

A Classified Bibliography on the History of Scientific Instruments  
by G.L'E. Turner and D.J. Bryden

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D.J. Bryden, Edinburgh  
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## ASTROLABE

ACKERMANN, S., 'Mutabor: Die Umarbeitung eines mittelalterlichen Astrolabs im 17. Jahrhundert', in: von GOTSTEDTER, A. (ed), *Ad Radices: Festband zum fünfzigjährigen Bestehen des Instituts für Geschichte der Naturwissenschaften der Johann Wolfgang Goethe-Universität Frankfurt am Main* (Stuttgart: Franz Steiner Verlag, 1994), 193-209.

ARCHINARD, M., *Astrolabe* (Geneva: Musée d'histoire des Sciences de Genève, 1983). 40pp.

BORST, A., *Astrolab und Klosterreform an der Jahrtausendwende* (Heidelberg: Carl Winter Universitätsverlag, 1989) (Sitzungsberichte der Heidelberger Akademie der Wissenschaften Philosophisch-historische Klasse). 134pp.

BROUGHTON, P., 'The Christian Island "Astrolabe" ', *Journal of the Royal Astronomical Society of Canada*, 80, no.3 (1986), 142-53.

DEKKER, E., 'An Unrecorded Medieval Astrolabe Quadrant c.1300', *Annals of Science*, 52 (1995), 1-47.

DIEKHOFF, R., 'Cosmographia planisphaeria: Ein Arsenius-Astrolabium des späten 16. Jahrhunderts im Kölnischen Stadtmuseum', *Kölner Museums Bulletin*, 2 (1990), 23-44.

FELLI, M., *L'Astrolabio di Galileo* (Florence: Istituto e Museo di Storia della Scienza, 1983). 32pp. With card model of astrolabe.

FIELD, J.V. and Wright, M.T., *Early Gearing: Geared Mechanisms in the Ancient and Medieval World* (London: Science Museum, 1985). 48pp.

FIELD, J.V. and WRIGHT, M.T., with HILL, D.R., *Byzantine and Arabic Mathematical Gearing* (London: Science Museum, 1985). 77pp. Reprinted papers from *Annals of Science*, 42 (1985), 87-163: FIELD, J.V. and WRIGHT, M.T., 'Gears from the Byzantines: a Portable Sundial with Calendrical Gearing' and HILL, D.R., 'Al-Birúní's Mechanical Calendar'.

van GENT, R.H., *The Portable Universe: two Astrolabes of the Museum Boerhaave* (Communication 259) (Leiden: Museum Boerhaave, 1994). 44pp.

GIBBS, S., with SALIBA, G., *Planispheric astrolabes from the National Museum of American History* (Smithsonian Studies in History and Technology No. 45) (Washington DC: Smithsonian Institution Press, 1984). 231pp.

GLASEMANN, R., 'Reinhard; Zwei mittelalterliche französische Astrolabien', in: von GOTSTEDTER, A. (ed), *Ad Radices: Festband zum fünfzigjährigen Bestehen des Instituts für Geschichte der Naturwissenschaften der Johann Wolfgang Goethe-Universität Frankfurt am Main* (Stuttgart: Franz Steiner Verlag, 1994), 211-230.

GORDON, R.B., 'Sixteenth-Century Metalworking Technology used in the Manufacture of two German Astrolabes', *Annals of Science*, 44 (1987), 71-84.

GORDON, R.B., 'Metallography of brass in a 16th century astrolabe', *Historical Metallurgy: The Journal of the Historical Metallurgy Society*, 20 (1986), 93-6.

de GRAEVE, J., 'La provenance de l'astrolabe "carolingien" de Marcel Destombes', *Physis: Rivista Internazionale di storia della scienza new series* 32 (1995), 209-216.

GRATUZE, B. and BARRANDON, J.-N., 'Nouvelles analyses de l'astrolabe latin AI.86-31', *Physis: Rivista Internazionale di storia della scienza new series* 32 (1995), 433-438.

d'HOLLANDER, R., 'Etude comparative entre l'astrolabe dit "carolingien" et l'astrolabe d'Abù-Bakr ibn Yusuf de Toulouse', *Physis: Rivista Internazionale di storia della scienza new series* 32 (1995), 405-420.

KESTEVEN, M., 'Ferguson's Astronomical Clock, Astrolabes and Stereographic projections', *Antiquarian Horology* 14 (1983-4), 602-608.

KING, D.A., 'Rewriting history through instruments: the secrets of a medieval astrolabe from Picardy,' in : ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 42-62.

KING, D. A., 'Über historische Modelle des Universums in drei und in zwei Dimensionen- die Armillarsphäre und das Astrolab', in: MÜLLER, U. (ed), *450 Jahre Copernicus "De*

*revolutionibus*": *Astronomische und mathe-matische Bücher aus Schweinfurter Bibliotheken* (Veröffentlichungen des Stadtarchivs Schweinfurt, Nr.9, 1993), 123-137.

KING, D.A., 'The Ciphers of the Monks and the Astrolabe of Berselius Reconsidered', in: DEMIDOV, S.S. *et al.* (eds), *Amphora: Festschrift für Hans Wussing zum 65. Geburtstag* (Basel: Birkhäuser, 1992), 375-388.

KING, D.A., 'Vergessene Schätze des Mittelalters', *Forschung Frankfurt*, 11, pt 4 (1993), 2-13.

KING, D.A., 'Ein vergessenes Zahlensystem des mittelalterlichen Mönchtums', in: von GOTSTEDTER, A. (ed), *Ad Radices: Festband zum fünfzigjährigen Bestehen des Instituts für Geschichte der Naturwissenschaften der Johann Wolfgang Goethe-Universität Frankfurt am Main* (Stuttgart: Franz Steiner Verlag, 1994), 405-420.

KING, D.A., 'The earliest known European astrolabe in the light of other early astrolabes', *Physis: Rivista Internazionale di storia della scienza* new series 32 (1995), 359-404.

KING, D.A. and TURNER, G.L'E., 'The Astrolabe Presented by Regiomontanus to Cardinal Bessarion in 1462', *Nuncius: Annali di Storia della Scienza*, 9, fas.1 (1994), 165-206, 15 pls.

LEVI-DONATI, G.R., 'Uno strumento ritrovato: l'Astrolabio perugino dell'anno 1498', *Bollettino della Deputazione di Storia Patria per l'Umbria*, 90 (Perugia, 1993).

MADDISON, F.R., 'The planispheric astrolabe. A brief modern bibliographic guide', *Horological Journal*, 80 no.4 (1987), 14-15.

MADDISON, F.R., 'The Barber's Astrolabe', *Interdisciplinary Science Reviews*, 17 (1992), 349-355.

MÁRCOVA, A., 'El Tratado del Astrolabio de Mošé Almosnino en un manuscrito de Leningrado', *Sefarad*, 51, 2 (1991), 437-446.

MUNDÓ, A.N., 'Analyse paléographique de l'astrolabe "carolingien" ', *Physis: Rivista Internazionale di storia della scienza* new series 32 (1995), 303-322.

PIERDOMINICI, N., 'Il "Trattato dell'Astrolabio" di Chaucer', *Annali della Facoltà di Lettere e Filosofia della Università di Macerata*, [1995?], 45-58.

POULLE, E., 'L'Astrolabe sphérique dans l'Occident latin', in HACKMANN, W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays presented to Francis Maddison* (Aldershot and Paris: Variorum and Société de l'Astrolabe, 1994), 223-237.

POULLE, E., 'La littérature astrolabique latine jusqu'au XIIIe siècle', *Physis: Rivista Internazionale di storia della scienza*, new series 32 (1995), 227-238.

RAU, H. and SCHALDACH, K., 'Vertikalsonnenuhren des 6.-14. Jahrhunderts', in: von GOTSTEDTER, A. (ed), *Ad Radices: Festband zum fünfzigjährigen Bestehen des Instituts für Geschichte der Naturwissenschaften der Johann Wolfgang Goethe-Universität Frankfurt am Main* (Stuttgart: Franz Steiner Verlag, 1994), 273-290.

SAMSÓ, J., 'Roma et Francia (=Ifranja) in M. Destombes' Carolingian Astrolabe', *Physis: Rivista Internazionale di storia della scienza new series* 32 (1995), 239-252.

SAUNDERS, H.S., *All the Astrolabes* (Oxford: Senecio 1984). 102pp.

SCHMIDL, P., 'Ein Astrolab aus dem 17. Jahrhundert - prachtvoll und verfälscht', in: von GOTSTEDTER, A. (ed), *Ad Radices: Festband zum fünfzigjährigen Bestehen des Instituts für Geschichte der Naturwissenschaften der Johann Wolfgang Goethe-Universität Frankfurt am Main* (Stuttgart: Franz Steiner Verlag, 1994), 291-314.

STAUTZ, B., 'Die früheste bekannte Formgebung der Astrolabien', in: von GOTSTEDTER, A. (ed), *Ad Radices: Festband zum fünfzigjährigen Bestehen des Instituts für Geschichte der Naturwissenschaften der Johann Wolfgang Goethe-Universität Frankfurt am Main* (Stuttgart: Franz Steiner Verlag, 1994), 315-328.

STEVENS, W.M., 'Paleographic studies of the letter forms on the Mater and Tympana of astrolabe AI. 86-31', *Physis: Rivista Internazionale di storia della scienza new series* 32 (1995), 253-302.

TALBOT, S., 'Astrolabes and Electrotypes: An Enquiry', *Bulletin of the Scientific Instrument Society*, No. 46 (1995), 18-22.

TIHON, A., 'Traité byzantins sur l'astrolabe', *Physis: Rivista Internazionale di storia della scienza new series* 32 (1995), 323-358.

TOLL, C., 'A Persian Astrolabe from AH 1187/AD 1773-74', *Oriental Suecana*, 38/9 (1989/90), 163-70.

TURNER, A.J. (ed), *Etudes 1987-1989*, *Astrolabica* 5 (Paris: Société Internationale de l'Astrolabe, 1989).

TURNER, A.J., 'Destombiam discovery and doubt: the problem of the "oldest latin astrolabe"', *Physis: Rivista Internazionale di storia della scienza new series* 32 (1995), 191-208.

TURNER, G.L'E., 'The three Astrolabes of Gerard Mercator', *Annals of Science*, 51 (1994), 329-353.

TURNER, G.L'E., ' "To find the mind's construction in the face": The Newly-Discovered Astrolabes of Mercator', *Bulletin of the Scientific Instrument Society*, No. 43 (1994), 16-21.

TURNER, G.L'E., 'The Discovery of Gerard Mercator's Astrolabes', *Sartoniana* [Ghent], 8 (1995), 33-44.

TURNER, G.L'E., 'An Astrolabe for Alessandro Farnese, Duke of Parma, by Erasmus Habermel', *Catalogue* (London: Christie Manson & Woods, 11 October 1995), 8-30.

TURNER, G.L'E., 'The craftsmanship of the "Carolingian" astrolabe, IC 3042', *Physis: Rivista Internazionale di storia della scienza* new series 32 (1995), 421-432.

TURNER, G.L'E. and DEKKER, E., 'An Astrolabe attributed to Gerard Mercator, c.1570', *Annals of Science*, 50 (1993), 403-443.

TURNER, G.L'E. and DEKKER, E., 'The first instruments of Gerard Mercator to be identified: three astrolabes', in: LÖFFLER, R. and TROMANAU, G. (eds), *Gerhard Mercator, Europa und die Welt* (Duisburg: Stadthistorisches Museum, 1994), 197-210.

TURNER, G.L'E. and DEKKER, E., 'Les Astrolabes', in: WATELET, M. (ed), *Gérard Mercator Cosmographe: le temps et l'espace* (Antwerp: Fonds Mercator Paribas, 1994), 178-191.

del VALLE, C., 'El manuscrito hebreo del *Tratado del Astrolabio* de R. Mošé Almosnino', *Sefarad*, 51, 2 (1991), 455-457.

WLODARCZYK, J., 'The Armillary Astrolabe', *Journal for the History of Astronomy*, 18 (1987), 173-95.

### **ASTRONOMICAL MODELS - Includes Armillary Spheres, Globes and Orreries &c**

APPLEBY, J.H., 'The Russia Company and John Rowley's Orrery', *Bulletin of the Scientific Instrument Society* 36 (1993), 15.

BARTHA, L., 'Ein Renaissance-Himmelsglobus als astronomisches Instrument: Der Dorn-Byloca-Globus aus dem Jahr 1480', *Der Globusfreund* 38-39 (1990), 37-44.

BAYNES-COPE, A.D., 'The Study and Conservation of Globes', *Der Globusfreund*, 33-34 (1986), 1-80.

BAYNES-COPE, A.D., 'Problems in re-shaping globes', *Der Globusfreund* 35-37 (1987), 33-35.

BEDINI, S.A., *Clockwork Cosmos: Bernard Facini and the Farnese Planisferologio* (Vatican City: Biblioteca Apostolica Vaticana, 1985). 221pp.

BEDINI, S.A., 'The Galilean Jovilabe', *Nuncius: Annali di Storia della Scienza*, 1 (1986), 25-46.

BEDINI, S.A., 'In pursuit of provenance; the George Graham Proto-Orreries', in HACKMANN, W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays*

presented to Francis Maddison (Aldershot and Paris: Variorum and Société de l'Astrolabe, 1994), 54-77.

BROWN, O., *The Whipple Museum of the History of Science Catalogue 4: Spheres, Globes & Orreries* (Cambridge: Whipple Museum, 1983). 23pp.

CRÍÑO, A.M. and WALLIS, H., 'New researches on the Molyneux Globes', *Der Globusfreund* 35-37 (1987), 11-17.

DAHL, E.H., 'Globes at the National Archives of Canada', *Der Globusfreund* 40-41 (1992), 123-136.

DAVIDS, C.A., 'The use of globes on ships of the Dutch East-India Company', *Der Globusfreund* 35-37 (1987), 69-78.

DEKKER, E., *De Leidsche Sphaera: Een uitzonderlijk planetarium uit de zeventiende eeuw* (Leiden: Museum Boerhaave, mededeling no. 219, 1985). 45pp.

DEKKER, E., 'Early Explorations of the Southern Celestial Sky', *Annals of Science*, 44 (1987), 439-70.

DEKKER, E., 'Conspicuous features on 16th century celestial globes', *Der Globusfreund* 43-44 (1995), 77-97.

DEKKER, E. and van der KROGT, P., *Globes from the Western World* (London: Zwemmer, 1993). 183pp.

EDGE, J.R., 'A Terrestrial Globe by William Bardin, with some Unusual Magnetic Features', *Bulletin of the Scientific Instrument Society*, No.39 (1993), 16-18.

FIRNEIS M.G. and GRÖSSING, H., 'Das Meteoroskop des Regiomontanus: Ein Instruments zur Bestimmung geographischer Koordinaten', *Der Globusfreund* 31-32 (1983), 140-156.

HOLBROOK, M., 'Beschreibung des Himmelsglobus von Henricus, Arnoldus und Jacobus van Langren und eines Planetariums von H. van Laun in Historischen Museum zu Frankfurt am Main', *Der Globusfreund* 31-32 (1983), 69-76.

KAMMER, W., 'Ingelheim: Liste alter Globen im Bundesland Hessen und aus einer Sammlung in Ingleheim in Rheinhessen, 2 Teil', *Der Globusfreund* 31-31 (1983), 15-68.

KAMMER, W., 'Liste alter Globen im Bundesland Rheinland-Pfalz der Bundesrepublik Deutschland', *Der Globusfreund* 40-41 (1992), 89-117.

KING, D. A., 'Über historische Modelle des Universums in drei und in zwei Dimensionen- die Armillarsphäre und das Astrolab', in: MÜLLER, U. (ed), *450 Jahre Copernicus "De*

*revolutionibus*": *Astronomische und mathe-matische Bücher aus Schweinfurter Bibliotheken* (Veröffentlichungen des Stadtarchivs Schweinfurt, Nr.9, 1993), 123-137.

KRATZSCH, K., *Alte Globen aus den Beständen der Nationalen Forschungs-und Gedenkstätten der klassischen deutschen Literatur in Weimar* (Weimar: NFG, 1984). 62pp.

van der KROGT, P., *Old Globes in the Netherlands* (Utrecht: HES Publishers, 1984). 294 pp.

van der KROGT, P., *Advertenties voor kaarten, atlassen, globes e.d. in Amsterdamse*

*kranten 1621-1811, with an Introduction in English* (Utrecht: HES Uitgevers BV, 1985). 473pp.

van der KROGT, P., 'Seventeenth century Dutch globes: Navigational instruments?', *Der Globusfreund* 38-39 (1990), 67-76.

van der KROGT, P., *Globi Neerlandici: The Production of Globes in the Low Countries* (Utrecht: HES Publishers, 1993). 647pp.

LAMB, T. and COLLINS, J.P. (eds), *The World in your Hands: An Exhibition of Globes and Planetaria* (London: Christie's, & Leiden: Boerhaave Museum, 1994). 122 pp.

LEOPOLD, J.H., *Astronomen Sterne Geräte: Landgraf Wilhelm IV. un seine sich selbst bewegenden Globen* (Luzern: Edition Joseph Fremersdorf, 1986). 239pp.

LIDNER, K., 'German globe-makers, especially in Nuremburg and Berlin', *Der Globusfreund* 35-37 (1987), 169-183.

LIPPINCOTT, K., 'Raphael's *Astronomia*: between art and science', in : ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 75-87.

von MACKENSEN, L., 'Wilhelm Schickards technische Entwürfe und die Erfindung seines Handplanetariums', in Seck, F. (ed), *Wissenschafts-feschichte um Wilhelm Schickard: Vorträge bei dem Symposium der Universität Tübingen in 500. Jahr ihres Bestehens am 24.und 25. Juni 1977*, (Tübingen: J.C.B Mohr, 1981), 67-79.

MILLBURN, J.R., 'Nomenclature of Astronomical models', *Bulletin of the Scientific Instrument Society* 34 (1992), 7-9.

MILLBURN, J.R. and RÖSSAAK, T.E., 'The Bardin Family, Globe-Makers in London, and their Associate, Gabriel Wright', *Der Globusfreund*, No.40/41 (Vienna 1992), 21-66 -plus 10 plates.

NIEUWENHUIS, H., *Het Eise Eisinga Planetarium* (Franeker, 1988). 56pp.,

OESTMANN, G., 'On the construction of globe gores and the preparation of spheres in the 16th century', *Der Globusfreund* 43-44 (1995), 121-131.

PASTOUREAU, M., 'Les Hardy - père et fils - et Louis-Charles Desnos "fiseurs des globes" à Paris au milieu du XVIII<sup>e</sup> siècle', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 73-82.

PELLETIER, M., 'From the luxury item to current consumption: product development of French Globes published in the 18th and 19th centuries', *Der Globusfreund* 35-37 (1987), 131-135.

dos REIS, A.E., 'List of old globes in Portugal', *Der Globusfreund* 35-37 (1987), 249-254.

RÖSSAAK, T.E., 'List of old globes in Norway', *Der Globusfreund* 35-37 (1987), 255-258.

SARMA, S.R., 'From al-Kura to Bhagola on the Dissemination of the Celestial Globe in India' *Studies in History of Medicine and Science* [New Delhi], new series 13, no. 1 (1994), 69-85.

SARMA, S.R., ANSARI, M.R. and KULKARNI, A.G., 'Two Mughlal celestial globes', *Indian Journal of History of Science* 28 (1993), 55-65.

SAVAGE-SMITH, E. and WAKEFIELD, C., 'Jacob Golius and celestial cartography', in HACKMANN, W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays presented to Francis Maddison* (Aldershot and Paris: Variorum and Société de l'Astrolabe, 1994), 238-260.

SCHMIDT, R. (ed), *Globe Labels/ Globus-Vignetten* (Vienna: Internationale Coronelli-Gesellschaft, 1995), 16pp. [Intended to supplement LAMB and COLLINS, see above.]

SCHILLINGER, K., 'The importance of geometrical instruments in the manufacture and use of globes', *Der Globusfreund* 38-39 (1990), 113-117.

SCIANNA, N., 'The Coronelli's three and a half foot globes', *Der Globusfreund* 43-44 (1995), 171-188.

SIMPSON, A.D.C., 'Globe production in Scotland in the period 1770-1830', *Der Globusfreund*, 35-37 (1987), 21-32.

SUMIRA, S., 'The conservation of globes: old and relatively new', *Der Globusfreund* 38-39 (1990), 141-147.

SUMIRA, S., 'Restoration of Heaven and Earth: the conservation of globes', *Bulletin of the Scientific Instrument Society* 33 (1992), 4-7.



ŠVEJDA, A., 'Globes in the National Technical Museum, Prague', *Der Globusfreund* 43-44 (1995), 14-18.

van SWINDEN, J.H., *Beschrijving van het Eisinga-Planetarium te Franeker* (1780). Reprint includes EEKHOGG, W., 'Het leven van Eisinga en eene geschiedenis van zijn planetarium', from 3rd edn (1851), and a biographical sketch of Van Swinden by van HOORN, M; (Franeker: Van Wijnen, 1994). xxxiii + vi + 164 pp.

TURNER, A.J., 'The Vitreous Globe: An 18th-century Novelty', *Bulletin of the Scientific Instrument Society*, No. 47 (1995), 8-11.

VOGEL, K.A., 'Armillary Spheres and Globes before 1492', *Der Globusfreund* 43-44 (1995), 41-54.

WAWRIK, F., 'Andreas Spitzer, Schneider, Jesuit, Instrumentbauer', *Der Globusfreund* 38-39 (1990), 87-96.

WAWRIK, F. and HÜHNEL, H., 'Das Globenmuseum der Österreichischen National-Bibliothek', *Der Globusfreund* 42 (1994), 5-188.

WATERS, D.W., 'English Navigational Books, Charts and Globes Printed Down to 1600', *Revista da Universidade de Coimbra*, 33 (1985), 239-57.

WLODARCZYK, J., 'The Armillary Astrolabe', *Journal for the History of Astronomy*, 18 (1987), 173-95.

ZÖGNER, L. (ed), *Die Welt in Händen: Globus und Karte als Modell von Erde und Raum* (Berlin: Staatsbibliothek Preussischer Kulturbesitz, 1989). 148pp.

ZUIDERVAART, H.J. and HOITSMA, H., *Een Zeeuws Planetarium uit de tweede helft van de 18e eeuw* (Middelburg: Zeeuws Museum, 1982). Offprint from *Archief van het Koninklijk Zeeuwsch Genootschap der Wetenschappen* 1982.

## **ASTRONOMY AND ASTRONOMICAL INSTRUMENTS - GENERAL**

see also: ASTROLABE: ASTRONOMICAL MODELS

### **ASTRONOMY - OBSERVATORIES: TELESCOPE**

*Astronomia y Cartografía de los Siglos XVIII y XIX* (Madrid: Observatorio Astronomico Nacional, 1987). 135pp.

BARTHA, L., *In Memoriam Miklós Konkoly Thege, Scholar, Engineer, Artist and Cultural Politician (1842-1916)*, CaACs Reports No.3 (Budapest, 1991). 23pp.

BATTIONI, G. and LOCATELLI, P. *Catalogo della Corrispondenza degli Astronomi di Brera (1800-1809)*, vol. 2 (Milan: Editore Ermes s.r.l. for Istituto di Fisica Generale Applicata, Università degli Studi di Milano, 1991). pp.435-913.

BENNETT, J.A., *The Whipple Museum of the History of Science Catalogue 3: Astronomy & Navigation* (Cambridge, 1983).

BENNETT, J.A., *The Divided Circle: A History of Instruments for Astronomy, Navigation and Surveying* (Oxford: Phaidon-Christie's Collectors Library, 1987). 224pp.

BENNETT, J.A., 'Hooke's Instruments for Astronomy and Navigation', in: HUNTER, M. and SCHAFFER, S. (eds), *Robert Hooke: New Studies* (Woodbridge, Boydell Press 1989), 20-32.

BENNETT, J.A., 'The English Quadrant in Europe: Instruments and the growth of Consensus in Practical Astronomy', *Journal for the History of Astronomy*, 23 (1992), 1-14.

BLONDEAU, R.A., *Ferdinand Verbiest S.J. (1623-1688) als wetenschapsmens* (Schoonaert: Roesbrugge, 1987). 141pp.

BOTT, G., WILLERS, J. and HOLZAMER, K., *Schätze der Astronomie* (Nürnberg: Germanisches National Museum, 1983).

BROKKEN, A. (ed), *Sterren in Beelden: Astrologie in de Eeuw van Mercator* (Sint-Niklaas, 1994). 176pp.

BROOKS, R.C., 'Methods of Fabrication of Fiducial Lines for 17th-19th Century Micrometers', *Bulletin of the Scientific Instrument Society*, No. 23 (1989), 11-14.

BURNETT, C., 'An unknown Latin version of an ancient *Parapigma*: the weather-forecasting stars in the *Iudicia* of Pseudo-Ptolemy', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 27-41.

CHALDECOTT, J.A., 'Platinum and Palladium in Astronomy and Navigation: The Pioneer Work of Edward Troughton and William Hyde Wollaston', *Platinum Metals Review*, 31 (1987), 91-100.

CHAPMAN, A., 'Tycho Brahe in China: The Jesuit Mission to Peking and the Iconography of European Instrument-Making Processes', *Annals of Science*, 41 (1984), 417-443.

CHAPMAN, A., 'Tycho Brahe: Instrument Designer, Observer and Mechanician', *Journal of the British Astronomical Association*, 99 (1989), 70-77.

CHAPMAN, A., 'Hermiah Horrocks, The Transit of Venus and the "New Astronomy" in early 17th century England', *Quarterly Journal of the Royal Astronomical Society*, 31 (1990), 333-57.

CHAPMAN, A., 'George Graham and the Concept of Standard Accuracies in Instrumentation', *Bulletin of the Scientific Instrument Society*, No.27 (1990), 3-8.

CHAPMAN, A., 'Reconstructing the angle-measuring instruments of Pierre Gassendi', in HACKMANN, W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays presented to Francis Maddison* (Aldershot and Paris: Variorum and Société de l' Astrolabe, 1994), 103-116.

CHAPMAN, A. 'Out of the Meridian: John Bird's Equatorial Sector and the New Technology of Astronomical Measurement', *Annals of Science*, 52 (1995), 431-463.

CHAPMAN, A., *Dividing the Circle* (Chichester: Ellis Horwood, 1990). 209pp.

CHAPMAN, A., *Dividing the Circle: The Development of Critical Angular Measurement in Astronomy, 1500-1850*, 2nd revised edn (Chichester: John Wiley, 1995). 215 pp.

DARIUS, J. and THOMAS, P.K., 'French innovations in in clockwork telescope drives,' in:

BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 144-154.

DÉBARBAT, S. and GRILLOT, S., 'Current research use of a historical instrument: The "Photomètre à Oeil-de-chat" designed by André Danjon', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994).

DUMONT, S. and GRILLOT, S., 'L'Astronomie d'amateur en France de 1789 a 1830: Deux Exemples', *Astronomie: Bulletin de la Societe astronomique de France et revue mensuelle d'astronomie*, 103 (1989), 277-284.

EELSALU, H. and HERRMANN, D.B., *Johann Heinrich Madler (1794-1874): Eine dokumentarische Biographie* (Akademie der Wissenschaften der DDR, Akademie-Verlag Berlin, 1985). 149pp.

FAUQUE, D., 'Les origines de l'héliomètre', *Revue d'Histoire des Sciences*, 36 (1983), 153-171.

FAUQUE, D., 'Alexis-Marie Rochon (1741-1817), savant astronome et opticien', *Revue d'Histoire des Sciences*, 38 (1985), 3-36.

FISCHER, K.A.F., 'Meridian instruments with an horizontal optic tube', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 155-158.

van GENT, R.H. and LEOPOLD, J.H., *The Time-keepers of Leiden Observatory* (Communication 256) (Leiden: Museum Boerhaave, 1992). 48pp.

GINGERICH, O., *The Great Copernicus Chase and Other Adventures in Astronomical History* (Cambridge: Cambridge University Press; Cambridge, Mass.: Sky Publishing Corp. 1992). xii + 304pp. [Reprints 36 articles published between 1966 and 1987].

GINGERICH, O., 'Astronomical paper instruments with moving parts', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 63-74.

GONZÁLEZ, F.J.G., *Instrumentos Científicos del Observatorio de San Fernando (Siglos XVIII, XIX y XX)* (Madrid: Instituto de Historia y Cultura Naval, 1995). 286pp.

von GOTSTEDTER, A. (ed), *Ad Radices: Festband zum fünfzigjährigen Bestehen der Instituts für Geschichte der Naturwissenschaften der Johann Wolfgang Goethe-Universität Frankfurt am Main* (Stuttgart: Franz Steiner Verlag, 1994). 606 pp.

GRILLOT, S, 'Les Instruments des observatoires français au 19<sup>e</sup> siècle', *Astronomie: Bulletin de la Societe astronomique de France et revue mensuelle d'astronomie*, 100 (1986), 275-289.

*De hemel is gestegen of de aarde is gedaald* (Franeker: Museum 't Coopmanshus, 1981). 94pp.

HOWSE, H.D., 'The Royal Astronomical Society Instrument Collection', *Quarterly Journal of the Royal Astronomical Society* 27 (1986), 212-236.

HOWSE, H.D., *The Greenwich List of Observatories: A World List of Astronomical Observatories, Instruments and Clocks, 1670-1850*, as a special number of *Journal for the History of Astronomy*, 17, (1986).

HOWSE, H.D., 'The Greenwich List of Observatories: Ammendment List No. 1', *Journal for the History of Astronomy* 25 (1994), 207-218.

JAROLM, M., *Catalogue of early printed books of the Library of the Astronomical Institute of the Czechoslovak Academy of Sciences* (Czechoslovak Academy of Sciences Institute of Astronomy: *Scripta astronomica 1*) (Prague, 1986).

JAROLÍM, M, *Katalog starých tisků knihovny Astronomického ústavu AV ČR II*, *Scripta astronomica 6* (Ondřejov: Astronomický Ústav, Akademie Východní republiky, 1994). Vol. II of a catalogue of early books on astronomy in the Astronomical Institute of the Academy of Sciences of the Czech Republic [formerly the Czechoslovak Academy of Sciences].

KELLER, H.U. and FRIEDLIE, T.K., 'Visibility Limit of Naked-eye Sunspots', *Quarterly Journal of the Royal Astronomical Society*, 33, no.2 (June 1992), 83-9.

KING, D.A., 'Some Remarks on Islamic Astronomical Instruments', *Scientiarum Historia*, 18 (1992), 5-23.

KING, D.A. 'Medieval Astronomical Instruments: A Catalogue in Preparation', *Bulletin of the Scientific Instrument Society*, 31 (1991), 3-7.

KING, D.A., 'Some Medieval Astronomical Instruments and their Secrets', in: MAZZOLINI, R.G. (ed), *Non-Verbal Communication in Science prior to 1900* (Biblioteca di Nuncius studi e testi XI), (Florence: Leo S. Olschki, 1993), 29-52.

KING, D.A., 'Astronomical Instruments between East and West', in (Österreichische Akademie der Wissenschaften, 619. Band) *Veröffentlichungen des Instituts für Realienkunde des Mittelalters und der frühen Neuzeit Nr.16: Kommunikation zwischen Orient und Okzident: Alltag und Sachkultur* (Internationaler Kongress Krems an der Donau 6. bis 9. Oktober 1992) (Vienna: Verlag der Österreichischen Akademie der Wissenschaften 1994), 143-198.

KING, D.A., 'Making Instruments Talk: Some Medieval Astronomical Instruments', *Bulletin of the Scientific Instrument Society*, No. 44 (1995), 5-12.

KOCHAR, R.K., 'The Growth of Modern Astronomy in India, 1651-1960', *Vistas in Astronomy*, 34 (1991), 69-105.

LEHR, A. *De Geschiedenis van het Astronomisch Kunstuurwerk: Zijn techniek en muziek* (The Hague: Martinus Nijhoff, 1981). 472pp.

LINDGREN, U., 'Astronomische und geodätische Instrumente zur Zeit Peter und Philipp Apians', in: *Philipp Apian und die Kartographie der Renaissance* (Munich: Anton H. Konrad Verlag for Bayerische Staatsbibliothek, 1989), 43-65.

MACDONALD, A. and MORRISON-LOW, A.D., *A Heavenly Library: Treasures from the Royal Observatory's Crawford Collection* (Edinburgh: Royal Observatory, 1994). 72pp.

McFARLAND, J., 'The Historical Instruments of Armagh Observatory', *Vistas in Astronomy*, 33 (1990), 149-210.

[MADRID], *Astronomia y Cartografía de los Siglos XVIII y XIX* (Madrid: Observatorio Astronómico Nacional, 1987). xv + 155pp.

*La Mesure du Ciel de la Plaque photographique aux Techniques spatiales*, (Paris, Observatoire de Paris, 1987), 68pp.

MEYNENT, M.-J., Foucault, Marseille et le télescope de 80cm à miroir en verre argenté', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 134-143.

MILLS, A.A., 'Portable Heliostats (Solar Illuminators)', *Annals of Science*, 43 (1986), 369-406.

MINIATI, M., 'Origini della Specola fiorentina', *Giornale di Astronomia* (1984), 209-20.

MIOTTO, E., TAGLIAFERRI, G. and TUCCI, P., *La Strumentazione nella Storia dell'Osservatorio astronomico di Brera (Istituto di Fisica General Applicata: Storia della Fisica)* (Milan: Università degli Studi di Milano, Edizioni Unicopli, 1990). 121pp.

MÖRZER BRUYNS, W.F.J., 'The astronomical clocks of Andreas Hohwü: a checklist', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 454-470.

MÜLLER, U. (ed), *450 Jahre Copernicus "De revolutionibus": Astronomische und mathematische Bücher aus Schweinfurter Bibliotheken* (Veröffentlichungen des Stadtarchivs Schweinfurt, Nr.9, 1993). 453pp. [Ausstellung... Schweinfurt...21 Nov. 1993- 19 Juni 1994]

NEEDHAM, J., LU, G-D., COMBRIDGE, J.H. and MAJOR, J.S., *The Hall of Heavenly Records: Korean Astronomical Instruments and Clocks 1380-1780* (Cambridge: CUP, 1986). 201pp.

NORTH, J.D., 'Celestial influences - the major premiss of astrology', in 'Astrologi hallucinati': *Stars and the End of the World in Luther's Time*, ZAMBELLI, P. (ed), (Berlin: Walter de Gruyter, 1986), 45-100.

PICOLET, G. (ed), *Jean Picard et les débuts de l'astronomie de précision au XVIIe siècle. Actes du colloque du tricentenaire* (Paris, 1987).

PIPPING, G., 'The Graham clock of Uppsala Observatory', *Antiquarian Horology* 18 (1989-90), 411-416.

POULLE, E., *Les Instruments astronomiques du Moyen Age* (Paris: A Brioux, 1983). A revised edition of article first published 1967.

PROVERBIO, E. and TUCCI, P., 'From Reflectors to Refractors: The Evolution of Giovan Battista Amici, Constructor of Astronomical Instruments' in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 213-219.

SARMA, S.R., 'Astronomical Instruments in Brahmagupta's *Brahmasphutasiddhanta*', *The Indian Historical Review*, 13, nos 1-2 [1989], 63-74.

SCHRAMM, H., *Astronomische Instrumente: Katalog* (Dresden: Staatlicher Mathematisch-Physikalischer Salon, Zwinger, 1987). 60pp.

SEGONDS, A.Ph., 'A propos d'un emblème de Tycho Brahe dans les *Mechanica*', in HACKMANN, W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays presented to Francis Maddison* (Aldershot and Paris: Variorum and Société de l'Astrolabe, 1994), 261-272.

ŠÍMA, Z., 'Prague Sextants of Tycho Brahe', *Annals of Science*, 50 (1993), 445-453.

SLECHTOVÁ, A., *Materials for the history of astronomy in the Central Archive of the Czechoslovak Academy of Sciences* (Czechoslovak Academy of Sciences Institute of Astronomy: *Scripta astronomica 2*) (Prague, 1987).

"*Sonnenborgh*": *De Utrechtse sterrewacht en haar geschiedenis, 1642-1977* (Utrecht, 1977), 48pp.

STIMSON, A.N., 'Some Board of Longitude instruments in the nineteenth century', in : de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 Oct 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 93-116.

STOTT, C. and HUGHES, D.W., 'The Amateur's Small Transit Instrument of the Nineteenth Century', *Quarterly Journal of the Royal Astronomical Society*, 28 (1987), 30-42.

VERDOT, J-P., 'A propos de deux petits quadrants indiens', in HACKMANN, W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays presented to Francis Maddison* (Aldershot and Paris: Variorum and Société de l'Astrolabe, 1994), 309-321.

VERNET, J., SAMSO, J., et al., *Instrumentos astronómicos en la España medieval: Su influencia en Europa*, (Exposicion, junio-julio 1985, Santa Cruz de la Palma and Ministerio de Cultura, Dirección General de Bellas Artes y Archivos Madrid).

WARNER, D.J. 'Prices of astronomical apparatus in the 19th century', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 5 (1991), 62-64.

WEBSTER, R. and WEBSTER, M., 'A tale of two instruments', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 291-294.

WIESENBACH, J., 'Pacificus von Verona als Erfinder einer Sternenuhr', in: BUTZER, P.L. and LOHRMANN, D. (ed), *Science in Western and Eastern civilization in Carolingian times* (Basel: Birkhäuser Verlag, 1993), 229-250.

WILLMOTH, F., ' "The Genius of all Arts" and the Use of Instruments: Jonas Moore (1617-1679) as a Mathematician, Surveyor, and Astronomer', *Annals of Science*, 48 (1991), 355-65.

WOLFSCHMIDT, G. (ed), *Nicolaus Copernicus: Revolutionär wider Willen* (Stuttgart, 1994). 350pp.

## **ASTRONOMY - OBSERVATORIES**

BEDINI, S.A., 'That Awfull Stage', (The Search for the State House Yard Observatory)', in *Science and Society in Early America: Essays in Honor of Whitfield J. Bell, Jr.* (Philadelphia: American Philosophical Society, 1986), 155-199.

BENNETT, J.A., *Church, State and Astronomy in Ireland: 200 Years of Armagh Observatory* (Armagh: The Armagh Observatory, & Belfast: Institute of Irish Studies, The Queen's University of Belfast, 1990). 277pp.

BENNETT, J.A., 'Equipping the Radcliffe Observatory: Thomas Hornsby and his instrument-makers', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 232-241.

BRACHNER, A., 'A Baroque Observatory in Southern Germany', *Bulletin of the Scientific Instrument Society*, no. 14 (1987), 4-6.

BRACHNER, A., 'Die Sternwarten Münchens: Teil 1', *Sterne und Weltraum*, 27 pt.1 (Jan 1988), 27-31; *idem*, Teil 2 (Feb. 1988), 80-5.

BRACHNER, A., BARTL, L. and HAUFFE, D., *Das Kloster Ochsenhausen Sternwarte und Armarium aus der Aufklärungszeit*, (Stuttgart: Finanzministerium Baden-Württemberg, 1989). 78pp.

BRYDEN, D.J., 'The Edinburgh Observatory 1736-1811: A Story of Failure', *Annals of Science*, 47 (1990), 445-74.

BUTLER, J., *Seeing Stars: Two Hundred Years of Astronomy in Armagh 1790-1990* (Armagh, 1990), 102pp.

DEBARBAT, S., 'Newton, Halley et l'Observatoire de Paris', *Revue d'Histoire des Sciences*, 39 (1986), 127-154.

DICK, S.J., 'Pulkovo Observatory and the National Observatory movement: an historic overview', in: LIESKE, J.H. and ABALAKIN, V.K. (eds), *Inertial Coordinate Systems on the Sky* (International Astronomical Union, 1990), 29-38.

DEIMAN, J.C., 'The instruments of the astronomical observatory of Utrecht University', *Tijdschrift voor de Geschiedenis der Geneeskunde, Natuurwetenschappen, Wiskunde en Techniek* 10 (1987), 174-189.



EELSALU, H., 'The Tartu (Dorpat) Observatory: A Neglected Astronomical Monument of the History of Tartu University', in: *Tartu Ülikool Labi Kolme Okupatsiooni*, special issue of *Tartu Ülikooli ajaloo Kusimusi*, XXV (1991), 218-221.

EELSALU, H. and RAUDSEPP, H., 'The List of Instruments and Related Objects kept in the Tartu Observatory Museum', *Archivalia uranographica*, issue No. 93, (198?) 4-15. [Estonian Academy of Science, Institute for Astrophysics and Atmospheric Physics]

FAIDIT, J-M., *L'Observatoire de la Babote, des origines à nos jours* (Montpellier: Centre cultural de l'Astronomie, 1986), 111pp.

van GENT, R.H. and LEOPOLD, J.H., *The Time-keepers of Leiden Observatory* (Communication 256) (Leiden: Museum Boerhaave, 1992). 48pp.

GOLVERS, N. and LIBBRECHT, U., *Astronoom van de Keizer: Ferdinand Verbiest en zijn Europese Sterrenkunde* (Louvain: Davidsfonds, 1988).

GONZÁLEZ, F.J.G., *Instrumentos Científicos del Observatorio de San Fernando (Siglos XVIII, XIX y XX)* (Madrid: Instituto de Historia y Cultura Naval, 1995). 286pp.

van HERK, G., et al, *De Leidse Sterrewacht: Vier eeuwen wacht bij dag en bij nacht* (Zwolle: Uitgeverij Waanders, 1983). 160pp.

HERMAN, J.K., "A hilltop in Foggy Bottom": *Home of the old Naval Observatory and the Naval Medical Department* Washington DC: Navy Medical Command, Department of the Navy, 1984).

HOWSE, H.D., *The Greenwich List of Observatories: A World List of Astronomical Observatories, Instruments and Clocks, 1670-1850*, (supp. no. of *Journal for the History of Astronomy*, 17 (1986))

HOWSE, H.D., 'The Greenwich List of Observatories: Ammendment List No. 1', *Journal for the History of Astronomy* 25 (1994), 207-218.

HOWSE, H.D., 'Newton, Halley, and the Royal Observatory' in: THROWER, N.J.W. (ed), *Standing on the shoulders of giants: a longer view of Newton and Halley*, (Berkeley, 1990), 14-26.

KAYE, G.R., *A Guide to the Old Observatories at Delhi; Jaipur; Ujjain; Benaras*, (Calcutta, 1920; facsimile reprint, Academic Press, Haryana, 1985).

LAURIE, P.S., 'William Dawes, and Australia's first Observatory', ed. HOWSE, H.D. and PERKINS, A., *Quarterly Journal of the Royal Astronomical Society*, 29 (1988), 469-82.

MANDRINO, A., TAGLIAFERRI, G., and TUCCI, P., *Inventario di Archivio dell'Osservatorio Astronomico di Brera, 1726-1917* (Milan: Università degli Studi di Milano, Istituto di Fisica Generale Applicata, Sezione di Storia della Fisica, 1987). 270pp.

