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Abstracts

Edited by Sloan Evans Despeaux and Kim Plofker

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Books for abstracting and eventual review should be sent to this department. Materials should be sent to Sloan Evans Despeaux, Department of Mathematics and Computer Science, Western Carolina University, Cullowhee, NC 28723, U.S.A. (e-mail: despeaux@wcu.edu).

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In order to facilitate reference and indexing, entries are given abstract numbers which appear at the end following the symbol #. A triple numbering system is used: the first number indicates the volume, the second the issue number, and the third the sequential number within that issue. For example, the abstracts for Volume 20, Number 1, are numbered: 20.1.1, 20.1.2, 20.1.3, etc.

For reviews and abstracts published in Volumes 1 through 13 there are an *author index* in Volume 13, Number 4, and a *subject index* in Volume 14, Number 1.

The initials in parentheses at the end of an entry indicate the abstractor. In this issue there are abstracts by Francine Abeles (Union, NJ), Joe Albree (Montgomery, AL), Mohammad K. Azarian (Evansville, IN), Timothy B. Carroll (Ypsilanti, MI), Christopher Hammond (New London, CT), Laura Martini (Siena), Fernando Zalamea (Bogotá), Kim Plofker, and Sloan Evans Despeaux.

General (multi-period/multi-cultural works, proceedings, collections, encyclopaedias, etc.)

Arianrhod, Robyn. *Einstein's Heroes: Imagining the World through the Language of Mathematics*, New York: Oxford University Press, 2005, xii + 323 pp. The author analyzes the use of mathematical language for understanding and describing the world. The life and work of Isaac Newton, Michael Faraday, and, most of all, James Clerk Maxwell figure prominently. See the review by Craig W. Roberts of the original edition in *Mathematical Reviews* 2036926 (**2005i**:01001). (LM) #33.4.1

Cahn, Michael. Opera omnia: The production of cultural authority, in #33.4.4, pp. 81–94. (KP) #33.4.2

Chemla, Karine. Algorithmes et histoire de la démonstration mathématique [Mathematical proofs: Algorithms and history], in #33.4.15, pp. 175–204. #33.4.3

Chemla, Karine, ed. *History of Science, History of Text*, Dordrecht: Springer-Verlag, 2004, xxviii + 254 pp. This book is composed of papers from a workshop held on 30 March–2 April 1995 in Berlin. The papers are abstracted separately as #33.4.2, #33.4.5, #33.4.16, #33.4.19, #33.4.26, #33.4.38, #33.4.39, #33.4.51, #33.4.57, #33.4.82, and #33.4.100. (KP) #33.4.4

Chemla, Karine. What is the content of this book? A plea for developing history of science and history of text conjointly, in #33.4.4, pp. 201–230. (KP) #33.4.5

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Derbyshire, John. *Unknown Quantity: A Real and Imaginary History of Algebra*, Washington, DC: Joseph Henry Press, 2006, 376 pp., hardcover. What the author describes as "a history of algebra, written for the curious nonmathematician." See the review by Luiz Henrique de Figueiredo at *MAA Online* [http://www.maa.org/reviews/UnknownQuantity.html]. (SED) #33.4.6

Friberg, Jöran. *Unexpected Links between Egyptian and Babylonian Mathematics*, Hackensack, NJ: World Scientific, 2005, xii + 294 pp. The author compares and sees connections between pre-Greek Egyptian and Babylonian mathematics, contradicting prevailing opinion. See the review by K.-B. Gunlach in *Mathematical Reviews* 2169808 (**2006f**:01001). (TBC) #33.4.7

Guerrero, A. Berenice, Axiomatization in mathematics [in Spanish], *Boletín de Matemáticas (N.S.)* **11** (1) (2004), 79–94. The author gives an account of the process of axiomatization in mathematics through history. (LM) #33.4.8

Hasnawi, Ahmed. *See* #33.4.15.

Kaplan, Pierre. L'équation de Pell–Fermat de Fermat à nos jours et un problème de Gauss [The Pell–Fermat equation from Fermat to today, and a problem of Gauss], in #33.4.15, pp. 205–219. #33.4.9

Kenschaft, Patricia Clark. *Change is Possible: Stories of Women and Minorities in Mathematics*, Providence, RI: American Mathematical Society, 2005, ix + 212 pp., paperback. A collection of anecdotes and interviews intended to appeal to anyone interested in the plight of historically underrepresented groups within the mathematical sciences. See the review by Z. Denkowska in *Mathematical Reviews* 2167140 (**2006g**:01019). (CH) #33.4.10

Koren, Barry. Computational fluid dynamics: Science and tool, *Mathematical Intelligencer* 28 (1) (2006), 5–16. A commentary highlighting the important developments in the history of theoretical fluid dynamics and its computational applications. The story begins with L. Euler's equations of motion for the flow of liquids and gases and includes the fluid-flow equations of C. Navier and G. Stokes. From there, the scene switches to modern computational fluid dynamics (CFD) and the contributions particularly of J. von Neumann, P. Lax, S.K. Godunov, and B. van Leer, whose work has led to available CFD software, particularly for aerodynamics. (FA) #33.4.11

Lenhard, Johannes; and Otte, Michael. Grenzen der Mathematisierung—von der grundlegenden Bedeutung der Anwendungen [Limits of mathematization—on the basic significance of applications], *Philosophia Naturalis* **42** (1) (2005), 15–47. The authors argue for the concept of a "fundamental mode" of mathematics that is oriented toward applications, supporting this argument on historical and philosophical grounds. They use this concept to explain the growth of mathematization from the 17th century onward (and particularly the development of "pure" mathematics in the 19th century) as a consequence of mathematics becoming "reflexive," i.e., taking itself as an object of its application-oriented approach. This "reflexive mathematization," the authors conclude, is fundamentally self-limiting. (KP) #33.4.12

Lloyd, G.E.R. New issues in the history of ancient science, *Apeiron* **37** (2004), 9–26. The author makes a case for "ecumenism" in the study of the history of science. He advocates that a comparative program be adopted in the study of different traditions in mathematics and the sciences. See the review by Karine C. Chemla in *Mathematical Reviews* 2138997 (**2006f**:01003). (TBC) #33.4.13

Mollin, Richard A. *Codes: The Guide to Secrecy from Ancient to Modern Times* (*Discrete Mathematics and Its Applications* **33**), Boca Raton, FL: Chapman & Hall/CRC, 2005, xx + 679 pp., hardback. An historical overview of the use and development of cryptographic codes. The author discusses numerous applications of cryptography, dating from classical antiquity to the present time. See the review by M.A. Burgin in *Mathematical Reviews* 2147215 (**2006g**:94027). (CH) #33.4.14

Molnár, Emil. *See* #33.4.18.

Morelon, Régis; and Hasnawi, Ahmad, eds. *De Zénon d'Élée à Poincaré* [*From Zeno of Elea to Poincare*], Leuven: Éditions Peeters, 2004, xl + 909 pp. This book presents 39 essays in honor of Roshdi Rashed. The book contains sections on mathematics, astronomy, physics, philology, and philosophy. The essays dealing with the history of mathematics are listed separately as #33.4.3; #33.4.9; #33.4.40; #33.4.41; #33.4.42; #33.4.44; #33.4.45; #33.4.49; #33.4.53; #33.4.54; #33.4.58; #33.4.75; #33.4.99; and #33.4.122. (LM/SED) #33.4.15

Olson, David R. Knowledge and its artifacts, in #33.4.4, pp. 231–245. (KP) #33.4.16

Otte, Michael. *See* #33.4.12.

Parés, Ramon; and Vernet, Joan, eds. Science in the History of Catalan Countries. Vol. I: From the Arabs to the Renaissance [in Catalan], València/Barcelona: Universitat de València/Institut d'Estudis Catalans, 2004, 629 pp., hardbound. The first of a projected three volume series on the history of science in the "Catalan countries" (encompassing the communities around Barcelona, Valencia and the Balearic Islands, extended to the borders of the Pays d'Oc in the Middle Ages), this first volume includes, in a first part, 6 chapters on the interrelations between the Arab scientific heritage and the uprise of science in medieval Catalunya, and, in a second part, 12 chapters on the consolidation of science through scholastic activities in the Universities and through the practical intertwinings between science and technology until the Renaissance (medicine, alchemy, astronomy, cartography, and hydraulics). The book includes many illustrations of scientific instruments, maps, diagrams, and a complete index of names. The imposing extension and comprehensiveness of the book exhibits the cardinal role that Catalunya may have played in the shadowy beginnings of European science. Chapters more specifically related to the history of mathematics are abstracted separately as #33.4.59; #33.4.60; #33.4.61; #33.4.76; #33.4.78; and #33.4.79. (FZ) #33.4.17

Prékopa, András; and Molnár, Emil, eds. *Non-Euclidean Geometries. János Bolyai Memorial Volume*, New York: Springer-Verlag, 2006, xiv + 506 pp. This book is comprised of papers from the International Conference on Hyperbolic Geometry held in Budapest, 6–12 July 2002. Those papers with historical content are listed or abstracted separately here as #33.4.120; #33.4.125; #33.4.128; and #33.4.183. (SED) #33.4.18

Rheinberger, Hans-Jörg. Writing works: A reaction to Michael Cahn's paper, in #33.4.4, pp. 95–103. (KP) #33.4.19

Sharma, Anita. *See* #33.4.20.

