HISTORIA MATHEMATICA **21** (1994), 469–482

# 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: V5319E @ TEMPLEVM.BITNET or V5319E @ VM.TEMPLE.EDU)

Readers are invited to send reprints, autoabstracts, corrections, additions, and notices of publications that have been overlooked. Be sure to include complete bibliographic information, as well as transliteration and translation for non-European languages. We need volunteers willing to cover one or more journals for this department.

Readers interested in receiving a computer-readable version of the abstracts, beginning with #11.3.1, are invited to write to the Abstracts Editor.

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 Joe Albree (Montgomery, AL), Irving Anellis (Ames, IA), Thomas L. Bartlow (Villanova, PA), Gary Brown (Collegeville, MN), John Dossey (Normal, IL), Catherine Goldstein (Paris), Ivor Grattan-Guinness (Middlesex), Louise S. Grinstein (Brooklyn), Albert C. Lewis (Hamilton), Marta Menghini (Rome), Laura Nurzia (Rome), Zorka Paradžik (Dubrovnik), James V. Rauff (Decatur, IL), and David E. Zitarelli.

AĞARGÜN, AHMET G., AND FLETCHER, COLIN R. al-Fārisī and the Fundamental Theorem of Arithmetic, *Historia Mathematica* **21** (1994), 162–173. The author provides an English translation of, and commentary on, the propositions used by the Persian mathematician Kamāl al-Dīn al-Fārisī to prove the Fundamental Theorem of Arithmetic. The author concludes that al-Fārisī proved the existence part but "neither stated nor proved uniqueness, and it was not his intention to." (DEZ) #21.4.1

ALCANTERA, JEAN PASCAL. La caractéristique géométrique leibnizienne: Travail du discernement et relations fondamentales, *Revue d'Histoire des Sciences* **46** (1993), 407–437. Leibniz's essays on the geometry of position associate the work of three relations (similitude, congruence, and determination) with a metaphysics of perception. However, congruence alone in the end will allow an algebraic rendering of such a calculus of position. The paper stresses that this is an illustration of how Leibniz moved towards a redefinition of topological conditions of existence. (CG) #21.4.2

ALEKSANDROVA, N. N., AND TURPANOVA, V. M. On the Concept of Linear Independence [in Russian], pp. 3–10 in #21.4.97. The history of linear independence in the 19th century from linearly independent



0315-0860/94 $6.00

vectors in Hamilton's quaternions to a 1901 paper of Maxime Bôcher using linear independence for differential equations. (DEZ) #21.4.3

ALEKSEEVA, N. B. On the History of the Theory of Finite Fields [in Russian], pp. 11–16 in #21.4.97. The development of finite fields from Gauss in 1801 to Steinitz in 1910. Two types of construction are compared, Galois' approach via imaginary units and the double module construction in Gauss and Serret. (DEZ) #21.4.4

ALEXANDER, DAN. Civilized Mathematics, *Focus* **14**(3) (1994), 10–11. Highlights of the fractious dispute between Pierre Fatou and Gaston Julia over the priority of fundamental developments in the iteration of complex rational functions. (DEZ) #21.4.5

ANELLIS, IRVING H. Grandfather of Fuzzy Logic?, *Modern Logic* **4** (1994), 304–305. A remark from Bart Kosko's *Fuzzy Logic* asserts that Bertrand Russell is the "grandfather" of fuzzy logic. However, the ideas which Kosko found in Russell which led him to assert this had already been considered by N. A. Vasilev a decade earlier. It is suggested that Russell learned of N. A. Vasilev's ideas from Vasilev's mathematician father A. V. Vasilev, who presided over a meeting of the St. Petersburg Mathematical Society which Russell attended in 1920. (IA) #21.4.6

ANELLIS, IRVING H. In Memoriam, *Modern Logic* **4** (1994), 79–83. Memorial notices on the deaths of William Glenn Clark, Alan H. Mekler, John George Kemeny, Max August Zorn, F. A. Medvedev, Hiu Fai "Hilfrid" Chau, Adolf Pavlovich Yushkevich, Friedrich Christian Simon Josef Kaulbach, and Paul Arthur Schilpp. (DEZ) #21.4.7