McFARLAND, J., 'The Historical Instruments of Armagh Observatory', *Vistas in Astronomy*, 33 (1990), 149-210.

MIOTTO, E., TAGLIAFERRI, G. and TUCCI, P., *La Strumentazione nella Storia dell'Osservatorio astronomico di Brera (Istituto di Fisica General Applicata: Storia della Fisica)* (Milan: Università degli Studi di Milano, Edizioni Unicopli, 1990). 121pp.

SHARMA, V.Nath, *Sawai Jai Singh and His Astronomy* (Delhi: Motilal Banarsidass Publishers Ltd, 1995). 347pp.

STEPHENS, C.E., 'Partners in Time: William Bond & Son of Boston and the Harvard College Observatory' *Harvard Library Bulletin*, 35 (1988), 351-84.

WACHICHE, J-D., 'L'Administration de l'Observatoire de Paris au temps de la Revolution', *Astronomie: Bulletin de la Societe astronomique de France et revue mensuelle d'astronomie*, 103 (1989), 249-257.

WAYMAN, P.A., *Dunsink Observatory, 1785-1985: A Bicentennial History* (Dublin: Royal Dublin Society, 1987). xiv + 353pp.

ZUIDERVAART, H.J., 'Astronomische waarnemingen en wetenschappelijke contacten van Jan de Munck (1687-1768) Stadsarchitect van Middelburg', in: *Worstelende Wetenschap: Aspecten van wetenschapsbeoefening in Zeeland van de zestiende tot in de negentiende eeuw* (Middelburg, 1986), 103-70.

## **BIBLIOGRAPHICAL AND RELATED STUDIES**

includes library and archive collection catalogues and guides.

ANDERSON, R.G.W., BURNETT, J.E. and GEE, B., *Handlist of Scientific Instrument-Makers' Trade Catalogues 1600-1914* (Edinburgh: Royal Museum of Scotland, 1990) (National Museums of Scotland Information Series No.8). 100pp.

BATORE, A., BEVILACQUA, F. and ROTOLO, L., *Inventario degli Atti Accademici della Biblioteca Universitaria di Pavia* (Pavia: Biblioteca Universitaria, 1990). 183pp.

BATORE, A. and BEVILACQUA, F., *Clavis Scientiarum: Catalogo del Fondo Storico di Fisica della Biblioteca Universitaria e della Biblioteca "A.Volta" di Pavia, Secolo XIX- Parte I, A-K; Parte II, L-Z* (Pavia: Biblioteca Universitaria, 1990). 522pp; 530pp.

BENNETT, J.A. and BERTOLONI MELI, D.B., *Sphaera Mundi, Astronomy Books 1478-1600: A 50th Anniversary Exhibition at the Whipple Museum of the History of Science* (Cambridge: Whipple Museum, 1994). 148 pp.

BUCCIANTINI, M., *Istituto e Museo di Storia della Scienza: Bibliografia Italiana di Storia della Scienza I* (1982) (Florence: Leo S. Olschki, 1985).

CALCOEN, R., *Inventaire du Fonds Henri Michel* (Brussels: Centre national d'histoire des sciences, 1991). 116pp.

CAROZZI, A.V. and BOUVIER, G., *The Scientific Library of Horace-Bénédict de Saussure (1797): Annotated Catalog of an 18th-Century Bibliographic and Historic Treasure* (Mémoires de la Société de Physique et d'Histoire naturelle de Genève, volume 46) (Geneva, 1994). x + 201pp.

DAVIS, A.B., and DREYFUS, M.S., *The Finest Instruments ever Made: A Bibliography of Medical, Dental, Optical, and Pharmaceutical Company Trade Literature; 1700-1939* (Arlington Massachusetts: Medical History Publishing Associates I, 1986), 446pp.

DESTOMBES, M., *Marcel Destombes: Contributions sélectionnées à l'Histoire de la Cartographie et des Instruments Scientifiques* (Utrecht: HES Publishers, 1987), 592pp.

FROGGATT, P. and DAVIES, A.C., 'David Smyth Torrens: physiologist and horologist', *Hermathena: A Trinity College Dublin Review*, no.140 (Summer 1986), 11-30.

GIORDANO, C., *Guida alla Mostra "Elettricità e Magnetismo nel Fondo storico di Fisica della Biblioteca Universitaria"*, (Pavia: Bib. Univ., 1990). 62pp.

HALLETT, M. and JAMES, P., *Contribution to the Bibliography and the Literature of Photography as prepared by W Jerome Harrison* (Occasional Papers [1]: History of Photography) (Birmingham: School of History of Art & Complementary Studies, City of Birmingham Polytechnic, 1987).

HERRIES DAVIES, G.L., *The History of the Irish Science: A Select Bibliography* (Dublin: Royal Irish Academy, 1983), 13pp.

JAROLM, M., *Catalogue of early printed books of the Library of the Astronomical Institute of the Czechoslovak Academy of Sciences* (Czechoslovak Academy of Sciences Institute of Astronomy: *Scripta astronomica 1*) (Prague, 1986).

JAROLÍM, M., *Katalog starých tisk\_knihovny Astronomického ústavu AV\_R II*, *Scripta astronomica 6* (Ond\_ejov: Astronomický Ústav, Akademie V\_d \_eské Republiky, 1994). Vol. II of above catalogue.

JONES, M. and TAYLOR, J., *A Handlist of Trade Catalogues and Associated Literature in the Wellcome Museum of the History of Medicine* (London; The Science Museum, 1984), 68pp.

KARROW, R.W. Jr., *Mapmakers of the Sixteenth Century and Their Maps* (Chicago: Speculum Orbis Press for The Newberry Library, 1993). xxx + 846pp.

KRONICK, D.A., *Scientific and Technical Periodicals of the 17th and 18th Centuries: A Guide* (Metuchen, New Jersey, & London: The Scarecrow Press Inc., 1991). 332pp.

LANGE-FUCHS, H., *Magic Lantern Bibliography* (The Magic Lantern Society of Great Britain: Research Project No. 1, 1987) 56pp.

MADDISON, F.R., 'The planispheric astrolabe. A brief modern bibliographic guide', *Horological Journal*, 80 no.4 (1987), 14-15.

[MICHEL, H] [Bibliography] in HOGE, E. and de GRAEVE, J., 'Ciel et Terre rend hommage à Henri Michel', *Supplément au numéro de Mai-Juin 1982 de "Ciel et Terre"*, 24pp.

MOORE, K., *A Guide to the Archives and Manuscripts of the Royal Society* (London: The Royal Society, 1995). 72 pp.

[PRICE, D.J. de S.] [Bibliography] see BEDINI, S. A., 'Eloge: Derek De Solla Price (1922-1983)', *Annali dell'Istituto e Museo di Storia della Scienza di Firenze*, 9 (1984), 95-115.

SEZGIN, F. (ed), *Arabische Instrumente in orientalistischen Studien: Astronomische Instrumente Publikationen 1805-1931*, 6 vols (Frankfurt am Main: Institut für Geschichte der Arabischen-Islamischen Wissenschaften, 1990).

SIMCOCK, A.V., 'Elucidatio fabricae ususque: rambling among the beginnings of the scientific instrument bookshelf', in HACKMANN, W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays presented to Francis Maddison* (Aldershot and Paris: Variorum and Société de l' Astrolabe, 1994), 237-296.

TONEATTO, L., *Codices artis mensoriae: I manoscritti degli antichi opuscoli latini d'agrimensura (V-XIX sec.)* (Testi, Studi, Strumenti 5) (Spoleto: Centro italiano di Studi sull'alto medioevo, 1994). I, 543pp, 16 plates; II, pp. 547-871, 8 plates.

TURNER, A.J., 'La Gnomonique: Livres en langue Française imprimés entre 1500 et 1800', *ANCHA*, 50 (1987), 55-72.

WALLIS, R.V. and WALLIS, P.J., *Biobibliography of British Mathematics and its Applications: Part II 1701-1760* (Newcastle upon Tyne: Epsilon Press for Project for Historical Biobibliography, 1986), xxiii + 502pp.

WALLIS, R.V. and WALLIS, P.J., *Index of British Mathematicians. Part iii: 1701-1800* (Newcastle upon Tyne: PHIBB, 1992). 200pp.

WEISS, B., *Wie finde icht Literatur zur Geschichte der Naturwissenschaften und Technik* (Berlin: Arno Spitz, 1985). 289pp.

WOOD, R. D., (comp & ed), *Photohistorica: Literature Index of the European Society for the History of Photography*, 54/55, [listing for 1993 (published 1995)].

## **BINOCULARS**

BARTHA, L., 'Mini Glasses from the XVII Century' [opera glasses], *Elet és Tudomány*, 40, no.35 (1985), 1118. [In Hungarian.]

REID, W., 'Binoculars in the Army: Part 1, 1856-1903', *Army Museum* '81, 10-23.

REID, W., 'Binoculars in the Army: Part 2, 1904-1919', *Army Museum* '82, 15-30.

REID, W., 'Binoculars in the Army: Part 3, 1920-1945', *Army Museum* '83, 39-51.

REID, W., 'Binoculars in the Army: Part 4, 1945-1985', *Army Museum* '84, 31-39.

SEEGER, H.T., *Feldstecher: Ferngläser im Wandel der Zeit* (Borken : Edition Bresser Optik, 1989). 149pp

SEEGER, H. '100 years of Prismatic Binoculars', *Bulletin of the Scientific Instrument Society* 37 (1993), 16-18.

## **BIOGRAPHICAL AND INSTITUTIONAL STUDIES**

By topic: Astronomy: Cartography & Surveying: Chemistry &c

Horology: Instrument-Making (firms and individuals - by country/region

Mathematics & its applications: Natural Philosophy & Physics

## **BIOGRAPHICAL STUDIES - ASTRONOMY**

BEDINI, S.A., *Clockwork Cosmos: Bernard Facini and the Farnese Planisferologio*, (Vatican City: Biblioteca Apostolica Vaticana, 1985). 221pp.

van BERKEL, K., *Isaac Beeckman (1588-1637) en de mechanisering van het Wereldbeeld* (Amsterdam: Rodopi, 1983).

*Galileo e Padova: mostra di strumenti libri incision*, (Padova: Comune de Padova, 1983).  
Catalogue of exhibition, Padua 19 March-22 May, 1983.

HANLEY, H.A., *Dr John Lee of Hartwell*, (Aylesbury: Buckinghamshire County Record Office, 1983). 37pp.

HERBST, K.D., 'Hans Moritz Graf von Brühl und seine Leistungen im Zusammenhang mit dem Übergang zu den astronomischen Meßinstrumenten mit Vollkreisen Ende des 18. Jahrhunderts', *Die Sterne*, 67. Band, Heft 6 (1991), 335-342.

## **BIOGRAPHICAL STUDIES - CARTOGRAPHY AND SURVEYING**

EDEN, Peter (ed), *Dictionary of Land Surveyors and Local Cartographers of Great Britain and Ireland 1550-1850*, (Folkstone: Wm Dawson & Sons, 1979), 528pp.

KARROW, R.W. Jr., *Mapmakers of the Sixteenth Century and Their Maps: Bio-bibliographies of the cartographers of Abraham Ortelius, 1570* (Chicago: Speculum Orbis Press for The Newberry Library, 1993). 846pp.

van KEULEN, E.O., MÖRZER-BRUYNS, W.F.J., SPITS, E.K. (eds), *'In de Gekroonde Lootsman': Het kaarten-, boekuitgevers en instrumentmakershuis Van Keulen te Amsterdam 1680-1885.*' (Utrecht: HES Uitgevers, 1989), 104pp.

*Pedro Bernardo Villarreal de Berriz: La aportación vasca a la ingeniería del XVIII* (Bilbao, 1990), 157pp.

### **BIOGRAPHICAL STUDIES - CHEMISTRY &c**

ANDERSON, R.G.W. and LAWRENCE, C., *Science, Medicine and Dissent: Joseph Priestley 1733-1804* (Papers celebrating the 250th anniversary of the birth of Joseph Priestley together with a catalogue of an exhibition held at the Royal Society and the Wellcome Institute for the History of Medicine) (London: Wellcome Trust & Science Museum, 1987). 105pp

RHEES, D.J., *Joseph Priestley: Enlightened Chemist*, (Philadelphia: American Chemical Society Center for History of Chemistry, University of Pennsylvania, 1983), 34pp. Catalogue to an exhibit celebrating the 250th birthday of Joseph Priestley and the inauguration of the Center for History of Chemistry.

SIMCOCK A.V., ' "Reason's Dim Telescope": A poetic tirade against Joseph Priestley, FRS', *Notes and Records of the Royal Society*, 49 (1995), 79-84.

SIMPSON, A.D.C. (ed), *Joseph Black 1728-1799: A Commemorative Symposium*, (Edinburgh: The Royal Scottish Museum, 1982). 69pp.

SMITH, B. and HILL, M., *Joseph Priestley 1733-1804: Scientist, Teacher and Theologian: A 250th Anniversary Exhibition organised by Manchester College, Oxford at the Bodleian Library* (Oxford; Manchester College, 1983), 35pp.

### **BIOGRAPHICAL STUDIES - HOROLOGY**

BEESON, C.F.C., *Clockmaking in Oxfordshire 1400-1850*, 3rd edn with a new Introduction and Index by A.V. SIMCOCK (Oxford: Museum of the History of Science, 1989). 218pp.

BOULLIN, D.J., ' "John Forrest, Chronometer Maker to the Admiralty": The Forgery of Victorian Watches', *Horological Journal*, 133, no. 2 (1990), 52-56.

CARDINAL, C. (ed), *Ferdinand Berthoud 1727-1807: Horloger Mécanicien du Roi et de la Marine* (La Chaux-de-Fonds: Musée International d'Horlogerie, 1984).

FROGGATT, P. and DAVIES, A.C., 'David Smyth Torrens: physiologist and horologist', *Hermathena: A Trinity College Dublin Review*, no.140 (Summer 1986), 11-30.

GARCIA-DIEGO, J.A., *Juanelo Turriano, Charles V's Clockmaker: The Man and his Legend*, translated by C.D.LEY, (Wadhurst: Antiquarian Horological Society, and Editorial Castalia: Madrid, 1986). 165pp.

MILLBURN, J.R., 'Horology and the Adams family', *Antiquarian Horology* 13 (1982), 368-376.

PENFOLD, J.B., 'The London background of George Graham', *Antiquarian Horology* 14 (1983-4), 272-280.

STEPHENS, C.E., 'Partners in Time: William Bond & Son of Boston and the Harvard College Observatory' *Harvard Library Bulletin*, 35 (1988), 351-84.

### **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING**

By Region/Country.

See also - Scientific Instrument-Making

de CLERCQ, .P.R., (ed), *Nineteenth-Century Scientific Instruments and their Makers* (Papers presented at the Fourth Scientific Instrument Symposium, Amsterdam 23-26 October 1984) (Leiden: Museum Boerhaave, & Amsterdam: Rodopi, 1985), 281pp.

### **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - CANADA**

BROOKS, R.C., 'Instrument Making and Related Activities in Nova Scotia', *Bulletin of the Scientific Instrument Society* no. 12 (1987), 12-15.

BROOKS, R.C. and DANIELS, W.J., 'Surveying Instrument Makers of Central Canada', *Canadian Journal of Civil Engineering*, 20 (1993), 1037-1046.

SMITH, J.A., 'Charles Potter, Optician and Instrument Maker', *Journal of the Royal Astronomical Society of Canada*, 87 (1993), 14-33.

TOPHAM, W.R. and ZIOMKIEWICZ, B, 'Nathan Fellowes Dupuis: Scholar, Teacher and Craftsman', *Bulletin of the Scientific Instrument Society*, No.38 (1993), 5-10.

### **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - DENMARK**

ANDERSEN, H., 'Some Important Instruments and Instrument Makers in Denmark', in: DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 93-99.

ANDERSEN, H., 'Jeppe Smith (1759-1821): a Danish instrument-maker', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 403-417.

CHRISTENSEN, D.C., 'Spying on Scientific Instruments: The Career of Jesper Bidstrup', *Centaurus*, 37 (1994), 209-244.

### **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - EIRE**

BURNETT, J.E. and MORRISON-LOW, A.D., " *Vulgar and Mechanick*": *The Scientific Instrument Trade in Ireland 1650-1921*, (Dublin and Edinburgh: Royal Dublin Society & National Museums of Scotland, 1989). 166pp.

MORRISON-LOW, A.D., 'Irish Instrument Makers and Chemical Instrumentation', *Bulletin of the Scientific Instrument Society*, No.26 (1990), 11-15.

### **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - FRANCE**

ARCHINARD, M., 'The true name of Selligue', in : ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 306-328.

BENNETT, J.A., *Le Citoyen Lenoir: Scientific instrument making in revolutionary France (A Special Exhibition to mark the bicentenary of the French Revolution)* (Cambridge: Whipple Museum of the History of Science, 1989), 36pp.

BRENNI, P., '19th Century French Scientific Instrument Makers. I: H.-P. Gambey', *Bulletin of the Scientific Instrument Society*, No.38 (1993), 11-13.

BRENNI, Paolo, '19th Century French Scientific Instrument Makers. II: The Chevalier Dynasty', *Bulletin of the Scientific Instrument Society*, No.39 (1993), 11-14.

BRENNI, P., '19th Century French Scientific Instrument Makers: III-Lerebours et Secretan', *Bulletin of the Scientific Instrument Society*, No. 40 (1994), 3-6.

BRENNI, P., '19th Century French Scientific Instrument Makers: IV-Heinrich Daniel Ruhmkorff (1803-1877)', *Bulletin of the Scientific Instrument Society* No. 41 (1994), 4-8.

BRENNI, P., '19th Century French Scientific Instrument Makers: V-Jules Carpentier (1851-1921)', *Bulletin of the Scientific Instrument Society*, No. 43 (1994), 12-15.

BRENNI, P., 'Soleil-Duboscq-Pellin: A Dynasty of 19th century Scientific Instrument Makers', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 107-111.



BRENNI, P., 'Le triomphe de l'acoustique expérimentale: Marloye et Koenig', *Musée des arts et métiers La Revue*, No. 12 (September 1995), 29-37. Account of the two acoustic apparatus makers of 19th-century Paris.

BRENNI, P., '19th Century French Scientific Instrument Makers: VI-The Triumph of Experimental Acoustics: Albert Marloye (1795-1874) and Rudolph Koenig (1832-1901)', *Bulletin of the Scientific Instrument Society*, No. 44 (1995), 13-17.

BRENNI, P., '19th Century French Scientific Instrument Makers: VII-Paul Gustave Froment (1815-1865)', *Bulletin of the Scientific Instrument Society*, No. 45 (1995), 19-24.

BRENNI, P., '19th Century French Scientific Instrument Makers: VIII-Eugène Ducretet (1844-1915)', *Bulletin of the Scientific Instrument Society*, No. 46 (1995), 12-17.

BRENNI, P., '19th Century French Scientific Instrument Makers: IX-Louis Joseph Deleuil (1795-1862) and his son Jean Adrien Deleuil (1825-1894)', *Bulletin of the Scientific Instrument Society*, No. 47 (1995), 4-7.

[LE ROY], *La Dynastie des Le Roy horologers du Roi* (Tours: Musée des Beaux-Arts de Tours, 1987). 82pp.

TURNER, A.J., *From Pleasure and Profit to Science and Security: Etienne Lenoir and the transformation of precision instrument-making in France 1760-1830* (Cambridge: Whipple Museum of the History of Science, 1989). 107pp.

TURNER, A.J., 'Paper, print and mathematics: Philippe Danfrie and the making of mathematical instruments in late 16th century Paris', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 22-42.

## **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - GERMANY**

BOTT, G. (ed), *Wenzel Jamnitzer und die Nürnberger Goldschmiedekunst 1500-1700*, (Nuremberg: Germanisches Nationalmuseum and Munich: Klinkhardt & Biermann, 1985). 531pp.

BRACHNER, A., *G.F. Brander 1713-1783: Wissenschaftliche Instruments aus seiner Werkstatt*, (Munich: Deutsches Museum, 1983). 395pp.

BRACHNER, A., 'C.A. Steinheil, a Munich Instrument maker', *Bulletin of the Scientific Instrument Society*, no. 12 (1987), 3-7.

BRACHNER, A., 'German nineteenth-century scientific instrument makers' in: de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th

Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 117-158.

BRACHNER, Alto, *Die Münchener Optik in der Geschichte Entstehung, Unternehmungen, Sternwarten, Lokalitäten, Ausbreitung* (published thesis of the Technischen Universität München, München, 1986), 440pp..

[BUSCH], *775 Jahre Rathenow. 190 Jahre Optische Industrie Anstalt. 200 Jahre Mikroskope aus Rathenow* (Rathenow: Kreisverwaltung Rathenow in Verbindung mit der Stadtverwaltung Rathenow, 1991). 64pp. [Firm made optical instruments under the name Busch]

EELSALU, H., 'Big Fraunhofer's "Short" Story', *Journal of the Antique Telescope Society*, (summer 1994), 13-15.

HERBST, K. D., 'Das Wechselverhältnis von Astronomie und Maschinenbau, dargestellt am Beispiel des Wirkens von Georg von Reichenbach', *NTM: Schriftenreihe für Geschichte der Naturwissenschaften, Technik, und Medizin*, 28 (1991), 61-72.

JEBSEB-MARWEDEL, H., *Joseph von Fraunhofer und die Gashütte in Benediktbeuren*, (Munich: Fraunhofer Gesellschaft, 4th edn, 1982).

JENEMANN, H.R., 'Der Mechaniker-Pfarrer Philipp Matthäus Hahn und die Ausbreitung der Feinmechanik in Südwestdeutschland', *Zeitschrift für Württembergische Landesgeschichte*, 46 (1987), 117-61.

KEIL, I., 'Der Augsburger Optiker Johann Wiesel und seine Beziehungen zu Herzog August dem Jüngeren von Braunschweig-Lüneburg', in: BRÜNING, J. and NIEWÖHNER, F. (eds), *Augsburg in der Frühen Neuzeit: Beiträge zu einem Forschungsprogramm*, Niewöhner, Colloquia Augustana, Band I (1995), 158-169.

KEIL, I., 'Technology transfer and Scientific Specialization: Johann Wiesel, optician of Augsburg, and the Hartlib Circle', in: GREENGRASS, M.L. and RAYLOR, T. (eds), *Samuel Hartlib and Universal Reformation: Studies in Intellectual Communication* (Cambridge, 1994), 268-178.

KLEMM, H.G., *Georg Hartmann aus Eggolsheim (1498-1564): Ein Mathematiker, Physiker und Instrumentenmacher von Europäischem Rang* (Eggolsheim, 1989). 52pp.

LIDNER, K., 'German globe-makers, especially in Nuremberg and Berlin', *Der Globusfreund* 35-37 (1987), 169-183.

LOCKNER, P., *Die Merkzeichen der Nürnberger Rotschmiede* (Munich-Berlin: Deutscher Kunstverlag, 1981). 329pp. (Forschungshefter, Bayerischen Nationalmuseum München).

von MACKENSEN, L., *Feinmechanik aus Kassel: 225 Jahre F.W. Breithaupt & Sohn, Festschrift und Ausstellungsbegleiter* (Kassel: Georg Wenderoth Verlag, 1987). 84pp.

von MACKENSEN, L., 'Wilhelm Schickards technische Entwürfe und die Erfindung seines Handplanetariums', in SECK, F. (ed), *Wissenschafts-feschichte um Wilhelm Schickard: Vorträge bei dem Symposium der Universität Tübingen in 500. Jahr ihres Bestehens am 24.und 25. Juni 1977*, (Tübingen: J.C.B Mohr, 1981), pp.67-79.

McCONNELL, A., 'W.Harris & Co., London & Hamburg', *Bulletin of the Scientific Instrument Society* 36 (1993), 16.

MUNZ, A., *Philipp Matthäus Hahn, Pfarrer und Mechanikus* (Sigmaringen: Jan Thorbecke Verlag, 1990). 175pp.

THEWES, A., 'Beziehungen Südtirols zur Entdeckungsgeschichte des Fernrohrs', *Der Schlern*, 65 (1991), 284-295. Optical work of Anton Maria Schyrleus de Rheita and family.

TURNER, G.L'E., 'Gerard Mercator as Instrument Maker', *Duisburger Mercator-Studien*, Band 3, *Gerhard Mercator und die geistigen Strömungen des 16. und 17. Jahrhunderts*, edited by H.H. Blotevogel & Rienk Verm\_ (Duisburg, 1995), 131-146.

WAWRIK, F., 'Andreas Spitzer, Schneider, Jesuit, Instrumentbauer', *Der Globusfreund* 38-39 (1990), 87-96.

WEIL, H. and BADEN, H., 'Schieck and the Beginnings of the German Microscope Industry', *Bulletin of the Scientific Instrument Society*, no. 18 (1988), 9-12.

## **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - INDIA**

INSLEY, J., 'Making Mountains out of Molehills? George Everest and Henry Barrow, 1830-39', *Indian Journal of History of Science*, 30 (1995), 47-55.

## **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - ITALY**

BRENNI, P., 'Italian scientific instrument makers of the nineteenth century and their instruments', in: de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 183-204.

BRENNI, P., & MISITI, M., 'Costruttori italiani di Strumenti scientifici del XIX Secolo', *Nuncius: Annali di Storia della Scienza*, 1 (1986), 141-84.

GALLONI, M., 'Scientific Instrument Makers Working in Piedmont in 18th & 19th centuries', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh*

*International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 231-235.

LUALDI, A., 'A Trade Brochure by Françoise Baillou', *Bulletin of the Scientific Instrument Society*, No. 40 (1994), 16-17.

LUALDI, A., 'Pietro Patroni, an 18th-century Milanese Optician', *Bulletin of the Scientific Instrument Society*, No. 47 (1995), 12-13.

TURNER, G.L'E., 'The Florentine Workshop of Giovan Battista Giusti, 1556-c. 1575', *Nuncius: Annali di Storia della Scienza*, 10, pt 1 (1995), 131-172, 15 plates.

### **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - NETHERLANDS**

de CLERCQ, P.R., 'The scientific instrument-making industry in the Netherlands in the nineteenth century', in: de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 205-226.

van KEULEN, E.O., MÖRZER-BRUYNS, W.F.J., SPITS, E.K. (eds), *In de Gekroonde Lootsman': Het kaarten-, boekuitgevers en instrumentmakershuis Van Keulen te Amsterdam 1680-1885* (Utrecht: HES Uitgevers, 1989). 104pp.

LEOPOLD, J.H., 'Some notes on Benjamin Eyres', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 395-402.

MOOIJ, J., *Instrumenten, wetenschap en samenleving: Geschiedenis van de instrumentenfabricage en -handel in Nederland 1840-1940* (Soest: Het Instrument, 1988). 241pp.

POULS, H.C., 'Nederlands fabrikaat' in *Geodesia, nederlands geodetisch tijdschrift*, vol. 27 (1985), Feb.: 'Het automatische waterpasinstrument van Willem Meester (ca. 1685)', pp.48-50; April: 'Het waterpasinstrument van Christopher Becker (ca. 1845)', pp.136-41; May: 'De spiegelpasser van Lipkens en de kleine spiegelsextant van Laporte', pp.171-4; June: 'De afstandmeter van T.H. Snoeck (ca.1865)', pp.202-5.

van ZUYLEN, J., 'Jans & Harmanus van Deijl: an optical workshop in the 18th century', *Tijdschrift vor de Geschiedendis der Geneeskunde, Natuurwetenschappen, Wiskunde en Technick*, 10 (1987) 208-228.

### **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - PORTUGAL**

dos REIS, A. E., *Uma Oficina de Instrumentos matemáticos e náuticos (1800-85)* (Lisbon: Academia de Marinha, 1991). 112pp. [about the instrument maker, Jacob Bernard Haas, and his nephew]

## **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - SWEDEN**

AMELIN, O., 'Daniel Ekström: Maker of Scientific Instruments in 18th century Sweden', in: DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 81-83.

## **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - SWITZERLAND**

SCHULE, P., 'Une dynastie de "mechaniciens" et d'inventeurs: "les Paul" ', (Geneva, 1981), 11pp. Reprinted from *Genava*, ns 29 (1981), 139-149.

## **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - UNITED KINGDOM**

BANFIELD, E., *Barometer Makers and Retailers 1660-1900* (Trowbridge: Baros Books, 1991). 256pp.

BARTY-KING, H., *Eyes Right: The Story of Dollond & Aitchison Opticians 1750-1985* (London: Quiller Press, 1986), 260pp. BUT see *Annals of Science*, 43 (1986), 147-174.

BRACEGIRDLE, B., 'Famous Microscopists: Flatters and Garnett Ltd., 1901-1967', *Proceedings of the Royal Microscopical Society* 28 (1993), 55-62.

BRISTOW, H.R., 'Elliott, Instrument Makers of London: Products, Customers, and Development in

the 19th Century', *Bulletin of the Scientific Instrument Society*, No.36 (1993), 8-11.

BRYANT, T.J., 'John Handsford of Birmingham and Bristol' *Bulletin of the Scientific Instrument Society* 40 (1994), 11-12.

BRYDEN, D.J., 'Made in Oxford: John Prujean's 1701 Catalogue of Mathematical Instruments', *Oxoniensia*, 58 (1993). 263-285.

BRYDEN, D.J., 'James Watt, merchant: the Glasgow years, 1754-1774' in: SMITH, D. (ed), *Perceptions of great engineers: fact and fantasy*, (London: The Science Museum for the Newcomen Society &c, 1994), 9-21.

BURNETT, J.E. and MORRISON-LOW, A.D., "*Vulgar and Mechanick*": *The scientific instrument trade in Ireland, 1650-1921* (Edinburgh: National Museums of Scotland; and Dublin: Royal Dublin Society, 1989). 166pp.

CATTERMOLE, M.J.G. & WOLFE, A.F., *Horace Darwin's Shop: A History of the Cambridge Scientific Instrument Company 1878-1968* (Bristol: Adam Hilger, 1987). xvi + 285pp.

*Darwin's Shop: The Cambridge Scientific Instrument Company 1881-1968* (Cambridge: Cambridge University Library, 1986). 28pp.

CHAPMAN, A., 'Scientific instruments and industrial innovation: the achievement of Jesse Ramsden', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 418-430.

CLARKE, T.N., MORRISON-LOW, A.D., and SIMPSON, A.D.C., *Brass & Glass: Scientific Instrument Making Workshops in Scotland as Illustrated by instruments from the Arthur Frank Collection at the Royal Museum of Scotland* (Edinburgh: National Museums of Scotland, 1989). 320pp.

CLIFTON, G., 'An Introduction to the History of Elliott Brothers up to 1900', *Bulletin of the Scientific Instrument Society*, No.36 (1993), 2-7.

CLIFTON, G., *Directory of British Scientific Instrument Makers 1550-1851*, General Editor G.L'E. Turner (London: Zwemmer and National Maritime Museum, 1995). xviii +331 pp.

FRENCH, A., *John Joseph Merlin: The Ingenious Mechanick*, (London: The Iveagh Bequest, 1985), 146pp.

GEE, B., 'The Newtons of Chancery Lane and Fleet Street Revisited. Part 1: A Question of Establishment', *Bulletin of the Scientific Instrument Society*, No.35 (1992), 3-6.

GEE, B., 'The Newtons of Chancery Lane and Fleet Street Revisited. Part II: The Fleet Street Business and other Genealogy', *Bulletin of the Scientific Instrument Society*, No.36 (1993), 12-14.

HALLETT, M., 'John Benjamin Dancer 1812-1887: A Perspective', *History of Photography*, 10 (1986), 237-55.

INSLEY, J., 'Making Mountains out of Molehills? George Everest and Henry Barrow, 1830-39', *Indian Journal of History of Science*, 30 (1995), 47-55.

LUTHER, F., 'John Benjamin Dancer (1812-87): A Family History', *History of Photography*, 16 (1992), 123-134.

McCONNELL, A., *Instrument Makers to the World: A History of Cooke, Troughton & Simms* (York: The Ebor Press, 1992). 16pp.

McCONNELL, A., 'Thomas Cooke's Order Book: analysis of an optical business, 1856-1868', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 431-422.

- McCONNELL, A., *R.B. Bate of the Poultry, 1782-1847: The Life and Times of a Scientific Instrument-Maker* (Monograph No. 1) (London: Scientific Instrument Society, 1993). 74pp.
- McCONNELL, A., 'W.Harris & Co., London & Hamburg', *Bulletin of the Scientific Instrument Society* 36 (1993), 16.
- MENNIM, E. J., *Transit Circle: The Story of William Simms (1793-1860)* (York: Ebor Press, 1992). 316pp.
- MILLBURN, J.R., *Benjamin Martin: Supplement* (London: Vade-Mecum Press, 1986), 64pp.
- MILLBURN, J.R., *Retailer of the Sciences: Benjamin Martin's Scientific Instrument Catalogues, 1756-1782* (London: Vade-Mecum Press, 1986). 96pp.
- MILLBURN, J.R., 'John Rowley's Gunnery Instruments', *Bulletin of the Scientific Instrument Society*, No.32 (1992), 3-6.
- MILLBURN, J.R., 'William Deane and his Ordnance Bills', *Bulletin of the Scientific Instrument Society* 45 (1995), 12-18.
- MILLBURN, J.R. and RÖSSAAK, T.E., 'The Bardin Family, Globe-Makers in London, and their Associate, Gabriel Wright', *Der Globusfreund*, No.40/41 (Vienna 1992), 21-66 -plus 10 plates.
- MORRISON-LOW, A.D., 'Kemp & Co., Laboratory Suppliers', in *The History and Preservation of Chemical Instrumentation*, STOCK, J.T. and ORNA, M.V. (eds), (Dordrecht: D. Reidel Publishing Co., 1986), pp.163-86.
- MORRISON-LOW, A.D., 'Yeates & Son, Opticians and Mathematical Instrument Makers to the University', in *More People and Places in Irish Science and Technology*, (ed) MOLLAN, R.C.et al. (Dublin: Royal Dublin Society, 1990), pp.72-3.
- MORRISON-LOW, A.D., 'Proctor & Beilby, Part I: Early 19th Century Scientific Instrument Making in the English Midlands', *Bulletin of the Scientific Instrument Society*, No. 41 (1994), 9-15.
- MORRISON-LOW, A.D., 'Proctor & Beilby, Part II: Proctor & Beilby's Sheffield', *Bulletin of the Scientific Instrument Society*, No. 42 (1994), 17-21.
- NUTTALL, R.H., 'James Smith, and Smith & Beck: 1839-1852. Part 1: the microscopes', *Microscopy, the Journal of the Quekett Microscopical Club*, 36 (1989), 288-300 & 317.
- SIMPSON, A.D.C, 'Richard Reeve - The "English Campani" - and the Origins of the London Telescope-Making Tradition', *Vistas in Astronomy*, 28 (1985), 357-65.

SIMPSON, A.D.C., 'A Sub-Contractor of W. & S. Jones Identified', *Bulletin of the Scientific Instrument Society*, No.39 (1993), 23-27.

SMITH D., 'The Cary Family', *The Map Collector* no. 43 (1988), 40-47.

SMITH, J.A., 'The Schmalcalders of London and the "Priddis" dial', *Journal of the Royal Astronomical Society of Canada*, 87 (1993), 4-13.

TREHERNE, A.; *The Massey Family: Clock, Watch, Chronometer and Nautical Instrument Makers*, (Newcastle-under-Lyme: The Borough Museum, 1977), 38pp. Catalogue of an exhibition at the Borough Museum, Newcastle-under-Lyme.

TURNER, G.L'E., 'The Instrument Makers of Elizabethan England', *Sartoniana* [Ghent], 8 (1995), 19-31.

WETTON, J., 'John Benjamin Dancer: Manchester instrument maker', *Bulletin of the Scientific Instrument Society* 29 (1991), 4-8.

WETTON, J., *Scientific Instrument Making in Manchester 1790-1870* (Manchester: Museum of Science & Industry, 1993). 68pp.

WETTON, J., 'Scientific Instrument Making in Manchester, 1790-1870', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 71-79.

## **BIOGRAPHICAL STUDIES - INSTRUMENT-MAKING - UNITED STATES**

BEDINI, S.A.; *At the sign of the Compass and Quadrant: the Life and Times of Anthony Lamb* (Trans. America. Phil. Soc. 74, part 1, 1984). 84pp; and separately issued: (Philadelphia: American Philosophical Society, 1984). 84pp.

BEDINI, S.A., 'Benjamin Cody of Philadelphia. Colonial American navigational instrument maker', *Rittenhouse; Journal of the American Scientific Enterprise* 6 (1992), 103-115.

BRYDEN, D.J., 'Alva Mason, the Franklin Institute, and the Origins of Philosophical and Chemical Instrument Manufacture in the United States', *Proceedings of the American Philosophical Society*, 132 (1988), 400-419.

BRYDEN, D.J., 'George Washington Carpenter: A Philadelphia Supplier of Chemical and Philosophical Apparatus', *Rittenhouse: Journal of the American Scientific Instrument Enterprise*, 8 (1994), 97-109.

DRUMMETER, L.F. Jr., 'Starke & Kammerer in San Francisco', *Rittenhouse; Journal of the American Scientific Enterprise* 5 (1991), 25-32.



- FERRAGLIO, P.L., 'Dating Bulloch microscopes', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 114-116.
- FOREMAN, B.R., 'Laurence Charles Francis, Philadelphia Instrument Maker', *Rittenhouse; Journal of the American Scientific Enterprise* 6 (1992), 33-38.
- FRIED, B., 'Tracking "Uncle John's" telescopes. Identifying and dating instruments made by John A. Brashear', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 49-55.
- GARCELON, D.C., 'William Gardon & Sons: makers of surveying and astronomical instruments', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 42-48.
- McBEE, E., 'Joseph Milner Wightman: Philosophical Instrument Maker', *Rittenhouse; Journal of the American Scientific Enterprise* 6 (1992), 65-72.
- MILLER, R.C., 'Dating Young instruments', *Rittenhouse; Journal of the American Scientific Enterprise* 5 (1991), 21-24.
- MILLER, R.C., 'George Keglman and Keglman Brothers. Mathematical and optical instrument makers', *Rittenhouse; Journal of the American Scientific Enterprise* 5 (1991), 56-58.
- RICHARDS, O.W., 'Charles A. Spencer and his Microscopes', *Rittenhouse; Journal of the American Scientific Instrument Enterprise*, 2 (1988), 70-81.
- RUDD, M.E., 'Julien P. Friez: an important American Meteorological instrument maker', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 8 (1994), 114-123.
- SCHECHNER, S.J., 'John Prince and Early American Scientific Instrument Making', *Sibley's Heir* (The Colonial Society of Massachusetts), 59 (1982), 431-503.
- SPENCER, A.M., 'The meteorological instruments of John Jeffries', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 59-61.
- TURNER, S., 'J.H.T. Werner and Benjamin Barton', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 5 (1991), 53-55.
- TURNER, S., 'William Würdemann: first machanician of the U.S. Coast Survey', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 5 (1991), 97-110.
- TURNER, S., 'The Kendall Family: thermometer and barometer makers', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 7 (1993), 16-27.
- UZES, F.D.B., 'David Rittenhouse, colonial surveyor and instrument maker', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 5 (1991), 1-16.

WARNER, D.J., [Benjamin Pike and Sons, New York] 'Introduction' to [PIKE], *Pike's Illustrated Catalogue of Scientific & Medical Instruments* (Facsimile edition of the 2nd edn New York 1856) - (Norman: Dracut and San Francisco, 1984, and re-printed 1993), vii-xv.

WARNER, D.J., 'William J Young: from craft to industry in a skilled trade', *Pennsylvania History* 52 no.2 (1985), 53-68.

WARNER, D.J., 'At the sign of the Quadrant - the navigational instrument business in America to the Civil War', *The American Neptune* 46 (1986), 258-263.

WARNER, D.J. 'Richard Patten (1792-1865)', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 6 (1992), 57-63.

WARNER, D.J., 'Richard Pattern (1792-1865)', *ISSES Bulletin* 13 (Winter 1992), 37-43.

WARNER, D.J., [James W Queen & Co, Philadelphia] 'Introduction' to [QUEEN], *The Queen Catalogues* (Facsimile edition of 19 catalogues, Philadelphia, 1881-1890) - (Norman: San Francisco, 1993), vol 1, vii-xlix.

WARNER, D.J. 'Alvan Clarks' customers', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 8 (1993-4), 41-52.

WARNER, D.J., 'Octave Leon Petitdidier: Precision Optician', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 54-58.

WARNER, D.J., 'The A.S.Aloe business', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 62-64.

WARNER, D.J., 'The microscopes and telescopes of Robert B Tolles', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 65-83.

WARNER, D.J., 'Ernst W.Grundlach, German-American optician', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 10 (1995-6), 1-18.

WARNER, D.J., 'Compasses and Coils: The Instrument Business of Edward S. Ritchie', *Rittenhouse: Journal of the American Scientific Instrument Enterprise*, 9 (1994-5), 1-24.

WARTER, S.L., 'J.G.Joseph and Pittsburg's "Grand Solar Microscope" ', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 49-53.

## **BIOGRAPHICAL STUDIES - MATHEMATICS AND ITS APPLICATIONS**

ALGER, K.R, *Mrs Janet Taylor "Authoress and Instructress in Navigation and Nautical Astronomy" 1804-1870*, Fawcett Library Papers No. 6 (London: LLRS Publications, City of London Polytechnic, 1982), 29pp.

JIMÉNEZ, J., MARTINEZ, M. and SEBASTIÁN, A., 'The Royal Academy of Mathematics and the Imperial College in the National Museum of Science and Technology of Madrid', *Nuncius: Annali di Storia della Scienza*, 10, pt 1 (1995), 179-192.

KLEMM, H.G., *Der Fränkische Mathematicus Johann Schöner (1477-1547) und seine kirchenbacher Briefe an den Nürnberger patrizier Willibrand Pirckheimer* (Wissenschaftliche und künstlerische Beiträge des Ehrenbürg-Gymnasiums Forchheim, Heft 10) (Erlangen, 1992). 84pp.

KLEMM, H.G., *Georg Hartmann aus Eggolsheim (1489-1564): Leben und Werk eines fränkischen Mathematikers und Ingenieurs* (Wissenschaftliche und künstlerische Beiträge des Ehrenbürg-Gymnasiums Forchheim, Heft 8) (Forchheim, 1990). 104pp.

TURNER, A.J., 'Paper, print and mathematics: Philippe Danfrie and the making of mathematical instruments in late 16th century Paris', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 22-42.

WALLIS, R.V. and WALLIS, P.J., *Biobibliography of British Mathematics and its Applications: Part II 1701-1760* (Newcastle upon Tyne: Epsilon Press for Project for Historical Biobibliography, 1986), xxiii + 502pp.

WALLIS, R.V. and WALLIS, P.J., *Index of British Mathematicians. Part iii: 1701-1800* (Newcastle upon Tyne: PHIBB, 1992). 200pp.