Sharma, V.K.; and Sharma, Anita. History of development of binomial expansion, *Gaṇita-Bhāratī* **26** (1–4) (2004), 166–172. A brief survey of the evolution of the binomial theorem from its ancient to its modern forms. See the review by James J. Tattersall in *Mathematical Reviews* 2167898 (**2006g**:01004). (CH) #33.4.20

Vernet, Joan. *See* #33.4.17.

Więsław, Witold, ed., *European Mathematics in the Last Centuries*, Wrocław: University of Wrocław, Mathematical Institute, 2005. This book contains the proceedings of an April 2004 conference held in Będlewo. Papers in these proceedings are abstracted or listed separately as #33.4.84; #33.4.85; #33.4.91; #33.4.95; #33.4.126; #33.4.129; #33.4.131; #33.4.148; #33.4.154; #33.4.162; and #33.4.170. #33.4.21

Mesopotamia

Melville, Duncan J. The area and the side I added: Some old Babylonian geometry, *Revue d'Histoire des Mathématiques* **11** (1) (2005), 7–21. The author makes a convincing argument that the Babylonian scribes used a method for calculating areas of nonsquares with the algorithm that Jens Høyrup and others describe for solving quadratic problems. See the review by Victor J. Katz in *Mathematical Reviews* 2183027 (**2006f**:01005). (TBC) #33.4.22

Yuste, Piedad. Algebra and geometry in the Old Babylonian period: Matters concerning reeds, *Centaurus* **47** (4) (2005), 298–315. From the summary: "One of the mathematical topics examined in the Old Babylonian period consisted of calculating the size of a reed which was used to measure either a longitude or the perimeter of a rectangle or trapezium. These subjects were solved, probably, by applying the geometric construction called completing the square." The author argues against the hypothesis of Neugebauer and Thureau-Dangin that Old Babylonian geometry problems relied on a sort of "numerico-algebraic" symbolism, supporting instead the more recent arguments of Høyrup that the rules employed a more concrete cut-and-paste geometry. (KP) #33.4.23

India

Dutta, Amartya Kumar. Brahmagupta's bhāvanā: Some reflections, in #33.4.27, pp. 77–114. A modern analysis and historical overview of the techniques used by the 7th-century Indian mathematician Brahmagupta to solve so-called "square-nature" problems, or second-degree indeterminate equations. These are based on a principle of binary composition called in Sanskrit "bhāvanā." The author also argues for the advantages of this principle in the pedagogy of modern algebra. (KP) #33.4.24

Emch, Gérard G.; Sridharan, Ramaiengar; and Srinivas, M.D., eds. *Contributions to the History of Indian Mathematics*, New Delhi: Hindustan Book Agency, 2005, xii + 288 pp. This book consists of papers from the first Joint India–AMS Meeting in Mathematics held on 18 and 20 December 2003 in Bangalore. The papers are abstracted separately as #33.4.24, #33.4.29, #33.4.31, #33.4.32, #33.4.33, #33.4.34, #33.4.35, #33.4.36, #33.4.37, #33.4.135, and #33.4.149. #33.4.25

Filliozat, Pierre-Sylvain. Ancient Sanskrit mathematics: An oral tradition and a written literature in #33.4.4, pp. 137–157. (KP) #33.4.26

Gupta, Radha Charan. Mensuration of circle according to Jaina mathematical Gaṇitānuyoga, *Gaṇita-Bhāratī* **26** (1–4) (2004), 131–165. A discussion of classical Jaina methods for mensuration of the circle, along with a presentation of other traditional Indian algorithms. See the review by Doru Ştefănescu in *Mathematical Reviews* 2167897 (**2006g**:01007). (CH) #33.4.27

Kichenassamy, Satyanad. Baudhāyana's rule for the quadrature of the circle, *Historia Mathematica* **33** (2) (2006), 149–183. This paper reviews reconstructions of the rule for the approximate quadrature of a circle found in the Baudhāyana-Śulva-Sūtra and then gives a new one of its own based on manipulations with cords. (SED) #33.4.28

Linton, F.E.J. Shedding some localic and linguistic light on the tetralemma conundrums, in #33.4.27, pp. 63–73. This article uses modern nonstandard logic to analyze the Buddhist logical paradigm of the *catuṣkoṭi* or tetralemma, which may be represented as including canonical propositions P, not-P, P-and-not-P, and neither-P-nor-not-P. (KP) #33.4.29

Madhukar Mallayya, V. An interesting algorithm for computation of sine tables from the *Golasāra* of Nīlakaṇṭha, *Gaṇita-Bhāratī* **26** (1–4) (2004), 40–55. An explanation of the trigonometric techniques employed in the *Golasāra*, a 15th-century text written by Nīlakaṇṭha Somayāji of Kerala. See the review by George Abraham in *Mathematical Reviews* 2167894 (**2006g**:01008). (CH) #33.4.30

Patte, François. The karaṇī: How to use integers to make accurate calculations on square roots, in #33.4.27, pp. 115–134. The author examines Indian techniques for manipulating "karaṇīs" or integer surd quantities to avoid unnecessary extraction of square roots. He notes the defense of these techniques in a 17th-century commentary on the grounds that they reduce the inaccuracy involved in approximating irrational square roots. (KP) #33.4.31

Plofker, Kim. Relations between approximations to the sine in Kerala mathematics, in #33.4.27, pp. 135–152. The author discusses two series expansions for trigonometric quantities given by mathematicians of the Mādhava school in late medieval Kerala, known today as South India. The reasoning behind these series and possible links between them are discussed. (SED) #33.4.32

Ramasubramanian, K. Algorithms in Indian astronomy, in #33.4.27, pp. 183–208. An exploration of some representative algorithms in Indian astronomy from the 7th century to the 16th century, including the use of iterative techniques to avoid the problem of interdependency among several variables. (KP) #33.4.33

Sridharan, Ramaiengar. Mathematics in ancient and medieval India, in #33.4.27, pp. 1–29. Surveys highlights of the Indian mathematical tradition from the ancient ritual geometry of the Vedic period to the work on infinite series of the Kerala school in the mid-second millennium CE. (KP) #33.4.34

Sridharan, Ramaiengar. Sanskrit prosody, Piṅgala sūtras and binary arithmetic, in #33.4.27, pp. 33–62. Examines the mathematical aspects of the work on prosody or poetic metrics of the Indian scholar Piṅgala in the late first millennium BCE. The author emphasizes the relation between Sanskrit prosody's algorithms for combining light and

heavy syllables and the structure of binary arithmetic, as well as their influence on the development of early Indian combinatorics. (KP) #33.4.35

Sridharan, Ramaiengar. *See also*: #33.4.27.

Srinivas, M.D. Proofs in Indian mathematics, in #33.4.27, pp. 209–247. This article surveys the concept of proof in Indian mathematical texts, the disputes about it in modern historiography of mathematics, and its relation to epistemological and logical concepts in other Indian disciplines. The author argues for the use of Indian concepts of proof to help shape a broader mathematical epistemology that transcends the limitations of Platonic mathematical concepts of truth and rigor. (KP) #33.4.36

Srinivas, M.D. *See also*: #33.4.27.

Sriram, M.S. Algorithms in Indian mathematics, in #33.4.27, pp. 153–182. This article discusses some representative algorithms in Indian mathematics from the ritual geometry of ancient altar construction to the infinite-series computation of π by the Kerala mathematician Mādhava in the 14th century. (KP) #33.4.37

See also: #33.4.55, #33.4.135, and #33.4.149.

China

Clunas, Craig. Text, representation and technique in early modern China, in #33.4.4, pp. 107–121. (KP) #33.4.38

Dorofeeva-Lichtmann, Vera. Spatial organization of ancient Chinese texts (preliminary remarks), in #33.4.4, pp. 3–47. (KP) #33.4.39

Islamic/Islamicate

Abgrall, Philippe. Al-Qūhī, Archimédien [Al-Qūhī, Archimedean], in #33.4.15, pp. 85–118. #33.4.40

Alkhateeb, Haitham M. *See* #33.4.48.

