

Recent Publications Relating to the History of Astronomy

Ruth S. Freitag
Library of Congress
Books and Pamphlets

Antonaci, Antonio. *Filosofia e scienza; alla vigilia dell'età galileiana*. Galatina, Panico, 1990. 142 p. facsimis.

Chiefly about the *Pancosmia* of Francesco Patrizi (1529-1597).

Apian, Peter. *Instrument Buch, durch Petrum Apianum erst von new beschrieben. [Mit einem Nachwort von Jürgen Hamel]*. Leipzig, Reprintverlag im Zentralantiquariat der DDR, 1990] [128], xiv p. illus., port.

"Reprint der Originalausgabe von 1533 nach den Exemplar der Universitätsbibliothek Leipzig."

"Die zeitliche Verteilung der Publikationen Aplans nach inhaltlichen Gesichtspunkten bis 1609": folded leaf in pocket.

Baasner, Rainer. *Abraham Gotthelf Kästner, Aufklärer (1719-1800)*. Tübingen, M. Niemeyer, 1991. 683 p. illus., port. (Frühe Neuzeit, Bd. 5)

Blaauw, Adriaan. *ESO's early history. The European Southern Observatory from concept to reality*. Garching bei München, European Southern Observatory, 1991. xvi, 267 p. illus. (part col.), maps (part col.), ports. (part col.)

"... most of the contents of this book was the subject of a series of articles in the ESO Messenger from December 1988 to June 1991 ..."

Le Calendrier républicain de sa création à sa disparition, suivi d'une concordance avec le calendrier grégorien. Paris, Éditions de l'Observatoire de Paris, 1989. 137 p. illus.

Prepared by the Service des calculs et de mécanique céleste of the Bureau des longitudes.

Carey, Hilary M. *Courting disaster: astrology at the English court and university in the later Middle Ages*. New York, St. Martin's Press, 1992. 282 p. plates.

Chung-kuo ku tai t'ien hsiang chi lu tsung chi. [Ancient Chinese records of celestial phenomena: general] Nan-ching, Chiang-su k'o hsüeh chi shu ch'u pan she, 1988. 1100 p.

According to Nathan Sivin's review in *Chinese Science*, no. 10, 1991, p. 56, this work, edited by Chuang Wei-feng and Wang Li-hsing, resulted from the screening of "an enormous literature, including the Ming and Ch'ing Veritable Records and over 8200 gazetteers ... [It] provides several times as many records of astronomical observations ... as were heretofore available."

Chung-kuo t'ien wen shih liào hui pien. Ti 1 pan. Jen wu shih lüeh. [Collected materials on the history of Chinese astronomy. v. 1. Biographical sketches] Pei-ching, K'o hsüeh ch'u pan she, 1989. 327 p.

Compiled by Wang Li-hsing and others from the same sources as the work described in the previous entry, this volume (the first in a series), according to Sivin, is a collection of short biographies "of nearly 2500 pre-1911 astronomers arranged by dynasty ... Later volumes will cover books, institutions, calendar reforms, astrology, terminology, etc."

DeVorkin, David H. *Science with a vengeance: how the military created the US space sciences after World War II*. New York, Springer-Verlag, 1992. xxii, 404 p. illus., ports.

Drake, Stillman. *Galileo: pioneer scientist*. Toronto, Buffalo, University of Toronto Press, 1990. xviii, 261 p. facsimis.

"This book integrates the scattered results of my researches since 1972, when details of Galileo's experimental work began to emerge from his working papers."

Etnoastronomías americanas. Elizabeth de von Hildebrand, Jorge Arias de Greiff, compiladores. 45 Congreso de Americanistas. Bogotá, Centro Editorial, Universidad Nacional de Colombia, 1987. 279 p. illus., maps, plans.

"Este volumen reúne las ponencias del Simposio Etnoastronomía y Arqueoastronomía Americana, realizado en el 45º Congreso Internacional de Americanistas, llevado a cabo en la Universidad de los Andes, Bogotá, entre el 1º y el 7 de julio de 1985."

Contents: Reichel de von Hildebrand, E., and J. Arias de Greiff. Prefacio.—Corona Sánchez, E. Cosmogonia y formación del estado en Mesoamérica.—Corona Olea, H. Pequeño monumento circular astronómico de principios del siglo XVI.—Siarkiewicz, E. Un canon de eclipses lunares en el Códice Borgia.—Magaña, E. Astronomía y mitos estelares de indios de las Guayanas: Escorpión, Orión, las Pléyades, las Hadas y el Can Mayor.—Mayr, J. Contribución a la astronomía de los Kogi.—Pardo Rojas, M. Minos y conceptos cosmológicos de los indígenas emberá.—Ortiz Gómez, F. Etnoastronomía de los grupos Arawak de los Llanos (Colombia).—Baquero M., A. La etnoastronomía entre los Sikuani del alto Vichada.—Triana, G. Etnoastronomía puinave.—Correa R., F. Tiempo y espacio en la cosmología de los Cubeos.—Ibáñez Fonseca, R. Etnoastronomía siriano.—Reichel de von Hildebrand, E. Astronomía yukuna-matapí.—Hildebrand, M. von. Datos etnográficos sobre la astronomía de los indígenas tanimuka del norte Amazonas.—Franchetto, B., and M. D'Olne Campos. Kuikuru: integración cielo y tierra en la economía y en el ritual.—Urton, G. Etnoastronomía, organización [sic] social y calendario ritual en una comunidad andina.

Euler, Leonhard. *Opera omnia. Sub auspiciis Societatis Scientiarum Naturalium Helveticae. Ser. 2. Opera mechanica et astronomica. v. 24. Sol et luna. 2*. Edidit Charles Blanc. Basilae, Birkhäuser, 1991. xxvii, 326 p. illus.

Evans, David S. *Lacaille: astronomer, traveler*. With a new translation of his journal. Tucson, Pachart Pub. House, 1992. 320 p. illus., facsimis., maps, ports. (Pachart history of astronomy series, 9)

Fantoni, Girolamo. *Orologi solari: storia, teoria, pratica, costruzione, esempi*. Roma, Technimedia, 1988. 552 p. illus.

Galileo e Copernico; alle origini del pensiero scientifico moderno. A cura di Carlo Vinti. Perugia, Edizioni Porziuncola, 1990. 251 p. illus. (Università degli studi di Perugia. Collana di "Ricerche filosofiche." Sezione Epistemologia e storia della scienza, 2)

Contents: Vinti, C. Introduzione.—Skarga, B. Storia della scienza e filosofia.—Barone, F. Il copernicanesimo di Galileo.—Tonini, V. Misura del tempo, relatività e verità nomologica in Galileo.—Valdrè, L. Nuovi sistemi e nuovo umanesimo.—Vinti, C. "Exandre Koyré lettore di Copernico e di Galileo.—Pizzamiglio, P.

Le biblioteche di Copernico e Galileo; il ruolo della stampa nella nascita della scienza moderna.—Conti, L. Francesco Stelluti, il copernicanesimo dei Lincei e la teoria galileiana della marea.—Mincer, W. Galileo nell'illuminismo polacco.

Gingerich, Owen. *The great Copernicus chase and other adventures in astronomical history*. Cambridge, Mass., Sky Pub. Corp., and Cambridge, New York, Cambridge University Press, 1992. 304 p. illus., facsimis., ports.

A collection of previously published essays, presented here with revisions and corrections. Most of them first appeared in *Sky & Telescope*.

Contents: 1. Ancient Egyptian sky magic (1983).—2. The origin of the zodiac (1984).—3. The basic astronomy of Stonehenge (1977).—4. Some puzzles of Ptolemy's star catalog (with B. L. Welther, 1984).—5. Ptolemy and the maverick motion of Mercury (1983).—6. How astronomers finally captured Mercury (1983).—7. Islamic astronomy (1986).—8. The astronomy of Alfonso the Wise (1985).—9. From Aristarchus to Copernicus (1983).—10. The great Copernicus chase (1979).—11. The Tower of the Winds and the Gregorian calendar (1982).—12. Tycho Brahe and the great comet of 1577 (1977).—13. Galileo and the phases of Venus (1984).—14. The Galileo affair (1982).—15. Johannes Kepler and the *Rudolphine Tables* (1971).—16. An astrolabe from Lahore (1982).—17. Fake astrolabes (1982).—18. Newton, Halley, and the comet (1986).—19. Eighteenth-century eclipse paths (1981).—20. The 1784 autobiography of William Herschel (1984).—21. The great comet that never came (1983).—22. Unlocking the chemical secrets of the cosmos (1981).—23. The discovery of the satellites of Mars (1978).—24. The first photograph of a nebula (1980).—25. The great comet and the 'Carte' (1983).—26. James Lick and the founding of Lick Observatory (1978).—27. Atget's eclipse-watching (1981).—28. Faintness means farness (1987).—29. The mysterious nebulae, 1610-1924 (1987).—30. Harlow Shapley and the Cepheids (with B. L. Welther, 1985).—31. A search for Russell's original diagram (1982).—32. Dreyer and Tycho's world system (1982).—33. Robert Trumpler and the dustiness of space (1985).—34. The discovery of the Milky Way's spiral arms (1984).—35. The great comet of 1965 (1966).—36. Albert Einstein: a laboratory in the mind (1979).

Glowatzki, Ernst, and Helmut Götsche. *Dic Tafeln des Regiomontanus; ein Jahrhundertwerk*. München, Institut für Geschichte der Naturwissenschaften, 1990. 224 p. illus. (Algorithmus, Heft 2)

Istituto e museo di storia della scienza, Florence. Museo di storia della scienza; catalogo. A cura di Mara Miniati. Firenze, Giunti, 1991. xvi, 384 p. col. illus.

Partial contents: Miniati, M. Strumenti matematici a Firenze.—Miniati, M. Strumenti matematici stranieri.—Miniati, M. Strumenti scientifici toscani.—Galluzzi, P. Gli strumenti di Galileo.—Van Helden, A. Origine e sviluppo del telescopio.—Franco, L. La globografia tra empirismo e scienza.—Righini, A. L'astronomia in Firenze nel XVIII e XIX secolo.—Brusa, G. Origine e definizione dell'orologio meccanico.—Miniati, M. Strumenti matematici tra Settecento e Ottocento.

Kepler, Johann. *New astronomy*. Translated by William H. Donahue. Cambridge, New York, Cambridge University Press, 1992. xv, 665 p. illus.
Translation of *Astronomia Nova*.

Kunitzsch, Paul. Von Alexandria über Bagdad nach Toledo; ein Kapitel aus der Geschichte der Astronomie. München, Verlag der Bayerischen Akademie der Wissenschaften, In

Kommission bei der C. H. Beck'schen Verlagsbuchhandlung München, 1991. 17 p. (Bayerische Akademie der Wissenschaften, München. Philosophisch-Historische Klasse. Sitzungsberichte, Jahrg. 1991, Heft 1)

Kuppanna Sastry, T. S. Collected papers on jyotisha. Tirupati, Kendriya Sanskrit Vidyapeetha, 1989. xviii, 459 p.

Includes passages in Sanskrit.

The previously published papers in this collection date from the period 1933-79. "Bibliography of Prof. T. S. K. Sastry's Writings": p. xiv-xvi.

Contents: The Vāsiṣṭha sun and moon in Varāhamihira's *Pāñcasiddhāntikā*.—The Bijopanaya: is it a work of Bhāskarācārya?—A historical development of certain Hindu astronomical processes.—The system of the Vateśvara Siddhānta.—The school of Āryabhaṭa and the peculiarities thereof.—Some mis-interpretations and omissions by Thibaut and Sudhakara Svivedi in the *Pāñcasiddhāntikā* of Varāhamihira.—The main characteristics of Hindu astronomy in the period corresponding to pre-Copernican European astronomy.—The Vāsiṣṭha-Pauliṣa Venus in the *Pāñcasiddhāntikā* of Varāhamihira.—Vāsiṣṭha-Pauliṣa Jupiter and Saturn in the *Pāñcasiddhāntikā*.—The Vāsiṣṭha-Pauliṣa Mars in the *Pāñcasiddhāntikā* of Varāhamihira.—The epoch of the Romaka Siddhānta in the *Pāñcasiddhāntikā*, and the epoch longitudes of the sun and moon in the Vāsiṣṭha-Pauliṣa.—The epoch constants of the Vāsiṣṭha-Pauliṣa star planets.—Saurasiddhānta of *Pāñcasiddhāntikā*: planetary constants and computation (PS XVI, XVII, XVIII).—*Pāñcasiddhāntikā* XVIII 64-81: an interpolation.—The Śaka era of Varāhamihira (Śalivāhana Śaka).—The untenability of the postulated Śaka of 550 B.C.—Determination of the date of the *Mahābhārata*: the possibility thereof.—A brief history of Tamil astronomy.—The age of Śaṅkara. I. A review of The Age of Sankara, by T. S. Narayana Sastry (TSNS).—The age of Śaṅkara. II.—Astronomy.—The stars.—The stucture of the atom.—Newton and the law of gravitation.—The evolution of the universe according to Sir James Jeans.—The duration of eclipses.—The lunar eclipse in Hindu astronomy.—The theory of relativity.—Computation of the solar eclipse in Hindu astronomy.—Hindu astronomy through the ages—a short sketch.