ANELLIS, IRVING H. In Memoriam, *Modern Logic* **4** (1944), 281–283. Obituaries of Stephen Cole Kleene, Djuro Kurepa, Roberto Magari, and Vincent G. Potter. (IA) #21.4.8

ANELLIS, IRVING H. Logic and Mathematics in the Library of Casimir Lewy, *Modern Logic* **4** (1994), 286–298. Annotated list of works in mathematics, logic, history and philosophy of mathematics, and logic in the library of the late Casimir Lewy and sold at his death to Thommes Antiquarian Books of Bristol, England. Also gives a detailed description of the physical condition and summary of the contents of the items from the Lewy collection purchased by Modern Logic Publishing. (IA) #21.4.9

ANGELELLI, IGNACIO. Abstraction and Number in Michael Dummett's *Frege: Philosophy of Mathematics, Modern Logic* **4** (1994), 308–318. A review of Michael Dummett's *Frege: Philosophy of Mathematics* that provides a critical analysis of Dummett's treatment of Frege's answer to "What is number?" (IA) #21.4.10

ANTROPOV, A. A. The History of the Concept of Genus in Binary Quadratic Forms [in Russian], pp. 17–27 in #21.4.97. The group-theoretic elements in Euler's work are examined as a precursor to the work of Gauss. (DEZ) #21.4.11

BADGER, LEE. Lazzarini's Lucky Approximation of $\pi$, *Mathematics Magazine* **67** (1994), 83–91. The author uses a statistical analysis to debunk Lazzarini's 1901 claim that he had approximated $\pi$ by experimenting physically with the Buffon needle problem. (DEZ) #21.4.12

BANDT, CHRISTOPH. Zur Entwicklung der Integralgeometrie vor, durch und nach Blaschke, *Wissenschaftliche Zeitschrift der Ernst-Moritz-Arndt-Universität Greifswald, Mathematisch-Naturwissenschaftliche Reihe* **35** (1986), 3–6. After an introductory account of Wilhelm Blaschke (1885–1962) this article covers the following topics: integral geometry before Blaschke—geometrical probability; Blaschke's integral geometry; and the development of stochastic geometry. (ACL) #21.4.13

BARROW-GREEN, JUNE. International Congresses of Mathematicians from Zurich 1897 to Cambridge 1912, *The Mathematical Intelligencer* **16**(2) (1994), 38–41. This article presents information about the

number of attendees, the number and variety of papers, and the social arrangements at each of the Congresses between 1897 and 1912. (TLB) #21.4.14

BERG, JAN. *See* #21.4.118.

BLAY, MICHEL. *See* #21.4.95.

BODINI, ARTURO. Der Einfluss von Magnus auf das Werk von Cremona, *Mathematische Semesterberichte* **41** (1994), 17–21. The work of L. J. Magnus on quadratic transformations during 1832–1833 had a stronger influence on Luigi Cremona's work on birational transformations (1863–1865) than has hitherto been thought. (ACL) #21.4.15

BOI, LUCIANO. Mannigfaltigkeit und Gruppenbegriff: Zu den Veränderungen der Geometrie im 19. Jahrhundert, *Mathematische Semesterberichte* **41** (1994), 1–16. Bernhard Riemann's 1854 work on manifolds shed a new light on the geometrical structures of space. A further mathematical formalization of the space concept was given by the theory of transformation groups in the works of Felix Klein, S. Lie, W. Killing, H. Poincaré, H. Weyl, and E. Cartan. (ACL) #21.4.16

BRADEN, BART (Ed.) A Note from the Editor, *The College Mathematics Journal* **25** (1994), 178. The editor describes a special issue of the journal devoted to results attributed to Isaac Newton. Articles by Robert Weinstock, Curtis Wilson, Richard S. Westfall, A. P. French, and M. Nauenberg are abstracted separately. (DEZ) #21.4.17

BRYLEVSKAYA, L. I. A Discussion of the Existence of Non-measurable Sets [in Russian], pp. 28–33 in #21.4.97. An examination of examples of sets of real numbers that are not Lebesgue-measurable that arose among Vitali, Van Ulek, Luzin, and Lebesgue. (DEZ) #21.4.18

