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ABSTRACTS

Edited by David E. Zitarelli

The purpose of this department is to give sufficient information about the subject matter of each publication to enable users to decide whether to read it. It is our intention to cover all books, articles, and other materials in the field.

Books for abstracting and eventual review should be sent to this department. Materials should be sent to Prof. David E. Zitarelli, Department of Mathematics, Temple University, Philadelphia, PA 19122, U.S.A. (E-mail: ZIT@VM.TEMPLE.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 Thomas L. Bartlow (Villanova, PA), John G. Fauvel (Milton Keynes), Albert C. Lewis (Indianapolis), James V. Rauff (Decatur, IL), and David E. Zitarelli.

Abe, Takehisa. *See* #25.4.68.

Abeles, Francine F. The Development of the Automatic Calendar in the Nineteenth Century, *Gaṇita-Bhāratī* **17** (1995), 62–67. An examination of the development of ''an arithmetic equivalent of a mechanical perpetual calendar'' that would include the Christian ecclesiastical calendar. The contributions of Gauss and Zeller are included. See also *Mathematical Reviews* **98g**:01079. (JVR) #25.4.1

Abikoff, William. *See* #25.4.87.

Aczel, Amir D. *Fermat's Last Theorem: Unlocking the Secret of an Ancient Mathematical Problem*, New York: Four Walls Eight Windows, 1996, xii + 147 pp., $18. A popular account of the history of Fermat's last theorem that is comparable to Simon Singh's *Fermat's Enigma*. A generally negative review by Andrew Bremmer is given in *Mathematical Reviews* **97m**:01006. (ACL) #25.4.2

Adhikari, M. R. *See* #25.4.106.

Amann, H.; Helfrich, H.-P.; and Scholz, Reinhard. Joachim A. Nitsche (1926–1996) [in German], *Jahresbericht der Deutschen Mathematiker-Vereinigung* **99**(2) (1997), 90–100. An obituary that contains an account of the life and work of J. A. Nitsche. See also *Mathematical Reviews* **98g:**01056. (JVR) #25.4.3

Ascher, Marcia, and Ascher, Robert. *Mathematics of the Incas: Code of the Quipu*, Mineola: Dover Publications, 1997, x + 166 pp., softbound, $11.95. A reprint of a book published by the Univ. of Michigan Press in 1981. See *Mathematical Reviews* **83h:**01007. (DEZ) #25.4.4

Ascher, Robert. *See* #25.4.4.

0315-0860/98 $25.00

Aveni, Anthony F.; Morandi, Steven J.; and Peterson, Polly A. The Maya Number of Time: Intervalic Time Reckoning in the Maya Codices, II, *Journal of the History of Astronomy* **27** (1995), S1–S32. A continuation of the paper abstracted in #24.4.12. Here the authors demonstrate that ''a consideration of number may be of considerable value both to epigrapher and iconographer as an investigative tool.'' (DEZ) #25.4.5

Ayoub, Raymond G.; Huard, James G.; and Williams, Kenneth S. Sarvadaman Chowla (1907–1995), *Notices of the American Mathematical Society* **45** (1998), 594–598. Obituary of S. Chowla, described as ''one of the best-known number theorists from India who followed in the tradition of Ramanujan.'' Though actually born in London, Chowla was reared in India. He received his doctorate under J. E. Littlewood. (DEZ) #25.4.6

Bandt, Christoph. *See* #25.4.16.

Barbieri, Francesco, and Battelani Degani, Franca. *Catalogo della corrispondenza di Paolo Ruffini*, Pisa: Edizioni ETS, 1997, 607 pp., L 60,000. A catalog containing a description and summary of the correspondence of the Italian scientist, Paolo Ruffini (1765–1822). See also *Mathematical Reviews* **98g:**01001. (JVR) #25.4.7

Barrow-Green, June. Mathematics in Britain, 1860–1940: The Creation of a Source-Oriented Database, in Peter Denley, ed., *Computing Techniques and the History of Universities, Max-Planck-Institut 1996*, pp. 137–147. A database developed to support a study of the history of modern mathematics and to provide a unified source of information relating both to the practice and to the practitioners of mathematics in Britain during the period 1860 to 1940. (JGF) #25.4.8

Barrow-Green, June. Teaching the History of Mathematics Using the World Wide Web, *BSHM Newsletter* **37** (1998), 46–50. Describes the BSHM Web page, including an outline of sites containing material on the history of mathematics. (DEZ) #25.4.9

Barrow-Green, June. The Book That Changed My Life, *BSHM Newsletter* **37** (1998), 25–27. A tribute to Roger Cooke's 1984 book *The Mathematics of Sonya Kovalevskaya* and to the protagonist's mathematical example. (DEZ) #25.4.10

Barsky, Daniel. Younes Naït Slimane [1968–1996] and Mohammed Benchaou [1971–1996] [in French], *Gazette des mathématiciens* **71** (1997), 34–35. Brief biographies of two University of Paris doctoral students in mathematics who were killed in the RER bombing at the Port-Royal station. See also *Mathematical Reviews* **98g:**01057. (JVR) #25.4.11

Bashmakova, Isabella G.; Demidov, Sergei, S.; and Uspenskii, V. A. A Passion for Clarity [in Russian], *Voprosy Istorii Estestvoznaniya i Tekhniki* **4** (1996), 108–119. A tribute to the mathematical logician and historian of mathematics, Sofia Yanovskaya (1896–1966), that traces her life and work. See also #24.3.6 and the review by E. Mendelson in *Mathematical Reviews* **97m:**01060. (DEZ) #25.4.12

Battelani Degani, Franca. *See* #25.4.7.

Benvenuto, Edoardo. *See* #25.4.121.

Bergmann, Gunter. *See* #25.4.16.

Bingham, N. H. A Conversation with David Kendall, *Statistical Science* **11** (1996), 159–188. The British mathematician, David George Kendall, spent the first part of his career as an astronomer before changing his occupation to statistician in 1946. (DEZ) #25.4.13

Bothe, Hans-Gunther. *See* #25.4.16.

Botts, Truman. E. J. McShane in 1938–42: A Personal Recollection, *Notices of the American Mathematical Society* **45** (1998), 686–687. Brief note on Jimmy McShane's role at the University of Virginia. (DEZ) #25.4.14

Bożejko, Marek. Stanislaw Hartman (1914–1992) [in Polish], *Wiadomości Matematyczne* **31** (1995), 105–126. A biography of the Polish analyst, S. Hartman, followed by a list of his publications. See also #25.4.59. (DEZ) #25.4.15

Breard, Andrea. *See* #25.4.109.

Bremmer, Andrew. *See* #25.4.2.

Brieskorn, Egbert, ed. *Felix Hausdorff zum Gedächtnis: Band I*, Braunschweig: Friedr. Vieweg & Sohn, 1996, iv + 286 pp., DM 98. This first of a two-volume set contains papers by mathematicians at the three universities where Hausdorff had been a professor: Leipzig, Greifswald, and Bonn. Contents: Egbert Brieskorn, ''Einleitung'' (pp. 1–10); Hans-Joachim Ilgauds, ''Die frühen Leipziger Arbeiten Felix Hausdorffs'' (11–30); Hans-Joachim Girlich, ''Hausdorffs Beitrage zur Wahrscheinlichkeitstheorie'' (31–70); Peter Koepke, ''Metamathematische Aspekte der Hausdorffschen Mengenlehre'' (71–106); Erhard Scholz, ''Logische Ordnungen im Chaos: Hausdorffs frühe Beiträge zur Mengenlehre'' (107–134); Peter Schreiber, ''Felix Hausdorffs paradoxe Kugelzerlegung im Kontext der Entwicklung von Mengenlehre, Masstheorie und Grundlagen der Mathematik'' (135–148); Christoph Bandt and Hermann Haase, ''Die Wirkungen von Hausdorffs Arbeit über Dimension und ausseres Mass'' (149–183); Klaus Steffen, ''Hausdorff-Dimension, regulare Mengen und total irregulare Mengen'' (185–227); Hans-Gunther Bothe and Jorg Schmeling, ''Die Hausdorff-Dimension in der Dynamik'' (229–252); Erwin Neuenschwander, ''Felix Hausdorffs letzte Lebensjahre nach Dokumenten aus dem Bessel-Hagen-Nachlass'' (253–270); Gunter Bergmann, ''Die vom Lande NRW 1980 erworbenen Schriftstücke aus dem Nachlass Felix Hausdorffs'' (271–281); Claus Hertling, ''Verzeichnis der mathematischen Schriften Felix Hausdorffs'' (283–286). A detailed review is given by C. J. Scriba in *Mathematical Reviews* **97m:**01096. (ACL) #25.4.16

Brunner, Hermann. 1896–1996: One Hundred Years of Volterra Integral Equations of the First Kind, *Applied Numerical Mathematics* **24** (2–3) (1997), 83–93. The author describes a group of papers by Vito Volterra on methods of solution of Volterra integral equations of the first kind. See the review by Frank Smithies in *Mathematical Reviews* **98g:**01049. (JVR) #25.4.17