Larichev, Vitalii E. *Mudrost' zmei: pervobytnyi chelovek, Luna i Solnečse*. Otv. redaktor, V. I. Molodin. Novosibirsk, "Nauka," Sibirskoe ot-nie, 1989. 270 p. illus. (Serija "Istoriia nauki i tekhniki")

Lavrinovich, Kazimir K. *Fridrikh Vil'gel'm Bessel'*, 1784-1846. Otv. redaktor, A. A. Gurshtein. Moskva, "Nauka," 1989. 319 p. illus., ports. (Serija Nauchno-biograficheskaja literatura)

Mañjula. A critical study of the Laghumanaśa of Mañjula, by Kripa Shankar Shukla. New Delhi, Indian National Science Academy, 1990. 200 p. (Indian journal of history of science, v. 25, Jan./Oct. 1990. Supplement)

Includes transliterated Sanskrit text and English translation.

The Moon illusion. Edited by Maurice Hershenson. Hillsdale, N.J., L. Erlbaum Associates, 1989. xvi, 421 p. illus.

Each of the first 19 contributions includes a list of references. The 20th and final contribution, by Cornelis Plug, is an annotated, chronologically arranged bibliography of 285 sources that "includes most publications that have contributed to the study of the celestial illusions (the perceived horizon enlargement of the moon, sun, and constellations), from antiquity to the middle of 1987."

Moore, Patrick. Fireside astronomy; an anecdotal tour through the history and lore of astronomy. Chichester, New York, J. Wiley, 1992. 212 p. illus. (part col.), ports.

Moore, Patrick. Mission to the planets. The illustrated story of man's exploration of the solar system. London, Cassell, 1990. 128 p. illus. (part col.), maps.

The Old Royal Observatory: the story of astronomy & time. London, National Maritime Museum, 1991. 30 p. illus. (part col.), ports. (part col.)

Panicali, Roberto. Orologi e orologi del Rinascimento italiano: la scuola urbinata. L'horlogerie d'intérieur italienne au XVI^e siècle et l'école du Duché d'Urbino. Sixteenth century Italian chamber clocks and the Urbino school. Urbino, QuattroVenti, 1988. 145 p. illus., maps, ports.

Text in Italian, French, and English.

Introduction by Daniele Diotallevi.

See particularly the chapters on the workshop of Simone Barocci, the astronomical clock made by Giovanni Maria Barocci, and the chalice fountain sundial in the hanging garden of the Duke of Urbino's palace.

Ptolemaeus, Claudius. Der Sternkatalog des Almagest; die arabisch-mittelalterliche Tradition. Hrsg. und bearb. von Paul Kunitzsch. T. 3. Gesamtkonkordanz der Sternkoordinaten. Wiesbaden, O. Harrassowitz, 1991. 208 p.

An entry for T. 2 was included in HAD Newsletter no. 18.

Reichel, Ute. Astrologie, Sortilegium, Traumdeutung—Formen von Weissagung im Mittelalter. Bochum, Universitätsverlag Dr. N. Brockmeyer, 1991. 354 p. illus. (Bochumer historische Studien. Mittelalterliche Geschichte, Nr. 10)

Rušin, Vojtech. M. R. Štefánik, slovenský astronóm. Bratislava, Alfa, 1991. 111 p. illus.

Sacerdoti, Gilberto. Nuovo cielo, nuova terra; la rivelazione copernicana di "Antonio e Cleopatra" di Shakespeare. Bologna, Il Mulino, 1990. 412 p.

Sarma, K. V. Observational astronomy in India. [Thenhipalam?] Dept. of Sanskrit, University of Calicut, 1990. 57 p. (Calicut University Sanskrit series, no. 5)

Includes passages in Sanskrit.

Contents: 1. The Vedic phase.—2. The classical period.

Schmadel, Lutz D. Dictionary of minor planet names. Berlin, New York, Springer-Verlag, 1992. 687 p. illus.

Serinanell, Manuel. Pinzellades sobre la història i'origens de l'astronomia fins al nostre mil·lenari. Sabadell, AUSA, 1989. 129 p. illus.

Sheehan, William. Worlds in the sky: planetary discovery from earliest times through Voyager and Magellan. Tucson, University of Arizona Press, 1992. xv, 243 p. illus., ports.

La Specola dell'Università di Padova. Brugine, Edizioni 1+1, 1986. 377 p. illus., facsimis., maps, ports. (Centro internazionale di storia dello spazio e del tempo. Saggi, 4)

Contents: Bozzolato, G. Giuseppe Toaldo, uno scienziato europeo nel Settecento

veneto.—Del Negro, P. Appunti sul patriziato veneziano; la cultura e la politica della ricerca scientifica nel secondo Settecento.—Ghetti, C. Regesto dell'Archivio antico dell'Osservatorio astronomico di Padova.

Steiner, Gerhard. Eduard Schönfeld. Lebensbild eines hervorragenden Astronomen aus Hildburghausen. Hildburghausen, Frankenschwelle, 1990. 96, [24] p. illus. (Reihe in Nordfranken)

Theon, of Alexandria. Le Grand commentaire de Théon d'Alexandrie aux tables faciles de Ptolémée. 2-3. Édition critique, traduction, commentaire [a cura di] Anne Tihon. Città del Vaticano, Biblioteca apostolica vaticana, 1991. 366 p. (Studi e testi, 340)

An entry for v. 1 was included in HAD Newsletter no. 12.

Ti Rømer facetter. [Redaktion Claus Thykier] Albertslund, O. Albrechtsen bogtryck + offset, 1989. 176 p. illus. (part col.)

Trinh, Xuan Thuan. Trinh Xuan Thuan, un astrophysicien. Entretien avec Jacques Vauthier. Paris, Beauchesne-Fayard, 1992. 141 p. ports. (Scientifiques & croyants, 6)

Turner, Gerard L'E. Scientific instruments and experimental philosophy, 1550-1850. Aldershot, Hants, Variorum; Brookfield, Vt., Gower Pub. Co., 1990. [329] p. illus., port. (Collected studies, CS 311)

Partial contents: 4. Mathematical instrument-making in London in the sixteenth century (1983).—5. Johann Daniel von Berthold: a clerical craftsman and his universal ring dial (1979).—6. Three late-seventeenth century Italian telescopes, two signed by Paolo Belletti of Bologna (1984).—7. James Short, F.R.S., and his contribution to the construction of reflecting telescopes (1969).—8. The number code on reflecting telescopes by Nairne and Blunt (1979).—9. The London trade in scientific instrument-making in the eighteenth century (1976).—10. The cabinet of experimental philosophy (1985).—11. The auction sales of the Earl of Bute's instruments, 1793 (1967).—12. The physical sciences [at Oxford in the 18th century] (1986).

Vettius Valens. Anthologies. Livre 1. Etablissement, traduction et commentaire, par Joëlle-Frédérique Bara. Leiden, New York, E. J. Brill, 1989. xv, 245 p. illus. (Études préliminaires aux religions orientales dans l'Empire romain, t. 111)

Text in Greek and French.

Vialle, Jacques. La Rochelle, l'astrolabe et les étoiles: esquisse d'une histoire astronomique de La Rochelle. La Rochelle, Éditions Astrolabe, 1991. 29 p. illus.

Wallace, William A. Galileo and his Jesuit sources. In his Galileo, the Jesuits and the medieval Aristotle. Aldershot, Hants, Variorum; Brookfield, Vt., Gower Pub. Co., 1991. (Collected studies series, CS 346) p. [1]-[184]

Contents: 1. Aristotelian influences on Galileo's thought (1983).—2. The problem of causality in Galileo's science (1983).—3. Aristotle and Galileo: the uses of ΥΠΟΘΕΣΙΣ (suppositio) in scientific reasoning (1981).—4. Galileo and Aristotle in the *Dialogo* (1983).—5. Randall *redivivus*: Galileo and the Paduan Aristotelians (1988).—6. The early Jesuits and the heritage of Domingo de Soto (1987).—7. The problem of apodictic proof in early seventeenth-century mechanics; Galileo, Guevara, and the Jesuits (1989).—8. Science and philosophy at the Collegio Romano in the time of Benedetti (1987).

Zambelli, Paola. *The Speculum astronomiae and its enigma. Astrology, theology and science in Albertus Magnus and his contemporaries*. Dordrecht, Boston, Kluwer Academic Publishers, 1992. xvi, 352 p. col. front. (Boston studies in the philosophy of science, v. 135)
Includes Latin text and English translation, by Charles S. F. Burnett, Kristen Lippincott, David Pingree, and Paola Zambelli, of the *Speculum Astronomiae*.

Zoffoli, Enrico. *Galileo; fede nella ragione, ragioni della fede*. Bologna, Edizioni Studio domenicano, 1990. 185 p. illus., port. (Collana "Lumen," 1)

Articles

Abdulla-zade, Khurshed F. "Kniga ob astroliabii" Kushiara ibn Labbana Dzhili. In *Akademisâ nauk Tadzhikskoî SSR, Dushanbe. Otdelenie fiziko-matematicheskikh i geologicheskikh nauk*. Izvestiâ, okt./dek. 1986 g.: 51-57.

Abdulla-zade, Khurshed F., and Oleg V. Dobrovolski. Ob odnoi rukopisi astronomo-matematicheskogo soderzhanija. In *Akademisâ nauk Tadzhikskoî SSR, Dushanbe. Otdelenie fiziko-matematicheskikh, khimicheskikh i geologicheskikh nauk*. Izvestiâ, apr./iûn' 1989 g.: 67-70.

Adam, Karl. Zu "Des Mondes Gang" auf den Runstaben. *Mannus*, 54. Bd., Heft 2, 1988: 141-152.

Andrews, A. David. Cyclopaedia of telescope makers. pt. 1 (A-F). *Irish astronomical journal*, v. 20, Mar. 1992: 102-183. illus., ports.

Andrews, Frank P., and Edwin Budding. Carter Observatory's 9-inch refractor: the Crossley connection. *Southern stars*, v. 34, Mar. 1992: 358-366. illus., port.

Andrillat, Henri. Le Songe de Kepler. In *Académie des sciences et lettres de Montpellier. Bulletin. nouv. sér.*, t. 19; 1988. Montpellier, 1989. p. 303-310.

Andrillat, Henri. Le zodiaque de Dendérah. In *Académie des sciences et lettres de Montpellier. Bulletin. nouv. sér.*, t. 18; 1987. Montpellier, 1988. p. 141-157. illus.

Aoki, Shinko. The moon-test in Newton's *Principia*: accuracy of inverse-square law of universal gravitation. *Archive for history of exact sciences*, v. 44, no. 2, 1992: 147-190.

Ariew, Roger. Theory of comets at Paris during seventeenth century. *Journal of the history of ideas*, v. 53, July/Sept. 1992: 355-372. illus.

Árni Hjartarson. Halastjörnur, sólmýrkvar, eldgos og áreiðanleiki annála. [Comets, eclipses, eruptions and the reliability of the Icelandic chronicles] In *Islenzka fornleifafelag, Reykjavík. Árbók*. 1989. Reykjavík, 1990. p. 85-100. illus.
English summary.

Astronomer. In *Australian dictionary of biography*. Index: volumes 1 to 12. 1788-1939. Index editor, Hilary Kent. Carlton, Vic., Melbourne University Press, 1991. p. 173.

The index of occupations lists the names of 17 men of whom sketches are included in v. 1-12: Francis Abbott, Philip Francis Adams, Joseph Mason Baldwin, Pietro Paolo

Giovanni Ernesto Baracchi, Joseph Brooks, William Ernest Cooke, Walter Geoffrey Duffield, James Dunlop, Robert Lewis John Ellery, Walter Frederick Gale, Henry Alfred Lenehan, Christian Carl Ludwig Rümker, Henry Chamberlain Russell, William Scott, George Robarts Smalley, John Tebbutt, and Sir Charles Todd.

Aubouin, Jean. Des Lumières à la Révolution: forme et mesure de la Terre. In *Institut de France, Paris. Séance publique annuelle des cinq académies. Montesquieu, les Lumières, la Révolution. Mardi 24 octobre 1989. Paris, Palais de l'Institut*, 1989. (Institut. 1989, no 15) p. 5-12.

Aveni, Anthony F. The real Venus-Kukulcan in the Maya inscriptions and alignments. In *Palenque Round Table, 6th, 1986*. Sixth Palenque Round Table, 1986. Merle Greene Robertson, general editor; Virginia M. Fields, volume editor. Norman, University of Oklahoma Press, 1991. p. 309-321. illus.

Baasner, Rainer. Aberglaube und Apokalypse: zur Rezeption von Whistons Kometentheorie in der deutschen Literatur des 18. Jahrhunderts. In *Lessing yearbook*, 19; 1987. Edited for the Lessing Society by Richard E. Schade. Detroit, Wayne State University Press, 1988. p. 193-207.

Badia, Lola. Ramon, l'astrologia, els alquimistes i altres negocis lul-lians. *Serra d'or*, any 32, abr. 1990: 53-58. illus. (part col.)