CAJORI, FLORIAN. *A History of Mathematical Notations*, New York: Dover, 1993, two vols. bound as one, xvi + 451 pp. and xii + 367 pp., $19.95. A reprint of this classic work from 1929–1930. The first volume treats symbols in elementary arithmetic, algebra, and geometry, while the second is concerned with symbols in more advanced mathematics. (DEZ) #21.4.19

CAMPBELL-KELLY, MARTIN. The Airy Tape: An Early Chapter in the History of Debugging, *Annals of the History of Computing* **14**(4) (1992), 16–26. This article discusses an undebugged program written for the EDSAC computer in 1949. This program was apparently the first real, nontrivial application written for a stored program computer. An examination of the program shows the extent to which debugging *per se* was unanticipated by early computer programmers, and the motivation for the development of systematic programming practices and debugging aids at Cambridge. (LSG) #21.4.20

CAMPBELL-KELLY, MARTIN. Introduction: Computing at the University of Cambridge, *Annals of the History of Computing* **14**(4) (1992), 8–9. An overview of the contents of a special issue of the journal devoted to the early developments in computing at Cambridge University. Articles by Mary G. Croarken, Martin Campbell-Kelly, Joyce M. Wheeler, David J. Wheeler, John M. M. Pinkerton with Derek Hemy and Ernest H. Lenaerts, Maurice V. Wilkes, and Roger M. Needham are abstracted separately. (LSG) #21.4.21

CASSELS, J. W. S. Kurt Mahler (1903–1988), *Bulletin of the London Mathematical Society* **24** (1992), 381–397. Mahler's mathematical talent was recognized and cultivated by C. L. Siegal. With the rise of the Nazis, Mahler left his German home in 1933 and went to the University of Manchester, where he remained until the early 1960s. Mahler was "a leading pioneer" in the theory of transcendental numbers, and contributed to integral geometry, Diophantine equations, and Diophantine approximations. There are lists of his seven doctoral students and 221 published works. Reference is also made to an unpublished autobiography. (JA) #21.4.22

CROARKEN, MARY G. The Emergence of Computing Science Research and Teaching at Cambridge, 1936–1949, *Annals of the History of Computing* **14**(4) (1992), 10–15. The Cambridge University Mathematical Laboratory was established in 1937. A description of the motivation leading to the creation

of the laboratory is given. Changes at the laboratory arising from World War II are discussed. The laboratory was reorganized in 1945 under Maurice V. Wilkes. The article details how Wilkes formed a team to work on the EDSAC project. When the EDSAC appeared in May 1949, it confirmed Cambridge's preeminence as a center of computer development. (LSG) #21.4.23

DALMEDICO, AMY DAHAN. *Mathématisations. Augustin-Louis Cauchy et l'école française,* Argenteuil: Éditions du Choix and Paris: Albert Blanchard, 1993, 460 pp., 260 Ffr. The book, which is based on the author's 1990 *docteur d'état,* concentrates on Cauchy's program of research in linear elasticity theory and hydrodynamics during the 1820s, but also considers Lagrange's methods in mechanics, Fourier's heat theory, Germain's elasticity theory, and some of Cauchy's work on differential equations. *See* the review by Ivor Grattan-Guinness in *Historia Mathematica* **21** (1994), 88–93, where the reviewer compares and contrasts this work with his own. *See also* #18.1.51. (DEZ) #21.4.24

DATHE, UWE. *See* #21.4.100.

DEAKIN, MICHAEL A. B. Hypatia and Her Mathematics, *The American Mathematical Monthly* **101** (1994), 234–243. A description of what is known about Hypatia's mathematical activities in contrast to earlier accounts that are "fanciful, tendentious, unreferenced or plain wrong." Hypatia is described as an editor, textbook writer, and "popular, charismatic and versatile teacher," rather than a research mathematician. (DEZ) #21.4.25

DENLEY, C., AND PRITCHARD, C. The Golf Ball Aerodynamics of Peter Guthrie Tait, *The Mathematical Gazette* **77** (1993), 298–313. A short biographical sketch of Peter Guthrie Tait followed by a discussion of his papers on the physics of a driven golf ball. It is argued that a well-known anecdote about Tait's prediction of the maximum possible drive and an actual drive hit by his son was "in large measure the product of a journalist's imagination." (JVR) #21.4.26