WILLMOTH, F., *Sir Jonas Moore: Practical Mathematics and Restoration Science* (Woodbridge: Boydell & Brewer, 1992). 256pp.

## **BIOGRAPHICAL STUDIES: NATURAL PHILOSOPHY and PHYSICS**

BEDINI, S.A., 'Galileo and Scientific Instrumentation', in WALLACE, W. A. (ed), *Reinterpreting Galileo in Studies in Philosophy and the History of Philosophy*, 15, (1986), 127-53.

BENNETT, J.A., 'Robert Hooke as mechanic and natural philosopher', *Notes and Records of the Royal Society of London*, 35 (1980), 33-48.

CHRISTENSEN, O., *Jens Kraft 1720-1765* (n.p.: Dansk Historisk Handbogsforlag, 1988), with an appendix on Kraft's instrument collection by H.Andersen.

EICHORN, K., 'Heinrich Geissler (1814-1879): His Life, Times and Work', *Bulletin of the Scientific Instrument Society*, No.27 (1990), 17-19.

MANGIANTI, F. and BELTRANO, M.C., *Il Collegio Romano: 100 anni di Osservazioni Meteorologiche* (Rome: Ministero dell'Agricoltura e delle Foreste, 1990). 48pp.

MILLBURN, J.R., *An Analysis of the Subscribers to George Adams Junior's Lectures on Natural and Experimental Philosophy, 1794*, (Aylesbury: for the Author, 1985), 15pp and 98-frame microfiche.

MITCHELL, M., *History of the British Optical Association 1895-1978* (London: BOA, 1982).

MORRISON-LOW, A.D., and CHRISTIE, J.R.R., '*Martyr of Science*': *Sir David Brewster 1781-1868*, (Edinburgh: Royal Scottish Museum, 1984), 138pp.

MORRISON-LOW, A.D., 'William Nicol FRSE, c.1771-1851: Lecturer, Scientist and Collector', *Book of the Old Edinburgh Club*, new series 2 (1992), 123-131.

SCHÖNBURG-HARTENSTEIN, J., *Josef Anton Nagel-ein Direktor des physikalischen Kabinettes* (Vienna: Der Osterreichischen Akademie der Wissenschaften, 1987), Veröffentlichungen der Kommission für Geschichte der Mathematik, Naturwissenschaften und Medizin, Band 45. 113pp.

van der STAAR, P. (ed), *Fahrenheit's Letters to Leibniz and Boerhaave*, (Nieuwe Nederlandse Bijdragen tot de geschiedenis der Geneeskunde en der Natuurwetenschappen No. 10) (Leiden: Communication no. 218 from the Museum Boerhaave, and Amsterdam: Rodopi, 1983). 195pp.

van SWINDEN, J.H., *Beschrijving van het Eisinga-Planetarium te Franeker* (1780). Reprint includes EEKHOGG, W., 'Het leven van Eisinga en eene geschiedenis van zijn planetarium', from 3rd edn (1851), and a biographical sketch of Van Swinden by van HOORN, M; (Franeker: Van Wijnen, 1994). xxxiii +vi +164pp.

TAROZZI, G., (ed), *Leopoldo Nobili e la Cultura Scientifica del suo Tempo* (Istituto per i Beni Artistici, Culturali e Naturali della Regione Emilia-Romagna, Bologna [1985]). 343pp.

TURNER, A. J., & GOMEZ, N., *Pierre Gassendi, explorateur des sciences* (Digne-les-Bains, 1992), 204pp., illus. Exhibition catalogue from Musée de Digne, May-October 1992.

## **BOTANY**

de CHADAREVIAN, S., 'Instruments, Illustrations, Skills, and Laboratories in 19th-century German Botany', in: MAZZOLINI, R.G. (ed), *Non-Verbal Communication in Science prior to 1900* (Biblioteca di *Nuncius* studi e testi XI), (Florence: Leo S. Olschki, 1993), 529-562.

See King, D.A.; Galluzzi, P.; Hackmann, W.D.;

SEN, Dibakar & CHAKRABORTY, Ajoy Kumar, (eds), *J.C. Bose Speaks* (Calcutta: Puthipatra, 1986), 456pp.

## CALCULATING AND COMPUTING DEVICES

BROMLEY, A.G., 'Charles Babbage's Analytical Engine, 1838', *Annals of the History of Computing*, 4 (1982), 196-217.

BROMELY, A.G., 'Notes on the Antikethera Mechanism', *Centaurus* 29 (1986), 5-27.

BROMLEY, A.G., 'The evolution of Babbage's Calculating Engines', *Annals of the History of Computing* 9 (1987), 113-136.

BROMLEY, A.G., 'Observations of the Antikythera Mechanism', *Antiquarian Horology* 18 (1989-90), 641-652.

BRYDEN, D.J., 'The Arithmetical Jewell or Jewell or Arithmetick', *Quarto* (Abbot Hall Art Gallery, Kendal, Westmorland), 23, no. 2 (July 1985), 9-14.

BRYDEN, D.J., *Napier's bones: A History and Instruction Manual* (London: Harriet Wynter Ltd, 1992), 24pp.

BUXTON, H.W., *Memoir of the Life and Labours of the Late Charles Babbage Esq. F.R.S.*, ed. with intro. by A.HYMAN (Charles Babbage Institute reprint series for the History of Computing, vol. 13) (Cambridge, Mass. & London: MIT Press, 1988). 401pp.

COHEN, I.B., 'Babbage and Aiken; with notes on Henry Babbage's gift to Harvard and to other institutions of a portion of his father's Difference Engine', *Annals of the History of Computing* 10 (1988), 171-193.

FRANKSEN, O.I., *Mr Babbage's Secret: The Tale of a Cypher - and APL* (Strandberg, Denmark, 1984), 320pp.

HAWKINS, W.F., 'The first calculating machine (John Napier 1617)', *Annals of the History of Computing* 10 (1988), 37-51.

KEAN, V. J., *The Ancient Greek Computer from Rhodes known as the Antikythera Mechanism* (Anixi Attikis: Efstathiadis Group, 1991). 96pp.,

KEHRBAUM, A. and KORTE, B., *Calculi: Bilder des Rechnens einst und heute: Images of Computing in Olden and Modern Times* (Bonn: Nordrhein-Westfälische Akademie der Wissenschaften, Westdeutscher Verlag, 1995). 127 pp.

KIDWELL, P.A., 'American Scientistis and calculating machines - from novelty to commonplace', *Annals of the History of Computing* 12 (1990), 31-40.

KIDWELL, P.A., 'Adders made and used in the United States', *Rittenhouse; Journal of the American Scientific Enterprise* 8 (1994), 78-96.

KIDWELL, P.A., 'The calculating machine of Ramón Vereá', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 33-41.

KRADOLFER, P., *Einige Rosinen aus der Entwicklung der Rechenmaschinen*; reprint from *backup*, 3, 1987, to 3, 1988 (Aarau, Switzerland, Verlag Sauerländer, 1988).

LINDGREN, M., *Glory and Failure: The difference engines of Johann Müller, Charles Babbage and Georg & Edward Scheutz*, Linköping Studies in Arts and Sciences, 9 (1987). And republished Cambridge (Mass), 1990.

MARGUIN, J., *Histoire des instruments et machines à calculer: trois siècles de mécanique pensante, 1642-1942* (Paris: Herman, 1994). 207pp.

MARTIN, Ernst, *The Calculating Machines (Die Rechenmaschinen) their History and Development*, KIDWELL, P.A. and WILLIAMS M.R. (trans and ed), (Cambridge, Mass.: MIT Press, 1992). Charles Babbage Institute reprint vol. 16. From the German edition of 1925.

MINIATI, M., 'Les "Cistae Mathematicae" et l'organisation des connaissances au XVII<sup>e</sup> siècle' in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 43-51.

NAPIER, J., *Rabdology [Rabdologiæ-1617]*, trans RICHARDSON, W.F. with introduction by RIDER, R.E. (Charles Babbage Institute reprint series for the history of computing, vol. 5, (Cambridge, Mass.: MIT Press, 1990).

PALAND, R., 'Die Leupold-Maxchine: Ein Schaltklinkensystem 200 Jahre vor Christel Hamann', *Historische Bürowelt*, no. 8 (Jan. 1985), 14-15.

*Rechenkunst und Rechentechnik: Eine Ausstellung der Deutschen Forschungsgemeinschaft* (Bonn, 1981), 24pp.

ROBERTS, K.D., 'Carpenter's and Engineer's slide rules', *Chronicle of the Early American Industries Association*, 36 no.1 (1983), 1-5.

SCHILLINGER, K., *Zeicheninstrumente: Katalog* (Dresden: Staatlicher Mathematisch-Physikalischer Salon, 1990). 72pp.

SCHWARTZ, H.A., 'The Willis planimeter', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 7 (1993), 60-64.

STANLEY, P.E., 'Carpenters' and Engineers' slide Rules: Routledges' Rule', *Chronicle of the Early American Industries Association*, 37 no.2 (1984), 25-27.

SWADE, Doron, *Charles Babbage and his Calculating Engines* (London: The Science Museum, 1991). 48pp.

TEE, G.J., 'The heritage of Charles Babbage in Australia', *Annals of the History of Computing* 5 (1983), 45-59.

TOMASH, E., 'The Madrid Promptuary', *Annals of the History of Computing* 10 (1988), 52-67.

TURNER, A.J., "'Utile pour les calculs": the logarithmic scale rule in France and England during the seventeenth century", *Archives internationales d'Histoire des Sciences* 38 (1988), 251-71.

WILLIAMS, M.R., 'From Napier to Lucas: The Use of Napier's Bones in Calculating Instruments', *Annals of Computing*, 5 (1983), 279-96.

WILLIAMS, M.R., 'Early calculation', in: ASPREY, W. (ed), *Computing before Computers* (Ames, 1990).

WILLIAMS, W.D., 'Some Early Chemical Slide Rules', *Bulletin of the History of Chemistry*, 12 (1992), 24-29.

## **CARTOGRAPHY**

See also: Astronomical Models - Globes

ARNHOLD, H., *Das Geographische Institut zu Weimar: Wissenschaft und Industrie, Tradition und Gegenwart: Weimarer Schriften, Heft 11* (1984). 96pp.

*Astronomia y Cartografía de los Siglos XVIII y XIX* (Madrid: Observatorio Astronomico Nacional, 1987). 135pp.

CARCHIO, A., *Dall'Italia Immaginata all'Immagine dell'Italia: dalla prime concezioni cosmografiche ai rilevamenti da satellite* (Florence: Istituto Geografico Militare, 1986). 206pp.

COCKX-INDESTEGE, E. and de NAVE, F., *Christoffel Plantijn en de exacte wetenschappen in zijn tijd* (Brussels: Gemeentekredit, 1989). 192pp.

DESTOMBES, M., *Selected contributions to the history of Cartography and Scientific Instruments*, ed, SCHILDER, G., van der KROGT, P. and de CLERCQ, P. (Utrecht: HES, 1987). 568pp.

*Enkhuizen in kaart: vier eeuwen stadsplattegronden* (Catalogus van de tentoonstelling 'Enkhuizen in kaart' in het Stedelijk Waagmuseum te Enkhuizen van 1 juni tot 1 oktober 1984), (Enkhuizen, 1984). 38pp.

FIRNEIS M.G. and GRÖSSING, H., 'Das Meteoroskop des Regiomontanus: Ein Instruments zur Bestimmung geographischer Koordinaten', *Der Globusfreund* 31-32 (1983), 140-156.

JEIJBROEK, J.F. and SCHAPELHOUMAN, M. (eds), *Kunst in kaart: Decoratieve aspecten van de cartografie* (Utrecht: HES Uitgevers, 1989). 131pp.

KARROW, R.W. Jr., *Mapmakers of the Sixteenth Century and Their Maps: Bio-bibliographies of the cartographers of Abraham Ortelius, 1570* (Chicago: Speculum Orbis Press for The Newberry Library, 1993). 846pp.

van der KROCHT, P.C.J., *Advertenties voor kaarten, atlanten, globes e.d. in Amsterdamse kranten 1621-1811, with an Introduction in English* (Utrecht: HES Uitgevers BV, 1985). 473pp.

LEMOINE-ISABEAU, C., *Cartographie belge dans les collections espagnoles XVIIe au XVIIIe siècle* (Brussels: Crédit Communal, 1985). 112pp.

LÖFFLER, R. and TROMANAU, G. (eds), *Gerhard Mercator, Europa und die Welt* (Duisburg: Stadthistorisches Museum, 1994).

[MADRID], *Astronomia y Cartografía de los Siglos XVIII y XIX* (Madrid: Observatorio Astronómico Nacional, 1987). xv + 155pp. [Exhibits drawn from the Observatorio, Museo Naval, Museo Arqueológico Nacional, Museo Nacional de Ciencia y Tecnología.]

[MAGELLAN], *João Jacinto de Magalhães: Bicentenário da sua Morte- 700 Anos da Fundação da Universidade: Conferência sobre Ciências físicas no Séc. XVIII: Exposição de Instrumentos antigos e Bibliografia* (Coimbra: Observatório da Univ. de Coimbra, 1990).

[MERCATOR], *Gerard Mercator et la Géographie dans les Pays-bas méridionaux* (Antwerp: Museum Plantin-Moretus, 1994). 175pp. [Exhibition at the museum 30 April-24 July 1994]

de NAVE, F., and VOET, L., *Musée Plantin-Moretus* (Brussels: Ludion S.A. - Cultura Nostra - 1989). 128pp.

PASTOUREAU, M., 'Les Hardy - père et fils - et Louis-Charles Desnos "fiseurs des globes" à Paris au milieu du XVIII<sup>e</sup> siècle', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 73-82.

SCHILDER, G., *Plaatsbepaling; de oude kaart in zijn verscheidenheid van toepassingen* (inaugural lecture Utrecht University, 15 November 1982) (Amsterdam: Nico Israel, 1982). 31pp. illus.

STEGENA, L. (ed), *Lazarus Secretarius: The First Hungarian Mapmaker and his Work* (Budapest: Akademiai Kiado, 1982). 116pp.



de VRIES, D. (ed), *Kaarten met geschiedenis 1550-1800: Een selectie van oude getekende kaarten van Nederland uit de Collectie Bodel Nijenhuis* (Utrecht: HES Uitgevers, 1989). 123pp.

WALLIS, H., *Raleigh & Roanoke: The First English Colony in America, 1584-1590* (London and Raleigh: British Library and North Carolina Museum of History, 1985). 116pp.

WATELET, M. (ed), *Gérard Mercator Cosmographe: le temps et l'espace* (Antwerp: Fonds Mercator Paribas, 1994).

WATERS, D., 'English Navigational Books, Charts and Globes Printed Down to 1600', *Revista da Universidade de Coimbra*, 33 (1985), 239-57.

WOLF, H. (ed), *Philipp Apian und die Kartographie der Renaissance* (Weissenhorn: Anton H. Konrad Verlag, 1989).

ZÖGNER, L. (ed), *Die Welt in Händen: Globus und Karte als Modell von Erde und Raum* (Berlin: Staatsbibliothek Preussischer Kulturbesitz, 1989). 148pp.

### **CATALOGUES - reprints, commentaries &c**

For modern catalogues of collections see - COLLECTIONS

ANDERSON, R.G.W., BURNETT, J.E. and GEE, B., *Handlist of Scientific Instrument-Makers' Trade Catalogues 1600-1914* (Edinburgh: Royal Museum of Scotland, 1990) (National Museums of Scotland Information Series No.8). 100pp.

[BERGER, C.L. & SONS], *Hand-Book and illustrated catalogue of the Engineer's and Surveyor's instruments of precision made by C.L.Berger, 1890* (Reprint, Mendham N.J.: The Astragal Press, 1993). 218pp. [With introduction by GARCELON, D.C.]

BRYDEN, D.J., 'Made in Oxford: John Prujean's 1701 Catalogue of Mathematical Instruments', *Oxoniensia*, 58 (1993). 263-285.

*Catalogue del'Exposition collective allemande d'instruments d'optique, de Mécanique et de Précision: exposition universelle de 1900*, (Berlin 1900; reprinted Paris: Editions Alain Brioux, 1984), 245pp.

CROM, T.R., *Trade Catalogues 1542 to 1842* (Melrose, Florida: T.H. Crom, 1989). 392pp.

DAVIS, A.B., and DREYFUS, M.S., *The Finest Instruments ever Made: A Bibliography of Medical, Dental, Optical, and Pharmaceutical Company Trade Literature; 1700-1939* (Arlington Massachusetts: Medical History Publishing Associates I, 1986), 446pp.

[GURLEY, W. & L.E.], *A Manual of the principal instruments used in American Engineering and Surveying, manufactured by W. & L.E.Gurley, Troy, N.W.*, 21st ed 1874 (Reprint, Mendham N.J.: The Astragal Press, 1993). 224pp. [With introduction by GARCELON, D.C.]

JONES, M. and TAYLOR, J., *A Handlist of Trade Catalogues and Associated Literature in the Wellcome Museum of the History of Medicine* (London; The Science Museum, 1984), 68pp.

KINCHIN, P. and KINCHIN, J., *Glasgow's Great Exhibitions: 1888, 1901, 1911, 1938, 1988* (Bicester, Oxon: White Cockade Publishing, 1989). 200pp.

LUALDI, A., 'A Trade Brochure by Françoise Baillou', *Bulletin of the Scientific Instrument Society*, No. 40 (1994), 16-17.

[PIKE], *Pike's Illustrated Catalogue of Scientific & Medical Instruments* (Facsimile edition of the 2nd edn New York 1856) - (Norman: Dracut and San Francisco, 1984, and re-printed 1993), 766pp. With introduction by WARNER, D.J..

[QUEEN], *The Queen Catalogues* (Facsimile edition of 19 catalogues, Philadelphia, 1881-1890) - (Norman: San Francisco, 1993), 2 vols. With introduction by WARNER, D.J.

E. Zimmerman, *Leipzig, XVIII, Preis-Liste under psychologische und physiologische Apparate* (1903). 135pp - reprint: (Institut für Geschichte der Neuern Psychologie, Universität Passau, nd.)

## **CHEMISTRY - CHEMICAL INSTRUMENTS - CHEMICAL ENGINEERING**

ANDERSON, R.G.W., 'Early Islamic Chemical Glass', in *Chemistry in Britain*, 19 (1983), 822-3.

ANDERSON, R.G.W., 'Instruments and Apparatus,' in *Recent Developments in the History of Chemistry*, (ed) C.A. Russell (London: Royal Society of Chemistry, 1985),

ANDERSON, R.G.W., 'Joseph Black and his chemical furnace', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 118-126.

ANDERSON, R.G.W., 'A Source for 18th -century Chemical Glass', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 47-52.

ANTONIOTTO, P. and CERRUTI, L. (eds), *Atti del I° Convegno di Storia della Chimica* (Turin, 1985), 210pp.

BAIRD, D., 'Baird Associates's Commercial Three-Meter Grating Spectrograph and the Transformation of Analytical Chemistry', *Rittenhouse*, 5 ( 1991), 65-80.

BAIRD, D., 'Analytical Chemistry and the "Big" Scientific Instrumentation Revolution', *Annals of Science*, 50 (1993), 267-290.

- BENNETT, S., 'The development of process control instruments', *Transactions of the Newcomen Society* 63 (1991-2), 113- 164.
- BERRY, M., 'Tempest in a milk pail: the lactometer and 19th century dairy disputes', *Rittenhouse: The Journal of the American Scientific Instrument Enterprise* 7 (1993), 76-83.
- BOLTON, H.C., HOLLAND, J. and WILLIAMS N.H., 'The Grimwade Milligram Chemical Balance: An Early Australian Attempt to Establish a Scientific Instrument Industry', *Historical Records of Australian Science*, 9, ii (December 1992), 107-117.
- BRINKMANN, A.A.A.M. *De Alchemist in de Prentkunst* (Amsterdam: Editions Rodopi, 1982), 70pp.
- BRYDEN, D.J., 'Alva Mason, the Franklin Institute, and the Origins of Philosophical and Chemical Instrument Manufacture in the United States', *Proceedings of the American Philosophical Society*, 132 (Dec. 1988), 400-419.
- BURCHARD, U., 'Geschichte und Instrumentarium der Lötrohrkunde', *Deutsches Museum Wissenschaftliches Jahrbuch 1992/93* (Munich: Deutsches Museum, 1993), pp. 7-62.
- BURNETT, J., 'The Use of New Materials in the Manufacture of Scientific Instruments, c.1880-c.1920', in: STOCK, J.T. and ORNA, M.V. (eds) *The History and Preservation of Chemical Instrumentation*, (Dordrecht: D. Reidel Publishing Co., 1986), pp.217-38.
- GIEBELER, E.H.W and ROSENBAUER, K.A., *Historia Scientiae Naturalis. Beiträge zur Gesichte der Laboratoriumstechnik und deren Randgebiete*, (Darmstadt: G-I-T Verlag Ernst Giebeler, 1982).
- HAMMOND, P.W. and EGAN, H., *Weighed in the Balance: A History of the Laboratory of the Government Chemist* (London: HMSO, 1992). xvi + 372pp.
- HEILENZ, S., *The Leibig Museum in Giessen: Guide through the Museum and a Liebig Portrait from a Current Viewpoint*, 2nd edn (Giessen, 1988).
- van LENNEP, J., *Alchemie: Contribution à l'histoire de l'art alchimique* (Brussels: Crédit Communal, 1984). 448pp.
- McCANN, A., 'A private laboratory at Petworth House, Sussex, in the late 18th century', *Annals of Science* 40 (1983), 635-655.
- MORRISON-LOW, A.D., 'Kemp & Co., Laboratory Suppliers', in STOCK, J.T. and ORNA, M.V. (eds) *The History and Preservation of Chemical Instrumentation*, (Dordrecht: D. Reidel Publishing Co., 1986), pp.163-86.
- MORRISON-LOW, A.D., 'Irish Instrument Makers and Chemical Instrumentation', *Bulletin of the Scientific Instrument Society*, No.26 (1990), 11-15.

von OSTEN, S., SOUKUP, R.W, and MAYER, H., 'Das Laboratoriums-Inventar von Oberstockstall aus dem 16. Jahrhundert: ein Zwischenbericht', *Der Anschnitt: Zeitschrift für Kunst und Kultur im Bergbau*, 46, 2-3 (1994), 100-102.

SIMCOCK, A.V., ' "Reason's dim telescope": a poetic tirade against Joseph Priestly, FRS', *Notes and Records of the Royal Society of London* 49 (1995), 79-84.

SMEATON ,W.A., 'Some large burning lenses and their uses by 18th century French and British chemists', *Annals of Science* 44 (1987), 265- 275.

SOUKUP, R.W., von OSTEN, S. and MAYER, H., 'Alembics, Curcubits, Phials, Crucibles: A 16th-Century Docimastic Laboratory Excavated in Austria', *Ambix*, 40 (1993), 25.

van SPRONSEN, J.W., *A Guide of European Museums and Expositions on Chemistry and History of Chemistry* (Budapest: Museum for Science and Technology, for the Federation of European Chemical Societies Working Party for History of Chemistry: 1981), 32pp.

van SPRONSEN, J.W., *Histoire van de Scheikunde in Europese Musea* (Leiden: Museum Boerhaave, Mededeling No. 215, 1983). 144pp. Second part of the above.

STOCK, J.T. and ORNA, M.V. (eds), *The History and Preservation of Chemical Instrumentation*, (Dordrecht: D. Reidel Publishing Co., 1986).

STOCK, J.T. and ORNA, M.V. (eds), *Electrochemistry, Past and Present* (American Chemical Society Symposium Series no. 390) (1989).

TSELOS, G.D. and WICKEY, C., *A Guide to Archives and Manuscript Collections in the History of Chemistry and Chemical Technology* (Center for History of Chemistry Publication No.7) (Philadelphia, PA: 1987). 198pp.

WARNER, D.J., 'American hydrometers', *Rittenhouse: The Journal of the American Scientific Instrument Enterprise* 5 (1991), 1-16.

WILLIAMS, W.D., 'Some Early Chemical Slide Rules', *Bulletin of the History of Chemistry*, 12 (1992), 24-29.

## **CINEMATOGRAPHY**

including: MAGIC LANTERNS and PROJECTION APPARATUS.

GREENACRE, D., *Magic Lanterns* (Aylesbury; Shire Album No.169, 1986), 32pp.

GRIGGS, D.D., 'Projection apparatus for science in late 19th century America', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 9-15.

[KINGSTON UPON THAMES MUSEUM], *Eadweard Muybridge of Kingston upon Thames*, (Kingston, 1984). 32pp.

[KINGSTON UPON THAMES MUSEUM], *Eadweard Muybridge: Exhibition Guide* (Kingston upon Thames, 1984), 24pp.

LIESEGANG, F.P., *Dates and Sources: A Contribution to the History of the Art of Projection and to Cinematography*, HECHT, H., (trans and ed), (London: Magic Lantern Society of Great Britain, 1986), 79pp. [Originally published as *Zahlen und Quellen: zur Geschichte der Projektionskunst u. Kinematographie* (Berlin: Deutsches Druck und Verlagshaus, 1926)]

*Laterna Magica: Vernügen, Belehrung, Unterhaltung, Der Projektionskünstler Paul Hoffman (1929-1888) (Ein Ausstellung des Historischen Museums Frankfurt* (Frankfurt am Main: Dezernat für Kultur und Freizeit, 1981).

LANGE-FUCHS, H., *Magic Lantern Bibliography* (The Magic Lantern Society of Great Britain: Research Project No. 1, 1987). 56pp.

*The Protector Lamp and Lighting Company Ltd. 1873-1973: The First Hundred Years* (Eccles: P.L. & L. CO., 1973). 56pp.

WARNER, D.J. 'Projection apparatus for science in antebellum America', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 6 (1992), 87-94.

## **COLLECTIONS: Catalogues, Guides and Histories of Collections &c**

See also: EXHIBITIONS, for catalogues of special exhibitions.

NB the items entered here are entered under other headings when the collection is particularly specific to a subject entry, but not otherwise.

The classification is General - then: Country: (with a 'Europe' section) Town:

HEILBRON, J.L., 'Some uses for catalogues of old scientific instruments', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 1-16.

TURNER, A.J., 'From Mathematical Practice to the History of Science: The Pattern of collecting Scientific Instruments', *Journal of the History of Collections*, 7 (1995), 135-150.

## **COLLECTIONS - ARGENTINA**

LA PLATA (University of La Plata)

RANEA, A.G., 'Origin and (Mis)Fortune of the Collection of Scientific Instruments of the Department of Physics, La Plata, Argentina', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 119-123.

## **COLLECTIONS - AUSTRALIA**

HOLLAND, J., *Scientific Instrument Collections in Australian Universities* (Sydney: Macleay Museum, University of Sydney, 1995), 15pp.

ADELAIDE (University of Adelaide Historical Collections):

RUNGE, P.C., *A Survey of Apparatus of Significance to the Development of Science and Research at the University of Adelaide* (Adelaide 1986). 61pp.

SYDNEY (University of Sydney, Faculty of Science):

BRANAGAN, D. and HOLLAND, G. (eds), *Ever Reaping Something New* (University of Sydney Faculty of Science Centenary, 1986). 256pp.

SYDNEY (University of Sydney, Macleay Museum):

HOLLAND, J., *Microscopes and Microscopy: Instruments and Related Items in the Macleay Museum* (Sydney 1989). 52pp.

HOLLAND, J., 'John Roach's instruments in Sydney', *Rittenhouse; Journal of the American Scientific Enterprise* 6 (1992), 20-24.

## **COLLECTIONS - AUSTRIA**

GRAZ: (University of Gratz):

HOHENESTER, A. and DORFER, A., *Aus dem Erbe großer Grazer Physiker: Ausstellung an der Universitätsbibliothek der Karl-Franzens-Universität Graz: Katalog zur Ausstellung*

15. Juni- 1. Oktober 1992 (Graz, Austria, 1991). 99pp.

LINZ (Oberösterreichische Landesausstellung): SEIPEL, W. (ed), *Mensch und Kosmos: Die Heraufkunft des modernen naturwissenschaftlichen Weltbildes* (Linz, 1990), 2 vols, 385pp + 199pp. Volume 2 illustrates many scientific instruments and clocks but dating is often poor.

VIENNA (Museen der Stadt Wien):

MATTL-WURM, S. (ed), *Uhrenmuseum Wien* (Vienna: Museen der Stadt Wien, revised edn, nd. [1989]), 198pp.

VIENNA (National-Bibliothek):

WAWRIK, F. and HÜHNEL, H., 'Das Globenmuseum der Österreichischen National-Bibliothek', *Der Globusfreund* 42 (1994), 5-188.

### **COLLECTIONS - BELGIUM**

LEMOINE-ISABEAU, C., *Cartographie belge dans les collections espagnoles XVIe au XVIIIe siècle* (Brussels: Crédit Communal, 1985). 112pp.

### **COLLECTIONS - CANADA**

MONTREAL (McGill University Department of Physics):

*The Rutherford Museum: Founded in 1967; Reopened in 1983* [Montreal, 1983]. 16pp.

OTTAWA(National Archives):

DAHL, E.H., 'Globes at the National Archives of Canada', *Der Globusfreund* 40-41 (1992), 123-136.

OTTAWA (National Museum of Science and Technology):

PATTERSON, J., *Meteorological Instruments of the Meteorological Service of Canada, ca 1940-1980* (Ottawa: National Museum of Science and Technology, 1993). xvii +178pp +50pp illus.

### **COLLECTIONS - CZECH REPUBLIC**

PRAGUE (Umeleckoprumyslove Muzeum ):

LENFIELD, J., *Slunecni hodiny ze sbirek UPM v Praze* (Acta UPM XVI: D. Supplementa 4) (Prague, n.d.). 174pp.

PRAGUE (NTM):

ŠVEJDA, A., 'Globes in the National Technical Museum, Prague', *Der Globusfreund* 43-44 (1995), 14-18.

### **COLLECTIONS - DENMARK**

ANDERSEN, H., *Historic Scientific Instruments in Denmark* (Copenhagen: Royal Danish Academy of Sciences and Letters, 1995). 446 pp.

COPENHAGEN( Historisk Medicinsk Museum):

RONNE, P. and NIELSON, A.B.W., 'Development of the ion X-ray tube: with a description of the Collections in the Medical Historical Museum, University of Copenhagen', *Acta Historica Scientiarum Naturalium et Medicalium* 35 (Copenhagen: Reitzel, 1986). 270pp.

MOE, H., *Mikroskopets Historie* (Copenhagen: Rhodos, Internationalt Forlag for Videnskab og Kunst, 1991) 261pp.

SORØ (Sorø Academy):

ANDERSEN, H., 'Det physiske Cabinet', *Naturens Verden*, no.10 (1991), 381-389.

CHRISTENSEN, O., *Jens Kraft 1720-1765: Biografisk Skitse af Ove Christensen* (Dansk Historisk Håndbogsforlag, 1988), 95pp. With appendix by ANDERSEN, H. on Jens Kraft's instrument collection.

## COLLECTIONS - EIRE

MOLLAN, C., *Irish National Inventory of Historic Scientific Instruments, Interim Report 1989* (Dublin: Royal Dublin Society, 1989). 224pp.

MOLLAN, C., 'The Irish National Inventory and one of its "Discoveries" ', in : ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 443-453.

MOLLAN, C., *Irish National Inventory of Historic Scientific Instruments* (Blackrock, Co. Dublin: Samton Ltd, 1995). 501pp.

DUBLIN (Egestorff Collection):

*The Egestorff Collection: An Abridged Catalogue* (Dublin [1984]). 32pp.

MAYNOOTH (St Patrick's College):

MOLLAN, C. and UPTON, J., *The Scientific Apparatus of Nicholas Callan, and other Historic Instruments* (Catalogues of Historic Scientific Instruments in Irish Collections, Number One) (Maynooth and Dublin: St Patrick's College and Samton Ltd, 1994). 304pp.

## COLLECTIONS - ESTONIA

TARTU (Tartu University Museum):

KOIV, E., *XIX sajandi alguse füüsikariistu Tartu Ulikooli ajaloo muuseumis/Physics Instruments from the Beginning of the 19th Century in Museum of the History of Tartu State University* (Tartu, 1989). 78pp.



KOIV, E, 'Füüsikariistad Tartu Ülikooli ajaloo muuseumis', in: *Tartu Ülikool Labi Kolme Okupatsiooni*, special issue of *Tartu Ülikooli ajaloo Kusimusi*, XXV (1991), 214-217.

TARTU (Tartu Observatory Museum):

EELSALU, H. and RAUDSEPP, H., 'The List of Instruments and Related Objects kept in the Tartu Observatory Museum', *Archivalia uranographica*, issue No. 93, (198?) 4-15. [Estonian Academy of Science, Institute for Astrophysics and Atmospheric Physics]

## COLLECTIONS - EUROPE

IMPEY, O. and MACGREGOR, A. (eds), *The Origins of Museums: The Cabinet of Curiosities in Sixteenth- and Seventeenth-Century Europe* (Oxford: Clarendon Press, 1985). 336pp.

MINOW, H., *Historische Vermessungsinstrumente: Ein Verzeichnis der Sammlungen in Europa (Historical Surveying Instruments: List of Collections in Europe)*, 2nd enlarged edn (Wiesbaden: Verlag Chmielorz GmbH, 1990). 310pp.

van SPRONSEN, J.W., *A Guide of European Museums and Expositions on Chemistry and History of Chemistry* (Budapest: Museum for Science and Technology, for the Federation of European Chemical Societies Working Party for History of Chemistry: 1981). 32pp.

van SPRONSEN, J.W., *Histoire van de Scheikunde in Europese Musea* (Leiden: Museum Boerhaave, Mededeling No. 215, 1983). 144pp. Second part of the above.

## COLLECTIONS - FRANCE

HILL, C.R., 'The Cabinet of Bonnier de la Mosson (1702-1744)', *Annals of Science*, 43 (1986), 147-174.

CHENONCEAU:

*Le Cabinet de physique et chimie de Chenonceau (XVIIIe siècle)* (Tours: Société Archéologique de Touraine Musée de l'Hôtel Gouin, 1989). 51pp.

LIMOGES (Musée Municipal de Limoges):

*Anciens appareils de physique de l'Ecole de Médecine et de Pharmacie de Limoges* (Limoges: Musée Municipal de Limoges 1985). 49pp.

PARIS (CNAM):

*Les Arts et métiers en révolution: Itinéraire dans les collections du musée* (Paris: Musée National des Techniques, CNAM, 1988). 500pp. Expo 1988/9

*Le pendule de Foucault au Musée des Arts et Méteirs* (Paris: CNAM 1990). 31pp.

*Collection des poids et mesures: Inventaire des Poids* (Paris: CNAM 1990), 146pp.

JACOMY, B., 'Du cabinet au Conservatoire: Les instruments scientifiques du Conservatoire des Arts et Métiers à Paris', *Journal of the History of Collections*, 7 (1995), 227-233.

MERCIER, A., *Le Portefeuille de Vaucanson: chefs-d'œuvre du dessin technique* (Paris: Musée national des Techniques, CNAM, 1991). 72pp.

PARIS: (Lycee Louis le Grand):

PROVOST, P., *Musée notices: Lycee Louis le Grand* (Paris: Lycee Louis le Grand, 1995). c200pp.[catalogue of the physics apparatus]

*Histoire et Musée* (Paris: Lycee Louis le Grand, 1995). 70pp.

PARIS: (Musée de l'Institut du Monde Arabe):

MOULIÉRAC, J., 'La Collection Marcel Destombes', in: TURNER, A.J. (ed), *Etudes 1987-1989*, *Astrolabica* 5 (Paris: Société Internationale de l'Astrolabe, 1989), 77-126.

TOURS (Musée de l'Hotel Gouin):

DUBOIS, J., 'La Science expérimentale au XVIII<sup>e</sup> siècle: L'Exemple du Cabinet de Physique et Chimie du Musée de l'Hotel Gouin à Tours', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 99-110.

## **COLLECTIONS - GERMANY**

KAMMER, W., 'Ingelheim: Liste alter Globen im Bundesland Hessen und aus einer Sammlung in Ingleheim in Rheinhessen, 2 Teil', *Der Globusfreund* 31-31 (1983), 15-68.

KAMMER, W., 'Liste alter Globen im Bundesland Rheinland-Pfalz der Bundesrepublik Deutschland', *Der Globusfreund* 40-41 (1992), 89-117.

BERLIN (Deutsches Rundfunk-Museum):

*Das Archiv des Rundfunk-Museums*. A part-work publication of technical sheets on historic wireless apparatus.

BERLIN (Zucher Museum):

OLBRICH, H., *Zucker Museum* (Berlin: 1989).

BIELEFELD (Stiftung Huelsmann)

SYDRAM, D., *Wissenschaftliche Instrumente und Sonnenuhren* (Kunstgewerbesammlung der Stadt Bielefeld Stiftung Huelsmann) (Munich: Callwey, 1989). 268pp.

DORTMUND (Museum für Kunst und Kulturgeschichte der Stadt Dortmund):

*Museumshandbuch Teil 2: Vermessungsgeschichte: Die Schausammlung Abteilung 22* (Dortmund: Museum für Kunst und Kulturgeschichte der Stadt Dortmund, 1985). 208pp.

DRESDEN (Staatlicher Mathematisch-Physikalischer Salon):

SCHARDIN, J., *Kunst- & Automatenuhren: Katalog der Gross-uhrensammlung* (Dresden: Staatlicher Mathematisch-Physikalischer Salon, Zwinger, 1989). 108pp.

SCHILLINGER, K., *Zeicheninstrumente: Katalog* (Dresden: Staatlicher Mathematisch-Physikalischer Salon, 1990). 72pp.

SCHILLINGER, K., 'The Development of the Collections of Scientific Instruments of the Mathematical-Physical Salon between 1750 & 1850 and their Use for Research & Teaching', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 101-106.

SCHRAMM, H., *Astronomische Instrumente: Katalog* (Dresden: Staatlicher Mathematisch-Physikalischer Salon, Zwinger, 1987). 60pp.

GIESSEN (Leibig Museum):

HEILENZ, S., *The Leibig Museum in Giessen: Guide through the Museum and a Liebig Portrait from a Current Viewpoint*, 2nd edn (Giessen, 1988).

JENA (Carl Zeiss Museum):

MINIATE, Mara, & WINKLER, Wolf, *Occhiali da vedere: Arte, Scienza e Costume attraverso gli occhiali* (Florence: Istituto e Museo di Storia della Scienza di Firenze, 1985). 176pp. [Exhibits from the Carl-Zeiss Museum, Jena, Germany]

WINKLER, W. (ed), *A Spectacle of Spectacles* (Leipzig: Edition Leipzig for Carl-Zeiss-Stiftung Jena, 1988). 178pp.

KASSEL (Hessisches Landesmuseum):

von MACKENSEN, L., *Die Naturwissenschaftlich-Technische Sammlung: Geschichte, Bedeutung und Ausstellung in der Kasseler Orangerie* (Kassel: Georg Wenderoth Verlag, 1991). 156pp.

MUNICH (Deutsches Museum)

MAYR, O. et al, *The Deutsches Museum: German Museum of Masterworks of Science and Technology, Munich* (London: Scala Books, 1990).160pp.

NUREMBERG (Germanischen Nationalmuseums):

BOTT, G. (ed), *Focus Behaim Globus: Teil 1: Aufsätze; Teil 2: Katalog* (Nuremberg: Verlag des Germanischen Nationalmuseums 1992). 977pp.

WOLFENBUTTEL (Herzog August Bibliothek):

*Sammler Fürst Gelehrter Herzog August zu Braunschweig und Lüneburg 1579-1666*, (Ausstellung katalogue der Herzog August Bibliothek in Wolfenbittel No. 27) (Wolfenbittel, 1979). 425pp.

## **COLLECTIONS - HUNGARY**

BUDAPEST:

[Pál Vásárhelyi and the education of engineers in the [Hungarian] age of reform [1825-1848], (Budapest, 1995). 150 pp. [In Hungarian. Includes illus catalogue of scientific instruments]

## **COLLECTIONS - INDIA**

SARMA, S.R., 'Indian Astronomical and Time-Measuring Instruments: A Catalogue in Preparation', *Indian Journal of History of Science*, 29 (4) (1994), 507-528.

## **COLLECTIONS - ITALY**

*Scienza spazioaperto: Settimana della cultura scientifica in Italia* (promossa dal Ministero dell'Università e della Ricerca Scientifica e Tecnologica, 18-22 marzo 1991) (special edition of *Quaderni di Vita italiana*, no.2, 1991). 252pp.

*Quaderni di Vita italiana*, no 2 (1992), 349pp. Special issue: *Scienza spazioaperto. Settimana della cultura scientifica e tecnologica, 4-10 maggio 1992* (Presidenza del Consiglio dei Ministri, Dipartimento per l'Informazione e l'Editoria: Rome, 1992). Guide to the science week in May 1992 in 112 towns. Useful index to the many museums and institutions that hold scientific instruments. Names, addresses, telephone numbers, and staff, are listed.

BASSO-RICCI, M. and TUCCI, P., 'La catalogazione di Strumenti geomagnetici italiani', *Nuncius: Annali di Storia della Scienza*, 10, pt 1 (1995), 211-215.

BEDINI, S.A., 'The fate of the Medici-Lorraine Scientific Instruments', *Journal of the History of Collections*, 7 (1995), 159-170.

DRAGONI, G., 'Vicende dimenticate del mecenatismo bolognese dell'ultimo 1700: l'acquisto della collezione di strumentazioni scientifiche di Lord Cowper', *Il Carrobbio* (rivista diretta da Antonio Ferri e Giancarlo Roversi), anno XI (1985). 68-84.

DRAGONI, G. (ed), *Instrumenta: Il patrimonio storico scientifico italiano: una realtà straordinaria* (Bologna: Grafis Edizioni, 1991). 286pp.

FERRARI, G. (ed), *Two hundred years of seismic instruments in Italy 1731-1940* (Bologna: Storia-Geofisica-Ambiente, 1992). 156pp.

del VECCHIO, M. (ed), *In view: the Telescopes of the Luxottica Museum*, (Agordo, 1995). 127pp.

AVELLINO (Istituto Magistrale Statale):

ABATE, G., *Mostra di antichi strumenti scientifici II edizione* (Avellino, 1994). 72 pp.

BOLOGNA (University of Bologna):

BAIADA, E., BÒNOLI, F. and BRACCESI, A., *Museo della Specola: Catalogo* (Bologna: Bologna University Press, 1995). 204 pp.

BÒNOLI, F., *The Bologna Astronomical Museum* (Bologna: Musei della Università di Bologna, n.d.). 8pp.

BRESADOLA, M. et al., *Una Scuola nel tempo: Documenti e collezioni dell'Istituto Tecnico "Pier Crescenzi"* (Bologna: Grafis Edizioni, 1995). 120pp.