Baffetti, Giovanni. Il "Siderius Nuncius" a Bologna. *Intersezioni, rivista di storia delle idee*, anno 11, dic. 1991: 477-500.

Baldwin, Ralph B., and Don E. Wilhelms. Historical review of a long-overlooked paper by R. A. Daly concerning the origin and early history of the moon. *Journal of geophysical research*, v. 97, Mar. 25, 1992: 3837-3843.

Daly's paper, "Origin of the Moon and Its Topography," was published in the *Proceedings of the American Philosophical Society*, v. 90, May 10, 1946, p. 104-119.

Barker, Peter, and Roger Ariew. Introduction. In *Revolution and continuity; essays in the history and philosophy of early modern science*. Washington, D.C., Catholic University of America Press, 1991. (Studies in philosophy and the history of philosophy, v. 24) p. 1-19.

See particularly the sections entitled "The Originality of Copernicus," "Galileo and the Phases of Venus," and "Tycho, Observational Astronomy, and Comets" (p. 1-8).

Barone, Elvira, Angelo Dorata, Gaetano D. Maccarrone, Erasmo Recami, and Elio Turrisi. Restauro e catalogazione del patrimonio scientifico di interesse storico del Dipartimento di Fisica e dell'Osservatorio astrofisico di Catania. In *Convegno "Una realtà straordinaria: il patrimonio storico-scientifico italiano," Bologna*, 1990. Instrumenta: il patrimonio storico scientifico italiano: una realtà straordinaria. A cura di Giorgio Dragoni. Bologna, Grafis, 1991. p. 271-279. col. illus.

Bartels, Klaus. Vom Mondgesicht zur Mondkarte. *Orion*, 50. Jahrg., Okt. 1992: 211-217. facsimis.
English summary.

Batten, Alan H. Who discovered Σ99? *Observatory*, v. 112, June 1992: 125-126.

Baum, Richard. The man [Gruithuisen] who found a city in the moon. In British Astronomical Association, London. Journal, v. 102, June 1992: 157, 159. illus.

Beckwith, Christopher I. Tibetan science at the court of the great Khans. In Tibet Society. Journal, v. 7; 1987. Bloomington. p. 5-11.
Emphasizes medicine and astrology.

Bedini, Silvio A. Benjamin Condy of Philadelphia, colonial American navigational instrument maker. Rittenhouse, v. 6, Aug. 1992: 103-115. illus.

Beckman, George W. E. Wer entdeckte die kosmische Hintergrundstrahlung? Sterne und Weltraum, 31. Jahrg., Juli 1992: 440. facsim.
On Émile Le Roux and the measurements he made in 1955.

Ben-Menahem, Ari. Cross-dating of biblical history via singular astronomical and geophysical events over the ancient Near East. In Royal Astronomical Society. Quarterly journal, v. 33, Sept. 1992: 175-190.

Berggren, J. L. Medieval Islamic methods for drawing azimuth circles on the astrolabe. Centaurus, v. 34, no. 4, 1991: 309-344. illus.

Berggren, J. L. Ptolemy's maps of earth and the heavens: a new interpretation. Archive for history of exact sciences, v. 43, no. 2, 1991: 133-144. illus.

Berggren, J. L. The relation of Greek spherics to early Greek astronomy. In Science and philosophy in classical Greece. Edited with a pref. by Alan C. Bowen. New York, Garland Pub., 1991. (Institute for Research in Classical Philosophy and Science. Sources and studies in the history and philosophy of classical science, 2) p. 227-248. illus.

Bernabeu Albert, Salvador. La expedición hispano-francesa a medir el paso de Venus. In Carlos III y la ciencia de la Ilustración. Manuel Sellés, José Luis Peset y Antonio Lafuente (compiladores). Madrid, Alianza Editorial, 1988. (Alianza universidad, 555) p. 313-329.

Bertoloni Meli, Domenico. Guidobaldo dal Monte and the Archimedean revival. Nuncius, anno 7, fasc. 1, 1992: 3-34.
See particularly "The Nova of 1604" (p. 26-32).

Bhathal, Ragbir S. Henry Chamberlain Russell: 19th century astronomer, meteorologist and organizer of Australian science. In Royal Society of New South Wales, Sydney. Journal and proceedings, v. 124, pt. 1/2, 1991: 1-21. illus., ports.

Blaauw, Adriaan. International cooperation and coordination in astronomical research. In Variable star research, an international perspective. Proceedings of the first European meeting of the American Association of Variable Star Observers: international cooperation and coordination in variable star research. Edited by John R. Percy, Janet Akyuz Mattei, Christiaan Sterken. Cambridge, New York, Cambridge University Press, 1992. p. 3-7.

Börngen, Freimut. Cuno Hoffmeister und die Planetoiden. Die Sterne, Bd. 68, Heft 1, 1992: 47-51. illus.

Bònoli, Fabrizio. La Specola di Bologna e il Museo di Astronomia. In Convegno "Una realtà straordinaria: il patrimonio storico-scientifico italiano," Bologna, 1990. Instrumenta; il patrimonio storico scientifico italiano: una realtà straordinaria. A cura di Giorgio Dragoni. Bologna, Grafis, 1991. p. 87-91. col. illus.

Bouvet, Jean P. Simon de Phares et les rapports entre astrologie et prophétie à la fin du Moyen Âge. Mélanges de l'École française de Rome: Moyen Âge, t. 102, fasc. 2, 1990: 617-648.

Bräuer, H. J., and B. Fuhrmann. Das Plattenarchiv der Sternwarte Sonneberg und die Sonneberger Himmelsüberwachung. Die Sterne, Bd. 68, Heft 1, 1992: 19-33. illus.

Brix, Peter, and Ulrich Joost. Mit wenigen Worten viel sagen; Georg Christoph Lichtenberg zum 250. Geburtstag. Physikalische Blätter, 48. Jahrg., Juni 1992: 437-439. facsim., port.

Bronshṭén, Vitalij A. Iosif Kleiber i Anatolij Vil'ev. Zemlja i vselennaia, iñul 'avg. 1990: 65-69. illus., port. (Vosstanavlivaiia stranitsy istorii, ocherk chetyrtyi)

Bronshṭén, Vitalij A. Mikhail Vil'ev. Zemlja i vselennaia, sent./okt. 1989: 70-75. illus., ports. (Vosstanavlivaiia stranitsy istorii, ocherk vtoroi)

Bronshṭén, Vitalij A. Nikolaj Dolgorukov. Zemlja i vselennaia, mai/iñun ' 1989: 51-56. illus., port. (Vosstanavlivaiia stranitsy istorii, ocherk pervyi)

Bronshṭén, Vitalij A. Nina Shtaude. Zemlja i vselennaia, sent./okt. 1991: 68-74. ports. (Vosstanavlivaiia stranitsy istorii, ocherk shestoij)

Brück, Hermann A. Lord Crawford's observatory at Dun Echt, 1872-1892. Vistas in astronomy, v. 35, pt. 1, 1992: 81-138. facsim., plates, ports.

Brück, Mary T., and Ian Elliott. The family background of Lady Huggins (Margaret Lindsay Murray). Irish astronomical journal, v. 20, Mar. 1992: 210-211. port.

Brush, Stephen G. How cosmology became a science. Scientific American, v. 267, Aug. 1992: 62-65, 68-70. illus. (part col.)

Bryden, David J. Evidence from advertising for mathematical instrument making in London, 1556-1714. Annals of science, v. 49, July 1992: 301-336. facsim.

Bugaevskij, A. V., and B. R. Moshailov. Vozniknovenie i razvitiie pol'sarimetrii bezatmosfernykh kosmicheskikh tel: postanovka problemy i pervye resul'taty. Ocherki istorii estestvoznanija i tekhniki, vyp. 39, 1991: 39-55. illus.

Buttmann, Günther. John Frederick William Herschel. Zum 200. Geburtstag des Astronomen und Physikers. Sterne und Weltraum, 31. Jahrg., Juli 1992: 452-453. port.

Carvalho, Rómulo de. Sobre a passagem do cometa de Halley em Portugal no ano de 1759. In Academia das ciências de Lisboa. Classe de ciências. Memórias. t.30. Lisboa, 1989. p. 177-217.

The "Apéndice documental" presents correspondence and records of Father Chevalier's

observations at Lisbon, from the papers of J. N. de L'Isle in the archives of the Observatoire de Paris.

Chabás, José, and Bernard R. Goldstein. Nicholaus de Heybech and his table for finding true syzygy. *Historia mathematica*, v. 19, Aug. 1992: 265-289. illus.

Chvojková, Eliška. František Hřebsk zemřel. *Říše hvězd*, roč. 73, čís. 1, 1992: 11. port.

Cioffarelli, Giovanni. Il *Trattato della sfera* di Bonaventura Cavalieri nelle edizioni di Urbano Daviso. *Bollettino di storia delle scienze matematiche*, anno 7, giugno 1987: 3-59.

Clocchiatti, Alejandro. The mysterious darkness of night; the story of Olbers's paradox. Griffith observer, v. 56, Aug. 1992: 2-9. illus., port.

Cohen, Simona. The Romanesque zodiac: its symbolic function on the church facade. *Arte medievale*, 2. ser., anno 4, n. 1, 1990: 43-54. illus.

Czerniakowska, Małgorzata. Piotr Krüger (1580-1639)—gdański matematyk i astronom, nauczyciel Jana Heweliusza. *Rocznik gdański*, t. 47, zesz. 1, 1987: 197-230. facsimis.
English summary: p. 228-229.

Dagron, Gilbert. Das Firmament soll christlich werden. Zu zwei Seefahrtskalendern des 10. Jahrhunderts. In *Fest und Alltag in Byzanz*. Hrsg. von Günter Prinzing und Dieter Simon. München, C. H. Beck, 1990. p. 145-156.
Translated by R. Weber and G. Prinzing.

A Dancer telescope and its observatory re-united. *Bulletin of the Scientific Instrument Society*, no. 34, Sept. 1992: 13-14.
Contents: Nuttall, S. History and restoration.—Wetton, J. Details of the telescope.

Darnell, Per B. Algol-observatoriet på Frederiksberg. *Astronomisk tidsskrift*, årg. 25, mars 1992: 24-26. illus., port.
The observatory was built for and used by Svend Kierulff (1877-1955), manager of the Kongelige Porcelainsfabrik.

Deferne, Jacques, and Bogna Dominik. À propos de la météorite d'Ensisheim tombée il y a cinq cent ans. *Orion*, 50. Jahrg., Okt. 1992: 222-227. illus., facsimis.

A German translation by E. Teichmann, "Der Meteorit von Ensisheim, der vor 500 Jahren auf die Erde fiel (1492)," appears in parallel columns.

A miniature from Diebold Schilling's *Luzerner Bilderchronik* (1513) that shows the falling meteorite is reproduced in color on the outside front cover of the issue.

Dekker, Elly. No additions, please, we are serious! A sundial delineator by Anthony Sneewine. *Bulletin of the Scientific Instrument Society*, no. 34, Sept. 1992: 3-5. illus.

Desantis, Giovanni. Pico, Pontano e la polemica astrologica. In *Bari (City)*. Università. Facoltà di lettere e filosofia. Annali. 29; 1986. Bari, Adriatica Editrice. p. 155-191.

Dick, Steven J. Centralizing navigational technology in America: the U.S. Navy's Depot of Charts and Instruments, 1830-1842. *Technology and culture*, v. 33, July 1992: 467-509. illus.

Dobrzycki, Jerzy. Reference meridian of the Copernican astronomy. In *From stars to quasars; materiały sesji naukowej poświęconej Profesor Wilhelmie Iwanowskiej*. Pod red. Stefanii Grudzińska i Bernarda Krygiera. Toruń, Uniwersytet Mikołaja Kopernika, 1989. p. 12-15.

Domanget, Jean. In memoriam: Sylvain Arend. *Ciel et terre*, v. 108, juil./août 1992: 101-102. illus., ports.

Dorschner, Johann, and Joachim Görtler. Der Encke-Tag in Rudolstadt. Nachlese einer symbolischen Initiative. *Die Sterne*, Bd. 68, Heft 3, 1992: 135-136. port.

Duma, Dmitrij P. Zhizn' i desiatel 'nost' Avenira Aleksandrovicha Čakovskiego. In *Selenodezija i dinamika luny; sbornik nauchnykh trudov*. Otv. redaktor V. S. Kislik. Kiev, Naukova dumka, 1990. p. 4-7.

Dumont, Simone, Jean Meeus, and Marcel Anstett. Passage de Mercure devant le soleil, observé par Gassendi (1592-1655), le 7 novembre 1631. *L'Astronomie*, avril 1992: 5-7. illus.

Duncan, A. M. Eric John Aiton (1923-91). *British journal for the history of science*, v. 25, June 1992: 253-254.

Dwyer, Eugene J. The temporal allegory of the Tazza Farnese. *American journal of archaeology*, v. 96, Apr. 1992: 255-282. illus.

According to the journal editor's introduction, "Eugene Dwyer believes that the Tazza Farnese was manufactured at the Ptolemaic court in Alexandria between 100 and 31 B.C. and that its figural decoration is a temporal allegory of the Nile and of creation. The seven figures correspond to the planets and they are arranged in a manner determined by the pattern of constellations surrounding Orion in the Greek astronomical sphere, among them the zodiacal signs Taurus, Gemini, and Cancer."