DHOMBRES, JEAN, AND DOMINIQUE, JULIA. Les repères d'une culture mathématique vers 1800: Le témoignage de deux listes de livres [The Characteristics of a Mathematical Culture Around 1800: The Testimony of Two Lists of Books,] *Rivista di storia della scienza,* 2d ser. **1** (1993), 1–83. Based on two unpublished lists of mathematics books that were recommended in France at the end of the Revolution, one written by J. L. Lagrange, this paper describes mathematical culture as it was engraved in the mind of the mathematicians at that time. The lists are provided along with bibliographical indications for each book quoted. (LN) #21.4.27

DIEUDONNÉ, JEAN. *A History of Algebraic and Differential Topology, 1900–1960,* Basel/Boston/Berlin: Birkhäuser, 1994, xxi + 648 pp., hardcover, $94.50. A second printing of the work abstracted in #17.3.26. (DEZ) #21.4.28

DOMINIQUE, JULIA. *See* #21.4.27.

DOROFEEVA, A. V. The Implicit Function Theorem and Its Relation to the Theory of Optimization Problems [in Russian], pp. 34–44 in #21.4.97. The history of the implicit function theorem reveals that its content underwent several changes, from its inception in the 17th century, through the work of Weierstrass and Jordan in the 19th century, to the work of Dini and Osgood in the 20th century. The paper ends with a description of the role of the theorem in functional analysis following a thread begun by Lagrange. (DEZ) #21.4.29

DUSCHENEAU, FRANÇOIS. *See* #21.4.34.

EKELAND, IVAR. *The Broken Dice, and Other Mathematical Tales of Chance,* Trans. Carol Volk, Chicago: The University of Chicago Press, 1993, hardcover, $19.95. The author uses stories from the *Heimskringla: History of the Kings of Norway* to discuss the relationship between the notions of chance, fate, anticipation, chaos, risk, and statistics. He argues that truth does not allow itself to be

grasped, for if there is an ultimate reality it retreats the closer we come to it, finally vanishing into insignificance. This path can only lead to the discovery of contingency, "and so it is that chance will be our constant companion." (GB) #21.4.30

ERLICHSON, HERMAN. The Visualization of Quadratures in the Mystery of Corollary 3 to Proposition 41 of Newton's *Principia*, *Historia Mathematica* **21** (1994), 148–161. The author's aim is to make Newton's Book 1, Proposition 41, which deals with the inverse problem of central forces, accessible to historians of science. He also explicates the mysterious Corollary 3, which is the sole concrete example of the proposition. (DEZ) #21.4.31

FERZOLA, ANTHONY P. Euler and Differentials, *The College Mathematics Journal* **25** (1994), 102–111. A survey of Euler's use of infinitesimals and infinite series in computing differentials of elementary functions encountered in a typical undergraduate calculus course. (DEZ) #21.4.32

FICHANT, MICHEL. Bibliographie leibnizienne, *Revue d'histoire des sciences* **46** (1993), 487–491. A compilation (since 1982) of works by Leibniz from the history of science and technology. (CG) #21.4.33

FICHANT, MICHEL. Book Review, *Revue d'histoire des sciences* **46** (1993), 538–539. Review of *Leibniz et la méthode de la science*, by François Duscheneau (Paris: PUF, 1993.) The reviewer states that the book studies Leibnizian conceptions of the scientific method concerning the recent debate on the status of theoretical constructions (Kuhn, Lakatos, etc.) In opposition to current views on Leibniz, the book stresses the pluralism and pragmatism of Leibniz's approach towards invention and demonstration. (CG) #21.4.34

FICHANT, MICHEL. Leibniz lecteur de Mariotte, *Revue d'histoire des sciences* **46** (1993), 333–405. Leibniz's study of Mariotte's *Traité de la percussion* constitutes a significant step in the genesis of ideas that led to his dynamics. The paper edits the notes of these readings and uses them to analyze the evolution of Leibniz's philosophy of motion. (CG) #21.4.35

FISCHER, HANS. Dirichlet's Contributions to Mathematical Probability Theory, *Historia Mathematica* **21** (1994), 39–63. A discussion of the central ideas of P. G. L. Dirichlet in the field of probability calculus and its application to error theory, based on one published paper, four sets of lecture notes, and unpublished notes. The author examines the general context of these contributions in light of Dirichlet's accomplishments in analysis, and assesses Dirichlet's place in 19th-century probability theory. (DEZ) #21.4.36