CALANCHI, E., *La Collezione degli strumenti del Museo di antropologia* (Bologna: Università di Bologna, clueb, 1991). 127pp.

DRAGONI, G., 'Il Museo di Fisica', in *Storia illustrata di Bologna*, TEGA, W. (ed), (Bologna: AIEP Editore, 1987), 8/VII, pp.141-160.

DRAGONI, G., 'Un Museo per quattro secoli di Fisica', in: *I Luoghi del Conoscere: I Laboratori storici e i Musei dell'Università di Bologna* (Milan: Amilcare Pizzi Editore, for Banca del Monte di Bologna e Ravenna, 1988), pp.84-97.

DRAGONI, G. and GROSSI, L., 'Per una politica delle raccolte scientifiche', *Saecularia Nona: Università di Bologna 1088-1988* (Bologna University 900th Anniversary Review) (Marzo/Aprile 1989, 80pp.), 42-52.

*Scienza & Storia: I musei della facoltà di Scienze* (Bologna: Università di Bologna ([1983])). 111 pp. )

BRESICIA:

*L'Astrofilo: Bollettino dell'Unione Astrofili Bresciana - Astrolabi e Volvelle: La sfera celeste descritta su un piano* (Brescia: Comune da Brescia Assessorato alla Cultura / Museo Civico di Scienze Naturali di Brescia, Editrice VANNINI, 1992).

FERRARA: (Liceo classico 'L.Ariosto'):

*Strumentaria alla scoperta dell'antico Laboratorio di Fisica del Liceo Ariosto (1860-1924)*, MARZOLA, P.B. et al (eds),. (Ferrara: Liceo classico 'L.Ariosto', n.d. [1994]). 117pp.

*Strumentaria: Alla scoperta dell'antico laboratorio di fisica del Liceo Ariosto (1860-1924)* (Ferrara: Lions Club, 1995), 117 pp.

FIRENZA (Istituto Geografico Militare):

CARCHIO, A., *Dall'Italia Immaginata all'Immagine dell'Italia: dalla prime concezioni cosmografiche ai rilevamenti da satellite* (Firenze: Istituto Geografico Militare, 1986). 206pp.

FIRENZA (Istituto Tecnico Toscano):

BRENNI, P., *Gli strumenti del Gabinetto di Fisica dell'Istituto Tecnico Toscano, I, Acustica* (Biblioteca dell'Assessorato alla Cultura 4, Provincia di Firenze, Firenze, 1986). 103pp.

BRENNI, P., *Fondazione Scienza e Tecnica: Gli strumenti di fisica dell'Istituto Tecnico Toscano - Ottica* (Florence: Museo di Storia della Scienza, 1995). 240 pp.

BRENNI, P. and GIATTI, A., *Inventario degli Strumenti del Gabinetto di Fisica dell'Istituto Tecnico Toscano* (Firenze: Associazione Interaccademica Fondazione Scienza e Tecnica 1989). 250pp.

FIRENZA (Museo nazionale del Bargello):

MINIATI, M., *Strumenti scientifici della Collezione Carrand* (Florence: Museo nazionale del Bargello, 1991). 69pp.

FIRENZA (Museo di Storia della Scienza):

BRENNI, P., *Museo di Storia della Scienza: Catalogue of Mechanical Instruments* (Florence: Giunti for Istituto e Museo di Storia della Scienza, 1993). 115pp.

GIATTI, A. and MINIATI, M., *Il Restauro degli Strumenti Scientifici* (Florence: Museo di Storia della Scienza, 1988), 83pp.

HACKMANN, W.D., *Museo di Storia della Scienza: Catalogue of Pneumatical, Magnetical and Electrical Instruments* (Florence: Museo di Storia della Scienza, 1995). 253 pp.

MINIATI, M, (ed)., *L'Età di Galileo: Il secolo d'oro della Scienza in Toscana* (Florence: Istituto e Museo di Storia della Scienza, 1987). 175pp, illus. incl. colour.

TURNER, G.L'E., *Museo di Storia della Scienza: Catalogue of Microscopes* (Florence: Giunti for Museo di Storia della Scienza 1991). 133pp.

GENOA (Università degli Studi di Genova):

*Settimana della Cultura scientifica a Genova: Strumenti e Scienze della Terra, geodesia, sismologia, petrografia* (Science Week, 4-14 May 1992) (Genoa:, 1992), 149pp.

BOATO, G. and BRUZZANTI, G., *Strumenti nella Fisica dell'Ottocento* (Università degli studi di Genova) (Genoa: Sagep Editrici, 1993). 143pp.

LUCCA:

BORCHI, E. and MACII, R., *Alcuni Strumenti del Liceo Machiavelli di Lucca* (Lucca: Maria Pacini Fazzi editore, 1991). 61pp.

MILAN (University of Milan):

MIOTTO, E., TAGLIAFERRI, G. and TUCCI, P., *La Strumentazione nella Storia dell'Osservatorio astronomico di Brera (Istituto di Fisica General Applicata: Storia della Fisica)* (Milan: Università degli Studi di Milano, Edizioni Unicopli, 1990). 121pp.

MILAN: (Museo Poldipezzoli):

*Museo Poldipezzoli, Tomo 2°: Orologi-Oreficerie* (Milan: Electra Editrice, 1981).

MODENA (Museo della Bilancia):

GROSSI, L., *I libri delle bilance: Collezione Albertazzi-Dazzani* (Campogalliano, Modena: Museo della Bilancia, 1992).

LUPPI, G. (ed), *Bilance a bracci uguali / equal-arm balances* (Modena: Museo della Bilancia & Bulino edizioni d'arte, 1993). 205pp.

NAPLES: (Museo del Dipartimento di Scienze Fisiche Università di Napoli):

RAGOZZINO, E. and SCHETTINO, E., *La Collezione degli antichi apparecchi dell'Istituto di Fisica: Gli Strumenti Ottici (1840-1890)* (Naples, 1984). 86pp.

RAGOZZINO, E. and SCHETTINO, E., *La Collezione degli antichi apparecchi dell'Istituto di Fisica: Eletticità e Magnetismo 1835-1900* (Naples, 1985). 106pp.

RAGOZZINO, E., RINZIVILLI, R. and SCHETTINO, E., *La Rivelazione della Radiazione Termica nella Strumentazione di Macedonio Melloni* (Naples, Museo del Dipartimento di Scienze Fisiche Università di Napoli, CUEN 1989). 43pp.

RAGOZZINO, E., RINZIVILLI, R. and SCHETTINO, E., *Museo del Dipartimento di Scienze Fisiche Università di Napoli: La Collezione degli Strumenti di Fisica: Rapporto di attività* (Naples: Dipartimento di Scienze Fisiche, October, 1990). 21pp.

NAPLES: (Museo storico dell'Osservatorio astronomica di Capodimonte):

GRIECO, M. (ed), *La Collina di Urania: Il Museo storico dell'Osservatorio astronomica di Capodimonte* (Naples: Elio de Roas Editore, 1992).

PADUA:

PANCINI, M. and SALANDIN, G. A., *Il Teatro di Filosofia sperimentale di Giovanni Poleni (1683-1761)* (Padova: Edizioni LINT, 1986). 116pp.

PALERMO:

FODERÁ, G., MARTINES, F. and RANDAZZO, D., 'Cataloghi di Strumenti scientifici nella Biblioteca dell'Osservatorio astronomico di Palermo', *Nuncius: Annali di Storia della Scienza*, 9, pt 2 (1994), 759-796.

PAVIA (Museo per la Storia dell'Università di Pavia):

BELLODI, G., BRENNI, P and De LUCA, M.T., *Guida alla Mostra "Strumenti di Misura Elettrici del Museo per la Storia dell'Università di Pavia"* (Pavia: Biblioteca Universitaria, 1990). 94pp.

BELLODI, G. and ROVIDA, E., *La Fisica a Pavia nelle opere di Giuseppe Belli (1791-1860)* (Pavia: Università degli Studi di Pavia, 1994). 143pp.

PAVIA (Liceo Ginnasio Statale Ugo Foscolo):

BRENNI, Paolo, *L'Antico Gabinetto di Fisica del Liceo* (Pavia: Liceo Ginnasio Statale Ugo Foscolo, 1992). 18pp.

PISA:

SEGNINI, C.A. and CAFFARELLI, R.V., *Antichi Strumenti scientifici a Pisa (Sec. XVII-XX)* (Pisa, 1990), 201pp.

ROME (Università 'La Sapienza' Roma):



D'AGOSTINO, S., *Gli Strumenti dell'Elettromagnetismo: Collezioni del Museo del Dipartimento di Fisica, Università 'La Sapienza' Roma; Istituto Tecnico Nautico 'Colonna', Roma* (Rome: Università degli Studi di Roma 'La Sapienza', 1991). 184pp.

ROME (Museo Astronomico e Copernicano di Rome):

CALSI, M., *Guida alla Visita del Museo Astronomico e Copernicano di Roma* (Rome: Osservatorio Astronomico di Roma, 1991). 147pp.

ROME (Liceo E.Q.Visconti):

ORLANDI, A., and RUSSELLI, W., *Collezione di strumenti di fisica Liceo E.Q. Visconti di Roma* (Rome: Editrice Universitaria di Roma, 1994). 82 pp.

ROME:

*Guida - Catalogo della Mostra didattica di Astronomia, Sede di Monte Porzio* (Rome, 1986) 53pp. [Shows four slate tables of astronomical diagrams by Athanasius Kircher, 1636]

SIENNA (Università degli Studi di Siena):

VANNOZZI, F., *Inventario del Patrimonio dell'Ateneo Senese: Gli Strumenti Scientifici* (Siena: Regione Toscana, Università degli Studi di Siena, 1992). 126pp.

TERENNA, G., and VANNOZZI, F., *Inventario del Patrimonio dell'Unità Sanitaria Locale 30 - Area Senese: Gli Strumenti scientifici* (Università degli Studi di Siena) (Siena: Tipografia Edizioni Cantagalli, 1944). xiv +98pp.

TURIN (Museo del Politecnico di Torino):

*Museo delle attrezzature per la didattica e la ricerca* (Turin: Politecnico di Torino, 1990). 39pp.

TURIN (University of Turin):

CARAZZA, B. and MAYNERI, M.C., 'The "Inventario dell Machine" found at Turin University', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 237-241.

## **COLLECTIONS - KUWAIT**

KING, D.A., 'Early islamic astronomical instruments in Kuwaiti Collections', in FULLERTON, A., and FEHÉRVÁRI, G., (compilers), *Kuwait Arts and Architecture: a collection of essays*, (Kuwait, 1995), 76-96.

## **COLLECTIONS - MONACO**

MONACO (Musée océanographique de Moanco):

CARPINE, C., *Catalogue des appareils d'océanographie en collection au Musée océanographique de Moanco: 1. Photomètres: 2. Mesureurs de courant* (Bulletin de l'Institut océanographique, 73, no. 1437 (1987)). 144pp.

## COLLECTIONS - NETHERLANDS

de CLERCQ, P., 'Science at Court: the 18th century Cabinet of scientific instruments and models of the Dutch Stadholders', *Annals of Science* 45 (1988), 113-123.

SMIT, P. (ed), with SANDERS A.P.M. & van der VEER, J.P.F., *Hendrik Engel's Alphabetical List of Dutch Zoological Cabinets and Menageries* (Second, enlarged edn, Amsterdam: Rodopi, 1986). 340pp. Also as *Neuwe Nederlandse Bijdragen tot de Geschiedenis der Geneeskunde en der Natuurwetenschappen* No. 19.

AMSTERDAM: (Scheepvaartmuseum):

MÖRZER BRUYNS, W.F.J., 'The Amsterdam Scheepvaartmuseum and Anton Mensing: the Scientific Instruments', *Journal of the History of Collections*, 7 (1995), 235-241.

ANTWERP :

van CAMP, K.J., *19de-Eeuwse Wetenschappelijke en Didactische Instrumenten in bezit van de Stad Antwerpen: Elektriciteits-leer en Röntgenologie* (Antwerp: EBES, 1988). 152pp.

GRONINGEN(Historische Uitgeverij, Universiteitsmuseum):

DRAAISMA, D.(ed), *Een laboratorium voor de ziel Gerard Heyman en het begin van de experimentele psychologie* (Groningen: Historische Uitgeverij, Universiteitsmuseum, 1992). 151pp.

HAARLEM (Teyler's Museum):

van HOORN, M., 'Elisa van der Ven and the Physical Laboratory of the Teyler Foundation (Haarlem), 1878-1909', in : ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 278-290.

TURNER, G.L'E., 'Teyler's Museum Haarlem, during the nineteenth century', in: de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 227-240.

The HAGUE:

CLAASSEN, R. and WISSE, P., *Tweehonderd jaar Diligentia 1793-1993: Jubileumuitgave ter gelegenheid van het tweehonderdjarig bestaan van de Koninklijke Maatschappij voor Natuurkunde onder de zinspreuk Diligentia* (The Hague: Diligentia, 1993). 104pp. Includes catalogue of remains of Physical Cabinet, some 60 items.

LEEWARDEN: (Fries Museum):

‘Pibo Gualtheri en zijn collectie instrumenten’, *Fries Museumbulletin* (September 1993), 15-18. Includes an Arsenius-type astrolabe dated 1600.

LEIDEN (Museum Boerhaave):

*Christiaan Huygens, 1629-1695*, (Leiden, Museum Boerhaave Communication 224, 1988). 40pp.

Klein-kijkerij: Microscopen en microscopitsten in Nederland tot het begin van de 19e eeuw, (Leiden, Museum Boerhaave Communication 226, 1988). 32pp.

*De inwendige mens*, (Leiden, Museum Boerhaave Communication 227, 1989). 32pp.

FOURNIER, M., *The medico-mechanical equipment of Doctor Zander*, (Leiden, Museum Boerhaave Communication 229, 1989). 32pp.

*Van vernuftelingen en professoren: Nederland en de natuurwetenschappen rond 1600*, (Leiden, Museum Boerhaave Communication 230, 1989). 32pp.

*Newtons erfenis: Nederland, de natuurwetenschappen en de Verlichting*, (Leiden, Museum Boerhaave Communication 231, 1989). 32pp.

de CLERCQ, P., *The Leiden Cabinet of Physics*, (Leiden, Museum Boerhaave Communication 233, 1989). 56pp.

van HELDEN, A.C., *The coldest spot on Earth: Kamerlingh Onnes and low temperature research, 1882-1923*, (Leiden, Museum Boerhaave Communication 235, 1989). 32pp.

*De drie rijken der natuur*, (Leiden, Museum Boerhaave Communication 236, 1990). 32pp.

GROOSS, K.S., *Cornelis Solingen: A Seventeenth-Century Surgeon and his Instruments*, (Leiden, Museum Boerhaave Communication 238, 1990). 32pp.

van HELDEN, A.C., *Horror Vacui: De eeuw van de luchtpomp 1650-1750* (Communication 249). (Leiden: Museum Boerhaave, 1991), 40pp..

GROOSS, K. S. (ed), *Oog in Oog 1850-1925: Diagnostische ontwikkelingen in de oogheelkunde* (Leiden: Museum Boerhaave Communication 251, 1992).32pp.

WIECHMANN, A., *The Collection of Medicines of an Amsterdam Municipal Physician* (Communication 254) (Leiden: Museum Boerhaave, 1992). 39pp.

van HELDEN, A. C. and van GENT, R. H., *The Huygens Collection* (Leiden: Museum Boerhaave, Communication 264, 1995). 32 pp.

UTRECHT (University Museum):

DEIMAN, J.C., 'The instruments of the astronomical observatory of Utrecht University', *Tijdschrift voor de Geschiedenis der Geneeskunde, Natuurwetenschappen, Wiskunde en Techniek* 10 (1987), 174-189.

DEIMAN, J.C., 'Utrecht University and its microscopes', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 329-340.

### **COLLECTIONS - NORWAY**

RÖSSAAK, T.E., 'List of old globes in Norway', *Der Globusfreund* 35-37 (1987), 255-258.

### **COLLECTIONS - POLAND**

CRACOW (Jagiellonian University):

WALTO\_, S., *Collegium Maius: The Premises and the Collections of the Jagiellonian University Museum* (Cracow, 1992).

### **COLLECTIONS - PORTUGAL**

dos REIS, A.E., 'List of old globes in Portugal', *Der Globusfreund* 35-37 (1987), 249-254.

dos REIS, A.E., 'Historic Scientific Instruments in Portugal', *Bulletin of the Scientific Instrument Society*, No. 40 (1994), 18-20.

COIMBRA (Gabinete de Física & Observatório Astronómico, Universidade de Coimbra):

HALLEUX, R. (ed), *Les Mécanismes du Génie: Instruments scientifiques des xviii<sup>e</sup> et xix<sup>e</sup> Siècle* (Charleroi, 1991).

### **COLLECTIONS - ROMANIA**

ARDOS, A.I., 'Die Sammlung didaktischer Anschauungs-materialien von Samuel Brassai aus Cluj-Napoca', in *Blätter für Technikgeschichte*, 41-43 (1979-81 [Vienna 1983]), 67-79.

### **COLLECTIONS - RUSSIA**

MOSCOW (Polytechnischen Museums):

GURIKOV, V.A., 'Optische Geräte und Instrumente Ernst Abbes in der Sammlung des Polytechnischen Museums Moskau', *Neue Museums Kunde*, 27, no. 4 (1984), 230-36.

## COLLECTIONS - SPAIN

LEMOINE-ISABEAU, C., *Cartographie belge dans les collections espagnoles XVIe au XVIIIe siècle* (Brussels: Crédit Communal, 1985). 112pp.

MADRID (Naval Museum):

*Obras españolas de Náutica relacionadas con la Casa de la Contratación de Sevilla: Exposición conmemorativa del Bicentenario del Museo Naval (1792-1992)* (Madrid, 1992).

MADRID (Pharmacy Museum):

*El Museo de la Farmacia Hispana* (Madrid: Consejo Social de la Universidad Complutense de Madrid, 1993). 198pp.

## COLLECTIONS - SWEDEN

UPPSALA:

SANDSTROM, A.E., 'The Uppsala Cabinet of Physics', *Kungl. Vetenskapssamhällets i Uppsala Årsbok* 25 (1983-84), 5-46.

## COLLECTIONS - SWITZERLAND

ARCHINARD, M., 'A la recherche des collections perdues à Genève', *Musées de Genève* 276 (1987), 3-9

CAROZZI, A.V. and BOUVIER, G., *The Scientific Library of Horace-Bénédict de Saussure (1797): Annotated Catalog of an 18th-Century Bibliographic and Historic Treasure* (Mémoires de la Société de Physique et d'Histoire naturelle de Genève, volume 46) (Geneva, 1994). x + 201pp.

BRUGGER-ZARAGOZA, C.J., *Musées et Collections horlogères en Suisse* (La Chaux-de-Fonds, Chronométriphilia, 1986).

GENEVA: (Musée d'Historie des Sciences de Genève):

ARCHINARD, M., 'Les instruments scientifiques d'Horace Bénédict de Saussure', *Le Monde alpin et rhodanien*, 1-2 (1988), 151-164.

ARCHINARD, M., 'The scientific instruments of Horace-Bénédict de Saussure', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989),83-96.

ZURICH (University of Zurich Museums):

SCHETT, A., *Vom Helmholtz-Augenspiegel zur Funduskamera: Ophthalmoskope und verwandte Instrumente des Medizinhistorischen Museums der Universität Zürich* IGesnerus Supplement 41) (Aarau: Verlag Sauerländer, 1990). 84pp.

## **COLLECTIONS - UNITED KINGDOM**

HOLBROOK, M., *Science Preserved: A Directory of Scientific Instruments in Collections in the United Kingdom and Eire*, ANDERSON R.G.W and BRYDEN, D.J. (eds), (London: HMSO, 1992). 270pp.

MORRISON-Low, A.D., 'Natural Philosophy Collections of the Scottish Universities', *Science and Industry Curators Group Newsletter*, No.6 (1990), 8-11.

REID, J.S., 'Eighteenth-Century Scottish University Instruments: The Remarkable Professor Copland', *Bulletin of the Scientific Instrument Society*, No.24 (1990), 2-8.

TURNER, G.L'E., 'Scientific Instruments and the Arthur Frank Collection', in: *Art at Auction: The year at Sotheby's 1985-86* (London & New York: Sotheby's Publications, 1986), pp.396-399.

ABERDEEN (University of Aberdeen, Department of Physics):

JOHNSTON. W., (ed), *Thorkelin and Scotland... G.J. Thorkelin (1752-1829...)*(Sgann Microfilms, 1982). Includes *The Northern Traveller* (1790) with a list of early apparatus at Aberdeen University.

CAMBRIDGE (University of Cambridge, Whipple Museum of the History of Science):

BENNETT, J.A., 'The Cambridge Legacy of Robert T Gunther', in HACKMANN ,W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays presented to Francis Maddison* (Aldershot and Paris: Variorum and Société de l'Astrolabe, 1994), 78-83.

BENNETT, J.A., *The Whipple Museum of the History of Science Catalogue 3: Astronomy & Navigation* (Cambridge, 1983).

BENNETT, J.A., *The Whipple Museum of the History of Science Catalogue 5: Spectroscopes, Prisms & Gratings* (Cambridge: Whipple Museum, 1984). 26pp.

BENNETT, J.A., *A Decade of Accessions: Selected instruments acquired by the Whipple Museum between 1980 and 1990* (Cambridge: Whipple Museum of the History of Science, 1992). 64pp.

BENNETT, J.A., 'A Museum of the History of Science', *The Cambridge Review*, 114 (1993), 18-21.

BROWN, O., *The Whipple Museum of the History of Science Catalogue 1: Surveying* (Cambridge: Whipple Museum, 1982). 40pp.

BROWN, O., *The Whipple Museum of the History of Science Catalogue 2: Balances and Weights*, (Cambridge: Whipple Museum, 1982). 26pp.

BROWN, O., *The Whipple Museum of the History of Science Catalogue 4: Spheres, Globes & Orreries* (Cambridge: Whipple Museum, 1983). 20pp.

BROWN, O., *The Whipple Museum of the History of Science Catalogue 7: Microscopes* (Cambridge: Whipple Museum, 1986). 96pp.

BRYDEN, D. J., *The Whipple Museum of the History of Science. Catalogue 6. Sundials and Related Instruments* (Cambridge: Whipple Museum of the History of Science, 1988), 108pp.

LYALL, K., *The Whipple Museum of the History of Science. Catalogue 8. Electrical and Magnetic Instruments* (Cambridge: Whipple Museum, 1991). 136pp.

EDINBURGH (National Museums of Scotland):

CLARKE, T.N., MORRISON-LOW, A.D., and SIMPSON, A.D.C., *Brass & Glass: Scientific Instrument Making Workshops in Scotland as Illustrated by instruments from the Arthur Frank Collection at the Royal Museum of Scotland* (Edinburgh: National Museums of Scotland, 1989). 320pp.

*A Handlist of 20th Century Spectroscopic Instruments in the Royal Museum of Scotland* (National Museums of Scotland, Edinburgh, 1988). 16pp.

MORRISON-LOW, A.D., 'Sold at Sotheby's: Sir John Findlay's Cabinet and the Scottish antiquarian Tradition', *Journal of the History of Collections*, 7 (1995), 197-209.

GLASGOW (University of Strathclyde):

WILSON, F., *Catalogue of the Collection of Historical Scientific Instruments in the University of Strathclyde* (Glasgow: University of Strathclyde, 1980). 141pp.

KINGSTON UPON THAMES (Museum and Heritage Centre):

*Eadweard Muybridge: Exhibition Guide* (Kingston upon Thames, 1984). 24pp.

*Eadweard Muybridge of Kingston upon Thames* (Kingston, 1984). 32pp.

LONDON (Association of Anaesthetists):

WILKINSON, D.J. and ECCLES, A., 'The BOC Museum (The Charles King Collection of Historical Anaesthetic Apparatus): The evolution of a collection into a museum', *Journal of the History of Collections*, 4 (1992), 99-105.

LONDON (The Royal Astronomical Society):

HOWSE, H.D., 'The Royal Astronomical Society Instrument Collection', *Quarterly Journal of the Royal Astronomical Society* 27 (1986), 212-236.

LONDON (The Royal Society):

SIMPSON, A.D.C., 'Newton's Telescope and the Cataloguing of the Royal Society's Repository', *Notes and Records of the Royal Society*, 38 (1984), 187-214.

LONDON (The Science Museum):

COSSONS, N.(ed), *Making of the Modern World: Milestones in Science and Technology* (London: John Murray & The Science Museum, 1992), 224pp.

FARA, P., 'Fit for a King? The George III Gallery at the Science Museum', *History of Science*, 33 (1995), 359-367.

McCONNELL, A., *Geophysics and Geomagnetism: Catalogue of the Science Museum Collection* (London: HMSO, 1986). 45pp.

MORTON, A.Q., *Science in the 18th Century: The King George III Collection* (London: The Science Museum, 1993). 64pp.

MORTON, A.Q. and WESS, J.A., *Public & Private Science: The King George III Collection* (Oxford: Oxford University Press in association with the Science Museum, 1993). 710pp.

STOCK, John T & VAUGHAN, Denys, *The Development of Instruments to Measure Electric Current* (London: Science Museum, 1983). 50pp.

OXFORD (University of Oxford, Ashmolean Museum):

OVENELL, R.F., *The Ashmolean Museum 1683-1894* (Oxford: Clarendon Press, 1986). 304pp.

OXFORD (University of Oxford, Museum of the History of Science):

SIMCOCK, A.V., *The Ashmolean Museum and Oxford Science 1683-1983* (Oxford: Museum of the History of Science, 1984). 48pp.-903364-4.



SIMCOCK, A.V (ed), *Robert T Gunther and the Old Ashmolean*, (Oxford: Museum of the History of Science, 1985). 99pp.

SIMCOCK, A.V., 'An Ark for the History of Science', *Iatul Quarterly*, 1, no.3 (1987), 196-215.

TURNER, G.L'E., *The Great Age of the Microscope: The Collection of the Royal Microscopical Society through 150 Years* (Bristol: Adam Hilger). 380pp. [Collection on deposit at MHS Oxford]

TURNER, G.L'E., 'Some Curious Old Instruments: The Assembly of the Royal Microscopical Society's Collection of Microscopes', *Journal of the History of Collections*, 1, no. 2 (1989), 149-66.

ST ANDREWS (University of St Andrews, Department of Physics):

*Historical Scientific Instruments [in the ] Department of Physics, University of St Andrews* (St. Andrews: Physics Department, University of St Andrews, 1984).

WRAY, E.M (ed) *Catalogue of Apparatus in the Museum of the Natural Philosophy Class in the United Colleges of St. Salvator and St Leonard St. Andrews. Prepared by W Swam LLD May 1880.* (St Andrews:[Physics Department, St. Andrews University] 1983). 36pp.

WRAY, E.M. (ed), *Swan's Catalogue 1880* (printed version of the manuscript "Catalogue of Apparatus in the Museum of the Natural Philosophy Class in the United Colleges of St Salvator and St Leonard, St Andrews, Prepared by W. Swan, LL.D, May 1880 ") (St Andrews, Dept of Physics, revised edn Sept. 1984)

WRAY, E.M., *Historical Scientific Instruments from the Collection of the Department of Physics, University of St Andrews: A Guide to Selected Exhibits* (St Andrews: Dept of Physics, 1984). 26pp.

STAMFORD (Burghley House):

BADDELEY, J., *The Gentleman Collector: A Catalogue published to accompany a special exhibition at Burghley House, Stamford, between 28th March and 5th October 1986* [Stamford, 1986], 8pp.

TEDDINGTON (Museum of the National Physical Laboratory):

*Brief Guide to the National Physical Laboratory Museum* (Teddington: Department of Industry, National Physical Laboratory 1983).

PYATT, E., *The National Physical Laboratory. A History.* (Bristol: Adam Hilger Ltd, 1983).

WHITBY:

McCONNELL, A., 'The scientific life of William Scoresby Jnr, with a catalogue of his instruments and apparatus in the Whitby Museum', *Annals of Science* 43 (1986), 257-269.

## **COLLECTIONS - UNITED STATES**

BEDINI, S.A., 'Surveying Instruments: Collectors and Collections', *Professional Surveyor*, 16, pt 1 (1996), 6-10, 12, 15-16.

WARNER, D.J. 'Some collections of scientific instruments in the U.S.', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 7 (1993), 97-105.

MINNEAPOLIS (Bakken Library and Museum):

RHEES, D.J., 'The collection of the Bakken Library and Museum', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 108-110.

CLEVELAND (Howard Dittrick Museum of Historical Medicine, Cleveland, Ohio):

EDMONDSON, J.M., *Nineteenth century surgical instruments* (Cleveland: Historical Division of Cleveland Health Sciences Library, 1986).

GALVASTON (University of Texas):

BOWMAN, I. A., 'Microscope Collection at the Moody Medical Library', *Rittenhouse; Journal of the American Scientific Instrument Enterprise*, 10 (1995-6), 26-29.

HARVARD:

GIORDIANO, R.V., 'The Holyoke Instruments at Harvard', *Rittenhouse; Journal of the American Scientific Enterprise* 8 (1994), 33-40.

LOS ANGELES (Los Angeles County Natural History Museum):

CUMIFORD, W.L., 'A Mensing-Link? The Henze Collection of European Scientific Instruments', *Bulletin of the Scientific Instrument Society*, 28 (1991), 14-18.

NASHVILLE [Vanderbilt University]:

LAGEMANN, Robert T., *The Garland Collection of Classical Physics Apparatus at Vanderbilt University* (Nashville, Tenn., 1984). 330pp.

NEWPORT (Mariners' Museum):

MÖRZER BRUYNS, W.F.J., 'The Mariners' Museum Collection of Navigating Instruments: Needs and Opportunities', *Rittenhouse: Journal of the American Scientific Instrument Enterprise*, 9, pt 4 (1995), 97-119.

NEW YORK [Columbia College]:

BEDINI, S.A., 'Of "Science and Liberty" The Scientific Instruments of King's College and Eighteenth Century Columbia College in New York', *Annals of Science*, 50 (1993), 201-227.

NEW YORK STATE [Union College, Schenecady]

PILCHER, V.E., *Early Science and the first century of Physics at Union College, 1795-1895* (Schenectady: Union College, Schenectady N.Y., 1994).

PILCHER, V.E., 'Early scientific apparatus at Union College', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 84-88.

OREGON:

ABRAHAMSON, P., 'A museum of teaching instruments in Oregon', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 111-113.

PHILADELPHIA:

SIMPSON, A.D.C., ' "Le plus brillante collection qui existe au monde": A lost American collection of the nineteenth century', [Banker Collection, Philadelphia] *Journal of the History of Collections*, 7 (1995), 187-196.

ROCHESTER [International Museum of Photography]:

BUERGER, J.E., *French Daguerreotypes* (Chicago & London: U. Chicago Press, 1989). xxii + 256pp. Based on collection at International Museum of Photography at George Eastman House, Rochester, NY, U.S.A.

ROCKFORD: [The Time Museum]:

ANDREWS, W. and ATWOOD, S., *The Time Museum: An Introduction* (Rockford: The Time Museum, 1983). 32pp.

TURNER, A.J., *The Time Museum Catalogue of the Collection Vol. 1: Time Measuring Instruments* (Rockford, Illinois, 1985). 286pp.

RANDALL, A.G., *The Time Museum; Catalogue of Chronometers* (Rockford, Ill.: The Time Museum, 1992). 366pp.

WASHINGTON DC [National Museum of American History]:

MULTHAUF, R.P., and GOOD, G.A., *A Brief History of Geomagnetism and A Catalog of the Collections of the National Museum of American History* (Smithsonian Studies in History and Technology, No. 48) (Washington, D.C., 1987). 87pp.

HODSON, J., 'The Oersted apparatus at the Smithsonian: Perkins, Oersted and the Piezometer as an example of transatlantic exchange', *Rittenhouse; Journal of the American Scientific Enterprise* 6 (1992), 39-47.

YALE:

DANFORTH, E.Z., *Nesting Weights, Einsatzgewichte and Piles à Godets: A catalogue of Nested Cup Weights in the Edward Clark Streeter Collection of Weights and Measures* (Transactions of the Connecticut Academy of Arts and Sciences, 50 (1988), -117.

FALLEN, E.W. and MOORE, B.P., 'Historical scientific instruments at Yale University', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 106-107.

## CONSERVATION

ABATE, G., *Mostra di antichi strumenti scientifici II edizione* (Avellino, 1994). 72 pp. Describes restoration, and catalogues 87 items of physics apparatus.

BAYNES-COPE, A.D., 'The Study and Conservation of Globes', *Der Globusfreund*, 33-34 (1986), 1-80.

BAYNES-COPE, A.D., 'Problems in re-shaping globes', *Der Globusfreund* 35-37 (1987), 33-35.

DRAGONI, G. 'La strumentazione storico-scientifica: sintetica rassegna nazionale della attività del GNSF', in: BITELLI, L.M. (ed), *Restauro di Strumenti e Materiali scienza, musica, etnografia* (Florence: Nardini Editore, 1993), 13-49.

FRANZKE, J., *Alltägliches Bewahren: Konzeption des Sammlungsbereiches am Centrum Industriekultur*, offprint from *Aufriss* (1983) published by Centrum Industriekultur, Guntherstrasse, Nuremberg, 46pp.

SEBASTIAN, A., 'Hacia una arqueología de la ciencia: Problemas de conservación y restauración del patrimonio científico e industrial', *Pátina*, 2, no. 7 (June 1995). 118-129.

SUMIRA, S., 'The conservation of globes: old and relatively new', *Der Globusfreund* 38-39 (1990), 141-147.

SUMIRA, S., 'Restoration of Heaven and Earth: the conservation of globes', *Bulletin of the Scientific Instrument Society* 33 (1992), 4-7.

## CONSTRUCTION TRADES - INSTRUMENTS

ROBERTS, K.D., 'The L.C. Stephens Patent Combination Rule, Square, Level and Bevel', in *The Chronicle of the Early American Industries Association* 35 (no. 2), (1982), 24.

STANLEY, P.E., *Boxwood and Ivory: Stanley traditional rules 1855-1975* (Westborough Mass: Stanley, 1984). 188pp.

## **DENTAL INSTRUMENTS**

BENNION, Elisabeth, *Antique Dental Instruments* (London: Sotheby's Publications, 1986). 176pp.

DAVIS, A.B., 'Dental Craftsman in nineteenth-century America', in: de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 241-262.

DAVIS, A.B., and DREYFUS, M.S., *The Finest Instruments ever Made: A Bibliography of Medical, Dental, Optical, and Pharmaceutical Company Trade Literature; 1700-1939* (Arlington Massachusetts: Medical History Publishing Associates I, 1986). 446pp.

EDMONDSON, J.M., *Nineteenth century surgical instruments* (Cleveland: Historical Division of Cleveland Health Sciences Library, 1986).

## **DRAWING AND COPYING INSTRUMENTS**

ANDREWS, J.H., 'The copying of engineering drawings and documents', *Transactions of the Newcomen Society* 53 (1981-2), 1-13.

BEDINI, S.A., *Thomas Jefferson and his Copying Machines* (Charlottesville, Virginia: Press Virginia, 1984). 233 pp.

FRIESS, Peter, *Kunst und Maschine: 500 Jahre Maschinenlinien in Bild und Skulptur* (Munich: Deutscher Kunstverlag GmbH, 1993). 267pp.

HAMBLY, M, *Drawing Instruments* (London: British Architectural Library, 1982). 60pp.

HAMBLY, M., *Drawing Instruments 1580-1980* (London: Sotheby's Publications-Philip Wilson Publishers Ltd., 1988). 206pp.

von MACKENSEN, L., *Feinmechanik aus Kassel: 225 Jahre F.W. Breithaupt & Sohn, Festschrift und Ausstellungsbegleiter* (Kassel: Georg Wenderoth Verlag, 1987). 84pp.

di PASQUALE, G., 'Studio su un gruppo di compassi romani provenienti da Pompei', *Nuncius: Annali di Storia della Scienza*, 9, pt 2 (1994), 635-644.

SCHWARTZ, H.A., 'The Willis planimeter', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 7 (1993), 60-64.

SCOTT, Michael, *Drawing Instruments 1850-1950* (Aylesbury; Shire Album No.180, 1986). 32pp.

SIMPSON, A.D.C., 'An Edinburgh Intrigue: Brewster's Society of Arts and the Pantograph Dispute', *The Book of the Old Edinburgh Club*, new series 1 (1991), 47-73.

TURNER, G.L'E., 'Queen Charlotte's Protractor and Joshua Kirby', *Bulletin of the Scientific Instrument Society*, No.35 (1992), 23-24.

VINCENT, C., 'A Beam Compass by Christoph Trechsler the Elder and the Origin of the Micrometer Screw', *Metropolitan Museum Journal*, 24 (1989), 209-222.

## **ELECTRICAL MEASURING INSTRUMENTS**

see also: PHYSICS - INSTRUMENTS & APPARATUS

D'AGOSTINO, S., 'The Fundamental Role of Absolute Instruments in the Evolution of Classical Electrodynamics: Thomson's Absolute Electrometer', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 153-155.

BELLODI, G., BRENNI, P and De LUCA, M.T., *Guida alla Mostra "Strumenti di Misura Elettrici del Museo per la Storia dell'Università di Pavia"* (Pavia: Biblioteca Universitaria, 1990). 94pp.

BLONDEL, C., 'Entre l'électrophysiologie et l'électricité industrielle: le galvanomètre à cadre mobile', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 179-192.

BLONDEL, C. and DÖRRIES, M. (eds), *Restaging Coulomb: Usages, controverses et réplifications autour de la balance de torsion* (Biblioteca di Nuncius studi e testi XV), (Florence, 1994). 167.

BRENNI, P., 'Einstein's "Maschinchen" for the Measurement of small quantities of Electricity', in: KLEIN, M.J., KOX, A.J. and SCHULMAN, R. (eds), *The Collected Papers of Albert Einstein*, (Princeton: Princeton University Press, 1993), vol 5, 51-55.

MATSUMOTO, E., 'The history of electrical measuring instruments: galvanometers and the invention of self-balancing recorders', *Yokogawa Technical Report (English Edition)* no. 15 (Nov 1992), 47-53.

STOCK, J.T. and VAUGHAN, D., *The Development of Instruments to Measure Electric Current* (London: Science Museum, 1983). 50pp.

## **ELECTRICAL & MAGNETIC INSTRUMENTS**

See also: PHYSICS - INSTRUMENTS & APPARATUS: GEOMAGNETISM

## TELEGRAPHY

BARBER, G.W., and ARROTT, A.S., 'History and magnetics of compass adjusting', *IEEE Transactions on Magnetics* 24 (1988), 2883-2885.

CARDWELL, D.S., 'On Michael Faraday, Henry Wilde, and the Dynamo', *Annals of Science* 49 (1992), 479-487.

D'AGOSTINO, S., *Gli Strumenti dell'Elettromagnetismo: Collezioni del Museo del Dipartimento di Fisica, Università 'La Sapienza' Roma; Istituto Tecnico Nautico 'Colonna', Roma* (Rome: Università degli Studi di Roma 'La Sapienza', 1991). 184pp.

BLAKE-COLEMAN, B.C., *Copper Wire and Electrical Conductors: The Shaping of a Technology* (Philadelphia, PA: Harwood Academic Publishers, 1992). 284pp.

van CAMP, K.J., *19de-Eeuwse Wetenschappelijke en Didactische Instrumenten in bezit van de Stad Antwerpen: Elektriciteits-leer en Röntgenologie* (Antwerp: EBES, 1988) 152pp. Flemish and English.

FARA, P., ' "A treasure of hidden vertues": the attraction of magnetic marketing', *British Journal of the History of Science* 28 (1995), 5-35.

GEE, B., 'The Early Development of the Magneto-Electric Machine', *Annals of Science*, 50 (1993), 101-133.

GIORDANO, C., *Guida alla Mostra "Elettricità e Magnetismo nel Fondo storico di Fisica della Biblioteca Universitaria"*, (Pavia: Bib. Univ., 1990). 62pp.

HAWES, R.P., 'The History of the "Avometer" ', *Bulletin of the Scientific Instrument Society*, No. 37 (1993), 23-27.

JASPERS, H., 'An experimental generator with a Gramme ring armature', *Bulletin of the Scientific Instrument Society* 37 (1993), 11-13.

LYALL, K., *The Whipple Museum of the History of Science. Catalogue 8. Electrical and Magnetic Instruments* (Cambridge: Whipple Museum, 1991). 136pp.

RAGOZZI, E. and SCHETTINO, E., *La Collezione degli antichi apparecchi dell'Istituto di Fisica: Elettricità e Magnetismo 1835-1900* (Naples, 1985). 106pp.

WIECHMANN, A, and PALM, L.C., *Een elektriserend geleerde Martinus van Marum 1750-1837* (Haarlem: Joh. Enschedé en Zonen, 1987). 272pp.

## **ENGINEERING INSTRUMENTS**

BENNETT, S.A., 'The Development of Process Control Instruments 1900-1940', *Transactions of the Newcomen Society*, 63 (1992), 133-164.

HERLEA, A., 'Les indicateurs de pression: leur évolution en France au XIX<sup>e</sup> siècle', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 193-234.

FEJER, László, 'Chapters from the history of river flow measurement', *Technikatörténeti Szemle* [Budapest], 13 (1982), 69-91. (English summary).

## **EXHIBITION CATALOGUES - [Special - ie temporary exhibitions only]**

-divided by Country - Town

NB also appear in subject classification when the topic is specific

NNB guides to permanent exhibitions are under 'Collections'

## **EXHIBITIONS – AUSTRIA**

### **GRAZ**

DORFER, A. and HOHENESTER, A., *Katalog zur Ausstellung astronomischer Geräte in memoriam Johan. Kepler in 'Astronomischen Turm' der Karl-Franzens-Universität Graz* (Graz, 1994).

## **EXHIBITIONS - BELGUIM**

### **BRUSSELS**

FLANAGAN, Laurence and STENUIT, ROBERT, (eds), *Trésors de l'Armada*, (Brussels: Crédit Communal 1985). 208pp.