Bellosta, Hélène. L'émergence du négatif [The emergence of the notion of negative number], in #33.4.15, pp. 65–83. #33.4.41

Ben Miled, Marouane. Les quantités irrationnelles dans l'œuvre d'al-Karajī [Irrational quantities in the works of al-Karajī], in #33.4.15, pp. 27–54. #33.4.42

Berggren, J.L.; and Van Brummelen, Glen. Al-Kūhī's revision of Book I of Euclid's *Elements*, *Historia Mathematica* **32** (4) (2005), 426–452. This version of al-Kūhī's (late 10th century C.E.) work on Book I of Euclid's *Elements* contained 29 propositions, with proofs some of which were quite different from Euclid's, but no definitions nor axioms. Al-Kūhī proved Euclid's fourth postulate as his Proposition 1, he omitted all of Euclid's constructions, and he devised his own sequencing for the theorems. The authors of this paper provide the Arabic text and for their translation into English, they add commentaries. (JA) #33.4.43

Crozet, Pascal. Al-Siǧzī et la tradition des problèmes de division des figures [Al-Siǧzī and the tradition of problems of the division of figures], in #33.4.15, pp. 119–159. #33.4.44

Freudenthal, Gad; and Lévy, Tony. De Gérase à Bagdad: Ibn Bahrīz, al-Kindī, et leur recension arabe de Introduction arithmétique de Nicomaque, d'après la version hébraïque de Qalonymos ben Qalonymos d'Arles [From Gerasa to Baghdad: Ibn Bahrīz, al-Kindī and their Arabic translation of the *Introduction to Arithmetic* according to the Hebrew version of Qalonymos ben Qalonymos of Arles], in #33.4.15, pp. 479–554. #33.4.45

Goudarzi, Arman Karimi. *See* #33.4.50.

Lévy, Tony. *See* #33.4.47.

Oaks, Jeffrey A.; and Alkhateeb, Haitham M. *Māl*, enunciations, and the prehistory of Arabic algebra, *Historia Mathematica* **32** (4) (2005), 400–425. Variations in the use of the Arabic word *māl* are examined in five manuscripts

and translations of works we now call algebra, produced between the 9th and the 12th centuries. The result of the progression in meanings of *māl* over these centuries was "the uniting of two ideas: The naming of an unknown as 'thing,' which allows the creation of equations and the rules for simplifying them, and the procedures for solving simplified quadratic equations." (JA) #33.4.46

Savadi, Fatema. A criticism on Rosenfeld's argumentation on the attribution of a mathematical treatise to Ulugh Beg [in Persian], *Majalle-ye Tārīkh-e-'Elm* **4** (2005–2006), 85–103. In this article the author argues, with some supporting documents, that the author of *Risāla fi istikhrājayb daraja wāhida* (*Treatise on the Determination of the Sine of One Degree*) is Kādizāda [Qādī zāde] al-Rūmī. In a 2002 paper entitled, "A mathematical treatise written in the Samarqand Observatory of Ulugh Beg," Boris Rosenfeld and Jan P. Hogendijk attributed the above treatise not to Qādī zāde al-Rūmī, but to Ulugh Beg. Pages 27–32 of Rosenfeld and Hogendijk's paper are reprinted at the end of Savadi's article. (MKA) #33.4.47

Savoie, Denis. Study of an Arabic–Islamic cylindrical sundial [in French], *Majalle-ye Tārīkh-e-'Elm* **4** (2005–2006), 7–13 (foreign section). The author presents the mathematics involved in the design and construction of an 18th-century cylindrical sundial located in the Cairo Citadel. Also, the same issue of this journal contains a Persian translation of this article by Arman Karimi Goudarzi (in the Persian section on pp. 71–83). (MKA) #33.4.48

Vahabzadeh, Bijan. Umar al-Khayyām and the concept of irrational number, in #33.4.15, pp. 55–63. #33.4.49

Van Brummelen, Glen. *See* #33.4.43.

Other Non-Western

Imhausen, Annette. Ancient Egyptian mathematics: A new perspective on old sources, *Mathematical Intelligencer* **28** (1) (2006), 19–27. The author gives an overview of current research on ancient Egyptian mathematics and describes her own approach emphasizing its cultural dependence. Employing a rewriting procedure as a tool to compare the structure of mathematical problems texts, she claims that the analysis of all of these available texts together with additional related material provide a better understanding of the role of mathematics within Egyptian culture than relying exclusively on an internal analysis of a small body of such texts, which until recently has been the basis for assessing the mathematics of ancient Egypt. (FA) #33.4.50

Ritter, Jim. Reading Strasbourg 368: A thrice-told tale, in #33.4.4, pp. 177–200. (KP) #33.4.51

Rossi, Corinna. *Architecture and Mathematics in Ancient Egypt*, Cambridge, UK: Cambridge Univ. Press, 2004, xxii + 280 pp. The author investigates the mathematics behind ancient Egyptian architecture. See the review by Eleanor Robson in *Isis* **96** (2) (2005), 268–270. (SED) #33.4.52

Sasaki, Chikara. How was the terminology of modern Western mathematics translated into Japanese? in #33.4.15, pp. 845–858. #33.4.53

Antiquity

Decorps-Foulquier, Micheline. Sur les rencontres entre sections dans les Coniques Apollonius de Perge: Remarques sur le texte grec de la préface du Livre I [On the intersections of sections in the *Conics* of Apollonius of Perga: Remarks on the Greek text of the Preface of Book I], in #33.4.15, pp. 427–436. #33.4.54

Klintberg, Bo. Hipparchus's 3600′-based chord table and its place in the history of ancient Greek and Indian trigonometry, *Indian Journal of History of Science* **40** (2) (2005), 169–203. This paper continues the decades-old debate about the trigonometric parameters used by Hipparchus to compute the ratios for planetary models cited by Ptolemy in the *Almagest*. The chief focus of the debate is the question of whether Hipparchus used a trigonometric radius of 3438 arcminutes, a value attested in later Indian texts, and thus of whether this Indian value might have been derived from Greek sources. The author argues that the available evidence about Hipparchus' calculations is compatible with the hypothesis that he used a radius of 3600 rather than 3438 arcminutes, and shows the calculations as reconstructed in accordance with this hypothesis. (KP) #33.4.55

Mansfeld, Jaap. *Prolegomena Mathematica: From Apollonius of Perga to Late Neoplatonism*, Leiden/Boston: E.J. Brill, 1998, viii + 178 pp. The author looks at the introductions to ancient Greek treatises on mathematics in order to analyze a set of themes found in them. See the review by Karin Tybjerg in *Isis* **94** (4) (2003), 705. (SED) #33.4.56

Netz, Reviel. The limits of text in Greek mathematics, in #33.4.4, pp. 161–176. (KP) #33.4.57

Vuillemin, Jules. Les témoignages aristotéliciens sur les arguments de Zénon d'Élée: une version double [Aristotle's presentation of Zeno's arguments: a double version], in #33.4.15, pp. 1–26. #33.4.58

Middle Ages

Badia, Lola. Science in the work of Ramon Llull [in Catalan], in #33.4.17, pp. 403–442. Witness of a strong renewal on Llull's studies in Catalonian Universities (Barcelona, Girona, Illes Balears) in the last decade, the paper provides a careful overview of Llull's amazingly wide scientific interests. From a mathematical perspective, Llull's *Art*, which has been considered as a classification of the sciences oriented toward logical and technical control and has pioneered trends in topological logic and hierarchical recursion, is shown to lie at the heart of Llull's system. Llull's treatises on astronomy and geometry are also reviewed, as well as some more sparse data on mathematics. (FZ) #33.4.59

Chabàs, Josep. Astronomical activity in King Pere's epoch, XIVth century [in Catalan], in #33.4.17, pp. 483–514. The paper reviews some astronomical *Taules* (tables) related to the work of the astronomers/astrologers Dalmau Ses Planes, Jacob ben David Bonjorn and Bartomeu de Tresbéns, active in the Aragon-Catalonian Court under Pere el Cerimonós, as well as the more astrological bend taken later under Pere's successors. (FZ) #33.4.60

Comes, Mercè. Cartography in Mallorca and Barcelona [in Catalan], in #33.4.17, pp. 515–573. The paper provides an overview of Mallorca cartography in the Middle Ages and the Renaissance, including a review of previous nautical and geographical knowledge, a study on the origins of both Mediterranean and Mallorca cartography, lists of cartographers working in the island and in the Continent (France, Italy, Barcelona), and an analysis of the characteristics of Mallorca cartography, as compared to French, Italian, Arab, Turkish, Sevillian, or Portuguese cartography. (FZ) #33.4.61

Folkerts, Menso. Die Altercatio in der *Geometrie I* des Pseudo-Boethius. Ein Beitrag zur Geometrie im mittelalterlichen Quadrivium ["Altercatio" in the *Geometry I* of pseudo-Boethius. A contribution to geometry in the medieval quadrivium], in #33.4.65, pp. VIII-1–VIII-31. #33.4.62

Folkerts, Menso. Die älteste mathematische Aufgabensammlung in lateinischer Sprache: Die Alkuin zugeschriebenen *Propositiones ad acuendos iuvenes*. Überlieferung, Inhalt, kritische Edition [The oldest mathematical collection in Latin: The *Propositiones ad acuendos iuvenes* attributed to Alcuin. Critical edition], in #33.4.65, pp. V-1–V-65. #33.4.63