Bucciantini, Massimo, and Citernesi, Anna Corinna, eds. *Bibliographia italiana di storia della scienza. XII–XIII* (*1993–94*) [*Italian Bibliography of the History of Science XII–XIII* (*1993–94*), Florence: Leo S. Olschki, 1996, 361 pp., L 90,000. A bibliography listing works published in Italy during 1993–1994. Mathematics is found in Sections 510–519, pp. 100–112. The database is available electronically at http://galileo.imss.direnze.it/biblio/ebiss.html. (DEZ) #25.4.18

Burns, Stuart. The Babylonian Clay Tablet, *Mathematics Teaching* **158** (1997), 44–45. Investigations of a Babylonian tablet by middle school pupils revealed some remarkable differences, from those who discovered what it was about without realizing what they had achieved, to those who used a book to learn what all the numbers were—to give them the ''right'' answer—without gaining any idea what the tablet was about. (JGF) #25.4.19

Butcher, J. C., and Wanner, Gerhard. Runge–Kutta Methods: Some Historical Notes, *Applied Numerical Mathematics* **22** (1996), 113–151. This appreciation of the work of Runge, Heun, Kutta, and Nyström briefly surveys the significant developments in Runge–Kutta methods over the last 100 years. See the summary in *Mathematical Reviews* **97m:**01049. (ACL) #25.4.20

Ceccherine, Pier Vittorio. Giuseppe Tallini (1930–1995), *Designs, Codes and Cryptography* **9** (1996), 237–245. A description of the work in coding theory by the Italian mathematician, G. Tallini, followed by a list of his publications. (DEZ) #25.4.21

Ceccherine, Pier Vittorio. Giuseppe Tallini: His Life and Work, *Journal of Geometry* **57** (1996), 3–8. A description of the work of the Italian mathematician, G. Tallini, in various branches of geometry and combinatorics. (DEZ) #25.4.22

Chen, Sheng Shen. Chinese Mathematics [in Chinese], *Advances in Mathematics* (*China*) **25** (1996), 385–388. See *Mathematical Reviews* **97m:**01051. (DEZ) #25.4.23

Citernesi, Anna Corinna. *See* #25.4.18.

Cochell, Gary G. The Early History of the Cornell Mathematics Department: A Case Study in the Emergence of the American Mathematical Research Community, *Historia Mathematica* **25** (1998), 133–153. An account of development of the mathematics department at Cornell University in the first decades of the 20th century into one of the leading institutions in the U.S. (DEZ) #25.4.24

Confrey, Jere. *See* #25.4.35 and #25.4.36.

Cooke, Roger L. *See* #25.4.126.

Cooper, Amira. Integration of the Historical Development of Mathematics in Mathematics Teaching in the High School Using Self Reading, in Eduardo Veloso, ed., *Proceedings of HPM Meeting*, Braga, Portugal, 1996, vol. II, pp. 3–10. Providing historical material for students to read on their own at home contributes to a significant change in students' attitudes toward mathematics. It also increases the number of students who see individual reading as an important part of the learning process. (JGF) #25.4.25

Correia da Sa, Carlos, and Estrada, Maria Fernanda. History of Mathematics in Portugal, *BSHM Newsletter* **37** (1998), 11–13. An outline of activities on the history of mathematics undertaken by the universities in Portugal and two national organizations: the Seminario Nacional de Historia da Mathematica (SNHM), concerned mainly with scholarly pursuits, and the Associação de Professores de Matematica (APM), whose major emphasis is on the use of history in education. (DEZ) #25.4.26

Coutinho, S. C. The Many Avatars of a Simple Algebra, *American Mathematical Monthly* **104** (1997), 593–604. The so-called Weyl algebra, born in the 1920s cradle of quantum theory from work of Heisenberg, Born, and Jordan, is an example of a mathematical structure showing up in different contexts under different guises. (JGF) #25.4.27

Cover, J. A. Non-basic Time and Reductive Strategies: Leibniz's Theory of Time, *Studies in History and Philosophy of Science* **28** (1997), 289–313. The paper aims to give an historical and philosophical reconstruction of Leibniz's reductive theory of time. See the review by Pierre Kerszberg in *Mathematical Reviews* **98g:**01028. (JVR) #25.4.28

Crépel, Pierre. *See* #25.4.39.

Crilly, Tony. A Gemstone in Matrix Algebra, *Mathematical Gazette* **76** (1992), 182–188. Arthur Cayley's 1858 ''Memoir on the Theory of Matrices,'' whose centerpiece is what is now called the Cayley–Hamilton theorem, is often thought to signal the beginning of matrix theory. A letter from Cayley to Sylvester in November 1857, revealing his line of thought and its development, carefully explains his innovative notion of matrix addition. See also #20.1.19. (JGF) #25.4.29

Cuomo, Serafina. Shooting by the Book: Notes on Niccolò Tartaglia's *Nova scientia, History of Science* **35** (1997), 155–188. An investigation of the circumstances surrounding the production of Tartaglia's *Nova scienza*, particularly as it relates to military literature. See the review by William R. Shea in *Mathematical Reviews* **98g:**01025. (JVR) #25.4.30

Dadić, Žarko. Mathematical Views in 16th Century Dubrovnik, *Dubrovnik Annals* **1** (1997), 25–30. Although no books on mathematics were published in Dubrovnik in the 16th century, several works discussed mathematical questions. This paper examines books by Nikola Nalješković (c. 1510–1587) and Miho Monaldi (1540–1592). (DEZ) #25.4.31

D'Ambrosio, Ubiratan. Where Does Ethnomathematics Stand Nowadays? *For The Learning Of Mathematics* **17** (2) (1997), 13–17. History is vital to ethnomathematical studies; conversely ethnomathematics calls for a broader concept of sources and a new historiography for the history of mathematics, which in turn affects mathematics. (JGF) #25.4.32

D'Ambrosio, Ubiratan. *See also* #26.2.52.

Damerow, Peter. Number as a Second-Order Concept, *Science in Context* **9** (1996), 139–149. The historical development of the concept of number can be seen as an advancing emergence of subsequent stages of reflection on certain fundamental cognitive operations. The results of such processes of reflection are externally represented in tools of arithmetical thinking and in second-order concepts related to their use. (JGF) #25.4.33

Deakin, Michael. Boole's Mathematical Blindness, *Mathematical Gazette* **80** (1996), 511–518. George Boole never solved a particular problem in operational calculus, despite working on it throughout his life and holding the key to its solution. Analyzing the factors which prevented him from doing so helps us understand difficulties encountered by today's students. (JGF) #25.4.34

Demidov, Sergei S. *See* #25.4.12.

Dennis, David, and Confrey, Jere. Drawing Logarithmic Curves with Geometer's Sketchpad: A Method Inspired by Historical Sources, in James R. King and Doris Schattschneider, eds., *Geometry Turned On! Dynamic Software in Learning, Teaching and Research*, Washington: MAA, 1997, pp. 147–156. A mechanical linkage device from Descartes's *Geometry*, which can be used to find any number of points on a logarithmic or exponential curve, can be simulated by computer. Such a tool helps link grounded activity and systematic inquiry, as well as physical investigations and symbolic language, in mathematics learning. (JGF) #25.4.35

Dennis, David, and Confrey, Jere. The Creation of Continuous Exponents: A Study of the Methods and Epistemology of John Wallis, in Jim Kaput, Alan H. Schoenfeld, and Ed Dubinsky, eds., *Research in Collegiate Mathematics Education, II*, Providence: AMS, 1996, pp. 33–60. The authors analyze the methodology used by John Wallis in his *Arithmetica infinitorum* (1655) for the derivation of the formula for $\pi/2$ and contrast the empirical methods for pre-1800 mathematics with the formal–logical approach of modern times. Though agreeing with Imre Lakatos's goal of analyzing actual mathematical practice, they believe that his approach shows a formalistic bias that does not represent the earlier practice, one equally valuable to analyze. See the review by Craig G. Fraser in *Mathematical Reviews* **97m:**01024. (ACL) #25.4.36

Dershowitz, Nachum, and Reingold, Edward M. *Calendrical Calculations*, Cambridge: Cambridge Univ. Press, 1997, xxii + 307 pp., $64.95. A detailed discussion of 14 calendars, including the development of each and computer code to convert between them. See the review by Victor J. Katz in *Mathematical Reviews* **98g:**01007. (JVR) #25.4.37

Dhombres, Jean. Is One Proof Enough? Travels with a Mathematician of the Baroque Period, *Educational Studies in Mathematics* **24** (1993), 401–419. The baroque and prolific quality of the architecture of a number of proofs by Gregory of Saint-Vincent (1584–1667) of a property of the area under a hyperbola points to a connection between a culture and the discovery of a mathematical theory. (JGF) #25.4.38

Dhombres, Jean. La culture mathématique au temps de la formation de Desargues: Le monde des coniques, in Jean Dhombres and J. Sakarovitch, eds., *Desargues en son temps*, Paris: Blanchard, 1994, pp. 55–85. The author studies the state of knowledge of conics up to the publication of Desargues's *Brouillon projet* in 1639. See the review by Pierre Crépel in *Mathematical Reviews* **98g:**01029. (JVR) #25.4.39

Di Canzio, Albert G. *Galileo: His Science and His Significance for the Future of Man*, Portsmouth, NH: ADASI Publishing Co., 1996, xxvi + 389 pp., hardbound, $25. A scientific biography of Galileo by an author who describes himself as ''neither a historian, nor an academic, nor a theologian'' but the ''man in the street'' (p. xvi). The main theme is to study Galileo's physics and astronomy as a key to understanding the future of man. Chapter 5, ''The Royal Road to Geometry,'' deals with mathematical concepts. (DEZ) #25.4.40

Dieks, Dennis. *See* #25.4.44.