### **CHARLEROI**

HALLEUX, R. (ed), *Les Mécanismes du Génie: Instruments scientifiques des xviii<sup>e</sup> et xix<sup>e</sup> Siècle* (Charleroi, 1991) (Collection from Gabinete de Física and Observatório Astronómico, Universidade de Coimbra), 426pp., illus. [Exhibition at Palais des Beaux-Arts, Charleroi, Belgium, 21 Sep.-22 Dec.1991]



## GHENT

DORIKENS, M. and DORIKENS-VANPRAET, L., *Joseph Plateau: Fysicus en kunstenaar* (Ghent: Museum voor de Geschiedenis van de Wetenschappen, 1994). [Exhibition 23 Sept.-16 Oct. 1994]

## EXHIBITIONS - EIRE

### DUBLIN

MOLLAN, R.C., *The Mind and the Hand: Instruments of Science 1685-1932*. (Dublin: Samton Ltd for Trinity College, 1995). 64pp. [Exhibition in the colonnades gallery Old Library Trinity College Dublin Feb.-Dec. 1995]

## EXHIBITIONS - FRANCE

### DIGNE-LES-BAINS

TURNER, A. J., & GOMEZ, N., *Pierre Gassendi, explorateur des sciences* (Digne-les-Bains, 1992), 204pp., illus. [Exhibition Musée de Digne, May-October 1992]

### LILLE

*A la Conquete des Mers: Marins et Marchands de Bas-Pays*. 11<sup>e</sup> Festival de Lille: Musée de l'Hospice Comtesse (Lille, 1982). 250pp. [Lille, 23 octobre 1982 - 3 janvier 1983]

### PARIS

*L'Aventure du Mètre* (Paris: Musée National des Techniques, 1989). 103pp.

*La Médecine Médiévale à travers les Manuscrits de la Bibliothèque Nationale Paris*, Bibliothèque Nationale: 1982). 100pp.

*La Mesure du Ciel de la Plaque photographique aux Techniques spatiales*, (Paris, Observatoire de Paris, 1987). 68pp.

### ST MALO

*La Découverte du Monde cartographiques et cosmographes* (loan exhibition at St. Malo, Cabinet du Maire, (ed) le Musée de l'Île Ste-Hélène, Montreal, 1984). 88pp.

### TOURS

*La Dynastie des Le Roy horologers du Roi* (Tours: Musée des Beaux-Arts de Tours, 1987). 82pp. [Tours 11 avril-14 juin 1987]

## EXHIBITIONS - GERMANY

### BERLIN

ZÖGNER, L. (ed), *Die Welt in Händen: Globus und Karte als Modell von Erde und Raum* (Berlin: Staatsbibliothek Preussischer Kulturbesitz, 1989). 148pp.

### CASSELL

von MACKENSEN, L., *Feinmechanik aus Kassel: 225 Jahre F.W. Breithaupt & Sohn, Festschrift und Ausstellungsbegleiter* (Kassel: Georg Wenderoth Verlag, 1987). 84pp.

### DORTMUND

LANGEMEYER, G. (ed), *Museumshandbuch Teil 2: Vermessungsgeschichte: Die Schausammlung Abteilung 22* (Dortmund: Museum für Kunst und Kulturgeschichte der Stadt Dortmund, 1985), 208pp.

### RATHENOW

*775 Jahre Rathenow. 190 Jahre Optische Industrie Anstalt. 200 Jahre Mikroskope aus Rathenow* (Rathenow: Kreisverwaltung Rathenow in Verbindung mit der Stadtverwaltung Rathenow, 1991). 64pp. [Firm made optical instruments under the name Busch]

### SCHWEINFURT

MÜLLER, U. (ed), *450 Jahre Copernicus 'De revolutionibus': Astronomische und mathematische Bücher aus Schweinfurter Bibliotheken* (Veröffentlichungen des Stadtarchivs Schweinfurt, Nr 9, 1993). 437pp, [p.141 *et seq* is catalogue of an exhibition held 21 November 1993 to 19 June, 1994]

### TUBINGEN

*Kulturgeschichte des Fernrohrs*, Eine Ausstellung in Frühjahr 1985 (Tübinger Kataloge Nr.23, 1985).

### WOLFENBÜTTEL

Architekt & Ingenieur: Baumeister in Krieg & Frieden (Ausstellungs-katalogue der Herzog August Bibliothek, Wolfenbüttel, 1984). 415pp.

### WÜRZBURG

LEMMERICH, J., *Röntgen Rays Centennial: Exhibition on the Occasion of the Discovery of X-Rays in Würzburg on November 8, 1895* (Würzburg: Würzburg University, 1995). x + 211 pp.

## **EXHIBITIONS - HUNGARY**

### **BUDAPEST**

BARTHA, L. (ed), *Portable Sundials selected from Hungarian Collections* (Budapest: Museum of Applied Arts & Budapest History Museum, 1995). 68pp. [Exhibition Aug.-12 Nov. 1995]

## **EXHIBITIONS - ITALY**

### **BOLOGNA**

BENASSI, S. and DRAGONI, G. (eds), *Didattica e Scienza. I laboratori scolastici in Emilia e in Romagna*, (Bologna: Editrice CLUEB, 1983).

*I Materiali dell'Istituto delle Scienze. Catalogo della Mostra organizzata dall'Università degli Studi di Bologna nell'Accademia delle Scienze Settembre-Novembre 1979* (Bologna: 1979).

### **BRUGINE**

TURNER, A.J., (ed), *Mostra di una collezione veneta: Ritmi del cielo e misura del tempo*, (Padova, Centro Internazionale A.Beltrami di Storia dello Spazio e de Tempo, 1985). 164pp.

### **FLORENCE**

MINIATE, Mara, & WINKLER, Wolf, *Occhiali da vedere: Arte, Scienza e Costume attraverso gli occhiali* (Florence: Istituto e Museo di Storia della Scienza di Firenze, 1985). 176pp. [Exhibits from the Carl-Zeis Museum, Jena, Germany]

GIATTI, A. and MINIATI, M., *Il restauro degli strumenti scientifica: Firenze* (Florence, Istituto e Museo di Storia della Scienza di Firenze: Alinea, 1988). 83pp.

### **PADUA**

*Galileo e Padova: mostra di strumenti libri incision* (Padova: Comune de Padova, 1983).

PANCINI, M. and SALANDIN, G.A., *Il Teatro di Fofosofia sperimentale di Giovanni Poleni (1683-1761)* (Padova: Edizioni LINT, 1986). 116pp.

### **PISA**

CONTI, F., and GIUSTRI, H., *Oltre il Compasso: La geometria della curve* (Pisa: Università di Pisa, 1992). Exhibition at Palazzo Lanfranchi 8-31 May, 1992.

### **REGGIO EMILIA**

*L'Eredita' Scientifica di Leopoldo Nobili: Dibattito teorico degli strumenti nella fisica del primo Ottocento*, (Reggio Emilia: Biblioteca Municipale 'A. Panizzi', 1984). 133 pp.

## ROME

BRENNI, P. and MINIATE, M., 'L'Artigianato della Scienza', in: *La Seduzione dell'Artigianato: Artigianato nella Storia* (Rome: Fiera di Roma, 1990), 143-156.

## EXHIBITIONS - NETHERLANDS

### AMSTERDAM

TURNER, A.J., (ed), *Time (Catalogue of Exhibition 28 Nov. 1990- 6 Jan. 1991 at Nieuwe Kerk, Amsterdam)* (The Hague, 1990), 248pp.

### ANTWERP

*Gerard Mercator et la Geographie dans les Pays-bas meridionaux* (Antwerp: Museum Plantin-Moretus, 1994). 175pp. [Exhibition at the museum 30 April-24 July 1994]

### ENKHUIZEN

*Enkhuizen in kaart: vier eeuwen stadsplattegronden* (Catalogus van de tentoonstelling 'Enkhuizen in kaart' in het Stedelijk Waagmuseum te Enkhuizen) (Enkhuizen, 1984) 38pp. [1 juni tot 1 oktober 1984]

### FRANEKER

*De hemel is gestegen of de aarde is gedaald* (Franeker: Museum 't Coopmanshus, 1981). 94pp.

### LEIDEN

*Balans van een eeuw: Natuurwetenschappen en geneeskunde in Nederland in de 19e eeuw* (Leiden: Museum Boerhaave, 1985). 35pp. [spring 1985 to 3 February 1986]

### UTRECHT

*350 jaar verzamelaar* [a booklet to accompany an exhibition of the many varied collections belonging to the University of Utrecht, 17 May-20 July, 1986] (Utrecht: University Press, 1986). 77pp.

## EXHIBITIONS - PORTUGAL

### COIMBRA

*João Jacinto de Magalhães: Bicentenário da sua Morte- 700 Anos da Fundação da Universidade: Conferência sobre Ciências físicas no Séc. XVIII: Exposição de Instrumentos antigos e Bibliografia* (Coimbra: Observatório da Univ. de Coimbra, 1990).

## **EXHIBITIONS - SPAIN**

### **MADRID**

*Astronomia y Cartografía de los Siglos XVIII y XIX* (Madrid: Observatorio Astronómico Nacional, 1987). xv + 155pp. [Exhibits drawn from the Observatorio, Museo Naval, Museo Arqueológico Nacional, Museo Nacional de Ciencia y Tecnología.]

*Obras españolas de Náutica relacionadas con la Casa de la Contratación de Sevilla: Exposición conmemorativa del Bicentenario del Museo Naval (1792-1992)* (Madrid, 1992).

VERNET, J. and SAMSÓ J. (eds), *El Legado Científico Andaluz* (Madrid: Museo Arqueológico Nacional, 1992). 340pp.

## **EXHIBITIONS - UNITED KINGDOM**

### **CAMBRIDGE**

BENNETT, J.A., *Science at the Great Exhibition* (Cambridge: Whipple Museum, 1983). 22pp.

BENNETT, J.A., *Le Citoyen Lenoir: Scientific instrument making in revolutionary France (A Special Exhibition to mark the bicentenary of the French Revolution)* (Cambridge: Whipple Museum of the History of Science, 1989), 36pp.

BENNETT, J.A., *et. al.*, *Empires of Physics: A Guide to the Exhibition* (Cambridge: Whipple Museum, 1993). 110pp.

BENNETT, J.A. *et al*, *1900: The New Age; a guide to the exhibition* (Cambridge: Whipple Museum, 1994). 101pp.

BENNETT, J.A. and BROWN, O., *The Compleat Surveyor* (Cambridge: Whipple Museum, 1982). 30pp.

BENNETT, J.A., JOHNSTONE,S.A., and WILLMOTH, F.H., *The Ground of Artes: Mathematical Books of 16th-century England.* ( Cambridge: Whipple Museum, 1985). 24pp.

BENNETT, J.A. and MELI, D.B., *Sphaera Mundi, Astronomy Books 1478-1600: A 50th Anniversary Exhibition at the Whipple Museum of the History of Science* (Cambridge: Whipple Museum, 1994). 148 pp.

BRIAN, R., *Going to the Fair: Readings in the Culture of Nineteenth-century Exhibitions* (Cambridge: Whipple Museum, 1993). 198pp.

BUTLER, S., NUTTALL, R.H. and BROWN, O., *The Social History of the Microscope* (Cambridge: Whipple Museum, [1986]). 34pp.

*Darwin's Shop: The Cambridge Scientific Instrument Company 1881-1968* (An exhibition in Cambridge University Library, January-March 1987) (Cambridge: University Library, 1986). 28pp.

HANCOCK, N., HAWKINS, D., MORGAN, P., THWAITE, N. and WEATHERALL, M., *On a New Kind of Rays: 100 Years of X-Rays at Cambridge* An exhibition at the University Library, Cambridge, October 1995 (Cambridge: University Library, 1995).

PORTER, R. et al, *Science and Profit in 18th-century London*:(Cambridge: Whipple Museum, 1985). 40pp.

GOUK, P.M., *The Ivory Sundials of Nuremberg 1500-1700* (Cambridge: Whipple Museum of the History of Science, 1988), 144pp.

*The Great Telescope of Birr Castle* (Cambridge: Whipple Museum for the Cambridge Festival Fringe, 1983). 13pp.

#### EDINBURGH

MACDONALD, A. and MORRISON-LOW, A.D., *A Heavenly Library: Treasures from the Royal Observatory's Crawford Collection* (Edinburgh: Royal Observatory, 1994). 72pp.

MORRISON-LOW, A.D., and CHRISTIE, J.R.R., '*Martyr of Science*': *Sir David Brewster 1781-1868*, (Edinburgh: Royal Scottish Museum, 1984). 138pp.

WINKLER, W. (ed), *A Spectacle of Spectacles* (Leipzig: Edition Leipzig for Carl-Zeiss-Stiftung Jena, 1988). 178pp.

#### LONDON

ANDERSON, R.G.W., *Science in India* (London: The Science Museum, 1982). 98pp.

ANDERSON, R.G.W. and LAWRENCE, C., *Science, Medicine and Dissent: Joseph Priestley 1733-1804* (Papers celebrating the 250th anniversary of the birth of Joseph Priestley together with a catalogue of an exhibition held at the Royal Society and the Wellcome Institute for the History of Medicine) (London: Wellcome Trust & Science Museum, 1987). 105pp

BRONNER, M., *Science and Technology in 19th Century Germany*, (London: Goethe-Institut, and Munich: Deutsches Museum, 1982). 72pp.

FIELD, J.V. and WRIGHT, M.T. *Early Gearing: Geared Mechanisms in the Ancient and Medieval World*,(London: Science Museum, 1985). 48pp.

LAWRENCE, C. and LAWRENCE, G., *No Laughing Matter: Historical Aspects of Anaesthesia* (Catalogue of an exhibition at the Wellcome Institute for the History of Medicine, 8 June to 25 September, 1987) (Wellcome Institute for the History of Medicine/Science Museum, 1987). 84pp.

MURDOCH, T., (compiler) *The Quiet Conquest: The Huguenots 1685-1985*, (London: Museum of London, 1985). 326pp.

LAMB, T. and COLLINS, J.P. (eds), *The World in your Hands: An Exhibition of Globes and Planetaria* (London: Christie's, & Leiden: Boerhaave Museum, 1994). 122 pp.[Exhibition at London, 25 Aug.-9 Sept. 1994; at Leiden, 18 March-24 Sept. 1995]

## MANCHESTER

RIA, A., *Italians in Manchester: History, traditions, work* (Quart [Aosta]: Musumeci Editore, 1990). [Catalogue of exhibition in Manchester Town Hall, 1990, produced by Musumeci Editore]

## OXFORD

BENNETT, J.A., *The Measurers: A Flemish Image of Mathematics in the Sixteenth Century* (Oxford: Museum of the History of Science, 1995). 56 pp.

SMITH, B. and HILL, M., *Joseph Priestley 1733-1804: Scientist, Teacher and Theologian: A 250th Anniversary Exhibition organised by Manchester College, Oxford at the Bodleian Library* (Oxford, Manchester College, 1983). 35pp

## NANTWICH

TREHERNE, A.A., *Nantwich Clockmakers: Catalogue of Clocks and Watches exhibited at Nantwich Museum with biographies of all known Nantwich Clock and Watchmakers* (Nantwich, 1985). 36pp.

## STAMFORD

BADDELEY, J., *The Gentleman Collector: A Catalogue published to accompany a special exhibition at Burghley House, Stamford, between 28th March and 5th October 1986* [Stamford, Lincolnshire, 1986]. 8pp.

## EXHIBITIONS - UNITED STATES

### LINCOLN

RUDD, M.E., *Light and Color: An Exhibition of Notable Books from the History of Optics* (March 30-April 24, 1987) (Lincoln, Nebraska: Department of Physics & Astronomy, University of Nebraska-Lincoln, 1987). 18pp.

## NEW YORK

GUEDES, M.J. and LOMBARDI, G. (eds), *Portugal-Brazil: The Age of Atlantic Discoveries* (Catalogue of Exhibition at New York Public Library, 2 June-1Sept. 1990) (Lisbon, Milan & New York, 1990). 270pp.

## PHILADELPHIA

RHEES, D.J., *Joseph Priestley: Enlightened Chemist* (Catalogue to an exhibit celebrating the 250th birthday of Joseph Priestley and the inauguration of the Center for History of Chemistry (Philadelphia, Pa.: American Chemical Society Center for History of Chemistry, University of Pennsylvania, 1983). 34pp.

## WASHINGTON DC

DOGGETT, R., et al (eds), *Time: The Greatest Innovator. Timekeeping and Time Consciousness in Early Modern Europe*, (Folger Shakespeare Library; Washington, D.C., 1986). 116pp.

HARDING, Robert S., *Register of the William J. Hammer Collection c.1874-1935, 1955-1957* (Washington D.C.: Archives Center, National Museum of American History, Smithsonian Institution, 1986). v + 99pp.

## GEOPHYSICS AND GEOMAGNETISM

BARSANTI, D. and ROMBAI, L., *Leonardo Ximenes: uno scienziato nella Toscana lorenese del Settecento* (Florence: Edizioni Medicea, 1987). 241pp.

BARTHA, L., 'A Magnesek deklinacio korai adatai a Karpatmedenceben', *Technikatorteneti szemle XVI. 1986-1987* (Muzsak kozmuvelodesi kiado, Budapest, 1988), pp. 91-103.

BASSO-RICCI, M., 'La misura assoluta del campo magnetico terrestre eseguita degli astronomi di Brera nel 1836, secondo le modalit  di Gauss, e suo sviluppo', *Annali di Geofisica*, 36, Supplement No.5-6 (1993), 179-184.

BOSCHI, E. and FERRARI, G., 'European Seismology Looks Back: Recovering the Historical Roots', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 125-136.

BRAVIERI, P.D., *L'Osservatorio Ximeniano di Firenze* (Florence, 1985). 43pp.

BRAVIERI, P.D. *Filippo Cecchi, scritti e strumenti* (Florence: Osservatorio Ximeniano, 1988). 85pp.

BRYDEN, D.J., 'Magnetic Inclinary Needles: Approved by the Royal Society?', *Notes and Records of the Royal Society of London*, 47 (1993), 17-31.



CHAPMAN, A., 'The pit and the pendulum; G.B. Airy and the determination of gravity', *Antiquarian Horology* 21 (1993-94) 70-78.

FERRARI, G. (ed), *Tromometri avvisatori sismografi: osservazioni e teorie dal 1850 al 1880 / Tromometers seismoscopes seismographs: observations and theories between 1850 and 1880* (Bologna: Istituto Nazionale di Geofisica, 1991). 140pp.

FERRARI, G. (ed), *Gli strumenti sismici storici Italia e contesto europeo* (Bologna: Istituto Nazionale di Geofisica, 1990), 198pp.

FERRARI, G. (ed), *Two hundred years of seismic instruments in Italy 1731-1940* (Bologna: Storia-Geofisica-Ambiente, 1992). 156pp.

FERRARI, G., 'The Origin and Development of a Method of Measurement in Early Seismology', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 179-189.

GENOA (Università degli Studi di Genova): *Settimana della Cultura scientifica a Genova: Strumenti e Scienze della Terra, geodesia, sismologia, petrografia* (Science Week, 4-14 May 1992) (Genoa:, 1992). 149pp.

HACKMANN, W.D., 'Instrument and Reality: The Case of Terrestrial Magnetism and the Northern Lights (Aurora Borealis)', in: FELLOWS, R. (ed), *Philosophy and Technology: Supplement to Philosophy, vol. 38*, (Cambridge, 1995), 29-51.

LEVERE, T.H., 'Magnetic Instruments in the Canadian Arctic Expeditions of Franklin, Lefroy and Nares', *Annals of Science*, 43 (1986), 57-76.

McCONNELL, A., 'Nineteenth-century geomagnetic instruments and their makers', in : de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 29-52.

McCONNELL, A., *Geophysics and Geomagnetism: Catalogue of the Science Museum Collection* (London: HMSO, 1986). 45pp.

MULTHAUF, R.P., and GOOD, G.A., *A Brief History of Geomagnetism and A Catalog of the Collections of the National Museum of American History* (Smithsonian Studies in History and Technology, No. 48) (Washington, D.C., 1987). 87pp.

RICCI, M.B. and TUCCI, P., 'Gauss's Magnetometer at Brera Astronomical Observatory', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 221-226.

## GNOMICS

APPELBY, J.H., 'Rowley's sundials at St Paul's Cathedral, London', *Bulletin of the Scientific Instrument Society* 41 (1994), 28-29.

ARCHINARD, M., 'Construction geometrique des cadrans solaires de direction', *Scienza e Storia; Bollettino del Centro Internazionale di Storia dello Spazio e del Tempo* no. 7 (198?), 35-44.

ARCHINARD, M., 'Les Cadrans solaires rectilignes', *Nuncius* 3 (1988), 149-181.

ARCHINARD, M., 'The Diagram of Unequal Hours', *Annals of Science*, 47 (1990), 173-90.

BARTHA, L., 'Ancient Timekeepers: Sundials in the Christian Museum in Esztergom, Hungary', *Elet és Tudomány* [Life and Science], 40, no.23 (1985), 719-1. [In Hungarian].

BARTHA, L. (ed), *Portable Sundials selected from Hungarian Collections* (Budapest: Museum of Applied Arts & Budapest History Museum, 1995). 68pp.

BROOKES, A. and STANIER, M., *Cambridge Sundials* (Cambridge, [1991]). [28]pp.

BRYDEN, D. J., *The Whipple Museum of the History of Science. Catalogue 6. Sundials and Related Instruments* (Cambridge: Whipple Museum of the History of Science, 1988). 108pp.

BUCHNER, Edmund, *Die Sonnenuhr des Augustus (Nachdruck aus RM 1976 und 1980 und Nachtrag (uber die Ausgrabung 1980/1981))* (Mainz am Rhein: Verlag Philipp von Zabern, 1982). 112pp.

DANIEL, C.St.J.H., *Sundials* (Aylesbury; Shire Album No.176, 1986). 32pp.

DANIEL, C.St. J.H., 'Shedding a Glorious Light: Stained-Glass-Window Sundials', *Country Life*, 26 February 1987 pp.72-4; colour pictures. Also a letter by the author in same journal, 2 April 1987, p.99, a dial from the Weavers' Company, c. 1669.

DEKKER, E., 'A sundial deliniator by A.Sneewins', *Bulletin of the Scientific Instrument Society* 34 (1992), 3-5.

DEKKER, E., 'Ecliptic Tables on Instruments: Their Definition and Use', *Annals of Science*, 50 (1993), 303-324.

DOGGETT, Rachel, et al (eds), *Time: The Greatest Innovator. Timekeeping and Time Consciousness in Early Modern Europe*, (Folger Shakespeare Library; Washington, D.C., 1986). 116pp.

DRINKWATER, Peter I., *The Art of Sundial Construction* (Shipston: for the Author, 1985). 74pp.

ECKHARDT, W., 'Claude Dunod, Michael Bergauer und Johann Willebrand - zur Geschichte der Minutensonnenuhr', *Alte Uhren und moderne Zeitmessung*, 10, pt 5 (Oct. 1987), 30-48.

FIELD, J.V., 'Some Roman and Byzantine Portable Sundials and the London Sundial-Calendar', *History of Technology* 12 (1990), 103-135.

FIELD, J.V. and WRIGHT, M.T. *Early Gearing: Geared Mechanisms in the Ancient and Medieval World* (London: Science Museum, 1985). 48pp.

FIELD, J.V. and WRIGHT, M.T., with HILL D.R., *Byzantine and Arabic Mathematical Gearing* (London: Science Museum, 1985). Reprinted papers from *Annals of Science*, 42 (1985), 87-163: J.V.

FIELD, J.V. & WRIGHT, M.T., 'Gears from the Byzantines: a Portable Sundial with Calendrical Gearing', and D.R. Hill, 'Al-B\_r\_n\_i's Mechanical Calendar'. 77pp.

De GRAEVE, J., 'L'Ouvre gnomonique du P. Francis Hall Linus' *Bulletin de la Société Royale des Sciences de Liège*, 55 (1986), 207-219.

de GRAEVE, J., 'Francis Hall's sundial for the blind', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 216-7.

HIGTON, H., 'Dating Oughtred's design for the equinoctial ring dial', *Bulletin of the Scientific Instrument Society* 44 (1995), 25.

HOMET, Jean-Marie, *Les Cadran solaires* (Paris: Editions Ch. Massin, nd). 64pp.

KESTEVEN, M., 'Ferguson's Astronomical Clock, Astrolabes and Stereographic projections', *Antiquarian Horology* 14 (1983-4), 602-608.

KING, David A., 'The Sacred Direction in Islam: A Study of the Interaction of Religion and Science in the Middle Ages', *Interdisciplinary Science Reviews*, 10, no.4 (December 1985), 315-28.

KING, D.A., 'Vergessene Schätze des Mittelalters', *Forschung Frankfurt*, 11, pt 4 (1993), 2-13.

KLETNIEKS, Jānis, *Saules Pulksteni Latvijā* (Riga: Zinātne, 1983). 102pp.

KRAGTEN, J., *The Little Ship of Venice - Navicula de Venetiis: A time measurement device with a surprising construction* (Eindhoven: The Sundial Society of the Netherlands [De Zonnewijzerkring], 1989). 43pp.

LENFIELD, J., *Slunecni hodiny ze sbirek UPM v Praze* (Acta UPM XVI: D. Supplementa 4) (Prague: Umeleckoprumyslove Muzeum v Praze, n.d.). 174pp.

LLOYD, S.A., with introductions by GOUK, P and TURNER, A.J., *Ivory Diptych Sundials 1570-1750* (Catalogue of the Collection of Historical Scientific Instruments, Harvard University) (Cambridge Mass., and London: Harvard University Press, 1992). 169pp.

LOCHER, K.C., 'Two Greco-Roman Sundials from Alexandria and Dion', *Journal for the History of Astronomy*, 24 (1993), 300-302.

MAIELLO, F., *Storia del calendario: La misurazione del tempo, 1450-1800* (Turin: Einaudi editore, 1994).

MATTL-WURM, S. (ed), *Uhrenmuseum Wien* (Vienna: Museen der Stadt Wien, revised edn, nd. [?1989]), 198pp.

MILLS, A.A., 'Seasonal-Hour sundials', *Antiquarian Horology* 19 (1990-91), 147-170.

MILLS, A.A., 'Polarization of light from the sky and its application to timetelling and navigation', *Bulletin of the Scientific Instrument Society* 33 (1992), 8-14.

MILLS, A.A., 'Isaac Newton's sundials', *Antiquarian Horology* 20 (1992-93), 126-139.

MILLS, A.A., 'Seasonal-Hour Sundials on Vertical and Horizontal Planes, with an Explanation of the Scratch Dial', *Annals of Science*, 50 (1993), 83-93.

MILLS, A.A., 'The "Dial of Ahaz" and refractive sundials in general. Part I: Scaphe Dials', *Bulletin of the Scientific Instrument Society* 44 (1995), 21-24.

MILLS, A.A., 'The "Dial of Ahaz" and refractive sundials in general. Part II: Horizontal Planar Dials', *Bulletin of the Scientific Instrument Society* 45 (1995), 25-27.

MOORE, J., 'The Augsburg Dials', *The British Sundial Society Bulletin*, No.94.3 (October 1994), 10-13.

NAFFAH, C., 'Un cadran cylindrique ottoman du XVIII siècle', in: TURNER, A.J. (ed), *Etudes 1987-1989*, *Astrolabica* 5 (Paris: Société Internationale de l'Astrolabe, 1989), 36-51.

PARISOT, J.-P., 'La retrogradation de l'ombre dans les cadrans solaires analemmatiques', *Journal of the History of Astronomy*, 16 (1985), 43-48.

[POLDIPEZZOLI] *Museo Poldipezzoli, Tomo 2°: Orologi-Oreficerie* (Milan: Electra Editrice, 1981).

RIGASSIO, G.C., *Le Ore e le Ombre: Meridiane e orologi solari* (Milan: Mursia Editore, 1988). 220pp.

ROHR, R.R.J., 'A sun, moon and tidal dial', *Antiquarian Horology* 16 (1986-7), 227-232.

ROHR, R.R.J., 'The universal sundials of Jacques Ozanam', *Antiquarian Horology* 18 (1989-90), 171-177.

SCHIAVO, A., *La Meridiana di S.Maria degli Angeli* (Rome: Istituto Poligrafico e Zecca Dello Stato; Libreria Dello Stato, 1993).

SIMCOCK, A.V., 'An equinoctial ring dial by Ralph Greatorex', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 201-215.

SMITH, J.A., 'The Schmalcalders of London and the "Priddis" dial', *Journal of the Royal Astronomical Society of Canada*, 87 (1993), 4-13.

SOMERVILLE, Andrew R., 'The Sundials of Scotland: Have they a Dutch connection?', *De Zonnewijzerkring: Bulletin*, September, 1984.

SOMERVILLE, A.R., 'The sundials of John Bonar, schoolmaster of Ayr', *Antiquarian Horology* 16 (1986-7), 233-242.

SOMERVILLE, A.R., *The Ancient Sundials of Scotland* (London: Rogers Turner Books, 1990); offprint from *Proceedings of the Society of Antiquaries of Scotland*, 117 (1987), 233-64, plus 104pp typescript 'Catalogue of Scottish Sundials'.

SYNDRAM, D., *Wissenschaftliche Instrumente und Sonnenuhren* (Kunstgewerbemuseum der Stadt Bielefeld Stiftung Huelsmann) (Munich: Callwey, 1989). 268pp.

TURNER, A.J. 'Anglo-Saxon sundials and the "tidal" or "Octaval" system of measurement', *Antiquarian Horology*, 15 (1984-5), 76-77.

TURNER, A.J., 'La gnomonique en France à l'époque de Jean Picard', in: PICOLET, G. (ed), *Jean Picard et les débuts de l'astronomie de précision au XVIIe siècle. Actes du colloque du tricentenaire* (Paris, 1987), 345-360.

TURNER, A.J., 'Dialling in the Time of Giovan Battista Benedetti', *Atti del Convegno internazionale di studio Giovan Battista Benedetti e il suo Tempo* (Venice: Istituto Veneto di Scienze, Lettere ed Arti, 1987), 311-20.

TURNER, A.J., 'Greco-Egyptian zodiacs from a Gallo-Romano site', *Nuncius; Annali di storia della scienza*, 2 (1987), 95-110.

TURNER, A.J., 'La Gnomonique: Livres en langue Française imprimés entre 1500 et 1800', *Bulletin de l'Association nationale des collectionneurs et amateurs d'horlogerie ancienne*, 50 (1987-8), 55-72.

TURNER, A.J., 'Julien Le Roy's improved horizontal sundial', *Antiquarian Horology* 17 (1987-88), 463-466.

TURNER, A.J., 'Sun-Dials; History and Classification', *History of Science*, 27 (1989), 303-18.

TURNER, A.J., *Of Time and Measurement: Studies in the History of Horology and Fine Technology* (Collected Studies Series CS 407) (Aldershot: Variorum, 1993). 333pp.

TURNER, G.L'E., 'Charles Whitwell's Addition, c. 1595, to a Fourteenth-Century Quadrant', *The Antiquaries Journal*, 65, pt ii (1985), 454-5, 476, & plates xcix, c, ci.

VAUGHAN, D., ' "A Very Artificial Workman": the altitude sundials of Humphrey Cole', in : ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 191-200.

VERDOT, J-P., 'A propos de deux petits quadrants indiens', in HACKMANN, W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays presented to Francis Maddison* (Aldershot and Paris: Variorum and Société de l'Astrolabe, 1994), 309-321.

[VILLARREAL] *Pedro Bernardo Villarreal de Berriz: La aportación vasca a la ingeniería del XVIII* (Bilbao, 1990), 157pp.

WHITE, G.S.J., 'An Early Renaissance Stone Polyhedral Sundial found at Iron Acton Court, near Bristol', *Antiquarian Horology* 16 (1986), 139-144.

WIESENBACH, J., 'Pacifcus von Verona als Erfinder einer Sternenuhr', in: BUTZER, P.L. and LOHRMANN, D. (ed), *Science in Western and Eastern civilization in Carolingian times* (Basel: Birkhäuser Verlag, 1993), 229-250.

WRIGHT, M.T., 'Rational and Irrational reconstruction: the London Sundial Calendar and the early history of geared mechanisms', *History of Technology* 12 (1990), 65-102.

## **HOROLOGY**

ANDREWS, W. and ATWOOD, S., *The Time Museum: An Introduction* (Rockford, Illinois: The Time Museum, 1983). 32pp.

BENNETT, J.A., 'George Biddle Airy and horology', *Annals of Science*, 37 (1980), 269-285.

BROMLEY, A.G., 'Observations of the Antikythera Mechanism', *Antiquarian Horology* 18 (1989-90), 641-652.

BROMELY, A.G., 'Notes on the Antikethera Mechanism', *Centaurus* 29 (1986), 5-27.

- BEDINI, S.A., *The Pulse of Time: Galileo Galilei, the determination of longitude, and the pendulum clock* (Biblioteca di Nuncius, Studi e Testi, III, 1991). 132pp.
- BEESON, C.F.C., *Clockmaking in Oxfordshire 1400-1850*, 3rd edn with a new Introduction and Index by A.V. SIMCOCK (Oxford: Museum of the History of Science, 1989). 218pp.
- BENNETT, J.A., 'Science Lost and Longitude Found: The Tercentenary of John Harrison', *Journal for the History of Astronomy*, 24 (1993), 281-287.
- BOULLIN, D.J., 'An Iconographic Study of Sandglasses', *Nuncius: Annali di Storia della Scienza*, 4 (1989), 67-85.
- BOULLIN, D.J., 'An Iconographic study of sandglasses' in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 8-21.
- BOULLIN, D.J., ' "John Forrest, Chronometer Maker to the Admiralty": The Forgery of Victorian Watches', *Horological Journal*, 133, no. 2 (1990), 52-56.
- BRUGGER-ZARAGOZA, C.J., *Musées et Collections horlogères en Suisse* (La Chaux-de-Fonds, Chronométriphilia, 1986).
- CARDINAL, C. (ed), *Ferdinand Berthoud 1727-1807: Horologer Mécanicien du Roi et de la Marine* (La Chaux Fonds: Musée International d'Horlogerie, [1984]).
- CHAPIRO, A., MESLIN-PERRIER, C. and TURNER, A.J., *Horologeri et instruments de précision du début du XVIe au milieu du XVIIe siècle* (Musée national de la Renaissance Château d'Ecouen) (Paris, 1989). 141pp.
- CROM, T.R., 'Evolution of horological hand tools into mass production machinery', *NAWCC Bulletin* (April 1993), 131-145.
- DAVIES, A.C., 'Horology and Navigation: the chronometers on Vancouver's Expedition 1791-95', *Antiquarian Horology* 21 (1993-94), 244-255.
- DOGGETT, Rachel, et al (eds), *Time: The Greatest Innovator. Timekeeping and Time Consciousness in Early Modern Europe*, (Folger Shakespeare Library; Washington, D.C., 1986). 116pp.
- La Dynastie des Le Roy horologers du Roi* (Tours: Musée des Beaux-Arts de Tours 1987). 82pp.
- FAUQUE, D., 'Un élégant solution au problème des longitudes: Les horloges marines de Ferdinand Berthoud', *Revue d'histoire de Science et de leurs Applications*, 39 (1986), 345-350.

GARCIA-DIEGO, José A., *Juanelo Turriano, Charles V's Clockmaker: The Man and his Legend*, translated by C.D.LEY, (Wadhurst: Antiquarian Horological Society, and Editorial Castalia: Madrid, 1986). 165pp.

van GENT, R.H. and LEOPOLD, J.H., *The Time-keepers of Leiden Observatory* (Communication 256) (Leiden: Museum Boerhaave, 1992). 48pp.

HARDING, R.E.M., *The Metronome and it's Precursors* (Gresham Books: Henley-on-Thames, 1983). 44pp.

HOWSE, H.D., 'Clocks in the Greenwich List of Observatories', *Antiquarian Horology* 17 (1987-8), 30-38.

HOWSE, H.D., 'Clocks on the Greenwich List of Observatories: Ammendment List No. 1', *Antiquarian Horology* 21 (1993-4), 536-539.

KRUPP, Ingrid, 'Hals-und Taschenuhren in niederländschen Stilleben des 17. Jahrhunderts', *Alte Uhren*, 9 (1986), 53-63.

LEOPOLD, J.H., 'Christiaan Huygens, the Royal Society and Horology', *Antiquarian Horology* 21 (1993-94) 37-42.

LEVERE, T.H., 'Chronometers on the Arctic Expeditions of John Ross amd William Edward Parry: with notes on a letter from Messrs. William Parkinson & William James Frodsham', *Annals of Science* 51 (1994),165-175.

MILLS, A.A., 'Newton's water clocks and the fluid mechanics of clepsydrae', *Notes and Records of the Royal Society of London* 37 (1982), 35-61.

MILLS, A.A., 'The Mercury Clock of the *Libros del Saber*', *Annals of Science*, 45 (1988), 329-44.

MILLS, A.A., 'Monumental Astronomical Clocks, 1: The Underlying Astronomical Principles', *Horological Journal*, 132 (1990), 226-230; '2: Driving Mechanisms', *idem*, 278-82; '3: Dial Design: Geocentric and Heliocentric', *idem*, 304-8; '4: Dial Design: Astrolabe Projection and Hybrid Dials', *idem*, 340-6; '5: The Leicester Clock', *idem*, 378-84.

MILLS, A.A., 'Water-Driven Clocks', *Antiquarian Horology*, 22, no. 2 (1995), 136-145.

MÖRZER BRUYNS, W.F.J., 'The astronomical clocks of Andreas Hohwü: a checklist', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 454-470.

*Museo Poldipezzoli, Tomo 2°: Orologi-Oreficerie* (Milan: Electra Editrice, 1981).



NEEDHAM, J., LU, G-D., COMBRIDGE, J.H. and MAJOR, J.S., *The Hall of Heavenly Records: Korean Astronomical Instruments and Clocks 1380-1780* (Cambridge: CUP, 1986). 201pp.

PIPPING, G., 'The Graham clock of Uppsala Observatory', *Antiquarian Horology* 18 (1989-90), 411-416.

*Sammler Fürst Gelehrter Herzog August zu Braunschweig und Lüneburg 1579-1666* (Ausstellung katalogue der Herzog August Bibliothek in Wolfenbüttel No. 27) (Wolfenbüttel, 1979). 425pp.

SCHARDIN, J., *Kunst- & Automatenuhren: Katalog der Gross-uhrensammlung* (Dresden: Staatlicher Mathematisch-Physikalischer Salon, Zwinger, 1989). 108pp.

STEPHENS, C.E., 'Partners in Time: William Bond & Son of Boston and the Harvard College Observatory' *Harvard Library Bulletin*, 35 (1988), 351-84.

STEPHENS, C.E., "'The Most Reliable Time": William Bond, the New England Railroads, and Time Awareness in 19th-century America', *Technology and Culture*, 30 (1989), 1-24.

STEPHENS, C.E., 'The impact of the telegraph on public time in the United States, 1844-1893', *IEEE Technology and Society Magazine*, 8 (1989), 4-10.

TREHERNE, A.A., *Nantwich Clockmakers: Catalogue of Clocks and Watches exhibited at Nantwich Museum with biographies of all known Nantwich Clock and Watchmakers* (Nantwich 1985). 36pp.

TURNER, A.J., ' "The accomplishment of many years": three notes towards a history of the sand-glass', *Annals of Science*, 39 (1982), 161-172.

TURNER, A.J., 'La "Dial Clock" anglaise et son contexte sociale', *Bulletin de l'Association nationale des collectionneurs et amateurs d'horlogerie ancienne*, 36 (1983), 7-13.

TURNER, A.J., (ed), *Mostra di una collezione veneta: Ritmi del cielo e misura del tempo*, (Padova, Centro Internazionale A.Beltrami di Storia dello Spazio e de Tempo, 1985). 164pp.

TURNER, A.J., *The Time Museum Catalogue of the Collection Vol. 1: Time Measuring Instruments* (Rockford, Illinois, 1985). 286pp.

TURNER, A.J. 'L'Angleterre, la France et la navigation: le context historique de l'œuvre chronométrique de Ferdinand Berthoud' in: CARDINAL, C. (ed), *Ferdinand Berthoud 1727-1807: Horologer Mécanicien du Roi et de la Marine* (La Chaux Fonds: Musée International d'Horlogerie, nd). 1984), 142-163.

TURNER, A.J., 'Berthoud in England, Harrison in France: the transmission of horological knowledge in 18th century Europe', *Antiquarian Horology* 20 (1992), 219-239.

TURNER, A.J., 'Swedish Calendar Tobacco-Boxes, 1787', *Bulletin of the Scientific Instrument Society* 36 (1993), 18-19.

TURNER, A.J., *Of Time and Measurement: Studies in the History of Horology and Fine Technology* (Collected Studies Series CS 407) (Aldershot: Variorum, 1993). 333pp.

TURNER, A.J., 'Yûnus the Candle-Clock Maker and Babylonian functions', *Nuncius: Annali di Storia della Scienza*, 10, pt 1 (1995), 321-323.

TURNER, G.L'E., 'Sands of Time: Or, It's Later than You Think', *Bulletin of the Scientific Instrument Society*, No. 23 (1989), 14-16.

MATTL-WURM, S. (ed), *Uhrenmuseum Wien* (Vienna: Museen der Stadt Wien, revised edn, nd. [?1989]), 198pp.

WRIGHT, M., 'Robert Hooke's Longitude Timekeeper', in HUNTER, M. and SCHAFFER, S., *Robert Hooke: New Studies* (Woodbridge, Boydell Press 1989), 253-85.

ZEEMAN, E.C., 'Gears from the Greeks', *Proceedings of the Royal Institution of Great Britain* 58 (1986), 137-156.

## **ISLAMIC INSTRUMENTS**

see also: ASTROLABE

ACHINARD, Margarida; *Astrolabe* (Geneva: Musée d'histoire des Sciences de Genève, 1983). 40pp.

AGUILAR, R.P., *Los Tratados de Construcción y use de la Azafea de Azarquiel* (Cuadernos de Ciencias 1) (Madrid: Instituto Hispano-àrabe de Cultura, 1987).

HILL, D.R., *Islamic Science and Engineering* (Edinburgh: Edinburgh University Press, 1993). xiii+ 250pp.

ILYAS, Mohammed, *A Modern Guide to Astronomical Calculations of Islamic Calendar, Times & Qibla* (Kuala Lumpur: Berita, 1985).

KING, David A., 'The Sacred Direction in Islam: A Study of the Interaction of Religion and Science in the Middle Ages', *Interdisciplinary Science Reviews*, 10, no.4 (December 1985), 315-28.

KING, D.A., *Islamic Mathematical Astronomy* (London: Variorum Reprints, 1986). 342pp.

KING, D.A., *Islamic Astronomical Instruments* (London: Variorum Reprints, 1987). 365pp.

KING, D.A., 'Some Remarks on Islamic Astronomical Instruments', *Scientiarum Historia*, 18 (1992), 5-23.

KING, D.A., 'Some Remarks on Islamic Scientific Manuscripts and Instruments and Past, Present and Future Research', in: COOPER, J. (ed), *The Significance of Islamic Manuscripts* (London: Al-Furqan Islamic Heritage Foundation, 1992), 115-144.

KING, D.A., 'Instruments astronomiques syriens', pp. 432-443, 480, 485-487, in: LUZAN, S., MOULIÉRAC, J. and BOUNNI, A. (eds), *Syrie, Mémoire et Civilisation* (Paris: Flammarion for Institut du Monde Arabe, 1993), 432-443, 480, 485-7.

KING, D.A., 'L'Astronomie en Syrie a l'Epoque islamique', pp. 286-395 (essay); 433-480 (catalogue), in *Syrie: Mémoire et Civilisation* (Paris: Institut du Monde arabe, 1993).