Folkerts, Menso. *De arithmeticis propositionibus*. A mathematical treatise ascribed to the Venerable Bede, in #33.4.65, pp. III-1–III-30. This essay is an updated and extended English version of ["Pseudo-Beda: *De arithmeticis propositionibus*. Eine mathematische Schrift aus der Karolingerzeit," *Sudhoffs Archiv. Zeitschrift für Wissenschaftsgeschichte* **56** (1972), 22–43]. (SED) #33.4.64

Folkerts, Menso, ed. *Essays on Early Medieval Mathematics. The Latin Tradition*, Aldershot: Ashgate Publishing Limited, Variorum, 2003, xiv + 366 pp., hardcover. These essays by Folkerts concern mathematics during the period between ca. 500 and 1100 in the medieval West. Four of these essays appear for the first time in English. The essays are listed as #33.4.62; #33.4.63; #33.4.64; #33.4.66; #33.4.67; #33.4.68; #33.4.70; #33.4.71; #33.4.72; #33.4.73; and #33.4.74. (SED) #33.4.65

Folkerts, Menso. The *Geometry II* ascribed to Boethius, in #33.4.65, pp. IX-1–IX-9. This essay is an English translation of ["Das Problem der pseudo-boethischen Geometrie," *Sudhoffs Archiv. Zeitschrift für Wissenschaftsgeschichte* **52** (1968), 152–161]. (SED) #33.4.66

Folkerts, Menso. The importance of the Latin Middle Ages for the development of mathematics, in #33.4.65, pp. I-1–I-24. This essay is an English translation of "Die Bedeutung des lateinischen Mittelalters für die Entwicklung

der Mathematik—Forschungsstand und Probleme," that appeared in [C. Hünemörder, ed., *Wissenschaftsgeschichte heute*, Stuttgart: Steiner Verlag, 1987, pp. 87–114]. (SED) #33.4.67

Folkerts, Menso. The importance of the pseudo-Boethian *Geometria* during the Middle Ages, in #33.4.65, pp.VII-1–VII-24. #33.4.68

Folkerts, Menso. Leonardo Fibonacci's knowledge of Euclid's *Elements* and of other mathematical texts, *Bollettino di Storia delle Scienze Matematiche* **24** (1) (2004), 93–113. The author presents Fibonacci's works and studies the sources available to him. The author proves that Fibonacci knew and understood the *Elements*. See the review by Doru Ştefănescu in *Mathematical Reviews* 2163493 (**2006f**:01010). (TBC) #33.4.69

Folkerts, Menso. Mathematische Probleme im *Corpus agrimensorum* [Mathematical problems in the *Corpus agrimensorum*], in #33.4.65, pp. II-1–II-24. #33.4.70

Folkerts, Menso. The names and forms of the numerals on the abacus in the Gerbert tradition, in #33.4.65, pp. VI-1–VI-17. #33.4.71

Folkerts, Menso. The *Propositiones ad acuendos iuvenes* ascribed to Alcuin, in #33.4.65, pp. IV-1–IV-9. This essay is an English translation of "Die Alkuin Zugeschriebenen *Propositiones ad acuendoes iuvenes*," which appeared in [Paul Leo Butzer and Dietrich Lohrmann, eds. *Science in Western and Eastern Civilization in Carolingian Times*, Basel: Birkhäuser, 1993, pp. 273–281]. (SED) #33.4.72

Folkerts, Menso. "Rithmomachia," a mathematical game from the middle ages, in #33.4.65, pp. XI-1–XI-23. This essay is an English translation of "Rithmimachia" in [*Deutsche Literatur des Mittelalters*, Vol. 8, 2nd edition, Berlin: de Gruyter, 1990, cols. 86–94], and "Rithmimachie," in [Menso Folkerts, Eberhard Knobloch, Karin Reich, eds., *Maß, Zahl und Gewicht: Mathematik als Schlüssel zu Weltverständnis und Weltbeherrschung*, 2nd edition, Wiesbaden: Harrassowitz, 2001, pp. 333–340]. #33.4.73

Folkerts, Menso; and Smeur, A.J.E.M. A treatise on the squaring of the circle by Franco of Liège, of about 1050. I, II, in #33.4.65, pp. X-1–X-76. #33.4.74

Galonnier, Alain. Boèce et les Éléments d'Euclide : Quel maillon dans la chaîne des savoirs? [Boethius and the *Elements* of Eulcid: What link in the chain of knowledge?] in #33.4.15, pp. 437–478. #33.4.75

King, David. Astrolabes of medieval Catalonia [in Catalan], in #33.4.17, pp. 161–204. The paper gives a brief presentation of the history of the astrolabe and describes in detail five astrolabes connected to Catalunya: a Catalonian astrolabe of the 10th century, considered the oldest one in Europe, two other Catalonian astrolabes produced around 1300, an astrolabe of Petrus Raimundus' from 1375, and an Islamic astrolabe of the 11th century modified in Catalunya in the 14th century. (FZ) #33.4.76

Langermann, Y. Tzvi. Studies in medieval Hebrew Pythagoreanism: Translations and notes to Nicomachus arithmological tests, *Micrologus. Natura, Scienze e Societá Medievali. Nature, Sciences and Medieval Societies* **9** (2001), 219–236. The author initiates the investigation of traces of Pythagorean thought in medieval Hebrew texts. See the review by Glen R. Van Brummelen in *Mathematical Reviews* 2168436 (**2006f**:01009). (TBC) #33.4.77

Samsó, Julio. The beginnings of the introduction of Arab science to Europe through Catalonia [in Catalan], in #33.4.17, pp. 115–159. The paper studies the "introduction of Arab scientific material to Europe at the end of the Xth century" through "transferrers" (translators, men of science, ambassadors) on the Catalonian "frontier." The first European treatises on the construction and use of the astrolabe are shown to occur in that frontier, and calculations, tables and diagrams related to some astrolabes that circulated in the region are described. (FZ) #33.4.78

Samsó, Julio. Translations and original scientific work in Jewish communities. The development of Hebrew as a scientific language. Its projection in Languedoc and Provence [in Catalan], in #33.4.17, pp. 297–325. The paper studies the transmission of scientific inquiry in Spanish Jewish communities between 12th and 14th centuries, and, in particular, the work of Abraham bar Hiyya in arithmetic, geometry, astronomy and astrology. (FZ) #33.4.79

Simi, Annalisi. The legacy of Fibonacci's *Practica geometriae* in the geometry of the late Middle Ages and early Renaissance [in Italian], *Bollettino di Storia delle Scienze Matematiche* **24** (1) (2004), 9–41. The paper gives a

description of *Practica geometriae*, the mathematical knowledge and development of geometry of the time. See the review by Doru Ştefănescu in *Mathematical Reviews* 2163495 (**2006f**:01013). (TBC) #33.4.80

Simonov, R.A. The mathematical culture of ancient Russia in light of historical anthropology [in Russian], *Voprosy Istorii Estestvoznaniya i Tekhniki* **2** (2005), 66–87, 189. An analysis of several recently discovered documents that provide examples of the everyday mathematics employed in early medieval Russia. See the review by Štefan Porubský in *Mathematical Reviews* 2168120 (**2006g**:01009). (CH) #33.4.81

Smeur, A.J.E.M. *See* #33.4.74.

Renaissance

Cifoletti, Giovanna C. The algebraic art of discourse: Algebraic *dispositio*, invention and imitation in sixteenth-century France, in #33.4.4, pp. 123–135. (KP) #33.4.82

D'Hollander, Raymond. La théorie de la loxodromie de Pedro Nunes [The theory of loxodromy of Pedro Nunes], in #33.4.93, pp. 63–111. #33.4.83

Deschauer, Stefan. Further impressive problems from the Byzantine manuscript of 1436, in #33.4.21, pp. 19–36. See #33.4.85 and the review by Warren Van Egmond in *Mathematical Reviews* 2177654. (SED) #33.4.84

Deschauer, Stefan. Mathematik vor der Zeitenwende—Einige Glanzlichter in einer byzantinischen Handschrift von 1436 [Mathematics before the turn of an era—Some highlights in a Byzantine manuscript of 1436], in #33.4.21, pp. 7–18. This article as well as #33.4.84 discusses mathematical problems from the "Systematisches Rechenbuch" of Cod. Vind. Phil. Gr. 65 (ff. 11r-126v). See the review by Warren Van Egmond in *Mathematical Reviews* 2177653. (SED) #33.4.85

Groetsch, C.W. Nascent function concepts in *Nova scientia*, *International Journal of Mathematical Education in Science and Technology* **35** (6) (2004), 867–875. This paper discusses the origin of the concept of function, locating the emergence of "proto-functions" in Tartaglia's 16th-century treatise on ballistics. The author remarks in the summary: "The study of Tartaglia's ideas can be used in the classroom as a historical introduction to various function concepts, and certain modern extensions of Tartaglia's optimal range problem and inverse range problem are sources of enrichment for undergraduate courses in analysis, mathematical modeling and computation." (KP) #33.4.86

Knobloch, Eberhard. Nunes's "Book on Twilights," in #33.4.93, pp. 114–140. #33.4.87

Leitaõ, Henrique. Pedro Nunes and the Aristotelian mechanical problems, in #33.4.93, pp. 141–182. #33.4.88

Leitaõ, Henrique. *See also* #33.4.93.