Dold-Samplonius, Yvonne. Problem of the Two Towers, in Raffaella Franci, P. Pagli, and Laura Toti Rigatelli, eds., *Itinera mathematica*, Siena, 1996, pp. 45–69. The problem of the two towers—to find, on the connecting base line of two towers of unequal height, the point equidistant from their tops—frequently found in Italian arithmetic books of the early Renaissance, is widespread in Islamic culture. The earliest occurrence known at present is in the 9th-century Hindu Jaina Mahavira. (JGF) #25.4.41

Dominique, Perrin. *See* #25.4.91.

Drago, Antonio. Poincaré versus Peano and Hilbert about the Mathematical Principle of Induction, in Jean-Louis Greffe, Gerhard Heinzmann, and Kuno Lorentz, eds., *Henri Poincaré: Science et Philosophie*, Berlin: Akademie Verlag, 1996, pp. 513–527. The author argues that for Poincaré the philosophical meaning of ''synthetic a priori'' comes from his understanding of the geometrical tradition represented by Monge, Lazare Carnot, Lobachevskii, Chasles, Möbius, and Klein. The argument is also made that Poincaré, through his belief that mathematics is more than a formal language, anticipated the failure of Hilbert's formalism. See Hourya Sinaceur's comments in *Mathematical Reviews* **97m:**01052. (ACL) #25.4.42

Duverney, Daniel. De Leibniz à Euler, en passant par Jacobi, *Gazette des mathématiciens* **72** (1997), 79–83. The paper contains a proof of Jacobi's formula based on logarithmic derivatives. See the review by Doru Ştefănescu in *Mathematical Reviews* **98g:**01030. (JVR) #25.4.43

Ellis, G. F. R. Contributions of K. Gödel to Relativity and Cosmology, in Petr Hájek, ed., *Logical Foundations of Mathematics, Computer Science and Physics—Kurt Gödel's Legacy*, Berlin: Springer-Verlag, 1996, pp. 34–49. This paper provides details of Gödel's two papers on general relativity that were published in 1949 and 1952. He showed interesting new solutions for the Einstein equations that have been starting points for modern lines of research. See the review by Dennis Dieks in *Mathematical Reviews* **97m:**01053. (ACL) #25.4.44

Estrada, Maria Fernanda. *See* #25.4.26.

Farebrother, Richard William. A. C. Aitken and the Consolidation of Matrix Theory, *Linear Algebra and Its Applications* **264** (1997), 3–12. An outline of the origins of formal matrix theory in the 1870s and Aitken's role in disseminating matrix methods in the 1940s, especially to statistics and economics. (DEZ) #25.4.45

Fava, Franco. Franco Tricerri [in Italian], *Bollettino della Unione matematica italiana* **11** (1997), vii–xxii. A biography of the Italian mathematician, Franco Tricerri, a specialist in the geometry of differentiable manifolds. Tricerri was killed tragically in an airplane crash along with his wife and two sons. See also the review by Pietro Nastasi in *Mathematical Reviews* **98g:**01060. (DEZ) #25.4.46

FitzSimons, Gail. Is There a Place for the History and Pedagogy of Mathematics in Adult Education under Economic Rationalism?, in Eduardo Veloso, ed., *Proceedings of HPM Meeting*, Braga, Portugal, 1996, vol. II, pp. 128–135. Before the growth of economic rationalism and the adoption of industrial values to the exclusion of others, further education classes in Australia enabled adults returning to study to learn about the history of mathematics and recreate parts for themselves. (JGF) #25.4.47

Flood, Raymond. History of Combinatorics, *BSHM Newsletter* **37** (1998), 1–3. Report of a meeting on the history of combinatorics, held 21 May 1998 at the Open University in Milton Keynes. Abstracts of the eight talks and a photograph of the speakers are included. (DEZ) #25.4.48

Flood, Raymond, and Wilson, Robin. Stamp Corner: Chinese Mathematics II, *The Mathematical Intelligencer* **20** (2) (1998), 80. Displays stamps depicting Guo Shoujing, Matteo Ricci, Xu Guangqi, and an armillary sphere, describing their place in the development of mathematics in China. (TLB) #25.4.49

Folkerts, Menso. Regiomontanus' Role in the Transmission and Transformation of Greek Mathematics, in F. Jamil Ragep and Sally P. Ragep, eds., *Tradition, Transmission, Transformation*, Leiden: Brill, 1996, pp. 89–113. The author first looks at Regiomontanus's list of books to be published and the sources he

used in working on them. Next, the author records a number of problems found in a manuscript written by Regiomontanus, probably when he was 20. See the review by Jens Høyrup in *Mathematical Reviews* **98g:**01026. (JVR) #25.4.50

Fowler, David. Wilbur Richard Knorr (1945–1997): An Appreciation, *Historia Mathematica* **25** (1998), 123–132. A tribute to the historian of mathematics, Wilbur Knorr, who specialized in topics from ancient and medieval times in Greek, Arabic, and Hebrew. The bibliography contains four books and 78 articles, as well as 18 articles in various stages of preparation. (DEZ) #25.4.51

Fraser, Craig G. Jacobi's Result (1837) in the Calculus of Variations and its Reformulation by Otto Hesse (1857): A Study in the Changing Interpretation of Mathematical Theorems, in #24.3.58, pp. 149–172. Hesse's 1857 reformulation of Jacobi's 1837 result has generally been regarded as simply an improved exposition. Fraser shows how Hesse's work involved a fundamental shift from an algorithmic approach in the calculus of variations to an analytic approach. It is important to note that Hesse's interpretation of Jacobi was based on a flawed reading of Jacobi who himself failed to provide a complete demonstration. See the review by U. D'Ambrosio in *Mathematical Reviews* **97m:**01041. (ACL) #25.4.52

Fraser, Craig G. *See also* #25.4.36.

Führer, Lutz. Historical Stories in the Mathematics Classroom, *Mathematical Gazette* **76** (1992), 127–138. The desirability of incorporating history into mathematics teaching is easier to establish than how in practice it may be done. Two stories—Eratosthenes, and ideas of π—illustrate that history is too important to use to bore and perplex pupils: rather, it provides a changed tone for the framework within which mathematics education takes place. (JGF) #25.4.53

Furinghetti, Fulvia. History of Mathematics, Mathematics Education, School Practice: Case Studies in Linking Different Domains, *For the Learning of Mathematics* **17** (1997), 55–61. Experiences of teachers exploring different ways of using history are discussed and taxonomized. ''Integration'' is preferable to ''use'' of history, to characterize a more methodical development and analysis. (JGF) #25.4.54

Furinghetti, Fulvia. The Ancients and the Approximated Calculation: Some Examples and Suggestions for the Classroom, *Mathematical Gazette* **76** (1992), 139–142. A history of approximated calculation provides sources of problems that are of interest not only from an algorithmic point of view but also for developing mathematical concepts. (JGF) #25.4.55

Ganitanand (R. C. Gupta). *See* #25.4.117.

Gardiner, Tony. Once Upon a Time, *Mathematical Gazette* **76** (1992), 143–150. History of mathematics has much to offer the teaching of mathematics. Two pitfalls, though, are the temptation to enlist the support of ''history'' when trying to change social attitudes and the uncritical way in which intelligent students respond to pseudo-history. (JGF) #25.4.56

Gardiner, Tony. Rigorous Thinking and the Use of Instruments, *Mathematical Gazette* **76** (1992), 179–181. Florian Cajori's 1916 life of Oughtred contains thought-provoking material on the balance for the learner between labor-saving devices and mathematical understanding. (JGF) #25.4.57

Ghosh, J. K., Mitra, S. K., and Parthasarathy, K. R. *Glimpses of India's Statistical Heritage*, New Delhi: Wiley Eastern Ltd., 1993, ix + 293 pp., Rs. 120. Biographies of, and autobiographical accounts by, 10 Indian statisticians, most of whom worked outside the country: R. R. Bahadur, D. Basu, V. S. Huzurbazar, G. Kallianpur, D. B. Lahiri, P. R. Masani, K. R. Nair, C. R. Rao, S. S. Shrikhande, and P. V. Sukhatme. See the review by Ivo Schneider in *Gaṇita-Bhāratī* **19** (1997), 125–126. (DEZ) #25.4.58

Girlich, Hans-Joachim. *See* #25.4.16.