FLACHSMEYER, JÜRGEN. Von Blaschkes differential-topologischer Gewebegeometrie zur kombinatorischen Geometrie der lateinischen Quadrate, *Wissenschaftliche Zeitschrift der Ernst-Moritz-Arndt-Universität Greifswald, Mathematisch-Naturwissenschaftliche Reihe* **35** (1986), 23–29. Wilhelm Blaschke's early work on nets is outlined. He did not himself pursue the main subject here: combinatorial geometry of Latin squares. (ACL) #21.4.37

FLEGG, COLUMBA GRAHAM. St. Pavel Florensky: An Appreciation, *Modern Logic* **4** (1994), 266–276. A discussion of the life, work, and martyrdom of Pavel Florensky. Concentrates on philosophical aspects of Florensky's thought. (IA) #21.4.38

FLERON, JULIAN. A Note on the History of the Cantor Set and Cantor Function, *Mathematics Magazine* **67** (1994), 136–140. A discussion of the setting behind Cantor's discovery of the set and function named after him, and Hankel's earlier discovery in a different setting. (DEZ) #21.4.39

FLETCHER, COLIN R. *See* #21.4.1.

FOLKERTS, MENSO. Second Kenneth O. May Prize Awarded in Zaragoza, *Historia Mathematica* **21** (1994), 8–9. An editorial announcement that the second May Prize was awarded jointly to Christoph J. Scriba and Hans Wussing at the XIXth International Congress of History of Science in Zaragoza, Spain, on August 26, 1993. (DEZ) #21.4.40

FRANCHELLA, MIRIAM. Brouwer and Griss on Intuitionistic Negation, *Modern Logic* **4** (1994), 256–265. Author's abstract: "During the 1940s, a debate about the intuitionistic definition of negation took place between G. F. C. Griss and L. E. J. Brouwer: namely, Griss criticized Brouwer's definition as inconsistent with the intuitionistic framework. In this paper I first present Brouwer's definition of negation; then Griss' criticism of it and his proposal of a "negationless" mathematics; and finally Brouwer's reply to Griss." (IA) #21.4.41

FRENCH, A. P. In Defense of Newton: A Physicist's View, *The College Mathematics Journal* **25** (1994), 206–209. Brief polemic on Robert Weinstock's paper regarding attributions of some of Isaac Newton's results. (*See* #21.4.120.) Weinstock replies on pp. 209–211. (DEZ) #21.4.42

FRENKEL, V. Y. *See* #21.4.47.

FRITSCH, G. *See* #21.4.43.

FRITSCH, R., AND FRITSCH, G. *Der Vierfarbensatz. Geschichte, topologische Grundlagen und Beweisidee,* Mannheim: Bibliographisches Institut and F. A. Brockhaus, 1994, 251 pp., DM 38.80. Survey of the four color problem from its proposal by Guthrie in 1852 to Haken and Appel's computer-driven proof of 1977. Short biographies and portraits of all the principal contributors. Historical account mixed with fairly formal presentation of theorems from topology, for teaching use. (IGG) #21.4.43

GARCIADIEGO, ALEJANDRO R. *Bertrand Russell and the Origins of the Set-Theoretic 'Paradoxes,'* Basel/Boston/Berlin: Birkhäuser Verlag, 1992, xxix + 264 pp., hardbound, $77.50. This book "reconstructs and reinterprets the role of Bertrand Russell in the origins of the set-theoretic 'paradoxes.'" (DEZ) #21.4.44

GILLIES, DONALD (Ed.) *Revolutions in Mathematics,* New York: Oxford University Press, 1992, viii + 353 pp., $98. A collection of articles on whether, and in what sense, revolutions occur in mathematics. See the review by Michael S. Mahoney in *The American Mathematical Monthly* **101** (1994), 283–287, where the reviewer asserts that the title should have a question mark. *See also* #21.1.121. (DEZ) #21.4.45

GILLMAN, LEONARD. Two Bing Stories, *Focus* **14**(2) (1994), 14. Anecdotes about the driving habits and the first famous proof of R. H. Bing. (DEZ) #21.4.46