Maclean, Ian. Thomas Harriot on combinations, *Revue d'Histoire des Mathématiques* **11** (1) (2005), 57–88. The paper examines some of Harriot's ideas on anagrams, atomism, and number theory in the light of current debates about intellectual categories in the late Renaissance. The common thread running through all the aspects of Harriot's work considered here is the concept of combinations: combining letters to form anagrams, atoms to form objects, and units to form numbers with certain mathematical properties. It is argued that Harriot's technical work in all these aspects indicates a high level of "decontextualization" or independence of the prevailing religious and philosophical intellectual climate. (KP) #33.4.89

Navarro Brotóns, Víctor. Aspects of the cosmographical work of Pedro Nunes and his influence on Iberian cosmography [in Portuguese], in #33.4.93, pp. 31–62. #33.4.90

Queiro, Joaõ Filipe. *See* #33.4.93.

Schreiber, Peter. Some news on Dürer's contributions to geometry, in #33.4.21, pp. 141–148. #33.4.91

Taveira da Fonseca, Fernando. From Lisbon to Coimbra: The university during the time of Pedro Nunes [in Portuguese], in #33.4.93, pp. 7–29. #33.4.92

Trabucho de Campos, Luís; Leitaõ, Henrique; and Queiro, Joaõ Filipe, eds. *International Conference Petri Nonii Salaciensis Opera* (Proceedings of the conference held in Lisbon and Coimbra, May 24–25, 2002), Lisbon: Universidade de Lisboa, 2003, 184 pp. A collection of five essays related to the work of the 16th-century Portuguese mathematician and polymath Pedro Nunes. These essays are abstracted separately as #33.4.83, #33.4.87, #33.4.88, #33.4.90, and #33.4.92. (KP) #33.4.93

Ulivi, Elisabetta. Maestri e scuole d'abaco a Firenze: La *Bottega di Santa Trinita* [Abacus teachers and schools in Florence: The *Bottega di Santa Trinita*], *Bollettino di Storia delle Scienze Matematiche* **24** (1) (2004), 43–91. A detailed study of the so-called "abacus schools" of Florence in the late middle ages and early Renaissance. Significant attention is devoted to the Bottega di Santa Trinita and the masters who taught there. See the review by B.D. Jovanović in *Mathematical Reviews* 2163492 (**2006g**:01010). (CH) #33.4.94

Więsław, Witold. Quatercentenary François Viète's death, in #33.4.21, pp. 149–159. #33.4.95

See also: #33.4.61; #33.4.80

17th century

Bertoloni Meli, Domenico. Who is afraid of centrifugal force? *Early Science and Medicine* **10** (4) (2005), 535–543. This article calls into question the widely held assumption that Robert Hooke rejected the notion of centrifugal force, thus paving the way for Newton's subsequent advances in celestial mechanics. See the review by H. Lausch in *Mathematical Reviews* 2178666 (**2006g**:01011). (CH) #33.4.96

Gal, Ofer. The invention of celestial mechanics, *Early Science and Medicine* **10** (4) (2005), 529–534. An exploration of Robert Hooke's theories relating to celestial mechanics, ideas that ultimately influenced Newton's understanding of orbital motion. See the review by Chris M. Linton in *Mathematical Reviews* 2178665 (**2006g**:01012). (CH) #33.4.97

Guicciardini, Niccolò. Reconsidering the Hooke–Newton debate on gravitation: Recent results, *Early Science and Medicine* **10** (4) (2005), 511–517. Guicciardini surveys findings concerning the relationship between Newton and Hooke including a 1685 manuscript by Hooke seeking a law of universal force 2 years before Newton's *Principia*. See the review by Ivor Grattan-Guinness in *Mathematical Reviews* 2178663 (**2006f**:010015a). (TBC) #33.4.98

Knobloch, Eberhard. La configuration (mécanique, géométrie, calcul) et ses bouleversements à la fin du XVII^{e} siècle. L'exemple de Leibniz [Configuration (mechanics, geometry, calculus) and its upheavals at the end of the 17th century. The example of Leibniz], in #33.4.15, pp. 161–174. #33.4.99

Knobloch, Eberhard. Leibniz and the use of manuscripts: Text as process, in #33.4.4, pp. 51–79. (KP) #33.4.100

Manders, Kenneth. Algebra in Roth, Faulhaber, and Descartes, *Historia Mathematica* **33** (2) (2006), 184–209. This paper considers Descartes' "multiplicative" theory of equations of his 1637 *Géométrie* as a response to suggestions made by Peter Roth's in his 1608 *Arithmetica Philosophica*. Roth's "seventh degree" problem set is specifically considered; Descartes may have worked with Johann Faulhaber on this set that is discussed in Faulhaber's 1622 *Miracula Arithmetica*. (SED) #33.4.101

Nauenberg, Michael. Hooke's and Newton's contributions to the early development of orbital dynamics and the theory of universal gravitation, *Early Science and Medicine* **10** (4) (2005), 518–528. Nauenberg investigates Newton's communication with Hooke (1679) concerning a particle moving about a center under an attractive force. From 1685 onward, Newton denies any influence from Hooke. See the review by Ivor Grattan-Guinness in *Mathematical Reviews* 2178664 (**2006f**:010015b). (TBC) #33.4.102

Nauenberg, Michael. Robert Hooke's seminal contribution to orbital dynamics, *Physics in Perspective* **7** (1) (2005), 4–34. This article presents the exchange of letters between Robert Hooke and Isaac Newton that began in November 1679. It also discusses the role the ideas expressed in Hooke's letters played in understanding planetary motion. See the review by Chris M. Linton in *Mathematical Reviews* 2132206 (**2005m**:70002). (LM) #33.4.103

Penchèvre, Erwan. L'élimination en algèbre aux XVII^{e} et XVIII^{e} siècles [Algebraic elimination in the 17th and 18th centuries], *Historia Scientiarum* (2) **14** (2) (2004), 101–117. This paper discusses the work of some seventeenth-

and eighteenth-century authors on the theory of elimination. In particular, it analyzes the genesis of the theory and explores the 18th-century attempts to prove and generalize the Bézout theorem. (LM) #33.4.104

Sellés, Manuel. Infinitesimals in the foundations of Newton's mechanics, *Historia Mathematica* **33** (2) (2006), 210–223. A discussion of Newton's uses of two concepts of "moment" or infinitesimal. The author then relates these concepts to ideas of force, discusses two concepts of moment (infinitesimal) used successively by Newton in his calculus, and relates these two concepts to the two concepts of force presented in the *Principia*. (SED) #33.4.105

See also: #33.4.89.

18th century

Arantegui Tamayo, José Luis. *See* #33.4.109.

Capecchi, Danilo; and Drago, Antonino. On Lagrange's history of mechanics, *Meccanica* **40** (1) (2005), 19–33. This paper discusses Lagrange's historical account of the development of mechanics included in his *Mècanique analytique*. (LM) #33.4.106

Drago, Antonino. *See* #33.4.106.

Durán Guardeño, Antonio José. *See* #33.4.109.

Hon, Giora. Kant vs. Legendre on symmetry: Mirror images in philosophy and mathematics, *Centaurus* **47** (4) (2005), 283–297. Explores the relationship between Kant's notion of the "incongruent [or not superposable] counterpart" or mirror image and the modern concept of symmetry, arguing that the latter idea has often been anachronistically imposed upon Kant's statements. The author maintains that symmetry in its modern sense emerged only later in the solid geometry of Legendre. (KP) #33.4.107

Jacob, Marie. Interdire la quadrature du cercle à l'Académie: Une décision autoritaire des Lumières? [The banning of circle squaring by the French Royal Academy: An authoritarian decision of enlightenment?], *Revue d'Histoire des Mathématiques* **11** (1) (2005), 89–139. A study of the circumstances surrounding the French Royal Academy's decision in 1775 to reject all papers purporting to square the circle. See the review by Bernard Rouxel in *Mathematical Reviews* 2183030 (**2006g**:01014). (CH) #33.4.108

Newton, Isaac. *Análisis de cantidades mediante series, fluxiones y diferencias, con una enumeración de las líneas de tercer orden* [*Analysis of Quantities via Series, Fluxions and Differences, with an Enumeration of the Lines of Third Order*], trans. José Luis Arantegui Tamayo, Seville: Real Sociedad Matemática Española, Madrid, 2003, clxxxviii + 254 pp. A Spanish translation of the original Latin text from 1711. The volume was annotated by Antonio José Durán Guardeño and edited by Durán Guardeño and Francisco Javier Pérez Fernández. It contains exhaustive footnotes, annotations, bibliographical references, and biographical material. See the review by Pierre Crépel in *Mathematical Reviews* 2127585 (**2006g**:01018b). (CH) #33.4.109

Newton, Isaac. *Analysis per quantitatum series, fluxiones, ac differentias: Cum enumeratione linearum tertii ordinis* [*Analysis of Quantities via Series, Fluxions and Differences: With an Enumeration of the Lines of Third Order*], Seville: Real Sociedad Matemática Española, Madrid, 2003, xiv + 101 pp. A facsimile of the original Latin work, published in London in 1711 by William Jones. It consists of a variety of shorter texts, many of which had been published previously. See the review by Pierre Crépel in *Mathematical Reviews* 2127584 (**2006g**:01018a). (CH) #33.4.110

Pérez Fernández, Francisco Javier. *See* #33.4.109.