Gleichgewicht, Boleslaw. Stanislaw Hartman's Social Activity [in Polish], *Wiadomości Matematyczne* **31** (1995), 131–139. A description of the analyst S. Hartman's social and political activities, particularly his difficulties with the Polish government. See also #25.4.15. (DEZ) #25.4.59

González Rodríguez, J. M. Popular Arithmetic: Calculation Without Numbers [in Spanish], *Epsilon* **25** (1993), 77–92. The author studies a system of signs to represent money used by female fishmongers and peddlers on the island of Tenerife. See also *Mathematical Reviews* **98g:**01002. (JVR) #25.4.60

Gow, Rod. George Salmon 1819–1904: His Mathematical Work and Influence, *Irish Mathematical Society Bulletin* **39** (1997), 26–76. George Salmon exerted a great influence on mathematical research and teaching in Europe and America through the four textbooks which he published in Dublin between 1848 and 1862, although his direct involvement dwindled after his appointment as Regius Professor of Divinity at Trinity College Dublin in 1866. (JGF) #25.4.61

Graffi, Sandro. *See* #25.4.128.

Grattan-Guinness, Ivor. Benjamin Peirce's *Linear Associative Algebra* (1870): New Light On Its Preparation and "Publication," *Annals of Science* **54** (1997), 597–606. In 1870 Benjamin Peirce published a classification of a wide range of algebras by their defining properties. The influence of this work was felt mainly in the U.S., after its 1881 posthumous reprint in the *American Journal of Mathematics*. Original publication was by lithography, in an edition of 100; the National Academy of Sciences could not afford to publish it. (JGF) #25.4.62

Grattan-Guinness, Ivor. *See also* #25.4.92.

Gray, Jeremy. Around and Around: Quaternions, Rotations, and Olinde Rodrigues, in D. Flament, ed., *Le nombre une hydre à n visages: Entre nombres complexes et vecteurs*, Paris: Édition de la Maison des sciences de l'homme, 1997, pp. 89–101. The Saint-Simonian Olinde Rodrigues (1795–1850) was the first not only to publish (in 1840) a description of a rotation by a quadruple, but to see very clearly that the corresponding multiplication was not commutative. His work was not taken up, however, and the running was made by English-speaking mathematicians using the language of quaternions. (JGF) #25.4.63

Gray, Jeremy. The Foundations of Geometry and the History of Geometry, *The Mathematical Intelligencer* **20** (2) (1998), 54–59. Compares the Italian and German contributions to the foundations of geometry at the end of the 19th century and their influence on a modern view of the subject. (TLB) #25.4.64

Gray, Jeremy. *See also* #25.4.99 and #25.4.112.

Gray, S. I. B. A Mathematical Treasure in California, *The Mathematical Intelligencer* **20** (2) (1998), 41–46. The Huntington Library in San Marino, California, contains the book collection of the 19th-century railroad entrepreneur, Henry E. Huntington. Some of its holdings of rare and ancient mathematics texts are described. (TLB) #25.4.65

Grugnetti, Lucia. *See* #25.4.140.

Guo, Shi Rong. *See* #25.4.70.

Gupta, Radha Charan. A Report on the New Delhi Seminar on the Concept of Śūnya (Zero), *Gaṇita-Bhāratī* **19** (1997), 117–120. Report of a meeting held 12–14 February, 1997, with the aim of providing "a documented account of various facets of the discovery of Śūnya in mathematics and astronomy and its various ramifications in philosophy and arts." (DEZ) #25.4.66

Gupta, Radha Charan. The Last Combinatorial Problem in Bhāskara's *Līlāvatī, Indian Journal of History of Science* **32** (1997), 53–68. A discussion of "Bhāskara's problem." See the review by P. Rajagopal in *Mathematical Reviews* **98g:**01021. (JVR) #25.4.67

Gupta, Radha Charan. *See also* #25.4.72.

Gustafson, Karl, and Abe, Takehisa. (Victor) Gustave Robin: 1855–1897, *The Mathematical Intelligencer* **20** (2) (1998), 47–53. Reviews the mathematical work and philosophy of the physicist Gustave Robin, as well as what little is known of his life. (TLB) #25.4.68

Haase, Hermann. *See* #25.4.16.

Harman, Peter M. *See* #25.4.113.

Harnasz, Costel. An Old Exercise Book, *BSHM Newsletter* **37** (1998), 56–58. The author's account of his search for sources of mathematics appearing in a copy book from 1754. One source was located, the 1729 edition of *The Complete Measurer* by William Hawney. (DEZ) #25.4.69

Hashimoto, Keizo, and Jami, Catherine. Kepler's Laws in China: A Missing Link? Jean-François Foucquet's *Lifa wenda, Historia Scientiarum* **6** (3) (1997), 171–185. The authors shed light on the question of how Kepler's laws made their way to China. They refer to two versions of a newly discovered Chinese manuscript, *Lifa Wenda* [*Dialogue on Astronomy*]. See the review by Shi Rong Guo in *Mathematical Reviews* **98g:**01014. (JVR) #25.4.70

Hawkins, Thomas. The Birth of Lie's Theory of Groups, in Olav Arnfinn Laudal and Bjørn Jahren, eds., *The Sophus Lie Memorial Conference* (*Oslo 1992*), Oslo: Scandinavian Univ. Press, 1994, pp. 23–50. A discussion of the early work of Sophus Lie. See the review by Joachim Schwermer in *Mathematical Reviews* **98g:**01062. (JVR) #25.4.71

Hayashi, Takao. *The Bakhshālī Manuscript: An Ancient Indian Mathematical Treatise*, Groningen: Egbert Forsten Publishing, 1995, xii + 596 pp. Based on the author's 1985 doctoral dissertation from Brown University, this book examines a Sanskrit manuscript written on birch-bark in Śāradā script that the author assigns to the 7th century. See the review by R. C. Gupta in *Gaṇita-Bhāratī* **19** (1997), 126–128. (DEZ) #25.4.72

Heiede, Torkil. Why Teach History of Mathematics? *Mathematical Gazette* **76** (1992), 151–157. The answer proposed is: Because the history of a subject is part of the subject. You are not a mathematics teacher if you do not also teach the history of mathematics. (JGF) #25.4.73

Helfrich, H.-P. *See* #25.4.3.

Helgason, Sigurdur. Sophus Lie, the Mathematician, in Olav Arnfinn Laudal and Bjørn Jahren, eds., *The Sophus Lie Memorial Conference*, Oslo: Scandinavian Univ. Press, 1994, pp. 3–21. An overview of the career of Sophus Lie. See the review by Joachim Schwermer in *Mathematical Reviews* **98g:**01061. (JVR) #25.4.74

Hertling, Claus. *See* #25.4.16.

Hirsch, Morris W. Edwin Henry Spanier (1921–1996), *Notices of the American Mathematical Society* **45** (1998), 704–705. Biographical note on the Berkeley algebraic topologist, Ed Spanier, with a list of his 17 Ph.D. students. (DEZ) #25.4.75

Hitchcock, Gavin. A Window on the World of Mathematics, 1871: Reminiscences of De Morgan—A Dramatic Presentation, in Eduardo Veloso, ed., *Proceedings of HPM Meeting*, Braga, Portugal, 1996, vol. II, pp. 35–42. A dramatic monologue, constructed from his writings, in which Augustus De Morgan discusses the development of algebra over his lifetime. (JGF) #25.4.76

Hitchcock, Gavin. Teaching the Negatives, 1870–1970: A Medley of Models, *For the Learning of Mathematics* **17** (1997), 17–25, 42. Six contrasting classroom scenes of good teachers at work: C. Smith (1888), Alfred North Whitehead (1918), Edmund Landau (1930), Thomas Apostol (1957), American teacher (1961), English teacher (1966), with prologue (Augustus De Morgan) and epilogue (Felix Klein). With questions and exercises, for teacher-training workshops. (JGF) #25.4.77

Høyrup, Jens. *See* #25.4.50, #25.4.94, and #25.4.132.

Huard, James G. *See* #25.4.6.

Ignatieff, Yurie A. *The Mathematical Work of Walter Noll: A Scientific Biography*, Berlin: Springer-Verlag, 1996, x + 254 pp., $49. Brief accounts of the life and work of Walter Noll. A bibliography of his works in rational mechanics and the foundations of special relativity is also provided. See the review by Wilfried Schröder in *Mathematical Reviews* **97m:**01070. (ACL) #25.4.78

Ilgauds, Hans-Joachim. *See* #25.4.16.