GORELIK, G. E., AND FRENKEL, V. Y. *Matvei Petrovich Bronstein and Soviet Theoretical Physics in the Thirties,* Basel/Boston/Berlin: Birkhäuser, 1994, 208 pp., hardcover, $119. Biography of M. P. Bronstein (1906–1938), who worked in nuclear physics, astrophysics, relativistic quantum mechanics, and cosmology. (DEZ) #21.4.47

GRATTAN-GUINNESS, IVOR. Contributing to *The Educational Times:* Letters to W. J. C. Miller, *Historia Mathematica* **21** (1994), 196–203. An announcement of the location of the correspondence of W. J. C. Miller, with a list of his better known correspondents. *See* #19.3.43. (DEZ) #21.4.48

GRATTAN-GUINNESS, IVOR. *See also* #21.4.24.

GRIM, PATRICK. *The Incomplete Universe: Totality, Knowledge and Truth,* Cambridge, MA: MIT Press, 1991, 165 pp. See the review by Maria J. Frápolli in *Modern Logic* **4** (1994), 329–330. (IA) #21.4.49

GULIEVA, I. F. The History of the Problem of Two Fixed Centers [in Russian], pp. 139–144 in #21.4.97. This article begins with discussions of Euler's approach to the problem of two fixed centers in 1743 and Jacobi's solution using the so-called Hamilton–Jacobi formula a century later. Then it describes certain extensions of the problem at the turn of the 20th century, culminating in the work of K. Sharle on celestial mechanics. The last section mentions generalizations due to Moscow University students during the 1960s. (DEZ) #21.4.50

GUTOWSKI, MIECZYSLAW. Mathematics Education in Poland, *Mathematics Notes from Washington State University* **37** 1–4. An overview of the educational system in Poland from the "Golden Age" (1919–1939) to the present time. (DEZ) #21.4.51

HARKLEROAD, LEON. Back-and-Forth Again, *Modern Logic* **4** (1994), 303. A report on Jack Plotkin's recent findings that E. V. Huntington appears to have been the first person to develop the back-and-forth argument and that Felix Hausdorff brought it to the fore in his *Grundzüge der Mengenlehre*. (IA) #21.4.52

HARKLEROAD, LEON. *See also* #21.4.107 and #21.4.112.

HAWKINS, THOMAS. The Birth of Lie's Theory of Groups, *The Mathematical Intelligencer* **16**(2) (1994), 6–17. Discusses the influences on Sophus Lie that led him from his decision in 1868 to be a geometer to his work on continuous transformation groups, beginning in 1873. (TLB) #21.4.53

HEMY, DEREK. *See* #21.4.90.

HINZ, ANDREAS M. Laplace in Calvados, *The Mathematical Intelligencer* **16**(2) (1994), 18–24. Uses the geometric construction of Tons Brunes' so-called "sacred cut" to analyze the geometry of the 13th-century pavement of the Baptistery. (TLB) #21.4.54

HOGENDIJK, JAN. Bibliography of Publications by B. L. van der Waerden since 1983 on Ancient and Medieval Science, *Historia Mathematica* **21** (1994), 71–72. An update of van der Waerden's publications. (DEZ) #21.4.55

ILIFFE, ROB. "Aplatisseur du monde et de Cassini": Maupertuis, Precision Measurement, and the Shape of the Earth in the 1730s, *History of Science* **31** (1993), 335–375. Discusses the work of Pierre Moreau de Maupertuis in planning and carrying out the 1736 expedition to Lapland to measure the length of a degree at that latitude and Maupertuis' efforts to promote the results of the expedition. (TLB) #21.4.56

INEICHEN, ROBERT. Der "Vierfeldertest" von Carl Liebermeister (Bemerkungen zur Entwicklung der medizinischen Statistik im 19. Jarhhundert), *Historia Mathematica* **21** (1994), 28–38. Examination of a test for comparing two probabilities in medical statistics developed by Carl Liebermeister (1833–1901) during the 1870s. Liebermeister's principle is differentiated from R. A. Fisher's exact test for small samples. (DEZ) #21.4.57