KING, D.A., 'Astronomical Instruments between East and West', in (Österreichische Akademie der Wissenschaften, 619. Band) *Veröffentlichungen des Instituts für Realienkunde des Mittelalters und der frühen Neuzeit Nr.16: Kommunikation zwischen Orient und Okzident: Alltag und Sachkultur* (Internationaler Kongress Krems an der Donau 6. bis 9. Oktober 1992) (Vienna: Verlag der Österreichischen Akademie der Wissenschaften, 1994), 143-198.

KING, D.A., 'Early islamic astronomical instruments in Kuwaiti Collections', in FULLERTON, A., and FEHÉRVÁRI, G., (compilers), *Kuwait Arts and Architecture: a collection of essays*, (Kuwait, 1995), 76-96.

KING, D.A., 'Some illustrations in Islamic Scientific Manuscripts and their secrets', in: ATIYEH, G.N. (ed), *The Book in the Islamic world: the written world and communication in the Middle East*, (Washington DC: The Library of Congress, 1995), 149-177.

KING, D.A. and LORCH, R., 'Qibla Charts, Qibla Maps, and Related Instruments', in: HARLEY, J.B. and WOODWARD, D. (eds), *The History of Cartography*, vol. 2, bk 1, *Cartography in the Traditional Islamic and South Asian Societies* (Chicago: University of Chicago Press, 1992), 189-205.

LORCH, R., *Arabic Mathematical Sciences: Instruments, Texts, Transmission* (Collected Studies Series CS517) (Aldershot and Brookfield, Vermont: Variorum, 1995). 366pp.

MOULIÉRAC, J., 'La Collection Marcel Destombes', in: TURNER, A.J. (ed), *Etudes 1987-1989, Astrolabica 5* (Paris: Société Internationale de l'Astrolabe, 1989), 77-126. (Catalogue of collection in Paris, at Musée de l'Institut du Monde Arabe.

SAVAGE-SMITH, Emilie, *Islamicate Celestial Globes: Their History, Construction, and Use* (Smithsonian Studies in History and Technology No. 46, Washington, D.C.: Smithsonian Institution Press, 1985). 354pp.

SAVAGE-SMITH, E., 'The classification of Islamic celestial globes in the light of recent evidence', *Der Globusfreund* 38-39 (1990), 23-29.

SEZGIN, F. (ed), *Arabische Instrumente in orientalistischen Studien: Astronomische Instrumente Publikationen 1805-1931*, 6 vols (Frankfurt am Main: Institut für Geschichte der Arabischen-Islamischen Wissenschaften, 1990).

## **MATHEMATICS AND ITS APPLICATIONS**

See also: CALCULATING DEVICES: SURVEYING: NAVIGATION

BENNETT, J.A., 'The Challenge of Practical Mathematics', in: PUMFREY, S. (ed), *Science, Culture, & Popular Belief in Renaissance Europe* (Manchester: Manchester University Press, 1991), 176-90.

BENNETT, J.A., *Practical Mathematics in the Age of Discoveries* (Cambridge: Whipple Museum, 1992). [wallcharts on Astronomy, Navigation, Surveying, Cartography in the 15th & 16th centuries]

BENNETT, J.A., 'Architecture and Mathematical Practice in England, 1550-1650', in BOLD, J. and CHANEY, E. (eds), *English Architecture Public and Private: Essays for Kerry Downes* (London: Hambledon Press, 1993), 23-29.

BENNETT, J.A., *The Measurers: A Flemish Image of Mathematics in the Sixteenth Century* (Catalogue of the exhibition in 1995) (Oxford: Museum of the History of Science, 1995). 56 pp.

BENNETT, J.A., JOHNSTON, S.A., and WILLMOTH, F.H., *The Ground of Artes: Mathematical Books of 16th-century England*. (Cambridge, Whipple Museum of the History of Science, 1985). 24pp.

CONTI, F., and GIUSTRI, H., *Oltre il Compasso: La geometria della curve* (Pisa: Università di Pisa, 1992). Exhibition at Palazzo Lanfranchi 8-31 May, 1992.

DILKE, O.A.W., *Reading the Past: Mathematics and Measurement* (London: British Museum Publications, 1987). 64pp.

DUNN, R., 'The True Place of Astrology among the Mathematical Arts of Late Tudor England', *Annals of Science*, 51 (1994), 151-163.

GARCÍA TAPIA, N., *Ingeniería y arquitectura en el Renacimiento español* (Valladolid: Universidad de Valladolid, 1990). 552pp.

JOHNSTON, S., 'Mathematical Practitioners and Instruments in Elizabethan England', *Annals of Science*, 48 (1991), 319-44.

JOHNSTON, S., 'The Carpenter's Rule: Instruments, Practitioners, and Artisans in 16th century England', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 39-45.

- KERABAIAN, P.B., 'The English carpenter's rule and notes on its origins', *Tools and Technology* 9 (1990), 1-7.
- MEAGHER, J.H., 'Elias Voster: The Father of Irish Accountancy', *Journal of the Cork Archaeological and Historical Society*, 99 (1994), 111-119.
- MERCIER, A., *Le Portefeuille de Vaucanson: chefs-d'œuvre du dessin technique* (Paris: Musée national des Techniques, CNAM, 1991). 72pp.
- MINIATI, M., 'Les "Cistae Mathematicae" et l'organisation des connaissances au XVII<sup>e</sup> siècle' in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 43-51.
- ROBERTS, D.L., 'Romancing the root: an episode in the promotion of geometric aids for arithmetic instruction', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 33-36.
- THOMAS, K., 'Numeracy in early modern England', *Transactions of the Royal Historical Society* 5th series 37 (1987), 103-132.
- TURNER, A.J., 'Paper, print and mathematics: Philippe Danfrie and the making of mathematical instruments in late 16th century Paris', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 22-42.
- TURNER, A.J., 'A seventeenth century calendar scale for coins and mathematical instruments', *American Journal of Numismatics* 2nd series 5-6 (1993-94) [=1995], 209-219.
- TURNER, A.J., 'Natural Philosophers, Mathematical Practitioners and Timber in later 17th Century England', *Nuncius: Annali di Storia della Scienza*, 9, pt 2 (1994), 619-634.
- WALLIS, Helen, 'Navigators and Mathematical Practitioners in Samuel Pepys's Day', *The Journal of Navigation*, 47 (1994), 1-19.
- WALLIS, R.V. and WALLIS, P.J., *Biobibliography of British Mathematics and its Applications: Part II 1701-1760* (Newcastle upon Tyne: Epsilon Press for Project for Historical Biobibliography, 1986), xxiii + 502pp.
- WALLIS, R.V. and WALLIS, P.J., *Index of British Mathematicians. Part iii: 1701-1800* (Newcastle upon Tyne: PHIBB, 1992). 200pp.

WILLIAMS, J., 'Mathematics and the Alloying of the coinage, 1202-1700', *Annals of Science* 52 (1995), 213-263.

WILLMOTH, F., *Sir Jonas Moore: Practical Mathematics and Restoration Science* (Woodbridge: Boydell & Brewer, 1992). 256pp.

## **MEDICAL AND SURGICAL INSTRUMENTS**

see also: DENTAL INSTRUMENTS: PHARMACY & PHARMACEUTICAL

INSTRUMENTS &c: PHYSIOLOGICAL, ANTHROPOLOGICAL &

PSYCHOLOGICAL APPARATUS: X-RAYS AND RADIOLOGY

BURNETT, J.E., 'The Origins of the Electrocardiograph as a Clinical Instrument', in: BYNUM, W.F., LAWRENCE, C.J., & NUTTON, V.F. (eds), *The Emergence of Modern Cardiology*, (Medical History, Supplement No. 5, 1985), 53-76.

BURNETT, J.E., 'William Prout and the urinometer: some interpretations', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 242-254.

DAVIS, A.B., *Medicine and its Technology: An Introduction to the History of Medical Instrumentation* (Westport, Conn.: Greenwood Press, 1981). 285pp.

DAVIS, A.B., and DREYFUS, M.S., *The Finest Instruments ever Made: A Bibliography of Medical, Dental, Optical, and Pharmaceutical Company Trade Literature; 1700-1939* (Arlington Massachusetts: Medical History Publishing Associates I, 1986). 446pp.

DAVIS, A.B. and MERZBACH, U., 'The Role of the Polarimeter in the Diagnosis of Diabetes Mellitus: Biot's Bequest to 19th-century medical saccharimetry', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 143-151.

GRIFFIOEN, B.K.P., *Doktersgereedschap van Toen* (Delft: Reinier de Graaf Stichting te Delft, 1988). 94pp.

GROOSS, K.S., *Cornelis Solingen: A Seventeenth-Century Surgeon and his Instruments*, (Leiden, Museum Boerhaave Communication 238, 1990). 32pp.

GROOSS, K. S. (ed), *Oog in Oog 1850-1925: Diagnostische ontwikkelingen in de oogheelkunde* (Leiden: Museum Boerhaave Communication 251, 1992). 32pp.

HACKMANN, W.D., 'The induction-coil in medicine and physics, 1835-1865', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 235-250.

JONES, Michael & TAYLOR, Jean, *A Handlist of Trade Catalogues and Associated Literature in the Wellcome Museum of the History of Medicine* (London; The Science Museum, 1984). 68pp.

KÜNZL, E., *Medizinische Instrumente aus Sepulkralfunden der römischen Kaiserzeit* (Kunst und Altertum am Rhein Nr. 115) (Cologne: Rheinland-Verlag, 1983). 137pp.

LAWRENCE, C. and LAWRENCE, G., *No Laughing Matter: Historical Aspects of Anaesthesia* (Catalogue of an exhibition at the Wellcome Institute for the History of Medicine, 8 June to 25 September, 1987) (Wellcome Institute for the History of Medicine/Science Museum, 1987). 84pp.

MORRISON-LOW, A.D., 'W.A.F. Browne's phrenological calipers', *Bulletin of the Scientific Instrument Society* 34 (1992), 10-11.

*Proceedings of a Wellcome Research Workshop: Scottish Initiatives in Biomedical Engineering and Physics* printed in *Journal of Medical Engineering and Technology* 17 no.5 (1993).

STANSFIELD, D.A., and STANSFIELD, R.G., 'Dr Thomas Beddoes and James Watt: Preparatory Work 1794-96 for the Bristol Pneumatic Institute', *Medical History*, 30 (1986), 276-302.

TERENNA, G., and VANNOZZI, F., *Inventario del Patrimonio dell'Unità Sanitaria Locale 30 - Area Senese: Gli Strumenti scientifici* (Università degli Studi di Siena) (Siena: Tipografia Edizioni Cantagalli, 1944). xiv +98pp.

WIECHMANN, A., *The Collection of Medicines of an Amsterdam Municipal Physician* (Communication 254) (Leiden: Museum Boerhaave, 1992). 39pp.

WILBUR, C. K., *Antique Medical Instruments* (Atglen, Pennsylvania: Schiffer, 1987). 149 pp.

## **MEDICAL SCIENCE: GENERAL**

*La Médecine Médiévale à travers les Manuscrits de la Bibliothèque Nationale* Paris, Bibliothèque Nationale: 1982). 100pp.

*De volmaakte mens: De anatomische atlas van Albinus en Wandelaar* (Leiden: Museum Boerhaave, Communication 248, 1991). 32pp.)

## **METEOROLOGICAL INSTRUMENTS**

ARCHINARD, M., 'The scientific instruments of Horace-Bénédict de Saussure', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 83-96.

AUSTIN, J., 'A forgotten meteorological instrument: the rainband spectroscope', *Weather* 36 (1981), 151-154.

BANFIELD, E., *Barometers: Stick or Cistern Tube* (Trowbridge: Baros Books, 1985), 246pp.

BANFIELD, E., *Barometers: Wheel or Banjo* (Trowbridge, Baros Books, 1985), 150pp.

BANFIELD, E., *Barometers: Aneroid and Barographs* (Trowbridge, Baros Books, 1985), 151pp.

BANFIELD, E., *The Italian Influences on English Barometers from 1780* (Trowbridge, 1993). 160pp.

CHENU, J., 'Horace-Bénédict de Saussure in Nouvelle Grenade', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 97-98.

*The Dines Dynasty: A Family of Meteorologists* (Proceedings of a conference of the Royal Meteorological Society Specialist Group for History of Meteorology & Physical Oceanography, 23 October 1993) (London: The Science Museum, 1995). 67 pp.

van ENGELLEN, A.F.V. & GEURTS, H.A.M., *Nicolaus Cruquius (1678-1754) and his meteorological observations* (Koninklijk 1985). 155pp.

McCONNELL, A., 'Assessing the value of historical temperature measurements', *Endeavour*, new series 16 (1992), 80-84.

McCONNELL, A., 'The Aneroid Barometer comes to London', *Bulletin of the Scientific Instrument Society*, No.38 (1993), 20-22.

McCONNELL, A., 'A Fitzroy Barometer by Any Other Name', *Antique Collecting* (March 1993), 16-19.

McCONNELL, A., 'Sympiesometers and Pocket Barometers', *Antique Collecting* (March 1995), 9-12.

PATTERSON, J., *Meteorological Instruments of the Meteorological Service of Canada, ca 1940-1980* (Ottawa: National Museum of Science and Technology, 1993). xvii +178pp +.50pp illus.



PETERSON, T.F., 'The zealous marketing of rain-band spectroscopes', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 91-96.

RAUDSEPP, M., 'Tartu meteorologia observatoorium 1919-1952', in : *Tartu Ülikool Labi Kolme Okupatsiooni*, special issue of *Tartu Ülikooli ajaloo Kusimusi*, XXV (1991), 153-161.

SPENCER, A.M., 'The meteorological instruments of John Jeffries', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 59-61.

ZELBSTEIN, U., 'Brève réflexion sur l'évolution des techniques 'enregistrement vue à travers trois exemples de réalisation du XVIII<sup>e</sup> et du XIX<sup>e</sup> siècle', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 111-118.

## **METROLOGY**

### I - MONEY SCALES AND WEIGHTS

### II - WEIGHTS AND MEASURES - WEIGHING APPARATUS &c

## **METROLOGY**

### I - MONEY SCALES AND WEIGHTS

BROWN, O., *The Whipple Museum of the History of Science Catalogue 2: Balances and Weights*, (Cambridge: Whipple Museum, 1982). 26pp.

BRYDEN, D.J., 'John Gardner's Coin-Scale: A Scottish Gold Coin Scale of 1773', *Equilibrium*, 1990, no.1, 1303-1311.

CRAWFORTH, Michael A., *Sovereign Balances: I-Standard Rockers*. (Published in England for the International Society of Antique Scale Collectors, Chicago, 1983). 48pp.

HOUBEN, Gerard M.M., *The Weighing of Money* (Zwolle, 1982).

JENEMANN, H.R., 'Über Ausführung und Genauigkeit von Münzwägungen in spätrömischer und neuerer Zeit', *Trierer Zeitschrift* (Rheinisches Landesmuseum Trier), 48 (1985), 163-194.

## **METROLOGY**

### II - WEIGHTS AND MEASURES - WEIGHING APPARATUS &c

*L'Aventure du Mètre* (Paris: Musée National des Techniques, 1989). 103pp.

*Balans van een eeuw: Natuurwetenschappen en geneeskunde in Nederland in de 19e eeuw* (Leiden: Museum Boerhaave, 1985). 35pp.

BERNIER, M., GUICHARD, J.-P. and KUCZA, P. (eds), *1789-1840, la mise en place du système métrique: L'exemple des Deux-Sèvres* (Niort: Centre départemental de documentation pédagogique, 1990). 99pp.

BIGGS, Norman, *English Weights: An Illustrated Survey* (Egham: White House Publications, (1992). 80pp.

BOLTON, H.C., HOLLAND, J. and WILLIAMS N.H., 'The Grimwade Milligram Chemical Balance: An Early Australian Attempt to Establish a Scientific Instrument Industry', *Historical Records of Australian Science*, 9, ii (December 1992), 107-117.

BOT, Jan & van DIEST, Aad, *Vademecum van Nederlandse Metrieke Gewichten* (Amsterdam: Vereniging van Verzamelaars van Maten en Gewichten, 1983). 96pp.

BOT, Jan & Van DIEST, Aad, *Vademecum van Nederlandse Metrieke Gewichten* (Amsterdam: Vereniging van Verzamelaars van Maten en Gewichten, update Oct. 1985).

BROWN, O., *The Whipple Museum of the History of Science Catalogue 2: Balances and Weights*, (Cambridge: Whipple Museum, 1982). 26pp.

*Collection des poids et mesures: Inventaire des Poids* (Paris: CNAM, 1990). 146pp.

CONNOR, R.D., *The Weights and Measures of England* (London: HMSO for the Science Museum, 1987). 422pp.

CRAWFORTH, M.A., *Handbook of old weighing instruments* (Chicago, International Society of Antique Scale Collectors, 1984). 130pp.

DANFORTH, E.Z., *Nesting Weights, Einsatzgewichte and Piles à Godets: A catalogue of Nested Cup Weights in the Edward Clark Streeter Collection of Weights and Measures* (Transactions of the

Connecticut Academy of Arts and Sciences, 50 (1988). pp117.

DÉBARBAT, S. and TEN, A.E. (eds), *Mètre et Système métrique* (Paris: Observatoire & Instituto de Estudios Documentales e Historicos sobre la Ciencia, Valencia, 1993). 194pp.

GAJDOS, Gusztáv, 'Rise and development of the Hungarian balance industry in the 19-20th century (1850-1945)', *Technikatörténeti Szemle* [Budapest], 14 (1983-84), 61-93. (English summary).

JENEMANN, H.R., 'Robert Hooke und die frühe Geschichte der Federwaage', *Berichte zur Wissenschaftsgeschichte*, 8 (1985), 121-130.

JENEMANN, H.R., 'Zur Geschichte der Kurzen Balkens an der gleicharmigen Ballenwaage', *Technikgeschichte* 52 (1985), 113-137.

JENEMANN, H.R., 'Paul Bunge und die Fertigung Wissenschaftlicher Waagen in Hamburg', *Zeitschrift für Unternehmensgeschichte*, 31 (1986), 117-140.

JENEMANN, H.R., 'Zur Geschichte der Herstellung von Präzisionswaagen hoher Leistung in Wein', *Blätter für Technikgeschichte*, 49 (1987), 7-85.

JENEMANN, H.R., 'Die Göttinger Präzisionsmechanik und die Fertigung feiner Waagen', *Göttinger Jahrbuch*, 36 (1988), 181-230.

JENEMANN, H.R., 'Teilmetrische Mass- und Gewichtseinheiten in den deutschen Ländern in der Zeit vor 1872', *Le Système Métrique: Bulletin de la Société métrique de France* (1989), 431-38.

KIDWELL, P.A., 'Publicizing the Metric System in America - from F.R.Hassler to the American Metric Bureau', *Rittenhouse; Journal of the American Scientific Enterprise* 5 (1991), 95-96.

LAQUÈVRE, J., *Catalogue des poids et mesures anciens de Provence-Alpes-Côte d'Azur* (Marseilles: J.Laquèvre, 1992). 48pp.

LOCKENR, H.P., *Die Merkzeichen der Nürnberger Rotschmiede* (Munich: Deutscher Kunstverlag, 1981). 329pp.

LUPPI, G. (ed), *Bilance a bracci uguali / equal-arm balances* (Modena: Museo della Bilancia & Bulino edizioni d'arte, 1993). 205pp.

REID, J.S., 'A new look at old linear measures', *Annals of Science* 46 (1989), 221-248.

SEAR, T.N., 'Airy's Dry Measure gauge for checking trade volume measures', *Bulletin of the Scientific Instrument Society* 45, 28-29.

SIMPSON, A.D.C., 'Grain Packing in Early Standard Capacity Measures: Evidence from the Scottish Dry Capacity Standards', *Annals of Science*, 49 (1992), 337-350.

SIMPSON, A.D.C., 'The pendulum as the British length standard: a nineteenth-century legal aberration', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 174-190.

SIMPSON, A.D.C., 'Scots 'Trone' Weight: Preliminary observations on the Origins of Scotland's early Market Weights', *Northern Studies*, 29 (1992), 62-81.

ZUPKO, R. L., Revolution in measurement: Western European weights and measures since the age of science, *Memoirs of the American Philosophical Society* 186 (1990). 548pp.

## **MICROSCOPES & MICROSCOPY**

See also: MICROSCOPY - ELECTRON MICROSCOPES

ARCHINARD, M., 'The true name of Selligie', in : ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 306-328.

BELL, J., 'The Craig Microscope', *Rittenhouse; Journal of the American Scientific Enterprise* 8 (1994), 73-77.

BENNETT, J.A., 'The social history of the microscope', *Journal of Microscopy* 155 (1989), 267-280.

BOWMAN, I. A., 'Microscope Collection at the Moody Medical Library', *Rittenhouse; Journal of the American Scientific Enterprise*, 10 (1995-6), 26-29.

BRACEGIRDLE, B., 'The First Automatic Microtome', *Proceedings of the Royal Microscopical Society*, 21, no.3 (May 1986), 145-147.

BRACEGIRDLE, B., *A History of Microtechnique; the evolution of the Microtome and the development of tissue preparation* 2nd edition (Chicago: Science Heritage, 1986).

BRACEGIRDLE, B., 'Famous Microscopists: Flatters and Garnett Ltd., 1901-1967', *Proceedings of the Royal Microscopical Society* 28 (1993), 55-62.

BRACEGIRDLE, B., 'Seventeenth-century simple microscopes', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 295-305.

BRACEGIRDLE, B., 'Microscopical illumination in the 1890s', *Proceedings of the Royal Microscopical Society* 28 (1993), 196-201.

BRACEGIRDLE, B., 'The development of biological preparative techniques for light microscopy, 1839-1989', *Journal of Microscopy* 155 (1989), 307-318.

BRACEGIRDLE, B., and McCORMICK, J.B., *The Microscopic Photographs of J.B. Dancer* (Chicago: Science Heritage Ltd, 1993). 288pp.

BRADBURY, S., 'Landmarks in biological light microscopy', *Journal of Microscopy* 155 (1989), 281-305.

BROCK, W.H., 'Patronage and publishing: journals of microscopy 1839-1989', *Journal of Microscopy* 155 (1989), 249-266.

BROWN, O, *The Whipple Museum of the History of Science Catalogue 7: Microscopes* (Cambridge: Whipple Museum, 1986). 96pp.

BURNETT, W.A.S., 'Darwin's Microscopes', *Microscopy: The Journal of the Quekett Microscopical Club*, 36 (1992), 604-626.

BUTLER, S., NUTTALL, R.H. and BROWN, O., *The Social History of the Microscope* (Cambridge: Whipple Museum, [1986]). 34pp.

DAVIDSON, B.M., 'Sources of Illumination for the Microscope 1650-1950', *Microscopy; the Journal of the Quekett Microscopical Club*, 36 (1990), 369-386.

DEIMAN, J.C., 'A Myth Revealed: The Case of the "Beeldsnyder Achromatic Objective"', *Annals of Science*, 48 (1991), 577-81.

DEIMAN, J.C., 'Utrecht University and its microscopes', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 329-340.

DRAGONI, G., 'G.B. Amici: Il microscopio a riflessione. Anticipazioni storiche, caratteristiche tecniche', *Gionale di Fisica* (Societa Italiana di Fisica), 29 (1988), 141-67.

DRAGONI, G., MATTEUCCI, G. and MISSIROLI, G.F., 'Progressi in Miscroscopia dalle Origini ai Giorni nostri: Microscopio ottico e Microscopio elettronico', *Il nuovo Saggiatore*, 3 (1987), 26-46.

ENGLESMANN, S.B., (ed), *Antoni van Leeuwenhoek 1632-1723*, (Leiden: Museum Boerhaave, 1982). 76pp.

BRACEGIRDLE, Brian (ed), *Beads of Glass: Leeuwenhoek and the early microscope*, (London: Science Museum, 1983), 76pp. English translation of the above.

FORD, B.J., *Single lens: the story of the simple microscope*, (London: Heinemann, 1985). 136pp.

FORD, B.J., *The Leeuwenhoek Legacy* (Bristol and London: Biopress, 1991). 185pp.

FOURNIER, M., 'Instrument-orientated history of science in practice; a solar microscope by Kleman', *Tijdschrift vor de Geschiedendis der Geneeskunde, Natuurwetenschappen, Wiskunde en Technick* 10 (1987), 131-148.

FOURNIER, M., 'Huygen's designs for a simple microscope', *Annals of Science* 46 (1989), 575-596.

FRAGA, X.A., VARELA, M., and COSTAS, E. (eds), *As investigacions micrográficas de Ernesto Caballero (1858-1935)* (Historia das Ciencias e das Tecnicas en Galicia, Monografias 2) (Coruna: Publicacions do Seminario de Estudos Galegos, 1989). 311pp.

GREINER, K. and SANDER, K., 'Das Stereomikroskop: Ursprünge und geschichtliche Entwicklung', *Biologie in unserer Zeit*, 17, no. 6 (December 1987), 161-8.

HASELMANN, Helmut, 'One Hundredth Anniversary of Abbe's Apochromats', *Proceedings of the Royal Microscopical Society*, 21, (1986), 197-201.

HEMMERLING, Kurt & FEUSTEL, Hans; *Historische Mikroskope des Pysikalischen Kabinette im Hessischen Landesmuseum Darmstadt* (Katalogue No. 13) (Darmstadt, 1983). 74pp.

HOLLAND, J., *Microscopes and Microscopy: Instruments and Related Items in the Macleay Museum* (Sydney: Macleay Museum University of Sydney, 1989). 52pp.

INSLEY, J. 'Court, Crisp and Clay: some notes on collectors and collections of antique microscopes', *Microscopy* 34 (1982), 345-353 & 376.

*Klein-kijkerij: Microscopen en microscopisten in Nederland tot het begin van de 19e eeuw*, (Leiden, Museum Boerhaave Communication 226, 1988). 32pp.

KOBAYASHI, Y., *The History of the Microscopes, especially of Japan* (Tokyo, 1984), 225pp.

KÖHLER, A., 'A new system of illumination for photomicrographic purposes', *Proceedings of the Royal Microscopical Society* 28 (1993), 181-185.

HASELMANN, H., 'One hundredth anniversary of Köhler illumination'. *Proceedings of the Royal Microscopical Society* 28 (1993), 186-188.

GUNDLACH, H., 'Köhler illumination in modern light microscopy', *Proceedings of the Royal Microscopical Society* 28 (1993), 194-196.

LOVAS, Béla, *Mikroszköp - mikrokozmosz* (Budapest: Gondolat, 1984).

*Medische microscopie in de negentiende eeuw: Introductie en gebruik van de microscop in geneeskundig onderwijs en onderzoek in Nederland*, a special issue of *Tijdschrift voor de Geschiedenis der Geneeskunde, Natuurwetenschappen, Wiskunde en Techniek*, 6, no. 2 (1983), 57-120.

MOE, H., *Mikroskopets Historie* (Copenhagen: Rhodos, Internationalt Forlag for Videnskab og Kunst, 1991) 261pp.

NOWAK, Hans Peter; *Geschichte des Mikroskops: Eine Ausstellung der Medizinhistorischen Sammlung der Universität Zurich* (Zurich, 1984), 130pp.

- NUTTALL, R.H., 'James Smith, and Smith & Beck: 1839-1852. Part 1: the microscopes', *Microscopy*, 36 (1989), 288-300 & 317.
- OTTO, L. and MARTIN, H., *150 Jahre Mikrophotographie* (Wien: Schulbetrieb der Höheren Graphischen Bundes-Lehr-und Versuchsanalt: 1989; 1992). 69pp.+ 60 plates.
- PFAFFL, F., *Das Mikroskop in der Geschichte der Geowissenschaften* (Zwiesel: the Author, 1985). 67pp.
- RICHARDS, O.W., 'Charles A. Spencer and his Microscopes', *Rittenhouse; Journal of the American Scientific Instrument Enterprise*, 2 (1988), 70-81.
- RONFORT, J-N., 'Science and Luxury: Two Acquisitions by the J.Paul Getty Museum', *The J.Paul Getty Museum Journal*, 17 (1989), 47-82. [Study of the elaborate French regal microscopes of c.1750 often ascribed to Alexis Magny].
- RUDD, M.E., 'An early micrometer microscope', *Bulletin of the Scientific Instrument Society* 32 (1992), 14-16.
- La RUE, B.J., 'The Microscopical Soirée of 1884', *Rittenhouse; Journal of the American Scientific Enterprise* 6 (1992), 52-56.
- La RUE, B.J., 'A Beck "Improved National" microscope with swinging substage', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 10 (1995-6), 19-25.
- TURNER, G.L'E., *Essays on the history of the microscope* (Oxford: Senecio Publishing Ltd, 1980).
- TURNER, G. L'E., 'Animadversions on the Origins of the Microscope', in NORTH, J.D. and ROCHE, J.J. (eds), *The Light of Nature* (Dordrecht: Martinus Nijhoff Publishers, 1985), 193-207.
- TURNER, G.L'E., 'The Engell Demonstration Microscope', *Bulletin of the Scientific Instrument Society*, no. 10 (1986), 12-14.
- TURNER, G.L'E., 'The origins of the Royal Microscopical Society', *Journal of Microscopy*, 155 (1989), 235-248.
- TURNER, G.L'E., *The Great Age of the Microscope: The Collection of the Royal Microscopical Society through 150 Years* (Bristol: Adam Hilger, 1989). 379pp.
- TURNER, G.L'E., *God Bless the Microscope! A History of the Royal Microscopical Society over 50 Years* (Oxford: R.M.S. 1989). 128pp.
- TURNER, G.L'E., 'Some Curious Old Instruments: The Assembly of the Royal Microscopical Society's Collection of Microscopes', *Journal of the History of Collections*, 1, no. 2 (1989), 149-66.

TURNER, G.L'E., 'Clerks to the Microscopists', *Proceedings of the Royal Microscopical Society*, 25 (1990), 121-25.

TURNER, G.L'E., '1590 and All That', *Proceedings of the Royal Microscopical Society*, 25 (1990), 423-24. Comment on the persistent myth that the telescope and/or microscope was invented in 1590.

TURNER, G.L'E., *Museo di Storia della Scienza: Catalogue of Microscopes* (Florence: Giunti for the Museo, 1991). 133pp.

TURNER, G.L'E., 'The Iris Diaphragm: 1867', *Proceedings of the Royal Microscopical Society*, 28 (1993), 5-6.

TURNER, G.L'E., 'A duc du Chaulnes Microscope, c. 1768', *Bulletin of the Scientific Instrument Society*, No. 39 (1993), 29-31.

TURNER, G.L'E., 'The Collins Graduating Diaphragm of 1865', *Bulletin of the Scientific Instrument Society*, No. 40 (1994), 25-26.

TURNER, G.L'E., 'Frederick Thomas Hudson's Microscopical Diary, 1849-1864', *The Quekett Microscopical Journal*, 37 (1994), 191-206.

WARNER, D.J., 'The introduction of the correction collar for microscope objectives', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 10 (1995-6), 30-32.

WARTER, S.L., 'J.G. Joseph and Pittsburg's "Grand Solar Microscope" ', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 49-53.

WATSON, R.D., 'E.H.Griffiths and the Griffiths Club Microscope', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 25-31.

WEIL, H. and BADEN, H., 'Schieck and the Beginnings of the German Microscope Industry', *Bulletin of the Scientific Instrument Society*, no. 18 (1988), 9-12.

van ZUYLEN, J., 'On the microscopes of Antoi van Leeuwnehoek', *Janus* 68 (1981), 159-198.

## **MICROSCOPY - ELECTRON MICROSCOPES**

See also: MICROSCOPES & MICROSCOPY

BROERS, A.N., 'High resolution electron beam fabrication: a brief review of experimental studies that began at Cambridge University in 1962', *Journal of Microscopy*, 139, pt 2 (August 1985), 139-52.

COSSLETT, V.E., '50 years of the electron microscope', *Advances in Optical and Electron Microscopy* 10 (1987), 224-226.



DRAGONI, G., MATTEUCCI, G. and MISSIROLI, G.F., 'Progressi in Miscroscopia dalle Origini ai Giorni nostri: Microscopio ottico e Microscopio elettronico', *Il nuovo Saggiatore*, 3 (1987), 26-46.

FUJITAS, H. (ed), *History of electron microscopy* (Tokyo: Japan Scientific Societies, 1986). 219pp.

GLOEDE, W., *Vom Lesestein zum Elektronenmikroskop* (Berlin: VEB Verlag Technik, 1986). 248pp.

GÜNTER, J.R. (ed), *History of Electron Microscopy in Switzerland* (Basel: Birkhäuser, 1990). 213pp.

HAWKES, P.W. (ed), *The Beginnings of Electron Microscopy; Advances in Electronics and Electron Physics, Supplement 16*: (London: Academic Press, 1985). 624pp.

HIRSCH, P., 'TEM in materials science - past, present and future', *Journal of Microscopy* 155 (1989), 361-371.

HUANG, L.Y., 'Reflections on the making of early electron microscopes in China', *Optick* 92 (Nov. 1992), 23-26.

KUNKLE, G.C. 'Technology in the seamless web: "Success" and "Failure" in the history of the electron microscope', *Technology and Culture* 36 (1995), 80-103

McMULLAN, D., 'Recollections of the early days of SEM in the Cambridge University Engineering Department, 1948-53', *Journal of Microscopy*, 139, pt 2 (August 1985), 129-38.

McMULLAN, D., 'SEM - past, present and future', *Journal of Microscopy* 155 (1989), 373-392.

MULVEY, T., 'The electron microscope; the British contribution', *Journal of Microscopy* 155 (1989), 327-338.

REISNER, J., 'An early history of the electron microscope', *Advances in Electronics and Electron Physics* 73 (1989), 134-230.

RUSKA, E., 'Die Entstehung des Elektronenmikroskops (Zusammenhang zwischen Ralisierung und erster Patentanmeldung Dokumente einer Erfindung)', *Archiv der Geschichte der Naturwissenschaften*, 11-12 (1984), 525-51.

RUSKA, E., 'The development of the electron microscope and of electron microscopy', *Reviews of Modern Physics* 59 (1987), 627-638.

STEWART, A.D.G., 'The origins and development of scanning electron microscopy', *Journal of Microscopy*, 139, pt 2 (August 1985), 121-27.

## **MILITARY INSTRUMENTS**

INSLEY, J., 'The Damnable Cavalry Sketching Board', *Army Museum '87*, 26-35.

MILLBURN, J.R., 'The Office of Ordnance and the Instrument-Making Trade in the Mid-Eighteenth Century', *Annals of Science*, 45 (1988), 221-93.

MILLBURN, J.R., 'John Rowley's Gunnery Instruments', *Bulletin of the Scientific Instrument Society*, No.32 (1992), 3-6.

MILLBURN, J.R., 'Gunnery Instruments and their Makers in the Eighteenth Century', *Journal of the Ordnance Society*, 7 (1995), 27-44.

MILLBURN, J.R., 'William Deane and his Ordnance Bills', *Bulletin of the Scientific Instrument Society* 45 (1995), 12-18.

RUSSELL, I., 'Purely by coincidence: the rangefinders of Barr and Stroud at the Battle of Jutland', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 283-290.

## **NATURAL AND EXPERIMENTAL PHILOSOPHY**

### **I - INSTRUMENTS AND GENERAL STUDIES**

See also: PHYSICS - INSTRUMENTS & APPARATUS: PNEUMATICS:

### **TEACHING APPARATUS**

### **II - LECTURE DEMONSTRATIONS**

## **NATURAL AND EXPERIMENTAL PHILOSOPHY**

### **I - INSTRUMENTS AND GENERAL STUDIES**

BEDINI, Silvio A., 'Galileo and Scientific Instrumentation', in WALLACE, William, A. (ed), *Reinterpreting Galileo in Studies in Philosophy and the History of Philosophy*, 15, (1986), 127-53.

BEDINI, S.A., 'Of "Science and Liberty" The Scientific Instruments of King's College and Eighteenth Century Columbia College in New York', *Annals of Science*, 50 (1993), 201-227.

BENNETT, J.A., 'The Mechanics' Philosophy and the Mechanical Philosophy', *History of Science*, 24 (1986), 1-28.

*Le Cabinet de physique et chimie de Chenonceau (XVIIIe siècle)* (Tours: Société Archéologique de Touraine Musée de l'Hôtel Gouin, 1989). 51pp.

de CLERCQ, P., 'Science at Court: the 18th century Cabinet of scientific instruments and models of the Dutch Stadholders', *Annals of Science* 45 (1988), 113-??

de CLERCQ, P., *The Leiden Cabinet of Physics*, (Leiden, Museum Boerhaave Communication 233, 1989). 56pp.

DRAGONI, G., 'Vicende dimenticate del mecenatismo bolognese dell'ultimo '700: l'acquisto della collezione di strumentazioni scientifiche di Lord Cowper', *Il Carrobbio* (rivista diretta da Antonio Ferri e Giancarlo Roversi), anno XI (1985), 68-84.

DRAGONI, G., 'Lord George Cowper's 18th century Cabinet of Physics', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 191-199.

DRAKE-BROCKMAN, J., 'The *Perpetuum Mobile* of Cornelis Drebbel', in HACKMANN, W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays presented to Francis Maddison* (Aldershot and Paris: Variorum and Société de l'Astrolabe, 1994), 124-147.

DUBOIS, J., 'La Science expérimentale au XVIII<sup>e</sup> siècle: L'Exemple du Cabinet de Physique et Chimie du Musée de l'Hotel Gouin à Tours', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 99-110.

FARA, P., ' "A treasure of hidden vertues": the attraction of magnetic marketing', *British Journal of the History of Science* 28 (1995), 5-35.

FOURNIER, M. and THEUNISSEN, B. (eds), *Het Instrument in de Wetenschap: Bijdragen tot de instrumentgerichte wetenschapsgeschiedenis* (special issue of *Tijdschrift voor de Geschiedenis der Geneeskunde, Natuurwet., Wiskunde en Techniek* vol. 10, no. 4, 1987) (Amsterdam: Rodopi, 1988). 163pp.

GREENSLADE, T.B.Jr., 'Atwood's Machine', *The Physics Teacher*, 23 (1985), 24-8.

GREENSLADE, T.B.Jr., 'Home built apparatus for natural philosophy', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 56-59.

HACKMANN, W.D., 'The nineteenth-century trade in natural philosophy instruments in Britain', in: de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 53-92.

HACKMANN, W.D., 'Natural Philosophy Textbook Illustrations 1600-1800', in: MAZZOLINI, R.G. (ed), *Non-Verbal Communication in Science prior to 1900* (Biblioteca di *Nuncius* studi e testi XI), (Florence: Leo S. Olschki, 1993), 169-196.

HILL, C.R., 'The Cabinet of Bonnier de la Mosson (1702-1744)', *Annals of Science*, 43 (1986), 147-174.

HOME, R.W., 'The Notion of Experimental Physics in Early 18th century France', in PITT, J.J. (ed), *Change and Progress in Modern Science*, (Dordrecht: Reidel, 1985), pp.107-131.

KOIV, E., 'Overlåtelsen av fysikaliska instrument från Dorpat till Helsingfors år 1828', *Opusculum*, 11 (1991), 34-48, & 50.

van LIEBURG, M.J. and SNELDERS, H.A.M., '*De Bevordering en volmaking der Proefondervindelijke Wijsbegeerte' De rol van het Bataafsch Genootschap te Rotterdam in de geschiedenis van de natuurwetenschappen, geneeskunde en techniek (1769-1988)* (Amsterdam: Rodopi B.V., 1989). 270pp

MINIATI, M., 'Nobili e l'ambiente scientifico fiorentino', *Giornale di Fisica*, 25, no.3-4 (July-Dec. 1984), 187-95.

MORRISON-Low, A.D., 'Natural Philosophy Collections of the Scottish Universities', *Science and Industry Curators Group Newsletter*, No.6 (1990), 8-11.

MORTON, A.Q., 'Men and machines in mid-18th century London', *Transactions of the Newcomen Society* 65 (1993-94), 47-56.

MORTON, A.Q., 'Concepts of power; natural philosophy and the uses of machines in mid-eighteenth century London', *British Journal of the History of Science* 28 (1995), 63-78.

MORTON, A.Q. and WESS, J.A., *Public & Private Science: The King George III Collection* (Oxford: Oxford University Press in association with the Science Museum, 1993). 710pp.

PANCINI, Maria and SALANDIN, Gian A., *Il Teatro di Filosofia sperimentale di Giovanni Poleni (1683-1761)* (Padova: Edizioni LINT, 1986), 116pp., illus.

PORTER, R. et al, *Science and Profit in 18th-century London*: (Cambridge: Whipple Museum, 1985). 40pp.

REID, J.S., 'Eighteenth-Century Scottish University Instruments: The Remarkable Professor Copland', *Bulletin of the Scientific Instrument Society*, No.24 (1990), 2-8.

SANDSTROM, Arne Eld, 'The Uppsala Cabinet of Physics', *Kungl. Vetenskapssamhällets i Uppsala Årsbok 25* (1983-84), 5-46.

SCHAFFER, S., 'Machine Philosophy: demonstration devices in Georgian mechanics', *Osiris* new series 9 (1994), 157-182.

SHAPIN, S. and SCHAFFER, S., *Leviathan and the Air-Pump: Hobbes, Boyle and the Experiment of Life* (Princeton 1985).

TALAS, S., 'The Physical Cabinets in Geneva at the end of the 18th century', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 85-91.

TAROZZI, Gino, (ed), *Gli Strumenti nella Storia e nella Filosofia della Scienza* (Istituto per i Beni Artistici, Culturali e Naturali della Regione Elilia-Romagna, Bologna, [1985]). 176pp.

TODESCO, P., 'The Physics Laboratories of the Ecclesiastical Colleges', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 173-177.

TURNER, Gerard L'E., 'The Cabinet of Experimental Philosophy', in *The Origins of Museums: The Cabinet of Curiosities in Sixteenth- and Seventeenth-Century Europe*, (ed) IMPEY, Oliver & MACGREGOR, Arthur, (Oxford: Clarendon Press, 1985), 214-22.

TURNER, G.L'E., 'Presidential Address: Scientific Toys', *British Journal for the History of Science*, 20 (1987), 377-98.

## **NATURAL AND EXPERIMENTAL PHILOSOPHY**

### **II - LECTURE DEMONSTRATIONS**

APPLEBY, J.H., 'Erasmus King: eighteenth-century Experimental Philosopher', *Annals of Science* 47 (1990), 375- 385.

MILLBURN, J.R., 'The London evening courses of Benjamin Martin and James Ferguson, 18th century lecturers on Experimental Philosophy', *Annals of Science* 40 (1983), 437-455.

MORTON, A.Q., 'Lectures on natural philosophy in London: 1750-1765: S.T.C.Demainbray (1710-1782) and the "Inattention" of his countrymen', *British Journal of the History of Science* 23 (1990), 411-434.