Isaacs, Ian; Ram, V. Mohan; and Richards, Ann. A Historical Approach to Developing the Cultural Significance of Mathematics Amongst First Year Preservice Primary School Teachers, in Eduardo Veloso, ed., *Proceedings of HPM Meeting*, Braga, Portugal, 1996, vol. II, pp. 26–33. A course at the Northern Territory University, Australia, set out to modify the belief systems and perceptions of trainee primary teachers about the nature of mathematics and the purpose of school mathematics. Work included geometry from China, India, Egypt, and Greece. Results were mixed; many students were unconvinced, and more work is needed. (JGF) #25.4.79

Jacobsen, Martin. Laplace and the Origin of the Ornstein–Uhlenbeck Process, *Bernoulli* **2** (1996), 271–286. A result of Laplace in 1810 is equivalent to the Fokker–Planck equation for the transition density of the Ornstein–Uhlenbeck process. The author traces the various uses made of Laplace's work in studying Brownian motion and as a model for the Markov chain. In the review by Eugene Seneta in *Mathematical Reviews* **97m:**01056 additional historical information is given relating to the work of M. Kimura in the 1950s. (ACL) #25.4.80

Jami, Catherine. *See* #25.4.70.

Katz, Victor. Some Ideas on the Use of History in the Teaching of Mathematics, *For the Learning of Mathematics* **17** (1997), 62–63. To discover ways of making learning better for students, teachers need to experiment with various ways of using history and sharing the results. Successful use may require action on a larger scale: setting a series of ideas, or even a whole course, in historical context. (JGF) #25.4.81

Katz, Victor. *See also* #25.4.37.

Kenig, Carlos E., and Stroock, Daniel W. Eugene Barry Fabes (1937–1997), *Notices of the American Mathematical Society* **45** (1998), 706–708. Biographical note on Minnesota analyst, Gene Fabes, called "an archetypical representative of [a] generation of Americans who went into mathematics in the 1960s." There is a list of his 21 Ph.D. students. (DEZ) #25.4.82

Kennedy, Edward S. *Astronomy and Astrology in the Medieval Islamic World*, Brookfield, VT: Ashgate, 1998, 368 pp., $99.95. A collection of studies examining spherical astronomy, celestial mapping, and planetary models that reinforces the author's emphasis on the importance of advances in mathematics for understanding the development of medieval Arabic sciences. Papers of interest to historians of mathematics include "Applied Mathematics in the Tenth Century: Abū' l-Wafā Calculates the Distance Baghdad–Mecca," "Ulugh Beg as Scientist," "The Heritage of Ulugh Beg," and "The Spherical Case of the Tūsī Couple." (DEZ) #25.4.83

Kerszberg, Pierre. *See* #25.4.28.

Kirsanov, V. S. The Correspondence between Isaac Newton and Robert Hooke: 1679–1680 [in Russian], *Voprosy Istorii Estestvoznaniya i Tekhniki* **4** (1996), 3–39, 172. The first complete translation into Russian of the letters between Newton and Hooke. (DEZ) #25.4.84

Knox, Kevin C. Dephlogisticating the Bible: Natural Philosophy and Religious Controversy in Late Georgian Cambridge, *History of Science* **34** (1996), 167–200. The dread of heterodox/atheistic and political contagion dominated the era from 1789 to 1812. Late 18th-century skirmishes around mathematics, authority and dissent, involving William Frend, Isaac Milner, and others, evolved and transmuted into issues of the 1810s whence the Analytical Society emerged as a parody of Biblical evangelism. (JGF) #25.4.85

Koepke, Peter. *See* #25.4.16.

Kool, Marjolein. Dust Clouds From the Sixteenth Century, *Mathematical Gazette* **76** (1992), 90–96. Working with historical materials in the classroom is a way of motivating pupils. Here the example is given of working with 16th-century Dutch arithmetic texts. (JGF) #25.4.86

Kra, Irwin, and Maskit, Bernard. Lipman Bers, Complex Analyst, in Jósef Dodziuk and Linda Keen, eds., *Lipa's Legacy*, Providence: American Mathematical Society, 1997, pp. 389–415. A description of the major work of Lipman Bers with a focus on his work in quasiconformal mappings, Teichmüller theory, and Kleinian groups. See the review by William Abikoff in *Mathematical Reviews* **98g:**01063. (JVR) #25.4.87

Krarup, Jacob, and Vajda, Steven. On Torricelli's Geometrical Solution to a Problem of Fermat, *IMA Journal of Mathematics Applied in Business and Industry* **8** (1997), 215–224. An essay on Torricelli's geometrical solution to the problem: Given three points in a plane, find a fourth point such that the sum of the distances to the three given points is minimal. See also *Mathematical Reviews* **98g:**01031. (JVR) #25.4.88

Kucera, Jan. Arab Contributions to Mathematics in the Middle Ages, *Mathematics Notes from Washington State University* **41** (2) (1998), 1–3. Outline of the emergence of Islam followed by a brief account of Arab contributions to mathematics from the time of the Khalif Umar II in 718 to Ulugh Beg in 1449. (DEZ) #25.4.89

Kushner, Boris A. Some Reminiscences about Sofya Aleksandrovna Yanovskaya [in Russian], *Voprosy Istorii Estestvoznaniya i Tekhniki* **4** (1996), 119–123. This tribute to the mathematical logician, Yanovskaya, gives some biographical details. It is translated from the English version in *Modern Logic* **6** (1996), 67–72. See the review by E. Mendelson in *Mathematical Reviews* **97m:**01060. (ACL) #25.4.90

Lallement, Gerard, and Dominique, Perrin. Marcel-Paul Schützenberger (1920–1996), *Semigroup Forum* **55** (1997), 135–151. An account of the life and work of M.-P. Schützenberger, who specialized in algebraic semigroups and the theory of automata, with a list of his publications. (DEZ) #25.4.91

Lamy, Loïc. Le *Journal de l'École Polytechnique* de 1795 à 1831: Journal savant, journal institutionnel, *Sciences et Techniques en Perspective* **32** (1995), 1–150. This history of the journal of the École Polytechnique includes an account of its origins and its role in the school. There are also indexes by subject (following a classification system by the author) and by author. See the comments by Ivor Grattan-Guinness in *Mathematical Reviews* **97m:**01042. (ACL) #25.4.92

Lawrence, Snezana. *See* #25.4.121.

Lehto, Olli E. *Mathematics Without Borders: A History of the International Mathematical Union*. New York: Springer-Verlag, 1998, 416 pp., paperbound, $35. A history of the International Mathematical Union (IMU) that reflects international mathematical cooperation from the first International Congress in 1897 to plans for the World Mathematical Year 2000. The account includes the founding of the IMU in the aftermath of World War I and the 15-year exclusion of Germany and the other defeated Central Powers, which sorely tested the IMU's principle of political neutrality and nondiscrimination. The IMU's Executive Committee's decisions regarding membership, location of international congresses, committee assignments, handling of protests, and awarding of the coveted Fields Medals were later influenced by World War II, the Cold War, the conflict between the People's Republic of China and Taiwan, a divided Germany, and problems in the emerging nations of Africa. (DEZ) #25.4.93

Lévy, Tony. Hebrew Mathematics in the Middle Ages: An Assessment, in F. Jamil Ragep and Sally P. Ragep, eds., *Tradition, Transmission, Transformation*, Leiden: Brill, 1996, pp. 71–88. A study of Hebrew mathematical work, excluding astronomy, astrology, and calendar calculations, up to the 16th century. See the review by Jens Høyrup in *Mathematical Reviews* **98g:**01024. (JVR) #25.4.94

MacKinnon, Nick. Homage to Babylonia, *Mathematical Gazette* **76** (1992), 158–178. Some resources on Old Babylonian mathematics that have been used with classes, at various places in the curriculum, in relation to place value, Pythagoras's theorem, and quadratic equations. The article deals with how the material may be integrated into pupils' general education, and where to see cuneiform mathematics in Britain. (JGF) #25.4.95

MacKinnon, Nick. Newton's Teaser, *Mathematical Gazette* **76** (1992), 2–27. Leibniz's series for $\pi/4$,

and Newton's riposte in his *Epistola posterior* (1676). The latter ''makes an excellent peg on which to hang a number of lessons on infinite series, and integration, and in the course of researching this article I found I had touched base with so many A-level topics that my whole teaching at this level has been revolutionised.'' (JGF) #25.4.96

Magnello, M. Eileen. Karl Pearson's Mathematization of Inheritance: From Ancestral Heredity to Mendelian Genetics (1895–1909), *Annals of Science* **55** (1998), 35–94. Contrary to long-standing claims, such as by their arch-rival William Bateson, Pearson and his colleague W. F. R. Weldon both attempted to synthesize Mendelism and biometrics, at least for discontinuous variation. The heavily mathematical basis of their work, however, did not communicate well to early Mendelians and geneticists. (JGF) #25.4.97

Maierù, Luigi. *La teoria e l'uso delle coniche nel Cinquescento* [*The Theory and Use of Conics in the 16th Century*], Rome: Salvatore Sciascia Editore, 1996, 192 pp., L 20,000. 16th-century contributions to conics are discussed: translations of Apollonius, and original works of Giorgio Valla, Johannes Werner, Giovanni Battista Memmo, Francesco Maurolico, Federigo Commandino, and Francesco Barozzi. See the review by Doru Ştefănescu in *Mathematical Reviews* **97m:**01019. (ACL) #25.4.98