JULLIEN, VINCENT. Les étendues géométriques et la ligne droite de Roberval, *Revue d'histoire des sciences* **46** (1993), 493–526. Roberval wrote a treatise *Éléments de géométrie* that remained unpublished and in which he took a stand on several essential themes in 17th-century mathematical epistemology: the theory of definition, the role of intuition, the place of motion in geometry, and the status and choice of first principles. The text includes a comparison between Roberval's reworking of the Euclidean domain with that adopted by Clavius and Arnault. (CG) #21.4.58

KANIGEL, ROBERT. Bubble, Bubble: Jean Taylor and the Mathematics of Minimal Surfaces, *The Sciences* (May/June 1993), 32–38. A glimpse of Rutgers mathematician Jean Taylor is included in this sketch of her work on minimal surfaces. (DEZ) #21.4.59

KATĚTOV, M., AND SIMON, P. *The Mathematical Legacy of Eduard Čech*, Basel/Boston/Berlin: Birkhäuser, 1994, 473 pp., hardcover, $94.50. Reprints of the most important papers of Eduard Čech on topology and geometry, with a collection of papers by some of his followers. (DEZ) #21.4.60

KEEN, LINDA. Lipman Bers (1914–1993), *Association for Women in Mathematics Newsletter* **24,** No. 3 (1994), 5–7. An obituary of Lipman Bers, who was particularly supportive of female students, by one of his doctoral students. (LSG) #21.4.61

KOELBLEN, SABINE. Journée sur la théorie des proportions, *Historia Mathematica* **21** (1994), 74–75. Report of a meeting on the theory of proportions held May 22, 1993, in Paris. (DEZ) #21.4.62

KORMIN, HENRY. Preserving the Church and Bernays Typescripts: A Case Study, *Modern Logic* **4** (1994), 299–302. Describes the physical condition of rare typed manuscripts on logic by Alonzo Church and Paul Bernays, from the 1930s and 1940s, purchased by Modern Logic Publishing. Discusses the techniques used to preserve the manuscripts. (IA) #21.4.63

KOVALENKO, T. M. Sources of a Scientific Biography of G. N. Duboshin [in Russian], pp. 145–157 in #21.4.97. A brief biography of the Russian mathematician Georgii Nikolaevich Duboshin (1904–1986), based on archival material, followed by a description of his contributions to celestial mechanics, a review of one of his papers by N. D. Moiseeva, and a discussion of his work on the stability theory of A. M. Lyapunov. The last section describes Duboshin's works on pedagogy. (DEZ) #21.4.64

KUDRYASHOVA, L. V., AND STEPANOVA, L. A. Dmitrii Nikanorovich Goryachev (1867–1949) [in Russian], pp. 158–165 in #21.4.97. An account of the life and scientific activities of D. N. Goryachev, a student of N. E. Zhukovskii who specialized in mechanics, based on archival sources. (DEZ) #21.4.65

KUZICHEVA, Z. A. On the History of Universal and Existential Operators [in Russian], pp. 59–65 in #21.4.97. A sketch of the work of Aristotle, Leibniz, De Morgan, Frege, Schröder, and Peano in mathematical logic, concentrating on universal and existential quantifiers. (DEZ) #21.4.66

LAUBENBACHER, REINHARD, AND SIDDOWAY, MICHAEL. Great Problems of Mathematics: A Summer Workshop for High School Students, *The College Mathematics Journal* **25** (1994), 112–114. Describes the mathematical themes and original sources used in a three-week workshop for high school students. (DEZ) #21.4.67

LAUBENBACHER, REINHARD C., AND PENGELLEY, DAVID J. Gauss, Eisenstein, and the "Third" Proof of the Quadratic Reciprocity Theorem: Ein kleines Schauspiel, *The Mathematical Intelligencer* **16**(2) (1994), 67–72. Uses quotations from the works of Gauss and Eisenstein and imaginary dialogue to present the proof indicated in the title. (TLB) #21.4.68

LAUGWITZ, DETLEF, AND NEUENSCHWANDER, ERWIN. Riemann and the Cauchy–Hadamard Formula for the Convergence of Power Series, *Historia Mathematica* **21** (1994), 64–70. Describes a set of lecture notes by G. F. B. Riemann from 1855–1856 in which the Cauchy–Hadamard formula for the radius of convergence of a power series is stated and proved. This contradicts the widespread notion that the formula passed unnoticed from Cauchy in 1821 to Hadamard around 1890. (DEZ) #21.4.69

LENAERTS, ERNEST H. *See* #21.4.90.