Terrall, Mary. *The Man Who Flattened the Earth: Maupertuis and the Sciences of the Enlightenment*, Chicago: Univ. of Chicago Press, 2002, ix + 408 pp. A biography of the French polymath Pierre-Louis Moreau de Maupertuis. See the review by Larry Stewart in *Isis* **96** (1) (2005), 121–122. (SED) #33.4.111

See also: #33.4.48; #33.4.104.

19th century

Avigad, Jeremy. Methodology and metaphysics in the development of Dedekind's theory of ideals, in #33.4.151, pp. 159–186. #33.4.112

Beaney, Michael. Frege and the role of historical elucidation: Methodology and the foundations of mathematics, in #33.4.151, pp. 47–66. #33.4.113

Bölling, Reinhard. Ein aufgefundener früher Brief Kummers am Beginn seiner Korrespondenz mit Jacobi [A recently found early letter of Kummer from the beginning of his correspondence with Jacobi], *NTM Neue Serie* **13** (4) (2005), 238–257. The recent discovery in the Mittag–Leffler Institute archives of E.E. Kummer's reply to Jacobi's first letter to him in 1834 reveals Kummer's early version of his paper on the summation of slowly convergent series, as well as some remarks on his teaching work. The article reproduces and comments upon Jacobi's initial letter, Kummer's newly unearthed reply (excluding the parts already published in the above series-summation paper), and Jacobi's response to it. (KP) #33.4.114

Brouzet, Robert. La double origine du groupe symplectique [The double origin of the symplectic group], *Expositiones Mathematicae* **22** (2004), 55–82. The origins of the symplectic group are studied. In particular the work of Möbius, Lie, and Hermite is given to illuminate the historical material. Extensions by Dickson and Dieudonné are given. See the review by Jeremy Gray in *Mathematical Reviews* 2166969 (**2006e**:01008). (TBC) #33.4.115

Corry, Leo. Axiomatics, empiricism, and Anschauung in Hilbert's conception of geometry: Between arithmetic and general relativity, in #33.4.151, pp. 133–156. #33.4.116

Crilly, Tony. *Arthur Cayley: Mathematician Laureate of the Victorian Age*, Baltimore: Johns Hopkins Univ. Press, 2006, 609 pp., hardcover. A comprehensive biography of the 19th-century British mathematician Arthur Cayley. See the review by Jeremy Gray at *MAA Online* [http://www.maa.org/reviews/ArthurCayley.html]. (SED) #33.4.117

Del Centina, Andrea. Abel's surviving manuscripts including one recently found in London, *Historia Mathematica* **33** (2) (2006), 224–233. After giving the location and history of all known extant Abel manuscripts, the author presents another Abel manuscript recently discovered in London. (SED) #33.4.118

Ferreiros, José. Riemann's Habilitationsvortrag at the crossroads of mathematics, physics, and philosophy, in #33.4.151, pp. 67–96. #33.4.119

Gray, Jeremy J. Gauss and non-Euclidean geometry, in #33.4.18, pp. 61–80. This article makes the case that Gauss did not discover non-Euclidean geometry in a purely mathematical sense, but that he considered the subject largely from the point of view of empirical observation. See the review by Alan S. McRae in *Mathematical Reviews* 2190839. (CH) #33.4.120

Gröger, Detlef. On Gauss's entry from January 6, 1809, *The American Mathematical Monthly* **113** (5) (2006), 455–458. The author supplies a reproduction of a crucial step in Gauss's proof of the supplementary law to the cubic reciprocity law. (SED) #33.4.121

Houzel, Christian. Poincaré et l'analyse diophantienne [Poincaré and Diophantine analysis], #33.4.15, pp. 221–236. #33.4.122

İnönü, Erdal. Mehmet Nadir: An amateur mathematician in Ottoman Turkey, *Historia Mathematica* **33** (2) (2006), 234–242. This note discusses the work of the Turkish amateur mathematician Mehmet Nadir (1856–1917). (SED) #33.4.123

Khorozov, Emil. Poincaré's scientific legacy and modern mathematics [in Bulgarian], *Annuaire de l'Université de Sofia "St Kliment Ohridski" Faculté de Mathématiques et Informatique* **97** (2005), 5–21. From the summary: "The paper discusses the main contributions of Poincaré to mathematics. On the basis of his work on automorphic functions, celestial mechanics and topology we trace his enormous influence on modern mathematics." (KP) #33.4.124

Kiss, Elemér. János Bolyai's new face, in #33.4.18, pp. 81–93. A discussion of the major contributions made by János Bolyai to number theory and algebra. The author focuses on Bolyai's results pertaining to Fermat's little

theorem, pseudoprime numbers, and Mersenne numbers and to Diophantine and exponential Diophantine equations. See the review by Doru Ştefănescu in *Mathematical Reviews* 2190840 (**2006h**:01013). (CH) #33.4.125

Murawski, Roman. Genius or madman? On the life and work of J.M. Hoene-Wroński, in #33.4.21, pp. 77–86. #33.4.126

Parshall, Karen Hunger. *James Joseph Sylvester: Jewish Mathematician in a Victorian World*, Baltimore: Johns Hopkins Univ. Press, 2006, 461 pp., hardcover. A comprehensive biography of the 19th-century British mathematician J.J. Sylvester, who along with Arthur Cayley (see #33.4.117) made pioneering advances in the British approach to invariant theory. (SED) #33.4.127

Prékopa, András. The revolution of János Bolyai, in #33.4.18, pp. 3–59. #33.4.128

Przeworska-Rolewicz, Danuta. Leon Lichtenstein (1878–1933). On the 125th anniversary of his birthday and the 70th anniversary of his death, in #33.4.21, pp. 99–122. #33.4.129

Reventos i Tarrida, Agusti. A new world created from nothing, a world in which one can square the circle! [in Catalan], *Butlletí de la Societat Catalana de Matemàtiques* **19** (2) (2004), 47–83. This paper focuses on the work of János Bolyai and on his new geometry, emphasizing the import of his approach concerning the uniqueness of the Fifth Postulate. (LM) #33.4.130

Schlote, Karl-Heinz. Carl Neumann's contributions to potential theory and electrodynamics, in #33.4.21, pp. 123–140. A discussion of the life and work of Carl Neumann (1832–1925). See the review by Ll.G. Chambers in *Mathematical Reviews* 2177661. (SED) #33.4.131

Sheynin, Oscar. Markov and life insurance, *The Mathematical Scientist* **30** (1) (2005), 5–12. The author describes Markov's work concerning life insurance, focusing on retirement funds and juvenile insurance. (LM) #33.4.132

Sørensen, Henrik Kragh. Exceptions and counterexamples: Understanding Abel's comment on Cauchy's Theorem, *Historia Mathematica* **32** (4) (2005), 453–480. In the transition from a *formula-centered* style of research in mathematical analysis (mid-18th century) to a *concept-centered* approach (mid-19th century), Abel pinpointed certain *exceptions* to the Cauchy theorem of the title. This theorem, that an infinite series of continuous functions always converges to a continuous function, was a "central step in the proof of Cauchy's binomial theorem." Abel went on to devise a substitute which, by design, was sufficient for his more general binomial theorem. Further, this paper discusses in detail Abel's progression from exceptions to *counterexamples*, and shows how this was a major advance on the path to concept-centered mathematical analysis. (JA) #33.4.133

Tappenden, Jamie. The Riemannian background to Frege's philosophy, in #33.4.151, pp. 97–132. #33.4.134

See also: #33.4.12; #33.4.150; and #33.4.151.