A drawing and photographs of the bowl appear on p. 249-254.

Dyson, Frank. A brief history of the Crossley 36-inch reflector. *Southern stars*, v. 34, Mar. 1992: 367-372.

Ehlers, Dietrich. Auffassungen zur Struktur der Welt von Thales bis Aristoteles. *Astronomie und physikalisch-technische Kenntnisse*. In *Geschichte der Physik, ein Abriss*. Hrsg. von Wolfgang Schreier. Berlin, VEB Deutscher Verlag der Wissenschaften, 1988. p. 25-64. illus.

Eichhorn, Heinrich K. Paralaxy po 150 rokoch. *Kozmos*, roč. 19, čís. 5, 1988: 155-157. illus., port.
Interview by Martin Šolc.

Eremeeva, Alina I. Boris Petrovich Gerasimovich (k 100-letiū so dnīa rozhdenīa). *Zemlja i vselennaia*, mart/apr. 1989: 35-41. ports.

Eremeeva, Alina I. Fransua Arago—uchenyi i grazhdanin. *Zemlja i vselennaia*, iūl/avg. 1989: 41-44. ports.

Esteban Pifiero, Mariano, and Félix Gómez Crespo. La primera versión castellana de *De Revolutionibus Orbium Caelestium*: Juan Cedillo Díaz (1620-1625). *Asclepio*, v. 43, fasc. 1, 1991: 131-162. facsimis.
English summary.

"... reveals the existence of an unpublished manuscript which is to be found in the National Library in Madrid under the catalogue number Ms.9091."

Ewing, Eve, and Marc Robin. Sunlight and shadow. In Rock art papers. v. 5. Edited by Ken Hedges. San Diego, San Diego Museum of Man, 1987. (San Diego Museum papers, 23) p. 113-124. illus.

Federici Vescovini, Graziella. Pietro d'Abano tra biografia e fortuna: due "ritratti" quattrocenteschi. In Medioevo; rivista di storia della filosofia medievale. 16; 1990. Padova, Editrice Antenore. p. 293-321.

Feraboli, Simonetta. Da una edizione umanistica di Manilio. Maia, nuova serie, anno 44, magg./ag. 1992: 165-169.
On Lorenzo Buonincontro's edition, published at Rome in 1484 (Hain 10706).

Ferrini, Cinzia. Features of irony and alleged errors in Hegel's "De orbitis planetarum." In Hegel-Jahrbuch. 1991. Fernwald (Annerod), Germinal. p. 459-477.

Field, Judith V. E. J. Aiton, 1920-1991. Archives internationales d'histoire des sciences, v. 41, déc. 1991: 356-358.

Fomenko, Anatolij T., Vladimir V. Kalashnikov, and G. V. Nosovskij. When was Ptolemy's star catalogue in 'Almagest' compiled in reality? Statistical analysis. Acta applicandae mathematicae, v. 17, Dec. 1989: 203-229. illus.

Franke, Martin. Die Herausbildung des heliozentrischen Weltbildes. In Geschichte der Physik, ein Abriss. Hrsg. von Wolfgang Schreier. Berlin, VEB Deutscher Verlag der Wissenschaften, 1988. p. 129-142. illus.

Fröhlich, Claus. History of solar radiometry and the World Radiometric Reference. Metrologia, v. 28, Sept. 1991: 111-115. illus.

Füssl, Wilhelm. Der Nachlass Peter Apians; eine Erbstreitigkeit vor dem Reichskammergericht. In Deutsches Museum. Wissenschaftliches Jahrbuch. 1991. München. p. 99-130.
On the dispute over Apian's estate.

Gabbay, Alan. Innovation and continuity in the history of astronomy: the case of the rotating moon. In Revolution and continuity; essays in the history and philosophy of early modern science. Edited by Peter Barker and Roger Ariew. Washington, D.C., Catholic University of America Press, 1991. (Studies in philosophy and the history of philosophy, v. 24) p. 95-129. illus.

Gallino, Roberto, and C. Lento. La natura delle nebulose a spirale. Giornale di astronomia, v. 18, mar. 1992: 2-11; giugno: 7-22. illus.
Contents: 1. La Via Lattea da Galileo a Herschel e Kapteyn.—2. Dall'universo di Shapley alla recessione delle galassie di Hubble.

Garcia Sanz, Arcadi. Dos calendaris llunars del segle XIV. In Congrés d'Història de la Corona d'Aragó, 13th, Palma de Mallorca, 1987. Comunicacions III. Palma de Mallorca, Institut d'Estudis Baleàrics, 1990. p. 7-26.

Gascoigne, Robert M. The historical demography of the scientific community, 1450-1900. Social studies of science, v. 22, Aug. 1992: 545-573. illus.

Includes data on individual sciences, astronomy among them.

Gaull, Marilyn. Under Romantic skies: astronomy and the poets. Wordsworth circle, v. 21, winter 1990: 34-41.

Gingerich, Owen. Astronomy in the age of Columbus. Scientific American, v. 267, Nov. 1992: 100-105. illus. (part col.)

Gingerich, Owen. Leo Goldberg (January 26, 1913-November 1, 1987). In American Philosophical Society, Philadelphia. Proceedings, v. 136, June 1992: 296-301. port.

Goercke, Ernst. Der Schliff asphärischer Linsen nach Angaben des Rheiia. Tecknikgeschichte, Bd. 58, Heft 3, 1991: 179-187. illus.
The illustration on the outside front cover of the issue, which relates to this article, is described by Goercke on p. 260.

Götz, Woldemar. Cuno Hoffmeister (1892-1968). Die Sterne, Bd. 68, Heft 1, 1992: 6-18. illus., ports.

A photograph of a bust of Hoffmeister, erected on the grounds of the Sonneberg Observatory on the occasion of the centenary of his birth, is reproduced in color on the front cover of the issue.

Golay, Marcel. L'astronomie. In Les Savants genevois dans l'Europe intellectuelle du XVII^e au milieu du XIX^e siècle. Édité par Jacques Trembley. Genève, Éditions du Journal de Genève, 1987. p. 55-88. illus. (part col.)

The last chapter of the book, "Biographies des savants genevois," by Jean-Michel Pictet, includes sketches of the following men who were involved in astronomy: Nicolas Fatio, p. 400; Jean-Alfred Gautier, p. 405; Émile Gautier, p. 406; Jacques-André Mallet, p. 415; Marc-Auguste Pictet, p. 423; Émile Plantamour, p. 426; and Jean Trembley, p. 440. There are portraits of all but Trembley.

Goldstein, Bernard R. The blasphemy of Alfonso X: history or myth? In Revolution and continuity; essays in the history and philosophy of early modern science. Edited by Peter Barker and Roger Ariew. Washington, D.C., Catholic University of America Press, 1991. (Studies in philosophy and the history of philosophy, v. 24) p. 143-153.

Goldstein, Bernard R., and Alan C. Bowen. The introduction of dated observations and precise measurements in Greek astronomy. Archive for history of exact sciences, v. 43, no. 2, 1991: 93-132.

González Sánchez, José Manuel. Astrología y medicina: pautas de investigación en las fuentes medievales españolas. In Anuario de estudios medievales. 21. Barcelona, Consejo Superior de Investigaciones Científicas, 1991. p. 629-644.
Summary in English.

Gorgolewski, Stanisław. VLBI in Toruń. In From stars to quasars; materiały sesji naukowej poświęconej Profesor Wilhelminie Iwanowskiej. Pod red. Stefanii Grudzińska i Bernarda Krygiera. Toruń, Uniwersytet Mikołaja Kopernika, 1989. p. 167-176.

Granada, Miguel A. Bruno, Digges, Palingenio: omogeneità ed eterogeneità nella concezione dell'universo infinito. *Rivista di storia della filosofia*, anno 47, n. 1, 1992: 47-73.
Summary in English.

Granada, Miguel A. L'interpretazione bruniana di Copernico e la "Narratio prima" di Rheticus. In *Rinascimento; rivista dell'Istituto nazionale di studi sul Rinascimento*. 2. ser., v. 30. Firenze, L. S. Olschki, 1990. p. 343-365.

Grant, Edward. Victor E. Thoren (1935-91). *British journal for the history of science*, v. 25, June 1992: 255-257.

Includes, on p. 256-257, some personal recollections by A. Rupert Hall.

Groos, Arthur. Treating the Grail king: astrology and medicine in Book XVI of Wolfram's "Parzival." *Sudhoffs Archiv*, Bd. 76, Heft 1, 1992: 74-86.

Guentherodt, Ingrid. Frühe Spuren von Maria Cunitia und Daniel Czepko in Schweidnitz, 1623. *Daphnis, Zeitschrift für mittlere deutsche Literatur*, Bd. 20, Heft 3/4, 1991: 547-584. facsimis.

Guentherodt, Ingrid. Maria Cunitia: *Urania Propitia*. Intendiertes, erwartetes und tatsächliches Lesepublikum einer Astronomin des 17. Jahrhunderts. *Daphnis, Zeitschrift für mittlere deutsche Literatur*, Bd. 20, Heft 2, 1991: 311-353. illus., facsimis.

Gürtler, Joachim. Das System der Saturnringe und die Enckesche Teilung. *Die Sterne*, Bd. 68, Heft 3, 1992: 188-197. illus.

A false-color image from Voyager 2 of a portion of Saturn's rings, showing the Encke division, appears on the outside front cover of the issue.

Guinot, Bernard. Navigation et mesure du temps. *Navigation*, v. 49, juil. 1992: 389-403. illus. English abstract.

Gurikov, V. A. Iz istorii astronomicheskikh priborov i instrumentov. *Zemlia i vselennaya*, iful'/avg. 1989: 72-77. illus.

Guy, Jacques B. M. À propos des mois de l'ancien calendrier pascuan. In *Société des océanistes. Journal*, no 94, 1992: 119-125.

Hahn, Roger. The Laplacean view of calculation. In *The Quantifying spirit in the 18th century*. Edited by Tore Frängsmyr, J. L. Heilbron, and Robin E. Rider. Berkeley, University of California Press, 1990. p. 363-380.

Hamel, Jürgen. Astronomiegeschichtliche Forschungen in der DDR. In *Disziplinorientierte wissenschaftshistorische Arbeiten in der DDR*. Rostock, Wilhelm-Pieck-Universität Rostock, Sektion Geschichte, 1988. (Rostocker wissenschaftshistorische Manuskripte, Heft 15) p. 17-21.

Presented at the 18th International Congress on the History of Science, held in Hamburg and Munich, Aug. 1-9, 1989.

Hamel, Jürgen. Die Entdeckung des Planeten Neptun an Enckes 55. Geburtstag. Vorgeschichte, Ablauf und Wirkung einer "geplanten" Entdeckung. *Die Sterne*, Bd. 68, Heft 3, 1992: 161-174. illus.

Hamel, Jürgen. Gesamtkatalog alter astronomischer Drucke: Astrologie ohne Makel. *Wissenschaft und Fortschritt*, 41. Jahrg., Juni 1991: 220-223. illus. (part col.)
The color illustrations appear on the inside front cover under the heading "Astronomic in alten Drucken."

Hamel, Jürgen. Tafeln und Kalender zur Ordnung des Lebens: die geteilte Zeit. *Wissenschaft und Fortschritt*, 41. Jahrg., Okt. 1991: 404-407. illus. (part col.)
The color illustrations appear on the inside front cover under the heading "Bildschmuck alter Kalender."

Han, Yan-ben, Zhi-sen Li, and Xi-hong Yang. Ancient central eclipse records of China and variation of the earth's rotation. In *Earth's rotation from eons to days. Proceedings of a workshop held at the Centre for Interdisciplinary Research (ZiF) of the University of Bielefeld, FRG, September 26-30, 1988*. P. Brosche, J. Sündermann (eds.). Berlin, New York, Springer-Verlag, 1990. p. 40-45. illus.

Hansen, Vagn L. Geometrien og den fysiske verden. *Normat*, årg. 39, hefte 3, 1991: 105-117.
English summary: p. 151.
"This is a historical survey of the role of geometry in astronomy and physics."

Hardman, Clark, and Marjorie H. Hardman. Linear solar observatory theory: the development of concepts of time and calendar. *North American archaeologist*, v. 13, no. 2, 1992: 149-172. illus.

Hearnshaw, John B. Doppler and Vogel—two notable anniversaries in stellar astronomy. *Vistas in astronomy*, v. 35, pt. 2, 1992: 157-177. facsimis., ports.

Hempel, Wolfgang. The Babylonian background of the term "Milky Way." In *DUMU-E₂-DUB-BA-A. Studies in honor of Åke W. Sjöberg*. Edited by Hermann Behrens, Darlene Loding, Martha T. Roth. Philadelphia, Samuel Noah Kramer Fund, University Museum, 1989. (Occasional publications of the Samuel Noah Kramer Fund, 11) p. 249-252.

Herrmann, Dieter B. Die Archenhold-Sternwarte in Berlin-Treptow wird 95 Jahre alt: das Weltall für Jedermann. *Wissenschaft und Fortschritt*, 41. Jahrg., Okt. 1991: 402-403. illus., port.