Malet, Antoni. Barrow, Wallis, and the Remaking of Seventeenth Century Indivisibles, *Centaurus* **39** (1997), 67–92. An analysis showing that the work of Wallis and Barrow allowed infinitesimals but not classical indivisibles. See also #25.3.78 and the review by Jeremy Gray in *Mathematical Reviews* **97m:**01029. (DEZ) #25.4.99

Malet, Antoni. Ferran Sunyer i Balaguer (1912–1967) and Spanish Mathematics after the Civil War, *The Mathematical Intelligencer* **20** (2) (1998), 23–30. Reviews the life and work of analyst, Sunyer, and describes the qualities of the Spanish mathematical community in the 1940s and 1950s which caused it to ignore or reject its most talented members. (TLB) #25.4.100

Martinović, Ivica. Stjepan Gradić on Galileo's Paradox of the Bowl, *Dubrovnik Annals* **1** (1997), 31–69. An explication of Stjepan Gradić's understanding of infinite processes in a work written between Galileo's *Discorsi* and Newton's *Principia*. The author discusses four of Gradić's results on Galileo's paradox of the bowl and compares Gradić's research to those of two contemporaries, Benvenuto Cavalieri and Honoré Fabri. (DEZ) #25.4.101

Maskit, Bernard. *See* #25.4.87.

Maslov, V. P.; Shubin, M. A.; Vershik, A. M.; and Vvedenskaya, N. D. Alik Berezin in the Recollections of Friends, in R. L. Dobrushin, R. A. Minlos, M. A. Shubin, and A. M. Vershik, eds., *Contemporary Mathematical Physics*, Providence: American Mathematical Society, pp. 225–236. Personal recollections of F. A. Berezin (1931–1980). See also #25.4.103. (DEZ) #25.4.102

Mendelson, E. *See* #25.4.12 and #25.4.90.

Minlos, R. A. Felix Alexandrovich Berezin (A Brief Scientific Biography), in R. L. Dobrushin, R. A. Minlos, M. A. Shubin, and A. M. Vershik, eds., *Contemporary Mathematical Physics*. Providence: American Mathematical Society, pp. 1–13. An account of the life and work of the Russian mathematician, Alik Berezin, who was killed in an accident before reaching the age of 50. See also #25.4.102. (DEZ) #25.4.103

Mitra, S. K. *See* #25.4.58.

Mo, Shao Kui. The Ratio of Circumference to Diameter According to Heng Zhang [in Chinese; English summary], *Journal of Northwest University* **26** (1996), 359–362. Heng Zhang was the first Chinese mathematician to evaluate π using mathematical-theoretic means. He obtained the value of $\sqrt{10}$. See the short notice by Dian Zhou Zhang in *Mathematical Reviews* **97m:**01014. (ACL) #25.4.104

Morandi, Steven J. *See* #25.4.5.

Morgan, Samuel P. Richard Wesley Hamming (1915–1998), *Notices of the American Mathematical*

Society **45** (1998), 972–977. Obituary of R. W. (Dick) Hamming, the mathematician, pioneer computer scientist, and professor who is best known for the error-correcting codes named after him. (DEZ) #25.4.105

Mukhopadhyay, A., and Adhikari, M. R. The Concept of Cyclic Quadrilaterals: Its Origin and Development in India (From the Age of Śulba Sūtras to Bhāskara I), *Indian Journal of History of Science* **32** (1997), 53–68. A study of the development of the concept of cyclic quadrilaterals in India from the 8th century BC to the 7th century AD. See the review by A. I. Volodarskii in *Mathematical Reviews* **98g:**01022. (JVR) #25.4.106

Murawski, Roman. *See* #25.4.148.

Murthy, Venkatesha. Workshop on Methods in Ancient Indian Mathematics and Their Adaptation to Secondary School Syllabus, *Gaṇita-Bhāratī* **19** (1997), 115–116. Report of a four-day workshop held in October 1996 to discuss ways to create an interest and appreciation in Indian secondary-school students toward their mathematical heritage. (DEZ) #25.4.107

Nastasi, Pietro. *See* #25.4.46.

Nebraska, University of—Lincoln. *Mathematics and Statistics Centennial Celebration: A Reunion and Symposium Commemorating 100 Years of Doctoral Education by the Department of Mathematics and Statistics at the University of Nebraska—Lincoln, May 14–16, 1998*, Lincoln: Department of Mathematics and Statistics, 1998, 36 pp. Includes reminiscences, doctoral alumni (with topic and supervisor), faculty, semester visitors, conferences, and a history of the department by Ed Halfar, Bill Leavitt, Earl Kramer, and David Skoug. The university was founded in 1869. (ACL) #25.4.108

Neuenschwander, Erwin. *See* #25.4.16.

Ogawa, Tsukane. A Process of Establishment of pre-modern Japanese Mathematics, *Historia Scientiarum* **5** (3) (1996), 255–262. A discussion of the establishment of a new paradigm in pre-modern Japanese mathematics and of the tengen-jutsu method of solving numerical equations. See the review by Andrea Breard in *Mathematical Reviews* **98g:**01016. (JVR) #25.4.109

Orzech, Morris. An Activity for Teaching about Proof and about the Role of Proof in Mathematics, *PRIMUS* **6** (1996), 125–139. A linear algebra class was infused with history and philosophy of mathematics to help students understand the notion of proof. The method here involved experiencing an historical skit/dialogue about the definition of proof and looking at some historical proofs to understand the development of the notion. (JGF) #25.4.110

Otte, Michael. Mathematics, Semiotics, and the Growth of Social Knowledge, *For the Learning of Mathematics* **17** (1997), 47–54. How the difference between the Newtonian and Berkeleyan worlds—of objects at the expense of meta-relationships, and vice versa—impinges on mathematics, in the cases of Descartes and Desargues, Felix Klein, Charles S. Peirce, and others. (JGF) #25.4.111

Panza, Marco. Concepts of Function, between Quantity and Form, in the 18th Century, in #24.3.58, pp. 241–274. The author presents a philosophical classification of definitions of function in the 18th century. The three examples given are from Johann Bernoulli I and Euler, the latter giving a definition or description as an analytic expression in 1748 and as a quantity depending on other quantities in 1755. See the detailed review by Jeremy Gray in *Mathematical Reviews* **97m:**01034. (ACL) #25.4.112

Paris, Richard. The Mathematical Work of G. G. Stokes, *Mathematics Today* **32** (1996), 43–46. The work of Stokes in mathematical analysis originated in physical problems. See the summary by Peter M. Harman in *Mathematical Reviews* **97m:**01080. (ACL) #25.4.113

Parshall, Karen Hunger. *James Joseph Sylvester: Life and Work in Letters*, Oxford: Clarendon Press, 1998, xv + 321 pp., hardbound, £55.00. This book contains 140 letters from Sylvester's correspondence showing that the usual stereotype of him as an eccentric, hot-tempered, sword-cane-wielding mathematician, like all stereotypes, has some basis in fact but much more basis in fiction. Mathematical and

historical commentary that accompany the letters reveal Sylvester as a friend, man of principle, mathematician, poet, professor, scientific activist, social observer, and traveler. The author's account of Sylvester's thought processes show him in personal and professional spheres and offer insight into the development of the technical and social structures of mathematics. (DEZ) #25.4.114

Parthasarathy, K. R. *See* #25.4.58.

Paxson, James J. The Allegory of Temporality and the Early Modern Calculus, *Configurations* **4** (1996), 39–66. Considering mathematics as a semiotic system, Newton's calculus bears the stamp of a new kind of allegory, in which he developed a self-consciously performative semiotics. (JGF) #25.4.115

Peterson, Polly A. *See* #25.4.5.