20th century

Andrews, George E. Ramanujan and partial fractions, in #33.4.25, pp. 251–260. Examines selected results of Ramanujan on partial fractions that require only comparatively simple prerequisites to produce very interesting results. (KP) #33.4.135

Antoine, Jean-Pierre. David Speiser's group theory: From Stiefel's crystallographic approach to Kac–Moody algebras, in Kim Williams, ed., *Two Cultures*, Basel: Birkhäuser, 2006, pp. 13–23. Part of a collection of essays honoring the physicist David Speiser, this article traces the development of Speiser's group-theoretical work. (KP) #33.4.136

Benis Sinaceur, Hourya. From Kant to Hilbert: French philosophy of concepts in the beginning of the twentieth century, in #33.4.151, pp. 311–337. #33.4.137

Bernstein, Jeremy. *Secrets of the Old One: Einstein, 1905*, New York: Copernicus Books, 2006, viii + 200 pp. An overview of the four revolutionary papers on mathematical physics—the mysterious laws of "the Old One," Einstein's

nickname for God—produced by Einstein in his "miracle year" of 1905. The work attempts to present the physical theories and their historical context using fairly simple mathematics. (KP) #33.4.138

Bernstein, Jeremy. Bachelier, *American Journal of Physics* **73** (5) (2005), 395–398. Louis Bachelier's doctoral thesis is explored. (LM) #33.4.139

Bierstedt, Klaus Dieter. Köthes gestufte Räume und Stufenräume: Eine Einführung—und etwas Problemgeschichte [Köthe's echelon spaces and co-echelon spaces: An introduction—and a little problem history], in #33.4.175, pp. 151–164. #33.4.140

Burde, Gerhard. Ruth Moufang, in #33.4.175, pp. 165–172. #33.4.141

Chademan, Arsalan. Lebesgue's famous article on integral [in Persian], *Majalle-ye Tārīkh-e-'Elm* **4** (2005–2006), 1–22. In this article the author presents a Persian translation of Henri Lebesgue's fundamental paper on definite integrals, which Lebesgue presented to the Academy of Science in Paris on April 1901. (MKA) #33.4.142

Copeland, B. Jack, ed. *Alan Turing's Automatic Computing Engine: The Master Codebreaker's Struggle to Build the Modern Computer*, Oxford: Oxford University Press, 2005, xx + 553 pp., hardback. A thorough treatment of the research spearheaded by Alan Turing in the 1940s, including the origins of the National Physical Laboratory (NPL) and the Automatic Computing Engine (ACE). This book includes previously unpublished pieces of Turing's work. See the review by A.D. Booth in *Mathematical Reviews* 2164870 (**2006g**:01020). (CH) #33.4.143

Darrigol, Olivier. The mystery of the Einstein–Poincaré connection, *Isis* **95** (4) (2004), 614–626. The author discusses the possible explanations of the similarities between Albert Einstein's and Henri Poincaré's theories of 1905 which do not contain any mutual reference. (LM) #33.4.144

Davis, Martin. What did Gödel believe and when did he believe it? *The Bulletin of Symbolic Logic* **11** (2) (2005), 194–206. This article discusses Gödel's philosophical beliefs and changes in particular in his views on Hilbert's program and on his attitude to the interpretation of sets. See the review by Volker Peckhaus in *Mathematical Reviews* 2139367 (**2005m**:03001). (LM) #33.4.145

Dawson, John W., Jr. *Logical Dilemmas: The Life and Work of Kurt Gödel*, Wellesley, MA: A.K. Peters, 2005, xiv + 362 pp. Presented is a new edition of this study of Gödel's life and work. The original work was abstracted here as #25.2.33. (LM) #33.4.146

DePauli-Schimanovich, Werner. *Kurt Gödel und die mathematische Logik* [*Kurt Godel and mathematical logic*], Linz: Universitätsverlag Rudolf Trauner, 2005, viii + 560 pp. From the publisher's description: "Besides several other books on the life and work of Kurt Gödel, the author, together with Peter Weibel, has produced a film about Gödel for Austrian television, the script of which is also reprinted in this volume in German, English, Spanish and French." (KP) #33.4.147

Duda, Roman. The discovery of Banach spaces, in #33.4.21, pp. 37–46. The author discusses the contributions in the early 1920's of Norbert Wiener, Hans Hahn, and Stefan Banach to the foundation of Banach spaces. See the review by Bhavana Deshpande in *Mathematical Reviews* 2177655. (SED) #33.4.148

Emch, Gérard G. Contributions of Indian mathematicians to quantum statistics, in #33.4.25, pp. 261–288. This paper presents brief biographical surveys of some of the founders and present-day Indian contributors to quantum statistics, seeking to explain how and why an interest in this subject developed among Indian mathematicians. (KP) #33.4.149

Epple, Moriz. Felix Hausdorff's considered empiricism, in #33.4.151, pp. 263–289. #33.4.150

Ferreiros, José; and Gray, Jeremy J., eds. *The Architecture of Modern Mathematics*: *Essays in History and Philosophy*, Oxford: Oxford Univ. Press, 2006, 456 pp., hardback. This volume presents essays in the history and philosophy of mathematics and shows many ways in which these areas can inform each other. These essays are listed separately as #33.4.112; #33.4.113; #33.4.116; #33.4.119; #33.4.134; #33.4.137; #33.4.150; #33.4.156; #33.4.163; #33.4.164; #33.4.166; #33.4.174; and #33.4.179. (SED) #33.4.151

Ferreirós, José. An episode of the crisis of foundations, 1904 [in Spanish], *La Gaceta de la Real Sociedad Matemática Española* **7** (2) (2004), 449–467. The author argues that Hilbert and König made significant contributions to the foundations of logic and arithmetic at the 3rd International Congress of Mathematics in 1904. See the review by María Cerezo in *Mathematical Reviews* 2170147 (**2006f**:01018). (TBC) #33.4.152

Fortnow, Lance. Beyond NP: The work and legacy of Larry Stockmeyer, in *STOC'05: Proceedings of the 37th Annual ACM Symposium on Theory of Computing* New York: ACM, 2005, pp. 120–127. Surveys the seminal computational complexity theory research of the late Larry Stockmeyer (1949–2004) on problems of higher than NP complexity and how to classify them. (KP) #33.4.153

Girlich, Hans-Joachim. Lomnicki–Steinhaus–Kolmogorov: Steps to a modern probability theory, in #33.4.21, pp. 47–56. Discusses the contributions of Anton Lomnicki, Hugo Steinhaus, Alexander Khinchin, and Andrei Kolmogorov to modern probability theory. See the review by William J. Adams in *Mathematical Reviews* 2177656 (**2006f**:60007). (SED) #33.4.154

Goenner, Hubert F.M. On the history of unified field theories, *Living Reviews in Relativity* **7** (2004), Article 2004-2, 152 pp. (electronic). The author reviews the efforts by mathematicians and physicists during the period 1914–1933 to unify the known fields of physics. See the review by Peter O'Donnell *Mathematical Reviews* 2037618 (**2005g**:83002). (SED) #33.4.155

Gray, Jeremy J. Modern mathematics as a cultural phenomenon, in #33.4.151, 371–396. #33.4.156

Gray, Jeremy J. *See also*: #33.4.151.

Grundmann, Siegfried. *The Einstein Dossiers: Science and Politics—Einstein's Berlin Period with an Appendix on Einstein's FBI File*, trans. Ann M. Hentschel, Berlin: Springer-Verlag, 2005, xx + 459 pp. This book examines the political impact of Einstein's work and activism through the official dossiers used by various surveillance organizations to keep tabs on him and his theories. The source materials cover the period from 1919, when Einstein (then a lecturer in Berlin) became internationally famous due to the confirmation of his theory of relativity by eclipse observations, to the McCarthy era in American politics when Einstein was scrutinized by the Federal Bureau of Investigation for suspected Communist connections. (KP) #33.4.157

Gupta, Jatinder N.D.; and Stafford, Edward F. Flowshop scheduling research after five decades, *European Journal of Operational Research* **169** (3) (2006), 699–711. This article includes a review of the development of flowshop scheduling problems and their solutions from the 1954 paper of S.M. Johnson. (SED) #33.4.158

Hentschel, Ann M. *See* #33.4.157.