Herrmann, Dieter B. Das astronomische Weltbild des 17. Jahrhunderts. In *Technische Hochschule Otto von Guericke, Magdeburg. Wissenschaftliche Zeitschrift*, Bd. 31, Heft 1, 1987: 29-32. facsimis.

Herrmann, Dieter B. Technische Voraussetzungen astronomischer Erkenntnisse: kostbarer als jegliches Zepter. *Wissenschaft und Fortschritt*, 41. Jahrg., Nov. 1991: 450-454. illus. (part col.)

Another illustration appears on p. 433.
Concerns the development of the technology supporting astronomical observation from Galileo's first use of a telescope.

Home, R. W., and Hans J. Kretzer. The Flagstaff Observatory, Melbourne: new documents relating to its foundation. *Historical records of Australian science*, v. 8, no. 4, 1991: 213-243. illus., ports.

Houziaux, Léo. L'astronomie stellaire au XVIII^e siècle. In *Académie royale des sciences, des lettres et des beaux-arts de Belgique, Brussels. Classe des sciences. Bulletin*, no 12, 1990: 349-357. illus.

Howse, Derek. Navigation and astronomy in the voyages. In *Background to discovery: Pacific exploration from Dampier to Cook*. Edited by Derek Howse. Berkeley, University of California Press, 1990. (Publications from the Clark Library professorship, UCLA, 11) p. 160-184. illus.

Huber, Peter J. Astronomical evidence for the long and against the middle and short chronologies. In *High, middle, or low? Acts of an international colloquium on absolute chronology held at the University of Gothenburg, 20th-22nd August 1987*. pt. 1. Edited by Paul Åström. Gothenburg, P. Åströms Forlag, 1987. (Studies in Mediterranean archaeology and literature. Pocket-book, 56) p. 5-17. illus.

Discussion appears in pt. 3 (1989. Pocket-book, 80), p. 19-24.

Hunger, Kurt. 40 years numerical stellar atmospheres; concluding remarks and personal considerations. In *Stellar atmospheres: beyond classical models*. [Proceedings of the NATO Advanced Research Workshop ... Trieste, Italy, September 3-7, 1990] Edited by L. Crivellari, I. Hubeny, and D. G. Hummer. Dordrecht, Boston, Kluwer Academic Publishers, 1991. (NATO ASI series. Series C, mathematical and physical sciences, v. 341) p. 449-452.

Irwin, John B. The case of the southern skies. *Griffith observer*, v. 56, July 1992: 2-17. illus., ports. On the development of astronomy in the Southern Hemisphere during the second half of this century. Another illustration appears on the outside front cover.

Jáchim, František. Jan Amos Komenský a astronomie. *Říše hvězd*, roč. 73, čís. 4/5, 1992: 74-75. illus., port.

Jan Mergenthaler kończy 90 lat. *Postępy astronomii*, t. 39, lip./wrzes. 1991: 129-132. illus., map, port. (Sylwetki astronomów polskich)
Interviewed by Tadeusz Jarzębowski.

Jones, Dennis. E. T. Cotttingham, F.R.A.S. Antiquarian horology, v. 19, winter 1991: 593-605. illus., facsimis., port.
A clockmaker who produced and maintained clocks for several observatories in Britain, Cotttingham is perhaps best known for his participation with Eddington in the May 1919 eclipse expedition to Principe.

Juan Vernet. Anthropos, revista de documentación científica de la cultura, no. 117, feb. 1991: 2-67. illus., ports.

This issue honors the well-known historian of Hispano-Arabic science and culture. Among the contents are Vernet's "Autopercepción intelectual de un proceso histórico" (p. 9-25), a selected list of his writings (p. 27-30), and bibliographies by Roser Puig Aguilar ("La ciencia en Al-Andalus," p. 46-53) and Mercè Viladrich i Grau ("Bibliografía sobre historia de la astronomía y la matemática árabes en los últimos diez años," p. 54-63).

Kalashnikov, Vladimir V., G. V. Nosovskii, and Anatolii T. Fomenko. Geometrija podvizhnykh konfiguracij zvezd i datirovka Al'magesta. In *Problemy ustolichivosti stokhasticheskikh modelei; trudy seminara*. Moskva, Vsesofuznyj nauchno-issledovatel'skij institut sistemnykh

issledovanij

1988. p. 59-78. illus.
An English translation, "The Geometry of Moving Stellar Configurations and the Dating of the *Almagest*," appears in the *Journal of Soviet Mathematics*, v. 57, Dec. 5, 1991, p. 3246-3263.

Kalashnikov, Vladimir V., G. V. Nosovskii, and Anatolii T. Fomenko. Statisticheskij analiz zvezdnogo kataloga "Almagest." In *Akademija nauk SSSR. Doklady*, t. 313, 30 avg. 1990: 1315-1320. illus.

An English translation, "Statistical Analysis of the Star Catalogue 'Almagest,'" appears in *Soviet Mathematics—Doklady*, v. 42, Jan./Feb. 1991, p. 168-173.

Kalinkov, Marin. Za bülgarskite imena na nafakoi süzvezdi. In *Sofia. Astronomicheska observatorifa. Astronomicheski kalendar*. g. 38; 1991. Sofijska, Izd-vo na Bülgarska akademija na naukite. p. 113-115.

Keay, Colin S. L. C. A. Chant and the mystery of auroral sounds. In *Royal Astronomical Society of Canada. Journal*, v. 84, Dec. 1990: 373-382.

Keyser, Paul T. Xenophanes' sun (Frr. A 32, 33.3, 40 DK^b) on Trojan Ida (Lucr. 5.600-5, D. S. 17.7.5-7, Mela 1.94-5). *Mnemosyne*, ser. 4, v. 45, fasc. 3, 1992: 299-311.

Indicates that the cited passages "are the earliest extant evidence" for Xenophanes's belief "that small bits or coals of fire came together to make the Sun anew daily."

Knude, Jens. On Bengt Stromgren's work in photometry. In *Precision photometry: astrophysics of the galaxy*. October 3-5, 1990, meeting held in Schenectady, New York, at Union College. Sponsored by Union College, Schenectady, New York; Van Vleck Observatory, Middletown, Connecticut. Schenectady, N.Y., L. Davis Press, 1991. (Van Vleck Observatory contribution no. 11) p. 3-12.

Discussion: p. 12.

Portraits of Strömgren appear on p. iii and 361.

Kopecký, Miloslav. Z historie BAC [Bulletin of the astronomical institutes of Czechoslovakia] *Říše hvězd*, roč. 73, čís. 1, 1992: 6. facsimis.

Kreuer, Werner. Der Meteoriteneinschlag von Ensisheim vom 7. November 1492. Sterne und Weltraum, 31. Jahrg., Okt. 1992: 622-624. col. illus., facsimis. (part col.)

Krige, John. The rise and fall of ESRO's first major scientific project, the Large Astronomical Satellite (LAS). *History and technology*, v. 9, no. 1/4, 1992: 1-26.

Kriss, Victor. Mimbres-Mogollon archaeoastronomy: another connection between Mesoamerica and the Southwest. In *Rock art papers*. v. 6. Edited by Ken Hedges. San Diego, San Diego Museum of Man, 1989. (San Diego Museum papers, 24) p. 25-28. illus.

Kuksewicz, Zdzisław. Peter of Modena, philosopher, astronomer, physician—a student of the famous fourteenth century Averroist John of Jandun. In *Medioevo; rivista di storia della filosofia medievale*. 15; 1989. Padova, Editrice Antenore. p. 111-142.

Kurt, V. G. Iosif Samuilovich Shklovskij (k 75-letiju so dnja rozhdenija). *Zemlja i veselennaja, nosabr'/dek.* 1991: 37-40. illus., ports.

Lackovičová, Anna. Mnohostranný génius. Kosmos, roč. 22, čís. 3-5, 1991: 104-106, 140-142, 176-178. illus., ports.
About Antonín Bečvář.

Lafuente, Antonio, and Antonio Mazuecos. La Academia itinerante: la expedición franco-española al Reino de Quito de 1736. In Carlos III y la ciencia de la Ilustración. Manuel Sellés, José Luis Peset y Antonio Lafuente (compiladores). Madrid, Alianza Editorial, 1988. (Alianza universidad, 555) p. 299-312.

Lapi Ballerini, Isabella. Il planetario della Sagrestia Vecchia. In Brunelleschi e Donatello nella Sagrestia Vecchia di S. Lorenzo. Testi di: Umberto Baldini, Cristina Danti, Isabella Lapi Ballerini, Paolo Alberto Rossi, Pietro Ruschi. Firenze, Il Fiorino—Alinari, 1989. p. 113-140. col. illus.

Larichev, Vitalij E. Sinodicheskie oboroty planet v kalendarnykh sistemakh drevnekamenного veka Sibiri (mal'tinskaya kultura). In Metody rekonstrukcii v arkheologii. Otv. redaktor f. U. P. Khofushkin. Novosibirsk, "Nauka," Sibirskoe otd-nie, 1991. p. 124-179. illus.

Larsson-Leander, Gunnar. Tord Elvius, 30 aug. 1915-6 mars 1992. Astronomisk tidsskrift, Årg. 25, juni 1992: 78-80. port.

Lavrinovich, K. K. Astronomija v Kenigsbergkom universitete. In Pribaltiška konferencija po istoriji nauki, 16th, Vilnius and Kaunas, 1991. Baltijos valstybių mokslo istorijos fragmentai; trijų Baltijos valstybių XVI mokslo istorikų konferencijos tezės. Fragments of the history of science in the Baltic States; abstract of the 16th Baltic Conference of History of Science. Vilnius, 1991. p. 50.

Lee, M. Owen. Per nubila lunam: the moon in Vergil's *Aeneid*. In Vergilius. v. 34; 1988. [Columbia, S.C.?] Vergilian Society of America. p. 9-14.

Lehmann, Franz. Eine Medaille von der grössten Kometenerscheinung des 17. Jahrhunderts. Die Sterne, Bd. 68, Heft 2, 1992: 113-114. illus.
The medal was struck in connection with the great comet of 1680/81.

Lejbowicz, Max. Chronologie des écrits anti-astrologiques de Nicole Oresme; étude sur un cas de scepticisme dans la deuxième moitié du XIV^e s. In Colloque Oresme, Université de Paris XII, 1987. Autour de Nicole Oresme. Actes du Colloque Oresme, organisé à l'Université de Paris XII. Édités par Jeannine Quillet. Paris, J. Vrin, 1990. (Bibliothèque d'histoire de la philosophie) p. 119-176.

Leo, Amilcare de, and Domenico Filippone. Francesco Maria Denza: dalla meteorologia all'astronomia. Amico e collaboratore di Angelo Secchi e Giovanni Schiaparelli. Giornale di astronomia, v. 16, dic. 1990: 10-13.

Leurquin, Régine. Un manuscrit autographe de la *Tribiblos Astronomique* de Théodore Méliténiole: le *Vaticanus graecus* 792. Scriptorium, v. 45, fasc. 2, 1991: 145-162. plate.
The plate (no. 13) is bound at the end of the issue.

Li, Zhi-sen, Yan-ben Han, and Zhi-fang Zeng. Ancient eclipse records of East Asia and the earth's rotation. In Earth's rotation from cons to days. Proceedings of a workshop held at the

Centre for Interdisciplinary Research (ZiF) of the University of Bielefeld, FRG, September 26-30, 1988. P. Brosche, J. Sündermann (eds.). Berlin, New York, Springer-Verlag, 1990. p. 46-50.

Liechtenhan, Francine D. Custine avant Custine: un jésuite en Russie. Revue de la Bibliothèque nationale, no 33, automne 1989: 37-46. illus.

About Jean Chappé d'Auteroche and his book, *Voyage en Sibérie*, based on his journey to observe the 1761 transit of Venus from Tobolsk.

Lightman, Alan P., and Owen Gingerich. When do anomalies begin? Science, v. 255, Feb. 7, 1992: 690-695. illus.
The examples are drawn from cosmology, astronomy, geology, biology, and physics.

Liu, Ci-yuan, and Kevin K. C. Yau. Application of early Chinese records of lunar occultations and close approaches. In Earth's rotation from cons to days. Proceedings of a workshop held at the Centre for Interdisciplinary Research (ZiF) of the University of Bielefeld, FRG, September 26-30, 1988. P. Brosche, J. Sündermann (eds.). Berlin, New York, Springer-Verlag, 1990. p. 33-39. illus.

Liu, Ci-yuan. Historical Chinese astronomical observations. In Earth's rotation from cons to days. Proceedings of a workshop held at the Centre for Interdisciplinary Research (ZiF) of the University of Bielefeld, FRG, September 26-30, 1988. P. Brosche, J. Sündermann (eds.). Berlin, New York, Springer-Verlag, 1990. p. 27-32.

Long, Charlotte R. The Pompeii calendar medallions. American journal of archaeology, v. 96, July 1992: 477-501. illus.

Lührs, Otto. Vom Schauen und Anfassen; der Besucher als Mitspieler—Technische Museen und ihr Wandel. Kultur & Technik, 16. Jahrg., Nr. 3, 1992: 49-53. illus. (part col.), port.
On the Urania in Berlin and the influence of its innovations.