Pfizenmaier, Thomas C. Was Isaac Newton an Arian? *Journal of the History of Ideas* **58** (1997), 57–80. Newton was heterodox rather than heretic: neither orthodox (viz. Athanasian) nor Arian, believing that both had wandered into metaphysical speculation. For him the Son was the express image of the Father, of the same kind of substance but not numerically the same. (JGF) #25.4.116

Pingree, David. *Census of the Exact Sciences in Sanskrit, Series A, Vol. 5*, Philadelphia: American Philosophical Society, 1994, xxvi + 756 pp., $45. The main entries of this volume concern those authors of the exact sciences in Sanskrit whose names begin *ya*, *ra*, *la*, and *va*. See the review by Ganitanand (R. C. Gupta) in *Gaṇita-Bhāratī* **19** (1997), 132–134. (DEZ) #25.4.117

Preston, Gordon. A. H. Clifford's Work on Unions of Groups, in Karl H. Hofmann and Michael W. Mislov, eds., *Semigroup Theory and Its Applications*, Cambridge, UK: Cambridge Univ. Press, 1996, pp. 5–14. The author, who wrote a highly influential book on algebraic semigroups with Alfred H. Clifford, puts Clifford's work from 1933 to 1974 into historical perspective. (DEZ) #25.4.118

Pritchard, Chris. The Contributions of Four Scots to the Early Development of Statistics, *Mathematical Gazette* **76** (1992), 61–68. The history of mathematics within a country can be used to kindle pupils' interest. Here, pioneering Scottish statisticians are evoked for Scottish pupils. (JGF) #25.4.119

Pulte, Helmut. Jacobi's Criticism of Lagrange: The Changing Role of Mathematics in the Foundations of Classical Mechanics, *Historia Mathematica* **25** (1998), 154–184. The author presents and analyzes the mathematical and philosophical arguments of Carl G. J. Jacobi opposing Lagrange's view that mechanics could be studied as an axiomatic–deductive science. He shows that Jacobi's criticism is motivated by a changed evaluation of the role of mathematics in the empirical sciences, which is interpreted as a process of dissolution of Euclideanism that dominated theoretical mechanics until then. (DEZ) #25.4.120

Radelet-de-Grave, Patricia, and Benvenuto, Edoardo, eds. *Entre mécanique et architecture—Between Mechanics and Architecture*, Basel/Boston/Berlin: Birkhäuser, 1995, 401 pp. A collection of articles on the relation between the science and art of architecture based on talks given at the 19th International Congress of the History of Sciences, Saragossa, 1993. See the review by Snezana Lawrence in *Historia Mathematica* **25** (1998), 221–224. (DEZ) #25.4.121

Radford, Luis. On Psychology, Historical Epistemology, and the Teaching of Mathematics: Towards a Socio-cultural History of Mathematics, *For the Learning of Mathematics* **17** (1997), 26–33. The history of mathematics can be used, in a less naive way than anecdotally or as a source of problems, as an epistemological laboratory to explore the development of mathematical knowledge. This requires critical analysis of how historical and conceptual developments are linked—notably, of the notion of ''epistemological obstacles''—through exploring how knowledge is rooted in its socio-cultural context (JGF) #25.4.122

Rajagopal, P. *See* #25.4.67.

Ram, V. Mohan. *See* #25.4.79.

Ransom, Peter. A Historical Approach to Maximum and Minimum Problems, *Mathematical Gazette* **76** (1992), 85–89. Finding a minimum, before pupils have met calculus, by studying Fermat's method

proves to have several advantages: it encourages library use and practice in algebra as well as following through a mathematical argument and introducing calculus. (JGF) #25.4.123

Ransom, Peter. Peter Nicholson, *BSHM Newsletter* **37** (1998), 20–23. Biographical comments on Peter Nicholson (1765–1844), with an examination of his book on dialling. (DEZ) #25.4.124

Rao, Balachandra. *Indian Mathematics and Astronomy: Some Landmarks*, Bangalore: Deep Publications, 1994, viii + 234 pp., Rs. 75. A brief history of mathematics and astronomy in India, written for students and general readers. See the review by Michio Yano in *Gaṇita-Bhāratī* **19** (1997), 128–132, (DEZ) #25.4.125

Reich, Karin. Bernhard Friedrich Thibaut, der Mathematiker an Gauß' Seite, *Gauss-Gesellschaft e. V. Göttingen: Mitteilungen* **34** (1997), 45–62. A mathematical biography of the mathematician, Bernhard Thibaut (1775–1831), who studied combinatorial analysis and was a contemporary of Gauss at Göttingen. See the review by R. L. Cooke in *Mathematical Reviews* **98g:**01046. (JVR) #25.4.126

Reingold, Edward M. *See* #25.4.37.

Rice, Adrian, and Wilson, Robin J. From National to International Society: The London Mathematical Society, 1867–1900, *Historia Mathematica* **25** (1998), 185–217. An examination of the principal developments that occurred during 1867–1900 when the London Mathematical Society, founded in 1865, consolidated its position as a prestigious learned body in both the national and the international mathematical arenas. See also #23.2.138. (DEZ) #25.4.127

Richards, Ann. *See* #25.4.79.

Russo, Lucio. *La Rivoluzione dimenticata* [*The Forgotten Revolution*], Milan: Feltrinelli, 1996, 380 pp., hardbound. A comprehensive and in-depth review of Hellenistic science between the founding of Alexandria in 331 BC and the closure of the Museum in 145 BC. The author's revolutionary theme is that Hellenistic scientists were not amateurs but real professionals who introduced today's scientific method and technology, including much of today's mathematics. See the review by Sandro Graffi in *Notices of the American Mathematical Society* **45** (1998), 601–605. (DEZ) #25.4.128

Schaffer, Simon. Babbage's Dancer and the Impresarios of Mechanism, in Francis Spufford and Jenny Uglow, eds., *Cultural Babbage: Technology, Time and Invention*, London: Faber & Faber, 1996, pp. 53–80. The intelligence attributed to machines depends on the cultural invisibility of human skills accompanying them. In Babbage's devices, the skills around automatic mechanization were invisible, like von Kempelen's apparent chess-playing device and the many other automata devised for public entertainment in the period. (JGF) #25.4.129

Schmeling, Jorg. *See* #25.4.16.

Schneider, Ivo. *See* #25.4.58.

Scholz, Erhard. *See* #25.4.16.

Scholz, Reinhard. *See* #25.4.3.

Schreiber, Peter. Clemens Thaer (1883–1974)—Ein Mathematikhistoriker im Widerstand gegen den Nationalsozialismus, *Sudhoffs Archiv* **80** (1996), 78–85. Thaer, known for his translation of Euclid's *Elements* into German, also published on Islamic mathematics. While teaching at a Gymnasium in Greifswald, he became an outspoken critic of National Socialism. He was forced into retirement in 1939 but allowed to resume teaching in 1940 in Detmold. The author's summary is given in *Mathematical Reviews* **97m:**01086. (ACL) #25.4.130

Schreiber, Peter. *See also* #25.4.16.

Schröder, Wilfried. *See* #25.4.78.

Schubring, Gert. Mathematische Wörterbücher des 18. Jahrhunderts, *Das achtzehnte Jahrhundert* **22**

(1998), 114–128. An investigation of the development of mathematical dictionaries in Europe from early modern times to 1800, particularly Germany during the 18th century. (DEZ) #25.4.131

Schwarz, Friedrich. Wieviele Rinder hat der Sonnengott? *Mitteilungen der Deutschen Mathematiker-Vereinigung* **2** (1997), 13–18. The author presents a solution to the Archimedean cattle problem (Pell's equation) using continued fractions and computer algebra systems, along with a history of the problem. See the review by Jens Høyrup in *Mathematical Reviews* **98g:**01013. (JVR) #25.4.132

Schwermer, Joachim. *See* #25.4.71 and #25.4.74.

Scriba, Christoph J. *See* #25.4.16.

Seltman, Muriel, and Seltman, P. E. J. Growth Processes and Formal Logic: Comments on History and Mathematics Regarded as Combined Educational Tools, *International Journal of Mathematics, Education, Science, and Technology* **9** (1978), 15–29. History of mathematics, seen as permeating through the whole of mathematics, can alleviate some of the teaching problems raised by the formal–logical character of mathematical thinking. Knowledge of the circumstances of mathematical discovery is integral to the access to, appreciation of, and performance in mathematics. (JGF) #25.4.133

Seltman, P. E. J. *See* #25.4.133.

Seneta, Eugene. *See* #25.4.80.

Shah, Nimish. Research in Progress, *BSHM Newsletter* **37** (1998), 28–33. Report of a meeting devoted to research conducted by graduate students, held 28 February, 1998 at Queen's College (Oxford). Abstracts of the eight talks are included. (DEZ) #25.4.134

Shea, William R. *See* #25.4.30.

Sherry, David. On Mathematical Error, *Studies in the History and Philosophy of Science* **28** (1997), 393–416. The view that mathematics is fallible is unsupported by standard historical cases, which show rather that mathematics is evolving: fallibilism is a misnomer for the freedom mathematicians enjoy in developing new conceptual structures. (JGF) #25.4.135

Shubin, M. A. *See* #25.4.102.

Sinaceur, Hourya. *See* #25.4.42.