SCHAFFER, S., 'Natural Philosophy and public spectacle in the eighteenth century', *History of Science* 21 (1983), 1-43.

SHERMAN, R., ' "That pleasing and noble branch of philosophy: the electrical lecture of Isaac Greenwood III' , *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 5 (1991), 46-52.

SHERMAN, R., 'Charles Came, itinerant science lecturer and his "splendid apparatus" ', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 5 (1991), 118-128.

STEWART, L. and WEINDLING, P. 'Philosophical threads: natural philosophy and public experiment among the weavers of Spitalfields', *British Journal of the History of Science* 28 (1995), 37-62.

## NATURAL & EXPERIMENTAL PHILOSOPHY II

WESS, J., 'Lecture demonstrations and the real world: the case of cart wheels', *British Journal of the History of Science* 28 (1995), 79-90.

## NAVIGATION AND NAVIGATIONAL INSTRUMENTS

BARBER, G.W., and ARROTT, A.S., 'History and magnetics of compass adjusting', *IEEE Transactions on Magnetism* 24 (1988), 2883-2885.

BARKER, R., ' "Many may Peruse us": Ribbands, Moulds and Models in the Dockyards', *Revista da Universidade de Coimbra*, 34 (1988), 539-59.

BEDINI, S.A., *The Pulse of Time: Galileo Galilei, the determination of longitude, and the pendulum clock* (Biblioteca di Nuncius, Studi e Testi, III, 1991). 132pp.

BEDINI, S.A., 'A Marine Quadrant by Bernardo Facini', *Nuncius: Annali di Storia della Scienza*, 8, fasc.2 (1993), 597-9.

BENNETT, J.A., *The Whipple Museum of the History of Science Catalogue 3: Astronomy & Navigation* (Cambridge, 1983).

BENNETT, J.A., *The Divided Circle: A History of Instruments for Astronomy, Navigation and Surveying* (Oxford: Phaidon-Christie's Collectors Library, 1987), 224pp., 260 illus.

BENNETT, J.A., 'Hooke's Instruments for Astronomy and Navigation', in: HUNTER, M. and SCHAFFER, S.(eds), *Robert Hooke: New Studies* (Woodbridge, Boydell Press 1989), 20-32.

BENNETT, J.A., *Practical Mathematics in the Age of Discoveries* (Cambridge: Whipple Museum, 1992). [wallcharts on Astronomy, Navigation, Surveying, Cartography in the 15th & 16th centuries]

BENNETT, J.A., 'Science Lost and Longitude Found: The Tercentenary of John Harrison', *Journal for the History of Astronomy*, 24 (1993), 281-287.

BORGHESI, Vilma, 'Unedito di Bartolomeo Crescenzo (1588-89)', . 23-118, illus., in *Cosmografi e cartografi nell' età moderna* (Miscellanea Storica Ligure, (versità di Genova, Istituto di Storia Moderna e Contemporanea) XII, no. 1, 1980), 23-118. .

BREMNER, R.W., 'The Length of the Mediterranean from Dicaerchus to the Discoveries', *Revista da Universidade de Coimbra*, 34 (1988), 371-381.

BROUGHTON, P., 'The Christian Island "Astrolabe" ', *Journal of the Royal Astronomical Society of Canada*, 80, no.3 (1986), 142-53.

BRYDEN, D.J., 'Magnetic Inclinary Needles: Approved by the Royal Society?', *Notes and Records of the Royal Society of London*, 47 (1993), 17-31.

CHALDECOTT, J.A., 'Platinum and Palladium in Astronomy and Navigation: The Pioneer Work of Edward Troughton and William Hyde Wollaston', *Platinum Metals Review*, 31 (1987), 91-100.

*A la Conquete des Mers: Marins et Marchands de Bas-Pays* (Lille: 11<sup>e</sup> Festival de Lille: Musée de l'Hospice Comtesse, 1982). 250pp.

COTTER, C. H., *A History of the Navigator's Sextant* (Glasgow: Brown, Son & Ferguson,, 1983), 226pp, illus.

DAVIDS, C.A., *Zeewezen en wetenschap: De wetenschap en de ontwikkeling van de navigatietechniek in Nederland tussen 1585 en 1815* (Amsterdam: De Bataafsche Leeuw, 1986), 519pp.

DAVIDS, C.A., 'The use of globes on ships of the Dutch East-India Company', *Der Globusfreund* 35-37 (1987), 69-78.

DAVIES, A.C., 'Horology and Navigation: the chronometers on Vancouver's Expedition 1791-95', *Antiquarian Horology* 21 (1993-94), 244-255.

DEKKER, E., 'Frederik Kaiser and his "Steady boat compass with nightly illumination" ', in : ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 268-277.

DICK, S.J., 'Centralizing navigational technology in America; the U.S. Navy's Depot of Charts and Instruments', *Technology and Culture* 33 (1992), 467-509.

FANNING, A.E., *Steady as She Goes: A History of the Compass Department of the Admiralty* (London: HMSO, 1986). 384pp.

- FAUQUE, D., 'Un élégant solution au problème des longitudes: Les horloges marines de Ferdinand Berthoud', *Revue d'histoire de Science et de leurs Applications*, 39 (1986), 345-350.
- FLANAGAN, Laurence and STENUIT, ROBERT, (eds), *Trésors de l'Armada*, (Brussels: Crédit Communal 1985). 208pp.
- FLEURY P., 'Les Roses des vents latines', *Euphrosyne*, n.s. 19 (1991), 61-88.
- GRANZOW, U. *Quadrant, Kompass und Chronometer: Technische Implikationen des euro-asiatischen Seehandels von 1500 bis 1800* (Stuttgart: Steiner, 1986). 381pp.
- GUEDES, M.J. (ed.), ['Proceedings of the V International Conference on the History of Nautics and Hydrography'] [translated title], *Anais Hidrograficos Tomo XLI (Suplemento)* (Rio de Janeiro, Brazil, 1984) [published 1987]. 697pp.
- GUEDES, M.J. and LOMBARDI, G. (eds), *Portugal-Brazil: The Age of Atlantic Discoveries*, (Lisbon, Milan & New York, 1990). 270pp.
- HACKMANN, W.D., 'Jan van der Straet (Stradanus) and the origins of the Mariner's Compass', in HACKMANN, W.D. and TURNER, A.J. (eds), *Learning, Language and Invention: Essays presented to Francis Maddison* (Aldershot and Paris: Variorum and Société de l'Astrolabe, 1994), 148-179.
- HOWSE, H. D., 'Some Early Tidal Diagrams', *Revista da Universidade de Coimbra*, 33 (1985), 365-85.
- HOWSE, H.D., 'Some Early Tidal Diagrams', *The Mariner's Mirror*, 79 (1993), 27-43.
- HOWSE, D., 'The Astronomers Royal and the Problem of Longitude', *Antiquarian Horology* 21(1993-4), 43-51.
- KOEMAN, C., 'Flemish and Dutch contributions to the Art of Navigations in the XVth Century', *Revista da Universidade de Coimbra*, 34 (1988), 493-504.
- van der KROGT, P., 'Seventeenth century Dutch globes: Navigational instruments?', *Der Globusfreund* 38-39 (1990), 67-76.
- MADDISON, F.R., 'Tradition and innovation: Columbus' first voyage and Portuguese navigation in the fifteenth century', in LEVENSON, J.A. (ed), *Circa 1492. Art in the Age of Exploration*, (New Haven and London, 1992), 89-94. [Exhibition at the National Gallery of Art, Washington, 1992-93].
- MADDISON, F.R., 'A consequence of discovery: astronomical navigation in 15th century Portugal', in EARLE, T.F. and PARKINSON, S. (eds), *Studies in the Portuguese Discoveries:*



*Proceedings of first Colloquium of the Centre for the Study of Portuguese Discoveries* (Warminster, 1992), 71-110.

McCONNELL, A., 'A matter of degree' [re Becher's sextant artificial horizon, 1834], *Bulletin of the Scientific Instrument Society* 37 (1993), 14-15.

McKEE, Alexander, *How we Found The Mary Rose* (London: Souvenir Press, 1982). 144pp.

MESKENS, A., 'Michael Coignet's Nautical Instructions', *Mariners Mirror*, 78 (1992), 257-276.

MORANDO, B., 'Une Création de la Convention: Le Bureau des Longitudes', *Astronomie: Bulletin de la Societe astronomique de France et revue mensuelle d'astronomie*, 103 (1989), 299-306.

MORRISON-LOW, A.D., 'Early navigational instruments in Scotland: Icons and survivals', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 218-231.

MÖRZER BRUYNS, W.F.J., 'Navigational Instruments in the Netherlands during the 19th Century: Production, Distribution and Use', *Bulletin of the Scientific Instrument Society*, no. 6 (Spring 1985), 11-17.

MÖRZER-BRUYNS, W.J.F., 'Navigational instruments from the bottom of the sea', *Tijdschrift vor de Geschiedendis der Geneeskunde, Natuurwetenschappen, Wiskunde en Technick* 10 (1987), 263-282.

MÖRZER BRUYNS, W.F.J., 'Een Portugees Zee-Astrolabium uit 1602' *Jaarverslag 1986: Vereening Nederlandsch Historisch Scheepvaart Museum* (Amsterdam, 1987), 31-3.

MÖRZER BRUYNS, W.F.J., 'Navigation on Dutch East India Company Ships around the 1740s', *The Mariner's Mirror*, 78 (1992), 143-154.

MÖRZER BRUYNS, W.F.J., *The Cross-Staff: History and Development of a Navigational Instrument* (Zutphen, Walburg Pers, 1994). 128pp.

MÖRZER BRUYNS, W.F.J., 'The Mariners' Museum Collection of Navigating Instruments: Needs and Opportunities', *Rittenhouse: Journal of the American Scientific Instrument Enterprise*, 9, pt 4 (1995), 97-119.

PIÑERO, J.M.L., *El arte de navegar eb la España del Renacimiento*, 2nd edn (Barcelona: Editorial Labor, 1986). 285pp.

dos REIS, A.E., 'O Quadrante nautico', *Revista da Universidade de Coimbra*, 34 (1988), 243-73.

RULE, Margaret, *The Mary Rose* (Portsmouth, 1982). 16pp.

RYAN, W.F., 'Navigation and the Modernisation of Petrine Russia: Teachers, Textbooks, Terminology', *Russia in the Age of the Enlightenment*, ed BARTLETT, R. and HARTLEY, J.M., (London, Macmillan, 1990), pp.75-105.

STANBURY, M., 'Scientific Instruments from the Wreck of HMS *Sirius* (1790)', *International Journal of Nautical Archaeology*, 20 (1991), 195-221.

STIMSON, A.N., 'Some Board of Longitude instruments in the nineteenth century', in : de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 93-116.

STIMSON, A., *The Mariner's Astrolabe: A Survey of Known, Surviving Sea Astrolabes* (Utrecht: HES Publishers, 1988). 190pp.

TURNER, A.J. 'L'Angleterre, la France et la navigation: le context historique de l'ouvre chronométrique de Ferdinand Berthoud' in: CARDINAL, C. (ed), *Ferdinand Berthoud 1727-1807: Horologer Mécanicien du Roi et de la Marine* (La Chaux Fonds: Musée International d'Horlogerie, [1984]), 142-163.

VEBÆK, C.L. and THIRSLUND, S., *The Viking Compass Guided Norsemen first to America* (Skjern, Denmark: Gullanders Bogtrykkeri, 1992). 59pp.

WARNER, D.J., 'At the Sign of the Quadrant - The Navigational Instrument Business in America to the Civil War', *The American Neptune*, 46, no. 4 (1986), 258-64.

WATERS, David W., 'English Navigational Books, Charts and Globes Printed Down to 1600'. *Revista da Universidade de Coimbra*, 33 (1985), 239-57.

WATERS, D.W., 'Reflections upon some Navigational and Hydrographic Problems of the XVth Century related to the Voyage of Bartolomeu Dias, 1487-88', *Revista da Universidade de Coimbra*, 34 (1988), 275-347.

WERSIG, P.S. and WERSIG, G., *Die Lust am Schauen oder Müssen Museen langweilig sein? Plädoyer für eine neue Sehkultur* (Berlin: Gebr. Mann Verlag, 1986). 200pp.

WRIGHT, M., 'Robert Hooke's Longitude Timekeeper', in HUNTER, M. and SCHAFFER, S., *Robert Hooke: New Studies* (Woodbridge, Boydell Press 1989), 253-85.

## **OCEANOGRAPHIC INSTRUMENTS**

CARPINE, C., *Catalogue des appareils d'océanographie en collection au Musée océanographique de Moanco: 1. Photomètres: 2. Mesureurs de courant* (Bulletin de l'Institut océanographique, 73, no. 1437 (1987)). 144pp.

McCONNELL, A., *Historical Instruments in Oceanography* (London: HMSO for the Science Museum, 1981). 52pp.

McCONNELL, A., *No Sea too Deep: the history of oceanographic instruments* (Bristol: Adam Hilger, 1982). 162pp.

McCONNELL, A., 'The scientific life of William Scoresby Jnr, with a catalogue of his instruments and apparatus in the Whitby Museum', *Annals of Science* 43 (1986), 257-267.

## **OPTICS & OPTICAL INSTRUMENTS**

### OPTICS AND OPTICAL INSTRUMENTS - GENERAL

See also: BINOCULARS: CINEMATOGRAPHY: MICROSCOPES & MICROSCOPY

PHOTOGRAPHIC APPARATUS & EQUIPMENT: SPECTROSCOPES &c:

### TELESCOPES

BARTHOLIN, E., *Experiments on Birefringent Icelandic Crystals*, trans ARCHIBALD, T., with intro by BUCHWALD J.Z. and PEDERSEN, K.M., with a facsimile of the original publication 1669 (*Acta historica scientiarum naturalium et medicinalium* Vol. 40) (Copenhagen: The Danish Library of Science and Medicine, 1991). 63pp., plus facsimile 60pp.

BEDINI, S.A. and BENNETT, A.G., ' "A Treatise on Optics" by Giovanni Cristoforo Bolantio', *Annals of Science*, 52 (1995), 103-126.

BENNETT, J.A., 'A Viol of Water or a Wedge of Glass', in: GOODING, D., PINCH, T. and SCHAFFER, S. (eds), *The Uses of Experiment* (Cambridge: CUP, 1989), 105-14.

BRACHNER, A., *Mit den Wellen des Lichts: Ursprünge und Entwicklung der Optik in süddeutschen Raum* (Munich: Olzog Verlag, 1987). 188pp.

BRYDEN, D.J., and SIMMS, D.L., 'Spectacles Improved to Perfection and Approved of by the Royal Society', *Annals of Science*, 50 (1993), 1-32.

COSTABEL, P., 'La double tube d' Arago', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 129-134.

DAVIS, A.B., and DREYFUS, M.S., *The Finest Instruments ever Made: A Bibliography of Medical, Dental, Optical, and Pharmaceutical Company Trade Literature; 1700-1939* (Arlington Massachusetts: Medical History Publishing Associates I, 1986). 446pp.

ERNST, G., 'Der Schiff asphärischer Linsen nach Angaben des Rheita', *Technikgeschichte* 58 (1991), 179-188.

GURIKOV, V.A., 'Optische Geräte und Instrumente Ernst Abbes in der Sammlung des Polytechnischen Museums Moskau', *Neue Museums Kunde*, 27, no. 4 (1984), 230-36.

HALL, A.R., 'The Contributions of Science & Technology to the Design of Early Optical Elements', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 19-25.

HAMMOND, J.H., *The camera obscura: a chronicle* (Bristol: Adam Hilger, 1981). 182pp.

HAMMOND, J.H. and AUSTIN, J., *The Camera Lucida in art and science* (Bristol: Adam Hilger, 1987). 202pp.

JACKSON, M.W., 'Die britische Antwort auf Fraunhofer und die deutsche Hegemonie in der Optik', *Deutsches Museum, Wissenschaftliches Jahrbuch* (1992-93), 117-138.

KIRMEIER, J. and BROCKHOFF, E., *The Historic Fraunhofer Glass-works in Benediktbeuern* (Munich: Haus der Bayerischen Geschichte, 1990). 32pp.

MILLS, A.A., and JONES, M.L., 'Three Lenses by Constantine Huygens in the Possession of the Royal Society of London', *Annals of Science*, 46 (1989). 173-82.

MILLS, A.A., and CLIFT, R., 'Reflections on the "Burning Mirrors of Archimedes", with a consideration of the geometry and intensity of sunlight reflected from plane mirrors', *European Journal of Physics*, 13 (1992), 268-279.

MINIATE, Mara, & WINKLER, Wolf, *Occhiali da vedere: Arte, Scienza e Costume attraverso gli occhiali* (Florence: Istituto e Museo di Storia della Scienza di Firenze, 1985), 176pp. Exhibits from the Carl-Zeis Museum, Jena, Germany.

MORRISON-LOW, A.D., and CHRISTIE, J.R.R., '*Martyr of Science*': *Sir David Brewster 1781-1868*, (Edinburgh: Royal Scottish Museum, 1984), 138pp.

NUTTALL, R.H., 'That curious curiosity: the Scotoscope', *Notes and Records of the Royal Society of London*, 42 (1988), 133-138.

RAGOZZINO, Ezio, & SCHETTINO, Edvige, *La Collezione degli antichi apparecchi dell'Istituto di Fixica: Gli Strumenti Ottici (1840-1890)* (Naples, 1984), 86pp.

ROSMORDUC, J., 'l'Evolution des montages polarimétriques de Léon Laurant', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission,

Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 119-128.

RUDD, M.E., *Light and Color: An Exhibition of Notable Books from the History of Optics* (March 30-April 24, 1987) (Lincoln, Nebraska: Department of Physics & Astronomy, University of Nebraska-Lincoln, 1987), 18pp.

RUSSELL, I., 'Purely by coincidence: the rangefinders of Barr and Stroud at the Battle of Jutland', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 283-290.

SCHAFFER, S., 'Glass Works: Newton's Prisms and the Uses of Experiment', in: GOODING, D., PINCH, T. and SCHAFFER, S.(eds), *The Uses of Experiment* (Cambridge: CUP, 1989), 67-104.

SCHETT, A., *Vom Helmholtz-Augenspiegel zur Funduskamera: Ophthalmoskope und verwandte Instrumente des Medizinhistorischen Museums der Universität Zürich* IGesnerus Supplement 41) (Aarau: Verlag Sauerländer, 1990). 84pp.

SIMMS, D.L., and HINKLEY, P.L. 'Brighter than how many suns? Sir Isaac Newton's Burning Mirror', *Notes and Records of the Royal Society of London*, 43 (1989), 31-51.

SIMPSON, A.D.C., 'Robert Hooke and Practical Optics: Technical Support as a Scientific Frontier', in HUNTER, M. and SCHAFFER, S., *Robert Hooke: New Studies* (Woodbridge, Boydell Press 1989), 33-62.

SIMPSON, A.D.C., 'François Soleil, Andrew Ross and William Cookson: The Fresnel Lens Applied', *Bulletin of the Scientific Instrument Society*, No. 41 (1994), 16-19.

SMEATON, W.A., 'Some large burning lenses and their uses by 18th century French and British chemists', *Annals of Science* 44 (1987), 265- 273.

THEWES, A., 'Beziehungen Südtirols zur Entdeckungsgeschichte des Fernrohrs', *Der Schlern*, 65 (1991), 284-295. Optical work of Anton Maria Schyrleus de Rheita and family.

TURNER, G.L'E., 'Spectacles over seven hundred years', in: WINKLER, W. (ed), *A Spectacle of Spectacles* (Leipzig: Edition Leipzig for Carl-Zeiss-Stiftung Jena, 1988), 9-16.

WARNER, D.J., 'Optics in Philadelphia during the 19th century' *Proceedings of the Americal Philosophical Society* 129 (1985), 291-299.

WINKLER, W. (ed), *A Spectacle of Spectacles* (Leipzig: Edition Leipzig for Carl-Zeiss-Stiftung Jena, 1988). 178pp.

## PHARMACY & PHARMACEUTICAL EQUIPMENT & APPARATUS

DAVIS, A.B., and DREYFUS, M.S., *The Finest Instruments ever Made: A Bibliography of Medical, Dental, Optical, and Pharmaceutical Company Trade Literature; 1700-1939* (Arlington Massachusetts: Medical History Publishing Associates I, 1986), 446pp.

LAUNERT, E., *Der Mörser: Geschichte und Erscheinungsbild eines Apothekengerätes* (Munich: Calweg 1990). 219pp.

## PHOTOGRAPHY & PHOTOGRAPHIC APPARATUS & EQUIPMENT

BRACEGIRDLE, B., and McCORMICK, J.B., *The Microscopic Photographs of J.B. Dancer* (Chicago: Science Heritage Ltd, 1993). 288pp.

BUERGER, J.E., *French Daguerreotypes* (Chicago & London: U. Chicago Press, 1989). xxii + 256pp. Based on collection at International Museum of Photography at George Eastman House, Rochester, NY, U.S.A.

DAGUERRE, L., *Historique et Description des procédés du Daguerréotype et du Diorama*, nouvelle édition, corrigée, et augmentée du portrait de l'auteur (Paris, 1839; facsimile reprint 1982 by Rumeur des Ages, La Rochelle). 76pp.

DARIUS, Jon, *Beyond Vision: One hundred historic scientific photographs* (Oxford & New York: OUP, 1984). 224pp.

HALLETT, M., 'John Benjamin Dancer 1812-1887: A Perspective', *History of Photography*, 10 (1986). 237-55.

HALLETT, M. and JAMES, P., *Contribution to the Bibliography and the Literature of Photography as prepared by W Jerome Harrison* (Occasional Papers [1]: History of Photography) (Birmingham: School of History of Art & Complementary Studies, City of Birmingham Polytechnic, 1987).

ISLER-DE JONGH, A., 'The Origins of Colour Photography, Scientific, Technical and Artistic Interactions', *History of Photography*, 18 (1994), 111-119.

KINGSLAKE, R., *A History of the Photographic Lens* (Boston & London: Academic Press, 1989). xi+334pp.

KÖHLER, A., 'A new system of illumination for photomicrographic purposes', *Proceedings of the Royal Microscopical Society* 28 (1993), 181-185.

MORRISON-LOW, A.D. and SIMPSON, A.D.C., 'A New Dimension: A context for Photography before 1860', in: STEVENSON, S. (ed), *Light from the Dark Room: A Celebration of Scottish Photography* (Edinburgh: National Galleries of Scotland, 1995), 15-28.

MORTON, V., *Oxford Rebels: the life and friends of Nevil Story Maskelyne 1823-1911 pioneer Oxford scientist, photographer and politician* (Gloucester: Alan Sutton, 1987).

*La Mesure du Ciel de la Plaque photographique aux Techniques spatiales*, (Paris, Observatoire de Paris, 1987), 68pp.

OTTO, L. and MARTIN, H., *150 Jahre Mikrophotographie* (Wien: Schulbetrieb der Höheren Graphischen Bundes-Lehr-und Versuchsanalt: 1989; 1992). 69pp.+ 60 plates.

PRITCHARD, M., *A Directory of London Photographers 1841-1908* (Bushley, Watford: ALLM Books, 1986). 106pp.

SCHAAF, L.J., 'The First Photograph James Nasmyth ever saw', *Scottish Photography Bulletin*, 2 (1990[=1991]),15-22 .

SCHMIDT, I. (ed), *Hermann Krone: Photographische Urmethoden* (Leipzig: VEB Fotokinoverlag, 1985). 135pp.

SILVERMAN, R.J., 'The stereoscope and photographic depiction in the 19th century', *Technology and Culture* 34 (1993), 729-756.

SIMCOCK, A.V., 'Essay Review: 195 Years of Photochemical Imaging 1794-1989', *Annals of Science*, 48 (1991), 69-86.

STERLING,T.C., ' Physics meets photography: the diffraction chromoscope and the diffraction method of color photography', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 8 (1994), 65-72.

THOMAS, G., 'Maharaja Sawai Ram Singh II of Jaipur, Photographer-Prince', *History of Photography*, 10 (1986), 181-91.

WOOD, R. D., *Two Voyages of the Daguerreotype from France* (Bromley, 1993). 12pp.

WOOD, R. D., (comp & ed), *Photohistorica: Literature Index of the European Society for the History of Photography*, 54/55, [listing for 1993 (published 1995)].

WOOD, R.D., *The Arrival of the Daguerreotype in New York* (New York: American Photographic Historical Society, 1994). 20 pp.

## **PHYSICS - INSTRUMENTS AND INSTRUMENTATION**

See also: ELECTRICAL INSTRUMENTS: ELECTRICITY & MAGNETISM:

NATURAL PHILOSOPHY APPARATUS: OPTICS & OPTICAL INSTRUMENTS:

TEACHING APPARATUS: THERMOMETRY: X-RAYS & RADIOLOGY

BOATO, G., BRUZZANITI, G. and ROBOTTI, N., 'Experimental Physics in Genoa during the 19th century', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 227-230.

BRENNI, P., 'Einstein's "Maschinchen" for the Measurement of small quantities of Electricity', in: KLEIN, M.J., KOX, A.J. and SCHULMAN, R. (eds), *The Collected Papers of Albert Einstein*, (Princeton: Princeton University Press, 1993), vol 5, 51-55.

BRENNI, P. and GIATTI, A., *Inventario degli Strumenti del Gabinetto di Fisica dell'Istituto Tecnico Toscano* (Florence, 1989) (Associazione Interaccademica Fondazione Scienza e Tecnica). 250pp.

van CAMP, K.J., *19de-Eeuwse Wetenschappelijke en Didactische Instrumenten in bezit van de Stad Antwerpen: Elektriciteits-leer en Röntgenologie* (Antwerp: EBES, 1988). 152pp.

de CLERCQ, P. 'Instrumenten en universitaire laboratoria, ca. 1860-1940', in: VISSER, R.P.W. and HAKFOORT, C. (eds), *Werkplaatsen van Wetenschap en Techniek: Industriële en academische Laboratoria in Nederland 1860-1940* (Thematic number of *Tijdschrift voor de Geschiedenis der Geneeskunde, Natuurwetenschappen, Wiskunde en Techniek*, 9, no. 4 (1986), published 1987, 184pp, paginated separately and as part of the volume.)

de CLERCQ, P., 'Brittle glass: a fragile chapter in the history of experimental physics', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 255-267.

FOURNIER, M. and THEUNISSEN, B. (eds), *Het Instrument in de Wetenschap: Bijdragen tot de instrumentgerichte wetenschapsgeschiedenis* (special issue of *Tijdschrift voor de Geschiedenis der Geneeskunde, Natuurwet., Wiskunde en Techniek* vol. 10, no. 4, 1987) (Amsterdam: Rodopi, 1988). 163pp.

HACKMANN, W.D., 'The induction-coil in medicine and physics, 1835-1865', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 235-250.

HACKMANN, W.D., 'Electricity from steam: Armstrong's hydroelectric machine in the 1840's', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 146-173.

HACKMANN, W.D. and MADDISON, F.R., 'L'Appareil de Foucault pour la détermination de la vitesse de la lumière. Note sur l'exemplaire de 1855 conservé à Oxford', *Bulletin de l'Académie du Second Empire*, 9 (1993), 9-11.



HEILBRON, J.L., *Weighing Imponderables and other Quantitative Science around 1800*, Supplement to Historical Studies in the Physical and Biological Sciences, 24 pt 1 (1993), (University of California Press). 337pp.

HODSON, J., 'The Oersted apparatus at the Smithsonian: Perkins, Oersted and the Piezometer as an example of transatlantic exchange', *Rittenhouse; Journal of the American Scientific Enterprise* 6 (1992), 39-47.

HOFMANN, J.R., 'Ampère's Invention of Equilibrium Apparatus: A Response to Experimental Anomaly', *British Journal for the History of Science*, 20 (1987), 319-41.

INSLEY, J., 'Jean-Daniel Colladon and his audiophones', *Bulletin of the Scientific Instrument Society* 47 (1995), 23-24.

LAGEMANN, Robert T., *The Garland Collection of Classical Physics Apparatus at Vanderbilt University* (Nashville, Tenn., 1984), 330pp.

MILLER, David Philip, 'The Revival of the Physical Sciences in Britain, 1815-1840', *Osiris*, second series, 2 (1986), 107-134.

PHILLIPS, V.J., *Waveforms: A History of Early Oscillography* (Bristol: Adam Hilger, 1987). 259pp.

RAGOZZINO, E. and SCHETTINO, E., *La Collezione degli antichi apparecchi dell'Istituto di Fisica: Meccanica dei Fluidi e Termologia (1840-1900)* (Naples, 1985). 80pp.

RAGOZZINO, E. and SCHETTINO, E., *Early Instruments of the Institute of Physics* (Naples: University of Naples, CUEN, 1988). 94pp.

RAGOZZINO, E., RINZIVILLI, R. and SCHETTINO, E., *La Rivelazione della Radiazione Termica nella Strumentazione di Macedonio Melloni* (Naples, Museo del Dipartimento di Scienze Fisiche Università di Napoli, CUEN 1989). 43pp.

RAGOZZINO, E., RINZIVILLI, R. and SCHETTINO, E., *Museo del Dipartimento di Scienze Fisiche Università di Napoli: La Collezione degli Strumenti di Fisica: Rapporto di attività* (Naples: Dipartimento di Scienze Fisiche, October, 1990). 21pp.

SCHETTINO, E., 'A new instruments for infrared radiation measurements; the thermopile of Mecedino Melloni', *Annals of Science* 46 (1989), 511-520.

STERLING, T.C., 'Physics meets photography: the diffraction chromoscope and the diffraction method of color photography', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 8 (1994), 65-72.

STERLING, T.C., 'Marcet's Apparatus', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 8 (1994), 110-113.

STOCK, J. T., 'Sir Charles Vernon Boys, Guardian of the Flame', *Bulletin of the Scientific Instrument Society*, No. 23 (1989), 2-6.

TURNER, G.L'E., 'Experimental Science in Early Nineteenth-Century Oxford', *History of Universities*, viii (1989), 117-135.

TURNER, S., 'The reflecting goniometer', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 7 (1993), 84-90.

VISSER, R.P.W. and HAKFOORT, C. (eds), *Werkplaatsen van Wetenschap en Techniek: Industriële en academische Laboratoria in Nederland 1860-1940* (Thematic number of *Tijdschrift voor de Geschiedenis der Geneeskunde, Natuurwetenschappen, Wiskunde en Techniek*, 9, no. 4 (1986), published 1987, 184pp, paginated separately and as part of the volume.)

### **PHYSIOLOGICAL, ANTHROPOLOGICAL & PSYCHOLOGICAL INSTRUMENTS**

BARSANTI, Giulio *et al*, *Misura d'uomo: Strumenti, teorie e pratiche dell'antropometria e della psicologia sperimentale tra '800 e '900*, (Florence: Istituto e Museo di Storia della Scienza, 1986). 174pp.

BERTINI, S., 'Les instruments du Laboratoire de Psychologie expérimentale du Florence entre 1800 et 1900', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 265-270.

BLONDEL, C., 'Entre l'électrophysiologie et l'électricité industrielle: le galvanomètre à cadre mobile', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 179-192.

BONNET, P., COCHART, D. and HAROCHE, C., 'De l'anthropologie à l'anthropométrie: de l'identité à l'identification', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 251-258.

BORELL, M., 'Extending the Senses: The Graphic Method', *Medical Heritage*, March/April, 1986, 114-121.

CALANCHI, E., *La Collezione degli strumenti del Museo di antropologia* (Bologna: Università di Bologna, clueb, 1991). 127pp.

de CHADAREVIAN, S., 'Graphical Method and Discipline: Self-Recording Instruments in Nineteenth-century Physiology', *Studies in the History and Philosophy of Science*, 24 (1993), 267-291.

DELMAS, L., 'Paul Broca et l'Instrumentation anthropologique', *Cahiers d'Anthropologie* (Paris), no1-2 (1980), 95-243.

DRAAISMA, D.(ed), *Een laboratorium voor de ziel Gerard Heyman en het begin van de experimentele psychologie* (Groningen: Historische Uitgeverij, Universiteitsmuseum, 1992). 151pp.

EVANS, H., 'Losing Touch: the controversy over the introduction of blood pressure instruments into medicine', *Technology and Culture* 34 (1993), 784-807.

EVANS, R.B., 'The Just Noticeable Difference: Psychophysical Instrumentation & Determination of Sensory Thresholds', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 137-141.

KUHFELD, A.W., 'The Graphic Method', *Rittenhouse: Journal of the American Scientific Instrument Enterprise* 9 (1994-5), 89-96.

LENOIR, T., 'Models and instruments in the development of electro-physiology 1845-1912', *Historical Studies in the Physical and Biological Sciences* 17 (1986), 1-54.

PAROT, F., 'La psychologie Française et ses instruments au début du Xx<sup>e</sup> siècle', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 259-264.

PRIMI, C., 'The double Tachystoscope', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 271-272.

SOMMER, Robert, *Experimental-psychologische Apparate and Methoden, Die Ausstellung bei dem 1. Kongress für experimentelle Psychologie 1904*, re-printed, with an introduction by H.Gundlach (Passauer Schriften \ur Psychologiegeschichte Nr. 2); Passau, 1984, 96pp.

ZELBSTEIN, U., 'Brève réflexion sur l'évolution des techniques 'enregistrement vue à travers trois exemples de réalisation du XVIII<sup>e</sup> et du XIX<sup>e</sup> siècle', in: BLONDEL, C., PAROT, F.,

TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 111-118.

*E. Zimmerman, Leipzig, XVIII, Preis-Liste unter psychologische und physiologische Apparate* (1903). 135pp - reprint: Institut für Geschichte der Neuern Psychologie, Universität Passau.

## **PNEUMATICS**

van HELDEN, A. C., 'The Age of the Air-Pump', *Tractrix*, 3 (1991), 149-172.

van HELDEN, A.C., *Horror Vacui: De eeuw van de luchtpomp 1650-1750* (Communication 249). (Leiden: Museum Boerhaave, 1991). 40pp.

van HELDEN, A.C., 'Theory and Practice in Air-Pump Construction: The Cooperation between Willem J.'s Gravesande and Jan van Musschenbroek', *Annals of Science*, 51 (1994), 477-95.

SHAPIN, S. and SCHAFFER, S., *Leviathan and the Air-Pump: Hobbes, Boyle and the Experiment of Life* (Princeton 1985).

STROUP, A., 'Christiaan Huygens and the development of the Air Pump', *Janus*, 68 (1981), 129-158.

WARNER, D. J., 'Air Pumps in American Education', *The Physics Teacher* (Feb 1987), 82-85.

## **PRECISION MECHANICS**

See also: SCIENTIFIC INSTRUMENT MAKING - TECHNIQUES OF MANUFACTURE

BROOKS, J., 'The Circle Dividing Engine: Development in England 1739-1843', *Annals of Science*, 49 (1992), 101-135.

BROOKS, R.C., 'Towards the perfect screw thread', *Transactions of the Newcomen Society* 64 (1992-3), 101-118.

BROOKS, R.C., 'Origins, usage and production of screws: an historical perspective', *History and Technology* 8 (1991), 51-76.

CHAPMAN, A., 'George Graham and the Concept of Standard Accuracies in Instrumentation', *Bulletin of the Scientific Instrument Society*, No.27 (1990), 3-8.

CHAPMAN, A., 'Scientific instruments and industrial innovation: the achievement of Jesse Ramsden', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 418-430.

CROM, T.R., 'Evolution of horological hand tools into mass production machinery', *NAWCC Bulletin* (April 1993), 131-145.

DÓKA, K., 'On the history of precision industry: toolsmiths of Pest', *Technikatörténeti Szemle* [Budapest], 14 (1983-84), 95-110 (English summary).

JENEMANN, H.R., 'Die Göttinger Präzisionsmechanik und die Fertigung feiner Waagen', *Göttinger Jahrbuch*, 36 (1988), 181-230.

JENEMANN, H.R., 'Teilmetrische Mass- und Gewichtseinheiten in den deutschen Ländern in der Zeit vor 1872', *Le Système Métrique: Bulletin de la Société métrique de France* (1989), 431-38.

JENEMANN, H.R., 'Der Mechaniker-Pfarrer Philipp Matthäus Hahn und die Ausbreitung der Feinmechanik in Südwestdeutschland', *Zeitschrift für Württembergische Landesgeschichte*, 46 (1987), 117-61.

KNUTSON, J., 'A Seventeenth Century Collection of Rose Engines and Tools: Notes on the turning room at Skokloster, Sweden', *Journal of the Tool and Trades History Society*, 6 (1990), 10-22.

MAURICE, Klaus, *Der drehelnde Souverän / Sovereigns as Turners: Materials on a Machine Art by Princes* (Zürich: Verlag Ineichen, 1985). 157pp.

MILLS, A.A., 'The Manufacture of Precision Brass Tubing', *Bulletin of the Scientific Instrument Society*, No.27 (1990), 10-15.

MUNZ, A., *Philipp Matthäus Hahn, Pfarrer und Mechanikus* (Sigmaringen: Jan Thorbecke Verlag, 1990). 175pp.

TURNER, A.J., *From Pleasure and Profit to Science and Security: Etienne Lenoir and the transformation of precision instrument-making in France 1760-1830* (Cambridge: Whipple Museum of the History of Science, 1989). 107pp.

TURNER, A.J., 'Berthoud in England, Harrison in France: the transmission of horological knowledge in 18th century Europe', *Antiquarian Horology* 20 (1992), 219-239.

WILLIAMS, M., 'Crisis or Complacency? The precision instrument industry in Britain and France, 1900 to 1920', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 273-282.

## **SCIENCE AND TECHNOLOGY - GENERAL HISTORICAL STUDIES**

AMALDI, E., et al., *La Scienza in Italia negli ultimi Quarant'Anni* (Milan: Franco Angeli, 1992). 462pp.

ANDERSON, R.G.W. (compiler), *Science in India*, with introduction by MENON, M.G.K., (London, Science Museum: 1982). vi + 98pp.

ANDERSON, R.G.W., ' "What is Technology?": Education through Museums in the mid-nineteenth century', *British Journal for the History of Science*, 25 (1992), 169-184.

ANDERSON, R.G.W. and TURNER, G.L'E. (Eds), *An Apparatus of Instruments: The Role of the Scientific Instrument Commission* (London: SIC, 1993), 22pp.

BEDINI, S.A., 'Christina of Sweden and the sciences', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 118-126.

BENNETT, J.A., 'Science Museums and Science History', in: ANDERSON, R.G.W. and TURNER, G.L'E. (Eds), *An Apparatus of Instruments: The Role of the Scientific Instrument Commission* (London: SIC, 1993), 22pp.

BENNETT, J.A. 'Can Science Museums Take History Seriously?', *Science as Culture*, 5, no. 22 (1995), 124-37. Reproduced in *Actes de les III Trobades D'Història de la Ciència I de la Tècnica als Països Catalans* (Barcelona, Schct, 1995), 37-45.

BRIAN, R., *Going to the Fair: Readings in the Culture of Nineteenth-century Exhibitions* (Cambridge: Whipple Museum, 1993). 198pp.

BRONNER, M., *Science and Technology in 19th Century Germany* (London: Goethe-Institut, and Munich: Deutsches Museum, 1982). 72pp.

*China. 7000 Years of Discovery* (Toronto: Ontario Science Centre, 1982). 64pp.

CLAASSEN, R. and WISSE, P., *Tweehonderd jaar Diligentia 1793-1993: Jubileumuitgave ter gelegenheid van het tweehonderdjarig bestaan van de Koninklijke Maatschappij voor Natuurkunde onder de zinspreuk Diligentia* (The Hague: Diligentia, 1993). 104pp.

COSSONS, N.(ed), *Making of the Modern World: Milestones in Science and Technology* (London: John Murray & The Science Museum, 1992), 224pp.

FOX, R., 'Research and curatorship in the national science museums: a reflexion on threats and opportunities', *Impact of Science on Society*, no.159 (1991), 263-71.

FOX, R., 'Collections and Research in the History of Science', in: ANDERSON, R.G.W. and TURNER, G.L'E. (Eds), *An Apparatus of Instruments: The Role of the Scientific Instrument Commission* (London: SIC, 1993), 22pp.

GALLUZI, P., 'Portraits of Machines in Fifteenth-Century Siena', in: MAZZOLINI, R.G. (ed), *Non-Verbal Communication in Science prior to 1900* (Biblioteca di *Nuncius* studi e testi XI), (Florence: Leo S. Olschki, 1993), 53-90.

HEILBRON, J.L., *Weighing Imponderables and other Quantitative Science around 1800*, Supplement to Historical Studies in the Physical and Biological Sciences, 24 pt 1 (1993), (University of California Press). 337pp.

HERRIES DAVIES G.L., *The History of Irish Science: A Select Bibliography* (Dublin: Royal Irish Academy, 1983), 13pp.

LEUSCHNER, Fritz, *Treasures of Technology in Museums of the World* (Leipzig: Edition Leipzig, 1983), 220pp.

MAYR, O. et al, *The Deutsches Museum: German Museum of Masterworks of Science and Technology, Munich* (London: Scala Books, 1990).160pp.

MAZZOLINI, R.G. (ed), *Non-Verbal Communication in Science prior to 1900* (Biblioteca di *Nuncius* studi e testi XI), (Florence: Leo S. Olschki, 1993). xii + 622pp.

MICHAELIS, Anthony R., 'The Medal of Science: A Bridge between Two Cultures', *Interdisciplinary Science Reviews*, 10, no. 4 (December 1985), 297-314.

MILAN (Museoscienza):

*Rivista semestrale del Museo della Scienza e della Tecnica di Milano*, second series, no.1, October 1991.

NAI, Hsia, *Essays on Archaeology of Science and Technology in China* (Peking, Institute of Archaeology, Chinese Academy of Social Sciences: 1979). 150pp. Chinese, with English resúms.

PONI, C., 'The Craftsman and the Good Engineer: Technical Practice and Theoretical Mechanics in J.T. Desaguliers', *History and Technology*, 10 (1993), 215-232.

SALA CATALÁ, J. *Ciencia y Técnica en la Metropolización de América* (Madrid: Ediciones Doce Calles, 1994). 346pp.

SANGWAN, S., *Science, Technology and Colonisation: An Indian Experience 1757-1857* (Delhi: Anamika Prakashan, 1991). xviii + 196pp.

SAMSÓ, J., *La ciencias de los antiguos en al-Andalus* (Madrid: Mapfre, 1992).

VILCHIS, J. and ARIAS, V., *Vencia y Técnica entre Viejo y Nuevo Mundo siglos XV-XVIII* (Madrid: Lunwerg Editores, 1992). 291pp..

## SCIENTIFIC INSTRUMENTS: GENERAL STUDIES

See also:SCIENTIFIC INSTRUMENT-MAKING - GENERAL STUDIES

ANDERSON, R.G.W., 'Were scientific instruments in the nineteenth century different? Some initial considerations', in: de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 1-12.