Maddison, Francis. Astrolabe. In The Christopher Columbus encyclopedia. Silvio A. Bedini, editor. v. 1. New York, Simon & Schuster, 1992. p. 47-49. illus.

Maiello, Francesco H. Il tempo dei calendari in Francia (1484-1805). Studi storici, anno 31, apr./giugno 1990: 413-436.

Malherbe, Jean M., Christian Coutard, and Thierry Roudier. La fondation de l'observatoire et les débuts de l'astronomie au Pic du Midi (1852-1947). L'Astronomie, oct. 1991: 6-9; nov.: 1-3; déc.: 1-8. illus., plan.

Mancha, José L. Astronomical use of pinhole images of Saint-Cloud's *Almanach Planetarium* (1292). Archive for history of exact sciences, v. 43, no. 4, 1992: 275-298. illus.
Includes Latin texts, translations, and commentary.

Marecki, Andrzej, Stefania Grudzińska, and Bernard Krygier. Scientific activity of Professor Wilhelmina Iwanowska. In From stars to quasars; materiały sesji naukowej poświęconej Profesor Wilhelminie Iwanowskiej. Pod red. Stefanii Grudzińskiej i Bernarda Krygiera. Toruń, Uniwersytet Mikołaja Kopernika, 1989. p. 5-11.

Several portraits are included among the illustrations following p. 16.

A chronologically arranged bibliography of Professor Iwanowska's writings, compiled by Alojzy Burnicki, Stefania Grudzińska, and Bernard Krygier, appears on p. 177-189.

Marín, Manuela. *Ilm al-nuğüm e ilm al-hidātān en al-Andalus*. In Union européenne d'arabisants et d'islamisants. Congress, 12th, Málaga, 1984. Actas del XII Congreso de la U.E.A.I. (Málaga, 1984). Madrid, 1986. p. 509-535.

Marold, Thomas. Der Wettlauf zum Mond. Die Sterne, Bd. 68, Heft 4, 1992: 223-240. illus.

Marquès i Planagumà, Josep M. Un nou fragment de Guillem de Conques en català. In Arxiu de textos catalans antics. 7/8; 1988/89. Barcelona, 1989. p. 288-293.

Introduces and transcribes the text of a two-leaf fragment, much of it concerning the heavens (e.g., the signs of the zodiac and the houses of the planets), from a Catalan translation of the *Dragnatikon* of Guillaume de Conches.

Marriner, Harry A. Ainsuca: a shaman's solar calendar? In Epigraphic Society. Occasional publications. v. 20; 1991. San Diego, 1992. p. 312-325. illus., map, plans.

"Ainsuca is a petroglyph site located near the town of Sasaima in the state of Cundinamarca, Colombia."

Marshack, Alexander. The Tai plaque and calendrical notation in the Upper Palaeolithic. Cambridge archaeological journal, v. 1, Apr. 1991: 25-61. illus.

Marvin, Ursula B. The meteorite of Ensisheim, 1492 to 1992. Meteoritics, v. 27, Mar. 1992: 28-72. illus., facsimis. (part col.)

See also, in the July issue, p. 255-256, the abstract of her paper, "The Meteoritical Quincentennial: the Stone of Ensisheim, 1492-1992," presented at the 55th annual meeting of the Meteoritical Society, July 27-31, 1992, in Copenhagen.

Mason, Stephen F. Bishop John Wilkins, F.R.S. (1614-72): analogies of thought-style in the Protestant Reformation and early modern science. In Royal Society of London. Notes and records, v. 46, Jan. 1992: 1-21. illus.

The projects promoted by Wilkins and his contemporaries formed the later stages of a revolution in European cosmology, with linked theological and scientific elements, culminating in the Newtonian world system."

Means, Laurel. "Ffor as moche as yche man may not haue þe astrolabe": popular Middle English variations on the computus. Speculum, v. 67, July 1992: 595-623.

Millburn, John R. Nomenclature of astronomical models. Bulletin of the Scientific Instrument Society, no. 34, Sept. 1992: 7-9. illus.

Mills, Allan A. Isaac Newton's sundials. Antiquarian horology, v. 20, summer 1992: 126-139. illus., map.

Mills, Allan A. Polarization of light from the sky and its application to timetelling and navigation. Bulletin of the Scientific Instrument Society, no. 33, June 1992: 8-14. illus.

Moreira, Ildeu de Castro. A expedição de Couplet à Paraíba—1698. Revista de Sociedade Brasileira de História da Ciência, no. 5, jan./junho 1991: 23-31.

Morin, Didier. Astronomie et calendrier afar. Northeast African studies, v. 10, no. 2/3, 1988: 27-35.

Mostert, Richard, and Marco Mostert. Using astronomy as an aid to dating manuscripts: the example of the Leiden Aratea planetarium. Quaerendo, v. 20, autumn 1990: 248-261. illus.

Muccillo, Maria. Luca Gaurico: astrologia e "prisca theologia." Nouvelles de la république des lettres, anno 10, nov. 1990: 21-44.

Nastasi, Pietro. Paolo Frisi e il problema della forma della Terra. In Ideologia e scienza nell'opera di Paolo Frisi (1728-1784). A cura di Gennaro Barbarisi. Atti del Convegno internazionale di studi, Politecnico di Milano, 3-4 giugno 1985. v. 1. Milano, F. Angeli, 1987. (Il Settecento, 8) p. 99-144.

Navarro Brotóns, Victor. La actividad astronómica en la España del siglo XVI: perspectivas historiográficas. Arbor, t. 142, jun./agosto 1992: 185-216.

Nevskaša, Nina I. Novye arkhivnye materialy po istorii Vil'niusskoi observatorii. In Pribaltiiskaja konferenčija po istorii nauki, 16th, Vilnius and Kaunas, 1991. Baltijos valstybių moksly istorijos fragmentai; triju Baltijos valstybių XVI moksly istorikų konferencijos tezės. Fragments of the history of science in the Baltic States; abstract of the 16th Baltic Conference of History of Science. v. 1. Vilnius, 1991. p. 49.

Noël, Yves. Il y a 250 ans La Condamine partait mesurer un arc de méridien au Pérou. In Académie nationale des sciences, arts et belles-lettres de Caen. Mémoires. t. 24; 1986. Caen. p. 25-27.

Nowak, Greg, and Paul Thagard. Copernicus, Ptolemy, and explanatory coherence. In Cognitive models of science. Edited by Ronald N. Giere. Minneapolis, University of Minnesota Press, 1992. (Minnesota studies in the philosophy of science, v. 15) p. 274-309. illus.

We apply in this essay a computational theory of explanatory coherence to an important case in the history of astronomy. The theory has been implemented in a connectionist computer program called ECHO that has been used to model the competition between Copernican and Ptolemaic astronomy ... After a brief sketch of the theory of explanatory coherence and the ECHO program, we shall provide a detailed account of the systems of Copernicus and Ptolemy."

Oberndorfer, Hans. Erinnerungen an Professor [Anton] Staus. Sterne und Weltraum, 31. Jahrg., Juli 1992: 478-480. illus., port.

O'Hara, James J. Naming the stars at *Georgics* 1.137-38 and *Fasti* 5.163-82. American journal of philology, v. 113, spring 1992: 47-61.

O'Neal, William J. Matter out of chaos. In Platōn. t. 41; 1989. En Athénais, 1990. p. 30-33. illus.

On the account in the *Timaeus* of the creation of the planets and their motion from west to east.

Orchiston, Wayne. The contribution of Francis Abbott to Tasmanian and Australian astronomy. Vistas in astronomy, v. 35, pt. 3, 1992: 315-344. illus., map, ports.

Pamfati Dmitrija Šakovlevicha Martynova. Zemlja i vselennaja, janv./febr. 1990: 45-48. port.
By a group of his colleagues.

Pantin, Isabelle. Galilée, l'aventurier des étoiles. Sciences et avenir, no 547, sept. 1992: 38-42. col. illus., col. ports.

Pappas, John. Les relations entre Frisi et d'Alembert. In Ideologia e scienza nell'opera di Paolo Frisi (1728-1784). A cura di Gennaro Barbarisi. Atti del Convegno internazionale di studi, Politecnico di Milano, 3-4 giugno 1985. v. 2. Milano, F. Angeli, 1987. (Il Settecento, 9) p. 123-143.

An appendix, "Correspondance inédite de Paolo Frisi" (p. 145-174), presents 20 previously unpublished letters, of which 14 are from d'Alembert.

Pedersen, Fritz S. A twelfth-century planetary theorica in the manner of the London Tables. In Copenhagen. Universitet. Institut for græsk og latinisk middelalderfilologi. Cahiers de l'Institut du moyen-âge grec et latin, no. 60, 1990: 199-318. illus.

Percy, John R. Variable stars: a historical perspective. In Variable star research, an international perspective. Proceedings of the first European meeting of the American Association of Variable Star Observers: international cooperation and coordination in variable star research. Edited by John R. Percy, Janet Akyuz Mattei, Christiaan Sterken. Cambridge, New York, Cambridge University Press, 1992. p. 11-20.

Perdrix, John L. The last great speculum: the 48-inch Great Melbourne Telescope. Australian journal of astronomy, v. 4, Apr. 1992: 149-163. illus., plan.

Pereira, Paulo. A esfera armilar na arquitectura do tempo de D. Manuel. Oceanos, no. 4, julho 1990: 44-50. illus. (part col.)
Additional illustrations appear on p. 43 and on the outside back cover of the issue.

Pfau, Werner. P/Encke—der schnellste unter den Kometen. Die Sterne, Bd. 68, Heft 3, 1992: 179-187. illus.

Philipp, Hugo. Sonnenuhren auf Zylinder- und Kegel-Flächen mit mittigen und aussermittigen Schattenwerferpunkten. Uhren, 15. Jahrg., Aug./Sept. 1992: 10-19. illus.

Pingree, David. MUL.APIN and Vedic astronomy. In DUMU-E₂-DUB-BA-A. Studies in honor of Åke W. Sjöberg. Edited by Hermann Behrens, Darlene Loding, Martha T. Roth. Philadelphia, Samuel Noah Kramer Fund, University Museum, 1989. (Occasional publications of the Samuel Noah Kramer Fund, 11) p. 439-445.

Pingree, David. The Preceptum canonis Ptolomei: In Rencontres de cultures dans la philosophie médiévale. Traductions et traducteurs de l'antiquité tardive au XIV^e siècle. Actes du colloque international de Cassino, 15-17 juin 1989, organisé par la Société internationale pour l'étude de la philosophie médiévale et l'Università degli studi di Cassino. Édités par Jacqueline Hamesse et Maria Fattori. Louvain-la-Neuve, 1990. (Textes, études, congrès, 11) (Rencontres de philosophie médiévale, 1) p. 355-375.

Pippard, Sir Brian. Foucault's pendulum. In Royal Institution of Great Britain, London. Proceedings. v. 63; 1991. Northwood, Mddx, Science Reviews. p. 87-100. illus.

Pitt, Joseph C. The heavens and earth: Bellarmine and Galileo. In Revolution and continuity; essays in the history and philosophy of early modern science. Edited by Peter Barker and Roger Ariew. Washington, D.C., Catholic University of America Press, 1991. (Studies in philosophy and the history of philosophy, v. 24) p. 131-141.

Popper, Daniel M. The McDonald Observatory and I way back then. In Frontiers of stellar evolution. [A symposium in celebration of the fiftieth anniversary of McDonald Observatory of the University of Texas at Austin] Edited by David L. Lambert. San Francisco, Calif., Astronomical Society of the Pacific, 1991. (Astronomical Society of the Pacific conference series, v. 20) p. 19-22.

Popper, Sir Karl R. How the moon might throw some light upon the two ways of Parmenides. Classical quarterly, v. 42, no. 1, 1992: 12-19.

Possenza, Mark. Two notes on Q. Cicero's *De duodecim signis* (FPL P. 79 Morel; P. 101 Büchner). Classical philology, v. 87, Jan. 1992: 44-46.
Relates to the adoption of Libra as a zodiacal constellation.

Pourciau, Bruce H. Newton's solution of the one-body problem. Archive for history of exact sciences, v. 44, no. 2, 1992: 125-146.

Příshoda, Pavel. Pavel Andrlík už není. Říše hvězd, roč. 73, čís. 1, 1992: 10. port.

Prizhiznennye portrety Galileja. Voprosy istorii estestvoznanija i tekhniki, no. 2, 1992: 109-117. illus.

Profesor G. A. Bakoš nie je medzi nami. Říše hvězd, roč. 73, čís. 3, 1992: 46. port.
Signed -T-.

Proverbio, Edoardo. L'attività di Ruggero Boscovich nel campo dell'ottica teorica e pratica. In Fondazione Georgio Ronchi. Atti, anno 47, genn./febbr. 1992: 147-163.

Prusakowa, Nina F., and A. W. Szpilewski. Tadeusz Banachiewicz i "Wszemświat" w latach 1905-1914. Wszemświat, t. 92, maj 1991: 99-102.

Puig Aguilar, Roser. La astronomía en al-Andalus. Aproximación historiográfica. Arbor, t. 142, jun./agosto 1992: 167-184.