Singmaster, David. Mathematical Gazetteer of Britain #10: Hackforth to Kirkcaldy, *BSHM Newsletter* **37** (1998), 15–19. Short descriptions of British mathematicians (John Tyndall was killed by an accidental overdose of chloral administered by his wife!) and mathematical sites (including a hairdresser's named ''Twenty Two over Seven'') beginning with H, I, J, and K. (DEZ) #25.4.136

Smale, Steve. Mathematical Problems for the Next Century, *The Mathematical Intelligencer* **20** (2) (1998), 7–15. Eighteen problems composing Smale's response to V. I. Arnold's invitation to update Hilbert's famous list of 1900, delivered as a lecture at the Fields Institute in 1997. (TLB) #25.4.137

Smith, Fenny K. C. The Circumnavigation of the Earth and a 15th-Century Solution to a Quartic Equation, in Raffaella Franci, P. Pagli, and Laura Toti Rigatelli, eds., *Itinera mathematica*, Siena, 1996, pp. 123–130. Pacioli's solution (1494) to a 1372 problem posed by Marco Trevigiano is the earliest known example of reducing the order of a higher degree equation by adding a constant in order to factor. (JGF) #25.4.138

Smith, John. The Remarkable Ibn al-Haytham, *Mathematical Gazette* **76** (1992), 189–198. A sketch of the life and achievements of Alhazen, including some subsequent history of ''Alhazen's problem'' on the reflection of light from a circular mirror. (JGF) #25.4.139

Smithies, Frank. *See* #25.4.17.

Speranza, Francesco, and Grugnetti, Lucia. History and Epistemology in Didactics of Mathematics, in Nicolina A. Malara, Marta Menghini, and Maria Reggiani, eds., *Italian Research in Mathematics*

Education 1988–1995, Consiglio nationale delle Richerché, 1996, pp. 126–135. The interaction between mathematical didactics and its history and epistemology is rich, and in Italy is institutionalized. In the 1900s, the relation was the subject of a rich debate; many writings from that period are still useful. The debate resumed in the 1980s and now involves many groups across Italy. (JGF) #25.4.140

Ştefănescu, Doru. *See* #25.4.43 and #25.4.98.

Steffen, Klaus. *See* #25.4.16.

Stein, Elias M. Singular Integrals: The Roles of Calderón and Zygmund, *Notices of the American Mathematical Society* **45** (1998), 1130–1140. A tribute to Alberto Calderón (1920–1998) that traces his mathematics and discusses its impact, including his joint work with Antoni Zygmund and his influence on several areas of contemporary mathematics. The author, a student of Zygmund, claims that ''there is probably no paper in the last fifty years which had such widespread influence in analysis'' (p. 1133) as Calderón's 1952 paper. (DEZ) #25.4.141

Stipetić, Vladimir. *Dubrovnik Annals* **1** (1997), 129 pp. This new annual journal is devoted to the history of Dubrovnik and the Republic of Dubrovnik. The introduction (pp. 7–8) explains why English is the official language and not Croatian. Two articles of mathematical interest, by S. Dadić and I. Martinović, are abstracted separately. (DEZ) #25.4.142

Stroock, Daniel W. *See* #25.4.82.

Swade, Doron. ''It Will Not Slice a Pineapple'': Babbage, Miracles and Machines, in Francis Spufford and Jenny Uglow, eds., *Cultural Babbage: Technology, Time and Invention*, London: Faber & Faber, 1996, pp. 34–51. Babbage's mastery of mechanical design was not matched by his political acuity. The discovery that the wooden calculating machine of Thomas Fowler may have lacked public funding in the wake of Babbage's apparent failure to utilize public funds efficiently deepens the ambiguity of our judgment of Babbage's legacy. (JGF) #25.4.143

Swetz, Frank. Mathematical Pedagogy: An Historical Perspective, in Eduardo Veloso, ed., *Proceedings of HPM Meeting*, Braga, Portugal, 1996, vol. II, pp. 121–127. Analysis of didactical trends in historical texts may explore several aspects, notably organization of material, use of instructional discourse, use of visual aids, and use of tactile aids. Examples include Babylonian and Chinese texts. (JGF) #25.4.144

Ulyanov, P. L. Reminiscences of Sergei Borisovich Stechkin [in Russian], *Uspekhi Matematicheskikh Nauk* **51** (1996), 11–20. An overview of the work of S. B. Stechkin in Fourier analysis. The first article in this journal contains an account of Stechkin's work in analysis and a list of his 110 publications. (DEZ) #25.4.145

Uspenskii, V. A. *See* #25.4.12.

Vajda, Steven. *See* #25.4.88.

Van Maanen, Jan. Teaching Geometry to 11 Year Old ''Mediaeval Lawyers,'' *Mathematical Gazette* **76** (1992), 37–45. A class of 11-year-old pupils studying Latin and mathematics studied a 1355 treatise by Bartolus of Saxoferrato on the division of alluvial deposits. Besides integrating the two subjects in the same project, it was a way of encouraging pupils to work together, to see the importance of mathematics in society, and to discover ruler-and-compass constructions. (JGF) #25.4.146

Vershik, A. M. *See* #25.4.102.

Veselý, Jiří. Teaching Activities of Jan Mařik, *Mathematica Bohemica* **121** (1996), 337–348. Brief biography of Jan Mařik (1920–1994), a description of his teaching activities, and a list of his publications. See also #25.4.151. (DEZ) #25.4.147

Volodarskii, A. I. *See* #25.4.106.

Vvedenskaya, N. D. *See* #25.4.102.

Wang, Hao. *A Logical Journey: From Gödel to Philosophy*, Cambridge, MA: MIT Press, 1996, xiv + 391 pp., $40. This is a continuation of the author's earlier *Reflections on Kurt Gödel* but presents a more explicit account of Gödel's life and work as well as his views on Platonism, the nature of logic, the existence of God, and many other topics. See the review by Roman Murawski in *Mathematical Reviews* **97m:**01090. (ACL) #25.4.148

Wanner, Gerhard. *See* #25.4.20.

Williams, Kenneth S. *See* #25.4.6.

Wilson, Robin. *See* #25.4.49 and #25.4.127.

Wimp, Jet. Book Review, *The Mathematical Intelligencer* **20** (2) (1998), 62–79. Under the guise of reviewing the writings of A. C. Aitken, the author relates much of the life and personality of the mathematician who was raised in New Zealand but spent his professional life in Scotland. The four A. C. Aitken books under consideration are *To Catch the Spirit: The Memoir of A. C. Aitken, Determinants and Matrices, The Case against Decimalisation,* and *Gallipoli to the Somme: Recollections of a New Zealand Infantryman.* (TLB) #25.4.149

Wußing, Hans, *et al.* *Vom Zählstein zum Computer*, Hildesheim: Verlag Franzbecker, 1997, viii + 149 pp., DM 34.80. The author views the history of mathematics as an ''intellectual adventure.'' Mathematics is seen as the foundation of all technology, science, and industry. See also *Mathematical Reviews* **98g:**01004. (JVR) #25.4.150

Yano, Michio. *See* #25.4.125.

Zajíčk, Luděk. On Results of Jan Mařik in the Theory of Derivatives, *Mathematica Bohemica* **121** (1996), 385–395. An account of the work of Jan Mařik in the theory of derivatives of real functions of one variable. See also #25.4.147 and *Mathematical Reviews* **97m:**01089. (DEZ) #25.4.151

Žerovnik, Janez. The RSA Cryptosystem in 1873 [in Slovenian], *Obzornik za Matematiko in Fiziko* **43** (4) (1996), 116–118. See the English summary in *Mathematical Reviews* **97m:**01048. (DEZ) #25.4.152

Zhang, Dian Zhou. *See* #25.4.104.

David E. Zitarelli's 20 research works with 46 citations and 169 reads, including: Mathematics Across the Iron Curtain: A History of the Algebraic Theory of Semigroups by Christopher Hollings.Â David E. Zitarelli's research while affiliated with Temple University and other places. Overview. Publications (20). Mathematics Across the Iron Curtain: A History of the Algebraic Theory of Semigroups by Christopher Hollings. Article. Full-text available. Mar 2016. David E. Zitarelli. Cite. Download full-text. David E. Zitarelli. edit data. Combine Editions. David E. Zitarelliâ€™s books. David E. Zitarelli Average rating: 3.5. Â· 2 ratings Â· 0 reviews Â· 6 distinct works. Finite Mathematics With Applications.Â Finite Mathematics with Applications by. Raymond F. Coughlin, David E. Zitarelli. 0.00 avg rating â€” 0 ratings â€” published 1992. Want to Read savingâ€¦ Looking for books by David E. Zitarelli? See all books authored by David E. Zitarelli, including Finite Mathematics With Applications, and Finite Mathematics With Calculus: An Applied Approach, and more on ThriftBooks.com.Â We use Cookies to collect information when you visit our site. You can learn more about how we use this information in our Privacy Policy. By closing this banner or continuing to use our site, you consent to our use of Cookies. Accept & Close. Skip to content. Below are Chegg supported textbooks by David E Zitarelli. Select a textbook to see worked-out Solutions. Books by David E Zitarelli with Solutions. Book Name. Author(s). Brief Calculus with Applications 0th Edition 0 Problems solved. Raymond F. Coughlin, Raymond F Coughlin, David E. Zitarelli. Calculus with Applications 2nd Edition 0 Problems solved. William Jeremiah Coughlin, Raymond F Coughlin, David E. Zitarelli, Coughlin, Raymond F. Coughlin. Finite Math with Calculus 0th Edition 0 Problems solved. David E. Zitarelli, Zitarel. Finite Math with Applications 0th Edition 0 Problems solved. Zi