Ingram, W.T. A brief historical view of continuum theory, *Topology and its Applications* **153** (10) (2006), 1530–1539. Focusing primarily on one-dimensional continua, the author discusses the development of continuum theory. (SED) #33.4.159

Kushner, Boris A. The constructive mathematics of A.A. Markov, *The American Mathematical Monthly* **113** (6) (2006), 559–566. An investigation of the life and constructive mathematics of Andrei Andreevich Markov, founder of the Russian school of constructive mathematics and son of A.A. Markov, after whom the chains and processes are named. (SED) #33.4.160

Laurinčikas, Antanas. Yu.V. Linnik and his large sieve method, *Fizikos ir Matematikos Fakulteto Mokslinio Seminaro Darbai* **8** (2005), 76–80. A brief description of the conference held in St. Petersburg in 2005 honoring the 90th birth anniversary of the number theorist Yuri Vladomirovich Linnik, who developed in the early 1940's the "large sieve" method for sifting out a proportion of residue classes. (KP) #33.4.161

Lorenz, Falko. Kaete Hey and the main theorem in the theory of algebras, in #33.4.21, pp. 57–76. A description of the unpublished dissertation of Kaete Hey, written in Hamburg in 1927 under the direction of Emil Artin. The dissertation ("Analytische Zahlentheorie in Systemen hyperkomplexer Zahlen") deals with the concept of zeta functions in central simple algebras over valuated fields. The author discusses the details of Hey's results and the historical context of her work. See the review by P.M. Cohn in *Mathematical Reviews* 2177657 (**2006g**:16001). (CH) #33.4.162

Mancosu, Paolo. Tarski on models and logical consequence, in #33.4.151, pp. 209–237. #33.4.163

Marquis, Jean-Pierre. A path to the epistemology of mathematics: Homotopy theory in #33.4.151, pp. 239–260. #33.4.164

Martinez, Alberto A. Conventions and inertial reference frames, *American Journal of Physics* **73** (5) (2005), 452–454. The role of conventions in defining inertial reference frame is discussed with a focus on the historical evidence connecting the analysis of simultaneity of Poincaré, Einstein, and Reichenbach. (LM) #33.4.165

McLarty, Colin. Emmy Noether's "set theoretic" topology: From Dedekind to the rise of functors, in #33.4.151, pp. 187–208. #33.4.166

Metzler, Wolfgang. Erinnerungen an Wolfgang Franz (4.10.1905–16.4.1996) [In remembrance of Wolfgang Franz (10/4/1905–4/16/1996)], in #33.4.175, pp. 187–195. #33.4.167

Monastyrsky, Michael. Some remarks on "Mathematics at the turn of the millennium," *The American Mathematical Monthly* **112** (9) (2005), 832–837. The author gives brief remarks on what he feels are the major achievements of twentieth-century mathematics. (SED) #33.4.168

Nastasi, Pietro; and Tazzioli, Rossana. Determining the *m*th Green function, and related questions [in Italian], *Rendiconti del Circolo Matematico di Palermo. Serie II. Supplemento* **74** (2004), 71–101. A part of Tullio Levi-Civita's biography, the first part of the article gives the history as well as the work done on the *m*th Green function by those related to Levi-Civita. See the review by Capi Corrales-Rodrigáñez, in *Mathematical Reviews* 2165409 (**2006f**:01020). (TBC) #33.4.169

Przeworska-Rolewicz, Danuta; and Rolewicz, Stefan. Historical remarks on bounded sets, in #33.4.21, pp. 87–97. The authors discuss the influence on functional analysis of the 1933 introduction of the notion of bounded sets on linear metric spaces by the Polish mathematicians Mazur and Orlicz. See the review by Taras Kudryk in *Mathematical Reviews* 2177659 (**2006f**:46001). (SED) #33.4.170

Radtke, Stefanie. Ruth Moufang als Industriemathematikerin—1937 bis 1946 [Ruth Moufang as industrial mathematician—1937 to 1946], in #33.4.175, pp. 173–186. #33.4.171

Rao, C.R. Score test: Historical review and recent developments, in Balakrishnan, N.; Kannan, N.; and Nagaraja, H.N., eds., *Advances in Ranking and Selection, Multiple Comparisons, and Reliability. Methodology and applications*, Boston, MA: Birkhäuser Boston, Inc., 2005, pp. 3–20. The author compares three asymptotic tests based on the Neyman–Pearson likelihood ratio, the Wald statistic, and the Rao's score statistic, including an historical review and recent developments. See the review by Rasul A. Khan in *Mathematical Reviews* 2111500 (**2005m**:62003). (LM) #33.4.172

Rolewicz, Stefan. *See* #33.4.170.

Sathyaprakash, B.S. Gravitational radiation—In celebration of Einstein's annus mirabilis, *Current Science* **89** (12) (2005), 2129–2139. Commemorates the centenary of Einstein's 1905 papers on special relativity, which implied the existence of wave-like phenomena in gravity, with a survey of the current status of gravitational wave detection efforts. (KP) #33.4.173

Scholz, Erhard. Practice-related symbolic realism in H. Weyl's mature view of mathematical knowledge, in #33.4.151, pp. 291–309. #33.4.174

Schwarz, Wolfgang, ed. *Aus der Geschichte der Frankfurter Mathematik. Festschrift zu den 100. Geburtstagen von Ruth Moufang, Gottfried Köthe, Wolfgang Franz* [*From the history of mathematics at the University of Frankfurt. Festschrift on the 100th birthdays of Ruth Moufang, Gottfried Köthe, Wolfgang Franz*], Frankfurt am Main: Universitätsarchiv Frankfurt am Main, 2005, 203 pp. The papers from this Festschrift are listed separately as #33.4.140; #33.4.141; #33.4.167; #33.4.171; #33.4.176; and #33.4.182 (SED) #33.4.175

Schwarz, Wolfgang; and Wolfart, Jürgen. Vorwort: Zur Geschichte des Mathematischen Seminars der Universität Frankfurt am Main von 1914 bis heute [Foreword: On the history of the Frankfurt am Main University Mathematical Seminar from 1914 to today], in #33.4.175, pp. 8–133. #33.4.176

Shifman, M., ed. *You Failed Your Math Test, Comrade Einstein: Adventures and Misadventures of Young Mathematicians or Test Your Skills in Almost Recreational Mathematics*, Hackensack, NJ: World Scientific Publishing Co., 2005, xxii + 210 pp. A collection of essays concerning university entrance examinations in mathematics and student competition problems in mathematics in the USSR of the 1970s and 1980s and in post-Soviet Russia. The second part of the book focuses on the design of mathematics examinations specifically to "weed out" students considered undesirable for social or political reasons. (KP) #33.4.177

Sieg, Wilfried. Only two letters: The correspondence between Herbrand and Gödel, *The Bulletin of Symbolic Logic* **11** (2) (2005), 172–184. The author discusses two letters exchanged in early 1931 between Jacques Herbrand and Kurt Gödel and the role that this correspondence played in the development of computability theory. (SED) #33.4.178

Sieg, Wilifried. Relative consistency and accessible domains, in #33.4.151, pp. 339–368. This paper originally appeared in *Synthese* **84** (2) (1990), 259–297. #33.4.179

Stafford, Edward F. *See* #33.4.158.

Tait, W.W. Gödel's reformulation of Gentzen's first consistency proof for arithmetic: The no-counterexample interpretation, *The Bulletin of Symbolic Logic* **11** (2) (2005), 225–238. The author describes Gentzen's first consistency proof for arithmetic and Gödel's reformulation of Gentzen's result. The relation between the two proofs is also discussed. (LM) #33.4.180

Tazzioli, Rossana. *See* #33.4.169.

Unnikrishnan, C.S. On Einstein's resolution of the twin clock paradox, *Current Science* **89** (12) (2005), 2009–2015. Examines Einstein's comparatively obscure 1918 paper on the special-relativity twin paradox, and argues that Einstein's resolution of the paradox is distorted by most modern textbook descriptions of it. In fact, the author claims, Einstein appealed to asymmetric general-relativistic gravitational time dilation rather than arguing for asymmetric special-relativistic time dilation in order to resolve the paradox; his approach "suffers from logical and physical flaws" in consequence. (KP) #33.4.181

Weidmann, Joachim. Gottfried Köthe 1905–1989, in #33.4.175, pp. 135–149. #33.4.182

Weiss, Asia Ivic; and Weiss, William. Remembering Donald Coxeter, in #33.4.18, pp. 115–118. #33.4.183

Weiss, William. *See* #33.4.183.

Williams, Kim. *See* #33.4.136.

Wolfart, Jürgen. *See* #33.4.176.

Yourgrau, Palle. *A World without Time: The Forgotten Legacy of Gödel and Einstein*, New York: Basic Books, 2005, x + 210 pp. This book discusses Gödel's philosophy and personal life, including his friendship with Einstein. See the review by John H. Ewing in *Mathematical Reviews* 2109964 (**2005m**:01022). (SED) #33.4.184

Zumino, Bruno. Supersymmetry then and now, *Fortschritte der Physik* **54** (2–3) (2006), 199–204. This article includes a discussion of the early history of four-dimensional supersymmetry. (SED) #33.4.185

See also: #33.4.112; #33.4.113; #33.4.116; #33.4.123; #33.4.129; #33.4.131; #33.4.132; and #33.4.134.

Reviewers

Index of authors of reviews in *Mathematical Reviews* and other publications that are referenced in these abstracts.

-Sloan Despeaux, Western Carolina University. "This carefully crafted anthology consists primarily of excerpts from diverse historical sources in premodern mathematics.Â -Kim Plofker, author of Mathematics in India. "This book provides the reader with English translations of key mathematical texts from medieval Western Europe and North Africa, all originally written in one of the three scientific languages of that time: Latin, Hebrew, and Arabic. Until now, there has been no sourcebook that deals with Hebrew mathematics as such, or the mathematics of the Muslim West. Sloan Evans Despeaux. MathSciNet. Ph.D. University of Virginia 2002.