Quatrième centenaire de la naissance de Gassendi. L'Astronomie, avril 1992: 4.

Quillet, Jeannine. La droit et la gauche du ciel selon Nicole Oresme. Economies et sociétés, t. 21, janv. 1987: 119-127.

Rafter, John. Archaeoastronomical possibility at CA-Riv-984. In Rock art papers. v. 6. Edited by Ken Hedges. San Diego, San Diego Museum of Man, 1989. (San Diego Museum papers, 24) p. 69-73. illus.

Raloff, Janet. Instrumental changes in astronomy. America's great collection of astronomical antiques is coming out of the closet. Science news, v. 142, Dec. 19/26, 1992: 424-426. col. illus.

- About the Adler collection in Chicago. Another color illustration appears on the front cover of the issue.
- Rawlins, Dennis. The Neptune conspiracy: British astronomy's post-discovery discovery. *Dio*, v. 2, Oct. 1992: 115-142.
- Razvi, Syed Abbas Hasan. Chronology in Central Asia (upto 11th C., A.D.). In his *A history of science, technology and culture in Central Asia*. v. 1. From pre-history to 11th C. A.D. Peshawar, Area Study Centre, Central Asia, University of Peshawar, 1991. p. 221-256. illus.
- See the book's detailed table of contents for additional, shorter sections relating to the history of astronomy. There is no index.
- Reed, Charles F., and Elizabeth A. Krupinski. The target in the celestial (moon) illusion. *Journal of experimental psychology: human perception and performance*, v. 18, Feb. 1992: 247-256. illus.
- Reis, António E. dos. Astrolábios portugueses adquiridos em leilão na Christie's. *Oceanos*, no. 2, out. 1989: 32-35. col. illus.
- Richey, M. W. Astronomy and astrology. In *The Christopher Columbus encyclopedia*. Silvio A. Bedini, editor. v. 1. New York, Simon & Schuster, 1992. p. 49-51.
- Richter, G. A. Der Felderplan der Sternwarte Sonneberg. *Die Sterne*, Bd. 68, Heft 1, 1992: 34-42. illus., port.
- Roberts, Arthur. The birth of high-energy neutrino astronomy: a personal history of the DUMAND project. *Reviews of modern physics*, v. 64, Jan. 1992: 259-312. illus.
- Robin, Marc, and Eve Ewing. The sun is in his house: summer solstice at San Carlos Mesa, Baja California Norte. In *Rock art papers*. v. 6. Edited by Ken Hedges. San Diego, San Diego Museum of Man, 1989. (San Diego Museum papers, 24) p. 29-36. illus.
- Robiou-Lamarche, Sebastián. Mitología y astronomía caribe según los cronistas franceses y el *Dictionnaire caraïbe-français* del Padre Raymond Bretón (1665). In *Museo del Hombre Dominicano*. Boletín, no. 22; 1989. Santo Domingo. p. 199-222. illus.
- Robiou-Lamarche, Sebastián. Posibles símbolos astronómicos-meteorológicos en el arte rupestre antillano. In *International Symposium of American Rock Art, 8th, Museo del Hombre Dominicano, Santo Domingo, 1987. Actas del VIII Simposium Internacional de Arte Rupestre Americano*. Santo Domingo, Museo del Hombre Dominicano, 1987 [i.e. 1988] p. 405-429. illus.
- Rössiger, S. Der Sonneberger "Bibliographische Katalog der veränderlichen Sterne." *Die Sterne*, Bd. 68, Heft 1, 1992: 43-46.
- Rohlf, Kristen. Die Anfangsjahre der Radioastronomie in Deutschland. *Die Sterne*, Bd. 68, Heft 2, 1992: 80-93. illus.
- Romain, William F. Hopewell inter-site relationships and astronomical alignments. *Ohio archaeologist*, v. 42, winter 1992: 4-5. map.

- Romain, William F. Hopewellian concepts in geometry. *Ohio archaeologist*, v. 42, spring 1992: 35-50. plans.
- Romain, William F. More astronomical alignments at Hopewell sites in Ohio. *Ohio archaeologist*, v. 42, winter 1992: 38-47. illus., map, plans.
- Ronan, Colin A. Leonard and Thomas Digges. *Endeavour*, new ser., v. 16, June 1992: 91-94. col. illus.
- "By enabling man to explore the Universe far beyond the range of the naked eye, the telescope is one of the most powerful of all scientific instruments. According to tradition, it was invented in Holland around 1608. There is evidence, however, that it originated more than thirty years earlier, in England, and that the inventors were Leonard and Thomas Digges. There is reason to suppose that it was the latter, and not Galileo, who first turned the telescope to the night sky, observing myriads of stars invisible to the naked eye. He concluded that the Universe was infinite in extent."
- Ronan, Colin A. Major advances in astronomy since 1890. In *Images of the universe*. Edited by Carole Stott. Cambridge, New York, Cambridge University Press, 1991. p. 1-19. illus. (part col.)
- Ronchi, Gabriella. *Tresor, Trattato della Sfera, Composizione del Mondo*: una serie di derivazioni. In *Miscellanea di studi in onore di Aurelio Roncaglia, a cinquant'anni dalla sua laurea*. v. 4. Modena, Mucchi Editore, 1989. p. 1161-1175.
- On vernacular translations of works by Brunetto Latini, Sacrobosco, and Ristoro d'Arezzo.
- Ronchi, Vasco. On Galileo's telescopes. In *Fondazione Giorgio Ronchi. Atti, anno 47, genn./febbraio 1992*: 131-145. illus.
- English translation of a paper first published in 1923.
- Rotzoll, Maike. Osservazioni sul "De imaginibus astrologicis" di Geronimo Torrella. In *Rinascimento; rivista dell'Istituto nazionale di studi sul Rinascimento*. 2. ser., v. 31. Firenze, L. S. Olschki, 1991. p. 219-237.
- Rudersdorf, Bill. Midsummer sunrise at El Morro [National Monument, New Mexico]. In *Epigraphic Society. Occasional publications*. v. 20; 1991. San Diego, 1992. p. 258-259. col. illus.
- Russo, Arturo. Choosing big projects in space research: the case of ESRO's scientific satellite COS-B. *History and technology*, v. 9, no. 1/4, 1992: 27-61. illus.
- Sadowski, Robert M. Archeoastronomiczna metoda chronologii bezwzględnej. In *Zeszyty naukowe Politechniki Śląskiej*, nr. 1046. Matematyka-fizyka, zesz. 61. Geochronometria, 6. Gliwice, 1990. p. 15-20.
- English summary.
- Sandage, Allan R. The search for the curvature of space. In *Crafoord Symposium, Stockholm, 1991. Extragalactic astronomy, including observational cosmology*. Editor: A. Elvius. Stockholm, Royal Swedish Academy of Sciences, 1992. (*Physica scripta*, v. T43, 1992) p. 7-21. illus., ports.

"Crafoord lecture presented at the Royal Swedish Academy of Sciences, Stockholm, September 25, 1991."

Preceded on p. 5-6 by "The Crafoord Prize 1991 in Astronomy to Dr. Allan R. Sandage," by Aina Elvius.

A Swedish translation by Elvius of Sandage's lecture was published under the title "Sökandet efter rymdens kröckning" in the *Astronomisk tidsskrift*, årg. 25, mars 1992, p. 4-23.

Santini, Carlo. L'astronomia e Germanico nell'"Antologia Palatina." *Giornale italiano di filologia*, v. 43, 15 nov. 1991: 193-203.

Schillinger, Klaus. Der Mathematisch-Physikalische Salon im Dresdner Zwinger. *Physikalische Blätter*, 48. Jahrg., Sept. 1992: 715-717. col. illus.

Schlamminger, Ludwig. Discovery of radio sun 50 years ago. In British Astronomical Association, London. *Journal*, v. 102, Apr. 1992: 80. illus.

See also the letter from Wayne Orchiston, "The Earliest Days of Solar Radio Astronomy," in the Oct. 1992 issue, p. 247.

Schmeidler, Felix. Über die copernicanischen Ephemeriden des Rheticus für 1551. *Sudhoffs Archiv*, Bd. 76, Heft 1, 1992: 122-125.

Schmidt, Marian. Jean-Claude Pecker. Evry Schatzman. In his *Hommes de science*; 28 portraits. Préf. de Hubert Curien. *Entretiens et photographies de Marian Schmidt*. Paris, Hermann, 1990. p. 183-190; p. 200-208. ports.

Schmidt, W., and O. Skerl. Von Christian Doppler zur Doppler-Strömungsmessung: "Über das farbige Licht der Doppelsterne ..." *Wissenschaft und Fortschritt*, 41. Jahrg., Apr. 1991: 134-135. col. illus., port.

Scott, John B. Divine science: the Barberini and astrology. In his *Images of nepotism; the painted ceilings of Palazzo Barberini*. Princeton, N.J., Princeton University Press, 1991. p. 68-87. plates (part col.)

The illustrations cited in the text are bound at the end of the volume.

Sehgal, Linda. Climbing Jacob's ladder: symbolism of a fantastic journey along the Milky Way. In Rock art papers. v. 6. Edited by Ken Hedges. San Diego, San Diego Museum of Man, 1989. (San Diego Museum papers, 24) p. 83-90. illus.

Seitter, Waltraut C. Zum 100. Geburtstag von Cuno Hoffmeister. *Die Sterne*, Bd. 68, Heft 1, 1992: 3-5.

Sellés García, Manuel A. La Academia y Observatorio de Marina. In Carlos III y la ciencia de la Ilustración. Manuel Sellés, José Luis Peset y Antonio Lafuente (compiladores). Madrid, Alianza Editorial, 1988. (Alianza universidad, 555) p. 173-186.

Sellés García, Manuel A. Astronomía y navegación. In Carlos III y la ciencia de la Ilustración. Manuel Sellés, José Luis Peset y Antonio Lafuente (compiladores). Madrid, Alianza Editorial, 1988. (Alianza universidad, 555) p. 81-98.

Sellés García, Manuel A. La política de instrumentos científicos en la Marina de la Ilustración. In Ciencia, técnica y estado en la España ilustrada. Joaquín Fernández Pérez, Ignacio González Tascón (editores). Zaragoza, Ministerio de Educación y Ciencia, Secretaría de Estado de Universidades e Investigación, Sociedad Española de Historia de las Ciencias y de las Técnicas, 1990. p. 3-12.

Serio, Salvatore. Ricordo di Giuseppe Salvatore Vaiana. *Giornale di astronomia*, v. 18, giugno 1992: 3-6. illus. (part col.), col. port.

Sharma, Virendra Nath. Zij-i Muhammad Shah and the tables of de La Hire. Indian journal of history of science, v. 25, Jan./Oct. 1990: 34-44. facsimis.

Sharov, A. S. Edvin Khabbl—dela i zhizn' (k 100-letiū so dnja rozhdenija). *Zemlia i vselennaya*, sent./okt. 1989: 48-53. illus., port.

Sindhi, Abdul Majid Memon. Contribution of the Indus Valley to the advancement of sciences in the days of Arabs, with special reference to Sidhānta. *Islamic studies*, v. 28, summer 1989: 183-189.

Slavnin, V. D. Arkhaika v dukhovnoi kul'ture kumandinfsev: vselennaya i chelovek, vremya i kalendar'. In Metody rekonstruktsii v arkheologii. Otv. redaktor I.U. P. Kholiushkin. Novosibirsk, "Nauka," Sibirskoe otd-nie, 1991. p. 179-218. illus.

Smirnov, D. A. Bol'shoi passazhnyi instrument v pervom vertikale Brauera. *Voprosy istorii estestvoznaniya i tekhniki*, no. 2, 1992: 95-98.

Smith, Harlan J. 50 years of McDonald Observatory. In Frontiers of stellar evolution. [A symposium in celebration of the fiftieth anniversary of McDonald Observatory of the University of Texas at Austin] Edited by David L. Lambert. San Francisco, Calif., Astronomical Society of the Pacific, 1991. (Astronomical Society of the Pacific conference series, v. 20) p. 1-17. illus., ports.

Two other portraits appear on p. v and vii.

Smith, Robert W. The biggest kind of big science: astronomers and the Space Telescope. In Big science: the growth of large-scale research. Edited by Peter Galison and Bruce Hevly. Stanford, Calif., Stanford University Press, 1992. p. 184-211. illus.

Sobotko, Paweł. Kto jest autorem słynnego dwuwiersza o Koperniku? *Urania (Kraków)*, r. 63, luty 1992: 58-60.

On the origin of a famous couplet epitomizing Copernicus's achievement.

Spaight, John T. The Porter Garden Telescope. *Rittenhouse*, v. 6, Aug. 1992: 97-102. illus.

Stephenson, F. Richard. A re-investigation of the 'double dawn' event recorded in the Bamboo Annals. In Royal Astronomical Society. *Quarterly journal*, v. 33, June 1992: 91-98. illus., map.

Stephenson, F. Richard. Stargazers of the orient. *New scientist*, v. 137, Jan. 2, 1993: 32-34. col. illus.

"A remarkable map of the stars has survived more than 2000 years to give us a picture

of how Chinese astronomers saw the sky."

The map decorates the ceiling of a tomb in Sian that dates from "the end of the Western Han dynasty, around 25 BC."