ANDERSON, R.G.W., 'Connoisseurship, Pedagogy or Antiquarianism?', *Journal of the History of Collections*, 7 (1995), 211-225.

ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 512pp.

ANDERSON, R.G.W. and TURNER, G.L'E. (Eds), *An Apparatus of Instruments: The Role of the Scientific Instrument Commission* (London: SIC, 1993), 22pp.

BEDINI, Silvio A., *Science and Instruments in Seventeenth-Century Italy* (Collected Studies Series CS449) (Aldershot and Brookfield, Vermont: Variorum, 1994). 352 pp.

BENNETT, J.A., 'Science Museums and Science History', in: ANDERSON, R.G.W. and TURNER, G.L'E. (Eds), *An Apparatus of Instruments: The Role of the Scientific Instrument Commission* (London: SIC, 1993), 22pp.

BLONDEL, C. and DÖRRIES, M. (eds), *Restaging Coulomb: Usages, controverses et répliques autour de la balance de torsion* (Biblioteca di Nuncius studi e testi XV), (Florence, 1994). 167.

BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989). 290pp.

BRENNI, P., 'Art and Science; the design of scientific instruments', in SHEA, W.R. and SPADAFORA, A. (eds), *Creativity in the Arts and Sciences*, (Canton Mass.: Science History, 1990), 121-141.

BRYDEN, D.J., 'A 1701 dictionary of mathematical instruments', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 365-382.



BRYDEN, D.J. and SIMMS, D.L., 'Archimedes as an Advertising Symbol', *Technology & Culture*, 34 (1993), 387-391.

CARLE, P., 'L' Instruments scientifique: Témoin d'une histoire, d'une culture, d'une société', *Interface* [journal of the Association Canadienne Française pour l'Avancement des Sciences], March-April 1987, 12-17.

CHAPIRO, A., MESLIN-PERRIER, C. and TURNER, A.J., *Horologeri et instruments de précision du début du XVIe au milieu du XVIIe siècle* (Musée national de la Renaissance Château d'Ecouen) (Paris, 1989). 141pp.

DELEHAR, P., 'Illustrations of scientific instruments in the *Gentleman's Magazine*, 1746-1796', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 383-394.

DESTOMBES, M., *Selected contributions to the history of Cartography and Scientific Instruments*, ed, SCHILDER, G., van der KROGT, P. and de CLERCQ, P. (Utrecht: HES, 1987). 568pp.

DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994). 256pp.

FIELD, J.V., 'What is scientific about a scientific instrument', *Nuncius: Annali dell'Istituto e Museo di Storia della Scienza*, 3 (1988), 3-26.

FOX, R., 'Collections and Research in the History of Science', in: ANDERSON, R.G.W. and TURNER, G.L'E. (Eds), *An Apparatus of Instruments: The Role of the Scientific Instrument Commission* (London: SIC, 1993), 22pp.

GRAVINA, F. (ed), *Le Meraviglie dell'Ingegno: Strumenti scientific dai Medici ai Loeran* (Florence: Ponte alle Grazie, 1990). 157pp.

GREENAWAY, F., 'More than "a mere Gazing Place": the Special Loan Exhibition and the Science Conferences of 1876', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 139-145.

HACKMANN, W.D., 'Instrumentation in the theory and practice of science: scientific instruments as evidence and as an aid to discovery', *Nuncius: Annali dell'Istituto e Museo di Storia della Scienza*, 10 (1985), 87-115.

HACKMANN, W.D., 'Scientific Instruments: Models of Brass and Aids to Discovery', in: GOODING, D., PINCH, T. and SCHAFFER, S. (eds), *The Uses of Experiment* (Cambridge: CUP, 1989), 31-65.

van HELDEN, A., 'The birth of the modern scientific instrument', in: BURKE, J. (ed), *The uses of science in the Age of Newton* (Berkeley 1983), 49-84.

HILL, C.R., 'Scientific instruments: an iconographic note', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 88-98.

KEIL, I., 'Technology transfer and Scientific Specialization: Johann Wiesel, optician of Augsburg, and the Hartlib Circle', in: GREENGRASS, M.L. and RAYLOR, T. (eds), *Samuel Hartlib and Universal Reformation: Studies in Intellectual Communication* (Cambridge, 1994), 268-178.

MICHAELIS, A.R., 'The Numismatics of Scientific Instruments', *Bulletin of the Scientific Instrument Society*, No. 16 (1988), 9-14.

MURDOCH, Tessa, (compiler) *The Quiet Conquest: The Huguenots 1685-1985* (Exhibition at Museum of London, 15 May-31 October 1985) (London: Museum of London, 1985) 326pp.

PARISINI, A., 'Cataloguing and Historical Research: An Example of the Activity of the Museo Laboratorio Aldini Valeriani', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 207-212.

RUSSELL, G., 'The Wellcome Historical Medical Museum's Dispersal of Non-medical Material 1936-1983', *Museums Journal*, Supplement to vol 86 (1986), 36pp.

RYAN, W.F., 'Scientific Instruments in Russia from the Middle Ages to Peter the Great', *Annals of Science*, 48 (1991), 367-84.

*Les Savants et la Revolution: Die Wissenschaftler und die Revolution* (The Hague: Institut Française de la Haye, 1989).

SEPPER, D.L., 'Showing, Doing and the Ontology of Using Scientific Instruments', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 29-34.

SIMPSON, A.D.C. 'Objects as evidence: the role of museum collections', *Journal of Medical Engineering and Technology* 17 (1993), 172-5

TAROZZI, Gino, (ed), *Gli strumenti nella storia e nella filosofia della scienza*, (Bologna: [no.] 10\* Ricerche dell'istituto per i beni artistici, culturali, naturali della Regione Emilia-Romagna [1983]), 272pp. Summaries in English.

TURNER, A.J., *Early Scientific Instruments: Europe 1400-1800* (London: Sotheby Publications, 1987). 320pp.

TURNER, A.J., 'Les Instruments scientifiques', *Antiquités et Objets d'arts*, no 36 (1992), 72pp.

TURNER, A.J., 'Interpreting the history of scientific instruments', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 17-26.

TURNER, A.J., *Mathematical Instruments in Antiquity and the Middle Ages* (London: Vade-Mecum Press, 1994). 161pp.

TURNER, G.L'E., 'Originals and imitations: a study of scientific instruments', *Interdisciplinary Science Review* 8 (1983), 274-283.

TURNER, G. L'E., *Nineteenth-Century Scientific Instruments* (London: Sotheby Publications, and Berkeley: University of California Press, 1983). 320pp.

TURNER, G.L'E., 'Amorini scienziat', *KOS*, 1, no. 10 (December 1984), 47-66.

TURNER, G.L'E., 'Recent Advances in the History of Scientific Instruments', *Bulletin of the Scientific Instrument Society*, no. 19 (1988). 3-6.

TURNER, G.L'E., *Scientific Instruments and Experimental Philosophy 1550-1850* (Collected Studies Series CS 331) (Aldershot, Hampshire: Variorum, 1990). 342pp.

TURNER, G.L'E., *Gli Strumenti. Vol. 1: Storia delle Scienze* (General Editor P.GALLUZZI) (Turin: Giulio Einaudi editore, 1991). 590pp.

TURNER, G.L'E., 'A Decade in the Study of Scientific Instruments', in: ANDERSON, R.G.W. and TURNER, G.L'E. (Eds), *An Apparatus of Instruments: The Role of the Scientific Instrument Commission* (London: SIC, 1993), 5-14.

WARNER, D.J., 'What is a scientific instrument, when did it become one, and why?', *British Journal of the History of Science* 23 (1990), 83-93.

## **SCIENTIFIC INSTRUMENT MAKING**

### **I - TECHNIQUES OF MANUFACTURE**

See also: PRECISION MECHANICS

### **II - THE TRADE**

See also: BIOGRAPHICAL & INSTITUTIONAL STUDIES - INSTRUMENT-MAKING

## SCIENTIFIC INSTRUMENT MAKING

### I - TECHNIQUES OF MANUFACTURE

BARCLAY, R.L., 'The metals of the scientific instrument maker. Part 1: Brass', *Bulletin of the Scientific Instrument Society* 39 (1993), 32-36.

BARCLAY, R.L., 'The metals of the scientific instrument maker. Part II: Steel', *Bulletin of the Scientific Instrument Society* 40 (1993), 13-15.

BRYDEN, D.J., and SIMMS, D.L., 'Spectacles Improved to Perfection and Approved of by the Royal Society', *Annals of Science*, 50 (1993), 1-32.

BROOKS, J., 'The Circle Dividing Engine: Development in England 1739-1843', *Annals of Science*, 49 (1992), 101-135.

BROOKS, R.C., 'Standard Screw Threads for scientific instruments: Part 1: Production techniques and the Filière Suisse', *History and Technology* 5 (1988), 59-76.

BROOKS, R.C., 'Standard Screw Threads for scientific instruments; Part II: The British Association Screw Gauge', *History and Technology* 6 (1988) 45-62.

BROOKS, R.C., 'Methods of fabrication of fiducial lines for 17th -19th century micrometers', *Bulletin of the Scientific Instrument Society*, 23 (1989), 11-14.

BROOKS, R.C., 'Gleaning information from screw threads', *Bulletin of the Scientific Instrument Society* 22 (1989), 7-11

BROOKS, R.C., 'Origins, usage and production of screws: an historical perspective', *History and Technology* 8 (1991), 51-76.

BROOKS, R.C., 'Towards the perfect screw thread', *Transactions of the Newcomen Society* 64 (1992-3), 101-118.

BROOKS, R.C., 'Diamonds in Instrument Making', *Bulletin of the Scientific Instrument Society* 47 (1995), 17-22.

CROM, T.R., 'Evolution of horological hand tools into mass production machinery', *NAWCC Bulletin* (April 1993), 131-145.

ERNST, G., 'Der Schiff asphärischer Linsen nach Angaben des Rheita', *Technikgeschichte* 58 (1991), 179-188.

GORDON, Robert B., 'Sixteenth-Century Metalworking Technology used in the Manufacture of two German Astrolabes', *Annals of Science*, 44 (1987), 71-84.

GORDON, Robert B., 'Metallography of brass in a 16th century astrolabe', *Historical Metallurgy: The Journal of the Historical Metallurgy Society*, 20 (1986), 93-6.

GOUK, P.M., *The Ivory Sundials of Nuremberg 1500-1700* (Cambridge: Whipple Museum of the History of Science, 1988), 144pp.

McCONNELL, A., 'Aluminium and its alloys for scientific instruments, 1855-1900', *Annals of Science* 46 (1989), 611-620.

MILLS, A.A., 'The Manufacture of Precision Brass Tubing', *Bulletin of the Scientific Instrument Society*, No.27 (1990), 10-15.

MILLS, A.A., 'Canada Balsam', *Annals of Science* 48 (1991), 173-178.

OESTMANN, G., 'On the construction of globe gores and the preparation of spheres in the 16th century', *Der Globusfreund* 43-44 (1995), 121-131.

SCHILLINGER, K., 'The importance of geometrical instruments in the manufacture and use of globes', *Der Globusfreund* 38-39 (1990), 113-117.

TURNER, S., 'Spiders in the Crosshairs: Cobwebs and the search for the perfect line', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 6 (1992), 1-10.

## **SCIENTIFIC INSTRUMENT MAKING**

### **II - THE TRADE**

AUGARDE, J.-D., 'La Fabrication des instruments scientifiques au XVIII<sup>e</sup> siècle et la corporation des fondeurs', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 52-72.

BENNETT, J.A., 'Instrument makers and the 'Decline of Science in England': the effects of institutional change on the élite makers of the early nineteenth century', in: de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 13-28.

BENNETT, J.A., 'The Mechanics' Philosophy and the Mechanical Philosophy', *History of Science*, 24 (1986), 1-28.

BOLTON, H.C., HOLLAND, J. and WILLIAMS N.H., 'The Grimwade Milligram Chemical Balance: An Early Australian Attempt to Establish a Scientific Instrument Industry', *Historical Records of Australian Science*, 9, ii (December 1992), 107-117.

BRACHNER, A., *Mit den Wellen des Lichts: Ursprünge und Entwicklung der Optik in süddeutschen Raum* (Munich: Olzog Verlag, 1987), 188pp.

BRENNI, P., 'The illustrated catalogues of some scientific instrument-makers', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 169-178.

BRYDEN, D.J., 'Evidence from Advertising for Mathematical Instrument Making in London, 1556-1714', *Annals of Science*, 49 (1992), 301-336.

BRYDEN, D.J. and SIMMS, D.L., 'Archimedes and the Opticians of London', *Bulletin of the Scientific Instrument Society*, No.35 (1992), 11-14.

CHALDECOTT, J.A., 'Printed ephemera of some 19th century instrument-makers', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cite des Sciences et de l'Industrie Paris, 1989), 159-168.

CHAPMAN, Allan, 'Tycho Brahe in China: The Jesuit Mission to Peking and the Iconography of European Instrument-Making Processes', *Annals of Science*, 41 (1984), 417-443.

de CLERCQ, .P.R., (ed), *Nineteenth-Century Scientific Instruments and their Makers* (Papers presented at the Fourth Scientific Instrument Symposium, Amsterdam 23-26 October 1984) (Leiden: Museum Boerhaave, & Amsterdam: Rodopi, 1985), 281pp.

de CLERCQ, P.R., 'Exporting Scientific instruments around 1700: the Musschenbroek Documents in Marburg', *Tractrix* 3 (1991), 79-120.

CRAWFORTH, M.A., 'Evidence from Trade Cards for the Scientific Instrument Industry', *Annals of Science*, 42 (1985), 453-544.

CRAWFORTH, M. A., 'Makers and Dates', *Bulletin of the Scientific Instrument Society*, No. 13 (1987), 2-8.

CRAWFORTH, M.A., 'Instrument Making in the London Guilds', *Annals of Science*, 44 (1987), 319-377.

CLIFTON, G.C., 'The Spectaclemakers' Company and the origins of the optical instrument-making trade in London', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds),

*Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 341-364.

CLIFTON, G., 'The Growth of the British Scientific Instrument Trade, 1600-1850', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 61-70.

GEE, B., 'Joseph Henry's Trade with Instrument Makers in London and Paris', *Bulletin of the Scientific Instrument Society*, No. 25 (1990), 19-24.

HOWSE, H.D., 'Prices of Lalande's Instruments in 1791', *Bulletin of the Scientific Instrument Society*, 21 (1989), 9-10.

McCONNELL, A., 'From Craft Workshop to Big Business: The London Scientific Instrument Trade's Response to Increasing Demand 1750-1820', *London Journal*, 19, pt 1 (1994), 26-53.

McCONNELL, A., 'Instruments for South America', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 113-118.

MILLBURN, J.R., 'The Office of Ordnance and the Instrument-Making Trade in the Mid-Eighteenth Century', *Annals of Science*, 45 (1988), 221-93.

MILLBURN, J.R., 'Historical Patents and the Instrument Collector', *Bulletin of the Scientific Instrument Society*, no. 18 (1988), 3-7.

MILLBURN, J.R., 'Instrument Makers and the Royal Arms', *Bulletin of the Scientific Instrument Society*, No.28 (1991), 2-7.

MILLBURN, J.R., 'Gunnery Instruments and their Makers in the Eighteenth Century', *Journal of the Ordnance Society*, 7 (1995), 27-44.

MONOD-CASSIDY, H., (ed), *Jerome Lalande: Journal d'un Voyage en Angleterre 1763* (Studies on Voltaire and the Eighteenth Century, no. 184) (Oxford: The Voltaire Foundation, 1980), 116pp.

MORRISON-LOW, A.D., 'Women in the Nineteenth-Century Scientific Instrument Trade', in: *Science and Sensibility: Gender and Scientific Enquiry 1780-1945*, (ed) M.BENJAMIN (Oxford, 1991), pp.89-117.

MORRISON-LOW, A.D., 'Women in the Nineteenth-Century Scientific Instrument Trade in Britain', *Bulletin of the Scientific Instrument Society*, No.28 (1991), 7-11.

MORRISON-LOW, A.D., 'The Road to Ruin? Bankruptcy and Some Legal Consequences for the Instrument Maker in 19th -century Britain', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 53-59.

MORRISON-LOW, A.D., 'The role of the subcontractor in the manufacture of precision instruments in provincial England during the Industrial Revolution', in: Blanchard, I. (ed), *New Directions in Economic and Social History* (Papers presented at the 'New Researchers' Sessions, Economic History Society, Edinburgh 1995) (Avonbridge: Newlees Press, 1995), 13-19.

PAYEN, J., 'La construction des instruments scientifiques en France au XIX siècle', in:de CLERCQ, P.R. ed, *Nineteenth-Century Scientific Instruments and their makers* (papers presented at the 4th Scientific Instrument Symposium, Amsterdam 23-26 October 1984), Communication 221 of the National Museum for the History of Science and Medicine 'Museum Boerhaave' (Leiden 1985), 159-182.

PAYEN, Jacques, 'Les constructeurs d'instruments scientifiques en France au XIX<sup>e</sup> siècle', *Archives internationales d'Histoire des Sciences*, 36 (1986), 84-161.

SCHILLINGER, K., 'The Development of Saxon Scientific Instrument-Making Skills from the Sixteenth Century to the Thirty Years War', *Annals of Science*, 47 (1990), 277-89.

WARNER, D.J., 'Optics in Philadelphia during the 19th century' *Proceedings of the Americal Philosophical Society* 129 (1985), 291-299.

WARNER, D.J. 'Instrument makers organise', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 5 (1991), 62-64.

WARNER, D.J. 'Prices of astronomical apparatus in the 19th century', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 5 (1991), 62-64.

WARNER, D.J. 'Everything from Watch to Locomotive', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 5 (1991), 81-93.

WARNER, D.J. 'British instrument makers in the U.S.', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 6 (1992), 25-31.

WARNER, D.J. 'What does "Warranted" mean?', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 7 (1993), 1-8.

WARNER, D.J. 'French instruments in the United States', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 8 (1994), 1-32.

WILLIAMS, M., 'Crisis or Complacency? The precision instrument industry in Britain and France, 1900 to 1920', in: BLONDEL, C., PAROT, F., TURNER, A.J. and WILLIAMS, M. (eds), *Studies in the History of Scientific Instruments* (Papers presented at the 7th Symposium of



the Scientific Instrument Commission, Paris 15-19 September 1987), (London: Rogers Turner Books for the Centre de Recherche en Histoire des Sciences de la Cité des Sciences et de l'Industrie Paris, 1989), 273-282.

WILLIAMS, M., *The precision makers: a history of the instruments industry in Britain and France, 1870-1939* (London: Routledge, 1993), 216pp.

## **SPECTROSCOPY & SPECTROGRAPHIC INSTRUMENTS**

AUSTIN, J., 'A forgotten meteorological instrument: the rainband spectroscope', *Weather* 36 (1981), 151-154.

BAIRD, D., 'Baird Associates's Commercial Three-Meter Grating Spectrograph and the Transformation of Analytical Chemistry', *Rittenhouse; Journal of the American Scientific Instrument Enterprise*, 5 (1991), 65-80.

BENNETT, J.A., 'Spectroscopy at the Whipple Museum, Cambridge', *European Spectroscopy News*, 33 (1980), 29-30.

BENNETT, J.A., *The Whipple Museum of the History of Science Catalogue 5: Spectroscopes, Prisms & Gratings* (Cambridge: Whipple Museum, 1984) 26pp.

BENNETT, J.A., *The Celebrated Phenomena of Colours: The Early History of the Spectroscope* (Cambridge: Whipple Museum of the History of Science, 1984), 21pp.

BENNETT, J.A., 'The spectroscope's first decade', *Bulletin of the Scientific Instrument Society*, no.4 (1984), 3-6.

EKLUND, J., 'The Hardy automatic recording spectrophotometer', *Rittenhouse; Journal of the American Scientific Enterprise* 6 (1992), 73-86.

*A Handlist of 20th Century Spectroscopic Instruments in the Royal Museum of Scotland* (National Museums of Scotland, Edinburgh, 1988). 16pp.

NUTTALL, R.H., 'Fifty Years of the Hilger Spekker' *Bulletin of the Scientific Instrument Society*, no. 5 (1987), 7-9.

PETERSON, T.F., 'The zealous marketing of rain-band spectroscopes', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 91-96.

TURNER, S., 'Applying the new science to a new industry: the promise of spectrum analysis and the reality of the Bessemer process of making steel', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 8 (1994), 53-63.

WARNER, D.J. 'Direct vision spectroscopes', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 7 (1993), 40-48.

## **SURVEYING**

### **I - GEODETIC SURVEY**

### **II - MARINE AND HYDROGRAPHIC**

### **III - TOPOGRAPHICAL**

## **SURVEYING**

### **I - GEODETIC SURVEY**

CARCHIO, Alberto, *Dall'Italia Immaginata all'Immagine dell'Italia: dalla prime concezioni cosmografiche ai rilevamenti da satellite* (Florence: Istituto Geografico Militare, 1986), 206pp.

*La Découverte du Monde cartographiques et cosmographes* (catalogue of loan exhibition at St. Malo, Cabinet du Maire, May-Sept 1984) (edited by le Musée de l'Ile Ste-Hélène, Montreal, 1984), 88pp.

DILKE, O.A.W., *Reading the Past: Mathematics and Measurement* (London: British Museum Publications, 1987). 64pp.

FAUQUE, D., 'Un Instrument essentiel de l'Expédition pour la Mesure de la Terre: Le Quart de Cercle mobile', in: LACOMBE, H. and COSTABEL, P. (eds), *La Figure de la Terre du XVIII<sup>e</sup> Siècle*, (Paris: Gauthier-Villars, 1988), 209-21.

INSLEY, J., 'Making Mountains out of Molehills? George Everest and Henry Barrow, 1830-39', *Indian Journal of History of Science*, 30 (1995), 47-55.

[PICARD] *Jean Picard et la Mesure de la Terre: Astronomie et Géodesie au 17e siècle* (Paris: Observatoire de Paris, 1982). 38pp.

LAFUENTE, A. and MAZUECOS, A., *Los Caballeros del Punto Fijo: Ciencia, politica y aventura en la expedición geodésica hispanofrancesa al virreinato del Perú en el siglo XVIII* (Madrid: CSIC; and Madrid: Serbal, 1987), 256pp.

LINDGREN, U., 'Astronomische und geodätische Instrumente zur Zeit Peter und Philipp Apians', in *Philipp Apian und die Kartographie der Renaissance* (Munich: Anton H. Konrad Verlag for Bayerische Staatsbibliothek, 1989), pp.43-65.

MARQUET, L., 'De Dunkerque a Barcelone: Parmons et par vaux le long d'un méridien (1792-1798)', *Astronomie: Bulletin de la Societe astronomique de France et revue mensuelle d'astronomie*, 103 (1989), 259-267.

SMITH, J.R., *From Plane to Spheroid: Determining the figure of the Earth from 3000 B.C. to the 18th century Lapland and Peruvian Survey Expeditions* (Rancho Cordova, California: Landmark Enterpre., 1987). 219pp.

## **SURVEYING**

### II - MARINE AND HYDROGRAPHIC

BALLARD, P; *Mercator's Projection and Marine Cartography in HMS Endeavour 1770* (Occasional Paper No. 34, Department of Geography, Faculty of Military Studies, University of New South Wales, Royal Military College, Duntroon, 1983). 13pp.

FISHER, S., 'The Origins of the Station Pointer', *International Hydrographic Review*, 68 (July 1991), 119-126.

*Lucas Jansz, Waghenauer van Enckhuysen: de maritieme cartografie in de Nederlanden in de zestiende en het begin van de zeventiende eeuw*, (Enkhuizen: Vrienden van het Zuiderzeemuseum, 1984), 135pp.

## **SURVEYING**

### III - TOPOGRAPHICAL

ARCHINARD, M. 'A propos de l'alidade de Pierre Guillaume Martel', *Genava*, new series, 37 (1989), 43-57.

*Architekt & Ingenieur: Baumeister in Krieg & Frieden* (Ausstellungs-katalogue der Herzog August Bibliothek Wolfenüttel nr 42, Wolfenbüttel, 1984). 415pp.

BEDINI, Silvio A., 'The Scientific Instruments of the Lewis and Clark Expedition', *Great Plains Quarterly*, 4, no. 1 (Winter 1984), 54-69.

BEDINI, S.A., 'Surveying Instruments: Collectors and Collections', *Professional Surveyor*, 16, pt 1 (1996), 6-10, 12, 15-16.

BEEKS, D.R., 'The American Railroad Goniometer', *Rittenhouse; Journal of the American Scientific Enterprise* 6 (1992), 48-51.

BENNETT, J.A., *The Divided Circle: A History of Instruments for Astronomy, Navigation and Surveying* (Oxford: Phaidon-Christie's Collectors Library, 1987), 224pp., 260 illus.

BENNETT, J.A., 'Geometry and Surveying in Early-Seventeenth-Century England', *Annals of Science*, 48 (1991), 345-54.

BENNETT, J.A. and BROWN, O., *The Compleat Surveyor* (Cambridge: Whipple Museum, 1982). 30pp.

BRENNI, P., 'A very peculiar Italian Instrument: De Rossi's "Icnographic and Orthographic Machine for surveying catacombs" ', *Bulletin of the Scientific Instrument Society* 37 (1993), 19-20.

BROWN, O., *The Whipple Museum of the History of Science Catalogue 1: Surveying* (Cambridge: Whipple Museum, 1982). 40pp.

CARCHIO, Alberto, *Dall'Italia Immaginata all'Immagine dell'Italia: dalla prime concezioni cosmografiche ai rilevamenti da satellite* (Florence: Istituto Geografico Militare, 1986), 206pp.

de CLERCQ, P., 'A princely piece from Friesland; the "Trigonometrical Instrument" of Wytze Foppes', *Bulletin of the Scientific Instrument Society* 47 (1995), 14-16.

COX, R.C., 'The development of survey instrumentation', *Survey Review* 28 (1986), 234-255.

DILKE, O.A.W., *Reading the Past: Mathematics and Measurement* (London: British Museum Publications, 1987), 64pp.

EGLIN, R.L., 'John S.Hougham and the early history of the solar compass', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 117-121.

FREEMAN, F.B., 'Rufus Porter's level and other inventions', *Rittenhouse; Journal of the American Scientific Enterprise* 5 (1991), 59-61.

HAHN, Nan L., 'Medieval Mensuration: Quadrans Vetus and Geometrie Due Sunt Partes Principales..', *Transactions of the American Philosophical Society Philadelphia*, 72, part 8 (1982), lxxxv + 204pp.

INSLEY, J., 'The Damnable Cavalry Sketching Board', *Army Museum '87*, 26-35.

INSLEY, J., 'The origin of the Everest Theodolite', *Bulletin of the Scientific Instrument Society* 43 (1994), 22-23.

KENNEDY, J.E., 'Contributions of W.B.Jack and W.E.King to the standardisation of early surveying instruments', *Journal of the Royal Astronomical Society of Canada* 79 (1985), 130-133).

KOEMAN, C, *Geschiendenis van de Kartografie van Nederland: Zes Eeuwen Land - en Zeekaarten en Stadsplattgronden* (Alphen-aan den Rijn: Canaletto, 1983).

LANGEMEYER, G. (ed), *Museumshandbuch Teil 2: Vermessungsgeschichte: Die Schausammlung Abteilung 22*(Dortmund: Museum für Kunst und Kulturgeschichte der Stadt Dortmund, 1985), 208pp.

MILLER, R.C., 'The first Surveyors' Transits', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 122-127.

MINOW, H., *Historische Vermessungsinstrumente: Ein Verzeichnis der Sammlungen in Europa (Historical Surveying Instruments: List of Collections in Europe)*, 2nd enlarged edn (Wiesbaden: Verlag Chmielorz GmbH, 1990). 310pp.

MONACO, G., 'Sulle prime Livelle a Cannocchiale', *Rivista di Storia della Scienza*, 3 (1986), 385-407.

POULS, H.C., 'Nederlands fabrikkat' in *Geodesia, nederlands geodetisch tijdschrift*, vol. 27 (1985), Feb.: 'Het automatische waterpasinstrument van Willem Meester (ca. 1685)', pp.48-50; April: 'Het waterpasinstrument van Christopher Becker (ca. 1845)', pp.136-41; May: 'De spiegelpasser van Lipkens en de kleine spiegelsextant van Laporte, pp.171-4; June: 'De afstandmeter van T.H. Snoeck (ca.1865)', pp.202-5.

QUINSEY, W.J., *Research Index of the Early Days of Land Surveying in Canada*, vol.1 (Scarborough, Ontario: Association of Land Surveyors of Ontario, 1992). x + 198pp.

ROCHE, J.J., 'The cross-staff as a surveying instrument in England 1500-1640' in TYACKE, S. (ed), *English Map-Making 1500-1650: Historical Essays*, (London: The British Library, 1983), 107-111.

SCHOFIELD, J. (ed), *The London Surveys of Ralph Treswell* (London: London Topographical Society Publication No. 135, 1987). 164pp.

TONEATTO, L., *Codices artis mensoriae: I manoscritti degli antichi opuscoli latini d'agrimensura (V-XIX sec.)* (Testi, Studi, Strumenti 5) (Spoleto: Centro italiano di Studi sull'alto medioevo, 1994). I, 543pp, 16 plates; II, pp. 547-871, 8 plates.

TOSCANO, P., 'Gunter's chain', *Surveying and Land Information Systems* 51 (Sept. 1991), 155-161.

TURNER, A.J., 'Melchisédech Thévenot, the bubble level, and the artificial horizon', *Nuncius*, 7 (1992), 131-145.

TURNER, G.L'E., 'Mathematical instrument making in London in the sixteenth century' in TYACKE, S. (ed), *English Map-Making 1500-1650: Historical Essays*, (London: The British Library, 1983), 93-106.

*Pedro Bernardo Villarreal de Berriz: La aportación vasca a la ingeniería del XVIII* (Bilbao, 1990), 157pp.

WILLMOTH, F., ' "The Genius of all Arts" and the Use of Instruments: Jonas Moore (1617-1679) as a Mathematician, Surveyor, and Astronomer', *Annals of Science*, 48 (1991), 355-65.

## **TEACHING APPARATUS**

See also: NATURAL PHILOSOPHY &c

ARDOS, Alexandru Ioan, 'Die Sammlung didaktischer Anschauungs-materialien von Samuel Brassai aus Cluj-Napoca', in *Blätter für Technikgeschichte*, 41-43 (1979-81 [Vienna 1983]), 67-79.

BENASSI, Stefano and PALLOTTI, Vincenzo, *Scuola e Scienza: Strumenti oggetti materiali* (Bologna; Istituto per i beni artistici culturali naturali della Regione Emilia-Romagna, 1981).

BRENNI, Paolo, *Gli strumenti del Gabinetto di Fisica dell'Istituto Tecnico Toscano*, I, Acustica (Biblioteca dell'Assessorato alla Cultura 4, Provincia di Firenze, Firenze, 1986). 103pp.

CHIEREGO, N. and ANGELINI, A., 'Upgrading and Utilization of Historical Instruments: Experience in a Secondary Technical School', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 247-248.

CNAM *Le pendule de Foucault au Musée des Arts et Méteirs* (Paris: CNAM, 1990). 31pp.

DAWES, H.A.L., 'Wheatstone's wave machine: a physical model of light', in: ANDERSON, R.G.W., BENNETT, J.A., and RYAN, W.F. (eds), *Making Instruments Count: Essays on Historical Scientific Instruments presented to Gerard L'Estrange Turner* (Aldershot: Variorum, 1993), 127-138.

*L'Eredita' Scientifica di Leopoldo Nobili: Dibattito teorico degli strumenti nella fisica del primo Ottocento* (Reggio Emilia: Biblioteca Municipale "A. Panizzi", 1984). 133pp.

FARAGGIANA, G. and SASSI, L., 'Teaching Instruments & Collections from the 19th century to the Present: The Example of the 19th century Construction Model Collection of the Regia Scuola di Applicazione for Engineers of Turin', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 243-246.

FRANCHINI, L., 'Research on old Physics Instruments in Neapolitan Schools and Present Teaching Methodology', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 249-251.

GRANDI, M., 'School, Society and Economy: The Museo Laboratorio Aldini Valeriani and its Collections, 1842-1911', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 201-206.

PANCINI, Maria and SALANDIN, Gian A., *Il Teatro di Fofosofia sperimentale di Giovanni Poleni (1683-1761)* (Padova: Edizioni LINT, 1986). 116pp.

ROBERTS, D.L., 'Romancing the root: an episode in the promotion of geometric aids for arithmetic instruction', *Rittenhouse; Journal of the American Scientific Enterprise* 7 (1993), 33-36.

RUGGIERO, L., BERNARDINI, P. and ROSSI, A., '19th century instruments for Teaching Physics at Lecce', in DRAGONI, G., McCONNELL, A. and TURNER, G.L'E. (eds), *Proceedings of the Eleventh International Scientific Instrument Symposium* [Bologna University, 9-14 September, 1991] (Bologna: Grafis Edizioni, 1994), 253-256./

TURNER, G.L'E., 'Presidential Address: Scientific Toys', *British Journal for the History of Science*, 20 (1987), 377-98.

WARNER, D.J. 'Commodities for the classroom: apparatus for science and education in antebellum America', *Annals of Science*, 45 (1988), 387-397.

ZUIDERVAART, H.J. and H. Hoitsma, *Een Zeeuws Planetarium uit de tweede helft van de 18e eeuw* (Middelburg: Zeeuws Museum, 1982). Offprint from *Archief van het Koninklijk Zeeuwsch Genootschap der Wetenschappen* 1982.

## **TELEGRAPHY and WIRELESS**

AHVENAINEN, J., *The Far Eastern Telegraphs: The History of Telegraphic Communication between the Far East, Europe and America before the First World War* (Helsinki: Suomalainen Tiedeakatemia, 1981). 226pp. (Annals Academiae Scientiarum Fennicae, tom 216).

BERLIN (Deutsches Rundfunk-Museum): *Das Archiv des Rundfunk-Museums*. A part-work publication of technical sheets on historic wireless apparatus.

BERTHO, C., *Télégraphes et téléphones de Valmy au microprocesseur* (Paris: Le Livre de Poche, 1981). 538pp.

BLAKE-COLEMAN, B.C., *Copper Wire and Electrical Conductors: The Shaping of a Technology* (Philadelphia, PA: Harwood Academic Publishers, 1992). 284pp.

BLONDEL, C., 'Edouard Branly, dalla parte della scienza', in GUAGNINI, A. and PANCALDI, G. (eds), *Cento anni di radio: le radici dell'invenzione* (Turin, 1995), 303-354.

BLONDEL, C., 'Branly et les débuts de la TSF', *Musée des arts et métiers La Revue*, No. 12 (September 1995), 4-9.

BRENNI, P., 'Le tube à limaille de Calzecchi Onesti et la TSF de Marconi: Quelques réflexions sur les débuts de la TSF en Italie', *Revue d'Histoire des Sciences*, 46(1933), 73-82.

CHALDECOTT, J.A., 'Platinum and the Greenwich System of Time-Signals in Britain: the work of George Biddell Airy and Charles Vincent Walker from 1849-1870', *Platinum Metals Review*, 30 (1986), 29-37.

CONSTABLE, A.R., 'The birth pains of radio', *Bulletin of the Scientific Instrument Society* 46 (1995), 6-11.

FEDELI, E. and GUIDONE, M. (eds), *La Conquista della Telegrafia senza fili: Temistocle Calzecchi Onesti e il Coherer* (Gruppo nazionale di Storia della Fisica: Consiglio nazionale delle Ricerche) (Bologna: Nuova Alfa Editoriale, 1987). 181pp..

MORUS, I.R., 'Telegraphy and the technology of display: the Electricians and Samuel Morse', *History of Technology* 13 (1991), 20-40.

STEPHENS, C.E., 'The impact of the telegraph on public time in the United States, 1844-1893', *IEEE Technology and Society Magazine*, 8 (1989), 4-10.

## TELESCOPES

ANDREWS, A.D., 'Cyclopaedia of telescope makers', *Irish Astronomical Journal* 20 no.3 (March 1992), 102-183.

BENNETT, J.A., 'The first aplanatic object glass', *Journal for the History of Astronomy*, 13 (1982), 206-208.

BENNETT, J.A., 'Lord Rosse and the giant reflector' in : NUDDS, J.R. *et al* (eds), *Science in Ireland 1800-1930, tradition and reform* (Dublin 1988), 105-113.

BURNETT, J.E., 'Dublin Telescopes of Distinction', *Technology Ireland*, 23, No.7 (Nov./Dec. 1991), 37-9.

COHEN, I.B., 'Newton's description of the reflecting telescope', *Notes and Records of the Royal Society of London* 47 (1993), 1-9.

HASHIMOTO, T., 'Huygens, Dioptrics and the improvement of the telescope', *Historia Scientiarum* no 23, (1989), 51-59.

*Kulturgeschichte des Fernrohrs*, (Tübinger 1985).

LOWNE, C.M., 'The object-glass of the Greenwich "Great Equatorial Telescope" ', *Journal for the History of Astronomy* 19 (1988), 169-182.

MILLS, A.A., and JONES, M.L., 'Three Lenses by Constantine Huygens in the Possession of the Royal Society of London', *Annals of Science*, 46 (1989), 173-82.

HALL, A. R., 'John Collins on Newton's Telescope', *Notes and Records of the Royal Society*, 49 (1995), 71-78.

HALL, A.R. and SIMPSON, A.D.C., *An Account of the Royal Society's Newton Telescope* (London: The Royal Society, 1995). 16 pp.



MINIATI, Mara, *et al.*, 'Examination of an Antique Telescope', *Nuncius: Annali di Storia della Scienza*, 9, pt 2 (1994), 677-682.

RONAN, C.A., 'Leonard and Thomas Digges [as inventors of the telescope]', *Endeavour* 16 (June 1992), 91-94.

SIMPSON, A.D.C., 'Newton's Telescope and the Cataloguing of the Royal Society's Repository', *Notes and Records of the Royal Society*, 38 (1984), 187-214.

SIMPSON, A.D.C., 'Richard Reeve - The "English Campani" - and the Origins of the London Telescope-Making Tradition', *Vistas in Astronomy*, 28 (1985), 357-65.

SIMPSON, A.D.C., 'James Gregory and the Reflecting Telescope', *Journal for the History of Astronomy*, 23 (1992), 77-92.

SPAIGHT, J.T., 'The Porter garden telescope', *Rittenhouse; Journal of the American Scientific Instrument Enterprise* 6 (1992), 97-102.

TOBIN, W., 'Foucault's invention of the silvered glass reflecting telescope and the history of his 80cm reflector at the Observatory, Marseille,' *Vistas in Astronomy* 30 (1987), 153-184.

TURNER, A.J., 'The pre-history, origins and development of the reflecting telescope', *Bollettino del Centro Internazionale di Storia dello Spazio del Tempo* no.3-4 (1984), 11-22.

TURNER, G L'E., 'Three late-seventeenth century Italian telescopes, two signed by Paolo Belletti of Bologna' *Annali dell' Istituto e Museo di Storia della Scienza di Firenze*, 9 (1984), 41-64.

TURNER, G.L'E., '1590 and All That', *Proceedings of the Royal Microscopical Society*, 25 (1990), 423-24. Comment on the persistent myth that the telescope and/or microscope was invented in 1590.

TURNER, G.L'E., 'There was no Elizabethan Telescope', *Bulletin of the Scientific Instrument Society*, No. 37 (1993), 3-5.

del VECCHIO, M. (ed), *In view: the Telescopes of the Luxottica Museum*, (Agordo, 1995). 127pp.

WILLACH, R., 'Schyrl de Rheita und die Verbesserung des Linsenfernrohres Mitte des 17 Jahrhunderts; Teil 1', *Sterne und Weltraum* 2 (1995), 102-110.

WILLACH, R., 'Schyrl de Rheita und die Verbesserung des Linsenfernrohres Mitte des 17 Jahrhunderts; Teil 2', *Sterne und Weltraum* 3 (1995), 1186-192.

## **THERMOMETRY**

BURNETT, J.E., 'Een thermometer van Hendrick Prins', *Teylers Museum Magazijn*, no. 9 (Autumn 1985), 7-11.

BURNETT, J.E., 'Fahrenheit's thermometers and letters' *Bulletin of the Scientific Instrument Society* no.16 (1988), 3-6.

CASATI, F., *Le thermomètre de Lyon*, Sciences et Techniques; 2 (Lyon: Ed. Lyonnaises d'art et d'histoire, 1992). 112pp.

ROSTOKER, W. and ROSTOKER, D., 'The Wedgewood temperature scale', *Archeomaterials* 3 (1989), 169-172.

### **X-RAYS AND RADIOLOGY**

BROWN, C.N., ' "A new Kind of Rays": the pre-history and discovery of X-Rays', *Bulletin of the Scientific Instrument Society* 46 (1995), 23-26.

van CAMP, K.J., *19de-Eeuwse Wetenschappelijke en Didactische Instrumenten in bezit van de Stad Antwerpen: Elektriciteits-leer en Röntgenologie* (Antwerp: EBES, 1988). 152pp.

EISENBERG, R.L., *Radiology: an illustrated history* (St Louis: Mosby-Yearbook, 1992). 606pp.

HANCOCK, N., HAWKINS, D., MORGAN, P., THWAITE, N. and WEATHERALL, M., *On a New Kind of Rays: 100 Years of X-Rays at Cambridge* An exhibition at the University Library, Cambridge, October 1995 (Cambridge: University Library, 1995).

LEMMERICH, J., *Röntgen Rays Centennial: Exhibition on the Occasion of the Discovery of X-Rays in Würzburg on November 8, 1895* (Würzburg: Würzburg University, 1995). x + 211 pp.

RONNE, P. and NIELSON, A.B.W., 'Development of the ion X-ray tube: with a description of the Collections in the Medical Historical Museum, University of Copenhagen', *Acta Historica Scientiarum Naturalium et Medicalium* 35 (Copenhagen: Reitzel, 1986). 270pp.

A Classified Bibliography on the History of Scientific Instruments. Originally published in 1997, this Classified Bibliography is "Based on the SIC Annual Bibliographies of books, pamphlets, catalogues and articles on studies of historic scientific instruments, compiled by G.L'E. Turner, 1983 to 1995, and issued by the Scientific Instrument Commission. Historic Scientific Instruments and the Teaching of Science: A guide to resources. Macleay Museum: Scientific Instrument Collection. Whipple Museum of the History of Science. National Science Museum/St. Patrick's College Maynooth. Muse This usually has a heading: references but may be bibliography or works cited depending on the conventions of the system you use. The object of your writing is for you to say something for yourself using the ideas of the subject, for you to present ideas you have learned in your own way. The emphasis should be on working with other people's ideas, rather than reproducing their words. The ideas and people that you refer to need to be made explicit by a system of referencing. Therefore, at the end of your assignment you need a list of the materials you have used - a bibliography or a reference list. There are many ways of writing a list of references - check with your department for specific information. The most common system is called the Harvard system.