Stevens, Albert. Ferdinand Verbiest, jésuite missionnaire, astronome et mandarin blanc. *Lumen vitae*, v. 44, no 2, 1989: 217-227.
English summary.

Stieglitz, Robert R. The Chaldeo-Babylonian [sic] planet names in Hesychius. In *Fucus: a Semitic/Afrasian gathering in remembrance of Albert Ehrman*. Edited by Yoël L. Arbeitman. Amsterdam, Philadelphia, J. Benjamins Pub. Co., 1988. (Amsterdam studies in the theory and history of linguistic science. Series IV, Current issues in linguistic theory, v. 58) p. 443-447.

Strumpf, Manfred. Die Gothaer Sternwarten. *Sterne und Weltraum*, 31. Jahrg., Okt. 1992: 608-613. illus. (part col.), plans; col. ports.

Strumpf, Manfred, and Oliver Schwarz. Humboldt's Bemühungen um die Gründung einer Sternwarte in Gotha. Ein neu entdeckter Briefwechsel, der auf eine Mitwirkung Enckes hinweist. *Die Sterne*, Bd. 68, Heft 3, 1992: 175-178. illus.

Strumpf, Manfred. Vom Artillerieleutnant zum Sternwartendirektor: Enckes Gothaer Jahre, 1816-1825. *Die Sterne*, Bd. 68, Heft 3, 1992: 137-142. illus.

Sumira, Sylvia. Restoration of heaven and earth: the conservation of globes. *Bulletin of the Scientific Instrument Society*, no. 33, June 1992: 4-7. illus.

Tadić, Milutin. Rimski cilindrični sunčanik iz Diluntuma (Stolac). In *Zemaljski muzej u Sarajevu. Glasnik. Arheologija*, nova serija, t. 45; 1990. Sarajevo. p. 147-154. illus., map.
Abstract and summary in English.

Tagliaferri, Guido, and Pasquale Tucci. Paolo Frisi e gli astronomi di Brera. In *Ideologia e scienza nell'opera di Paolo Frisi (1728-1784)*. A cura di Gennaro Barbarisi. Atti del Convegno internazionale di studi, Politecnico di Milano, 3-4 giugno 1985. v. 1. Milano, F. Angeli, 1987. (Il Settecento, 8) p. 145-160.

Tagliaferri, Guido, and Pasquale Tucci. La valorizzazione del patrimonio storico dell'Osservatorio astronomico di Brera. In *Convegno "Una realtà straordinaria: il patrimonio storico-scientifico italiano," Bologna, 1990. Instrumenta: il patrimonio storico scientifico italiano: un realtà straordinaria*. A cura di Giorgio Dragoni. Bologna, Grafis, 1991. p. 205-209. illus. (part col.)

Tate, Carolyn E. The city as a solar cosmogram. In *her Yaxchilan, the design of a Maya ceremonial city*. Austin, University of Texas Press, 1992. p. 111-115. illus.

Teichmann, Jürgen. "Der gestirnte Himmel über uns": zur Geschichte der neuen Ausstellung Astronomie. *Kultur & Technik*, 16. Jahrg., Nr. 3, 1992: 19-21. illus.
The new exhibition at the Deutsches Museum opened May 7, 1992.

Tenn, Joseph S. Bruce Medalist profiles. *Mercury*, v. 21, May/June, Sept./Oct.-Nov./Dec. 1992: 94-96, 110, 164-166, 194-196. ports.

Contents: George Ellery Hale, the thirteenth Bruce Medalist.—Edward Emerson Barnard, the fourteenth Bruce Medalist.—Ernest W. Brown, the fifteenth Bruce Medalist.

Accompanying the profile of Brown is an obituary of Jan Oort (p. 196), who was awarded the Bruce Medal in 1942.

Thomason, Neil. Could Lakatos, even with Zahar's criterion for novel fact, evaluate the Copernicus research programme? *British journal for the philosophy of science*, v. 43, June 1992: 161-200.

Thorsett, Stephen E. Identification of the pulsar PSR1509-58 with the 'guest star' of AD 185. *Nature*, v. 356, Apr. 23, 1992: 690-691. illus.

See also Richard N. Manchester's comments, "Dating Supernova Remnants," on p. 660-661 of this issue.

Thurston, Hugh. Greek and Indian planetary longitudes. *Archive for history of exact sciences*, v. 44, no. 3, 1992: 191-195.

Tiemann, Klaus H. Sternwartendirektor, Universitätslehrer und Akademiesekretär: Enckes berufliches Wirken in Berlin. *Die Sterne*, Bd. 68, Heft 3, 1992: 143-160. illus., port.

Tokarska-Bakir, Joanna. Obraz tradycyjnej astronomii i astrologii zarejestrowany u współczesnych Tybetańczyków. In *Lud; organ Polskiego Towarzystwa Ludoznawczego*. t. 72. Wrocław-Poznań, Polskie Towarzystwo Ludoznawcze, 1988. p. 147-182. illus.

English summary.

Troupéau, Gérard. Sur un astrologue mentionné dans le *Fihrist* (suite). *Arabica*, t. 39, mars 1992: 118-119.

Supplements a note that appeared in *Arabica*, t. 16, fév. 1969, p. 90.

Tubach, Jürgen. Mani und das 366-tägige Sonnenjahr. *Le Muséon*, t. 105, fasc. 1/2, 1992: 45-61.

Tuman, Vladimir S. Astrological omens from lunar eclipses as a source for Babylonian chronology, confirms the long chronology. In *High, middle, or low? Acts of an international colloquium on absolute chronology held at the University of Gothenburg, 20th-22nd August 1987*. pt. 3. Edited by Paul Åström. Gothenburg, P. Åströms Förlag, 1989. (Studies in Mediterranean archaeology and literature. Pocket-book, 80) p. 197-206.

Turner, Anthony J. Berthoud in England, Harrison in France: the transmission of horological knowledge in 18th century Europe. *Antiquarian horology*, v. 20, autumn 1992: 219-239. illus., facsimils., ports.

"Based on the third Dingwall-Belie Lecture, delivered at the British Museum on November 13th, 1991."

Van den Bergh, Sidney. The Nazca geoglyphs—an astronomical (?) mystery. *Vistas in astronomy*, v. 35, pt. 3, 1992: 273-280. illus.

Vasilij Grigor'evich Fesenkov (k 100-letiju so dnja rozhdenija). *Zemliâ i vselennaia*, fânv./febr. 1989: 27-39. illus., ports.

Contents: Straništy biografii.—Karâagina, Z. V. V. G. Fesenkov—uchenyi i organizator.—Idlis, G. M. Uchitel'—glazami uchenika.—Grigor'eva, N. B. My byli pervymi.—Fesenkova, L. V. Vospominanija ob otse.

Vasold, Manfred. Die ver-rückte Zeit: der Kalender der Französischen Revolution. Kultur & Technik, 16. Jahrg., Nr. 4, 1992: 36-37. illus.

Venice Conference on Cosmology and Philosophy, 1st, Venice, 1987. Kosmos: cosmology today between science and philosophy. May 8-9, 1987, Venice, Italy. Edited by Francesco Bertola, Massimo Calvani, Umberto Curi. In Società astronomica italiana. Memorie, v. 62, n. 3, 1991: 417-530.

Contents: Curi, U. Cosmology at the crossroad: scienze [sic] or philosophy?—Gratton, L. Cosmology and epistemology.—Longo, O. Epicurean cosmology: a "steady-state universe."—Badaloni, N. The infinity theme in Galilei.—Zellini, P. Infinity, finite and error.—Arp, H. C. How can philosophy cope with changing fashions in science.—Sini, C. Boundaries of the world and ubiquity of the mind.—Bellone, E. Classic and non-intentional consequences of some Newtonian problems.—Heidmann, J. 1980's cosmology and bioastronomy: an odyssean perspective.—Pecker, J. C. The search for valid theories of the universe.—Hoyle, Sir F. Some remarks on cosmology and biology.—Narlikar, J. V. The role of quantum phenomena in our understanding of the universe.

Venice Conference on Cosmology and Philosophy, 3d, Venice, 1989. Origin and evolution of the universe; a Hubble centenary conference, December 15-16, 1989, Venice, Italy. Edited by Francesco Bertola, Massimo Calvani, Umberto Curi. In Società astronomica italiana. Memorie, v. 62, n. 3, 1991: 531-704. illus.

Contents: Kippenhahn, R. Edwin Hubble and cosmology.—Ellis, G. F. R. Major themes in the relation between philosophy and cosmology.—Penrose, R. What does the big bang tell us about quantum gravity?—Bodei, R. How the world ceased to be eternal: Christian objections to pagan cosmology.—Gratton, L. The cosmic experiment.—Davies, P. C. W. The arrow of time.—Rees, M. J. Will the universe expand forever?—Weidmann, V. The concept of the universe and the problem of reality.—Heidmann, J. Final panel discussion.—Casanovas, J. Final panel discussion.

Vitinskii, IUrii I., T. V. Krat, Vladislav M. Sobolev, Vadim A. Antonov, and Vitalii G. Gorbatskii. Vladimir Alekseevich Krat i istorija sovetskoi astronomii. Ocherki istorii estestvoznanija i tekhniki, vyp. 40, 1991: 32-38. ports.

Voigt, Hans H. Johann Hieronymus Schroeter, Astronom. Rede anlässlich der Enthüllung einer Gedenktafel am 14.10.1988, Rote Strasse 17. In Göttinger Jahrbuch. Bd. 36; 1988. Göttingen, E. Goltze. p. 277-280.

Voigt, Hans H. Wilhelm Olbers, Astronom. Rede anlässlich der Enthüllung einer Gedenktafel am 11.10.1990, Weender Strasse 48. In Göttinger Jahrbuch. Bd. 38; 1990. Göttingen, E. Goltze. p. 247-249.

Wade, Peter. Lancaster's lost observatory. In British Astronomical Association, London. Journal, v. 102, June 1992: 160-162. illus.

Weigl, Engelhard. Das Teleskop und das Auge. In his Instrumente der Neuzeit; die Entdeckung der modernen Wirklichkeit. Stuttgart, J. B. Metzlersche Verlagsbuchhandlung, 1990. p. 24-52. illus., port.

Contents: Galilei und das Teleskop.—Das Teleskop und das Auge.—Reflexive Teleskopie: G. Galilei—Hannah Arendt—Hans Blumenberg.

Weyant, Marcel. Un grand astronome normand: André Danjon. In Académie nationale des sciences, arts et belles-lettres de Caen. Mémoires. t. 28; 1990. Caen. p. 45-58.

Weyant, Marcel. La grande comète de 1618 observée par l'astronome caennais Gilles Macé: de l'astronomie à l'astrologie. In Académie nationale des sciences, arts et belles-lettres de Caen. Mémoires. t. 25; 1987. Caen. p. 137-159. illus.

White, James C. Publication rates and trends in international collaborations for astronomers in developing countries, Eastern European countries, and the former Soviet Union. In Astronomical Society of the Pacific. Publications, v. 104, June 1992: 472-476. illus. Based on a survey of the *Astrophysical Journal* and the *Astronomical Journal* for the period 1960-89.

Whitney, Charles A. 'The Starry Night' illuminated. Physics today, v. 45, Aug. 1992, pt. 1: 13. Discusses several of Van Gogh's paintings that include views of the night sky.

Willerdeing, Eugen. James C. Maxwell und die Stabilität der Saturnringe. Physikalische Blätter, 48. Jahrg., Okt. 1992: 799-803. illus., port.

Williams, Thomas R. Some little known variable star astronomers from around the world. In Variable star research, an international perspective. Proceedings of the first European meeting of the American Association of Variable Star Observers: international cooperation and coordination in variable star research. Edited by John R. Percy, Janet Akyuz Mattei, Christiaan Sterken. Cambridge, New York, Cambridge University Press, 1992. p. 21-35.

Winkler, Louis. The Serpent Mound and serpentine meteors. Ohio archaeologist, v. 42, winter 1992: 56-59. illus., map.

Wright, David. Thomas Lewis [1856-1927]: a lifetime of double stars. In British Astronomical Association, London. Journal, v. 102, Apr. 1992: 95-101. illus., ports.

Wünsch, J. Astrometric observations of Hevelius and derived values of ΔT (dynamical time - universal time). In Earth's rotation from eons to days. Proceedings of a workshop held at the Centre for Interdisciplinary Research (ZIF) of the University of Bielefeld, FRG, September 26-30, 1988. P. Brosche, J. Sündermann (eds.). Berlin, New York, Springer-Verlag, 1990. p. 21-26. illus.

Zbierski, Andrzej. Wyniki badań grobu Jana Heveliusza. Kwartalnik historii kultury materialnej, r. 39, nr. 2, 1991: 153-170. illus., map, plan.

Zuccoli, Marina. La biblioteca del Dipartimento di Astronomia dell'Università di Bologna. In Convegno "Una realtà straordinaria: il patrimonio storico-scientifico italiano," Bologna, 1990. Instrumenta: il patrimonio storico scientifico italiano: una realtà straordinaria. A cura di Giorgio Dragoni. Bologna, Grafis, 1991. p. 93-98. illus.