MAHONEY, MICHAEL S. *See* #21.4.45.

MALYKH, A. E. Euler's Legacy in Combinatorics [in Russian], pp. 66–74 in #21.4.97. The author shows that Euler's investigations in combinatorics played a leading role by posing concrete problems and introducing basic notions. He also considers Euler's role in creating a combinatorial theory of Latin squares and in solving *partitio numerorum* problems. (DEZ) #21.4.70

MALYSHEV, V. A. The Philosophy of Large Systems and Traditional Mathematics [in Russian], pp. 75–83 in #21.4.97. Modern mathematical theories, such as statistical mechanics and quantum field theory, must adhere to certain principles that every future mathematical theory of "large systems" must contain. The author mainly restricts himself to applied mathematics. (DEZ) #21.4.71

MARTINOVIĆ, IVICA. Rugjer Bošković's Function Describing the Surface Area of the Cell of Bees, *Ekonomska Misao I Praksa* **2** (1993), 37–55. In 1760 Rugjer Bošković discovered a method for minimizing a function that described the surface area of the cell of bees using infinitesimal calculus. Bošković's model is explained in economic terms as "the most parsimonious use of wax." Also included is a translation from Latin to Croatian of Bošković's work *On the Cells of Bees*. (ZP) #21.4.72

MCARTHUR, CHARLES WILSON. *Operations Analysis in the United States Air Force in World War II,* Providence, RI: American Mathematical Society and London: London Mathematical Society, 1990, xxiv + 349 pp. *See* the review by Robin E. Rider, in *Historia Mathematica* **21** (1994), 95–96. (DEZ) #21.4.73

MCCLAIN, ERNEST G. *The Myth of Invariance. The Origin of the Gods, Mathematics and Music from the Rg Veda to Plato,* York Beach, Maine: Nicolas–Harp, 1976, xxii + 216 pp.; paperback reproduction, 1984, York Beach: Samuel Weiser, $8.95. Remarkable extension of known theses on the importance of musical temperament and harmony in origins of arithmetic which points to similarities and even links between the Ṛg Veda, the Egyptian Book of the Dead, the Bible, and Plato. Claims that texts can be taken literally from the numerical point of view, and provides persuasive interpretations of the occurrence of various numbers and proportions. 6:8:9:12 is the central proportion, but others are given. Many representations of number schemes given in figures. The book seems to be unknown to historians of mathematics. (IGG) #21.4.74

MCCLAIN, ERNEST G. *The Pythagorean Plato. Prelude to the Song Itself,* York Beach, Maine: Nicolas–Harp, 1976, xxii + 216 pp.; paperback reproduction, 1984, York Beach: Samuel Weiser, $8.95. Sequel to #21.4.74 in which Plato is taken seriously in advocating the prominence of integers, and relates them to musical intervals. Key passages in the *Republic, Timaeus,* and elsewhere are analyzed in terms of proportion schema, and interpretations are given of topics such as the lost city of Atlantis. Some discussion of successors, such as Nicomachus and Iamblichus (positive) and Aristotle (eventually negative); Plato himself seen as a footnote to Pythagoras. The book seems to be as unknown to historians of mathematics as is its predecessor. (IGG) #21.4.75

MEDVEDEV, F. A. Horn Angles in the *Commentaries* of Ash-Shirazi [in Russian], pp. 84–92 in #21.4.97. A brief account of the 13th-century Central Asian mathematician Ash-Shirazi, followed by an analysis of his work on horn angles in one of his works. Ash-Shirazi's place vis-à-vis ibn-Sina and al-Tusi is discussed. (DEZ) #21.4.76

MENGHINI, MARTA. Il ruolo di "Capiscuola" di Felix Klein e Luigi Cremona alla luce della loro corrispondenza [The Role of Felix Klein and Luigi Cremona as "Founders of a School" Arising from Their Correspondence], *Rivista di storia della scienza,* 2d ser. **1** (1993), 183–225. Several years ago a large collection of letters sent by world-famous mathematicians to Luigi Cremona was discovered in the Mathematics Department Library at the University of Rome, including 19 from Felix Klein. This paper translates them into Italian and provides notes and commentary. The letters confirm that Cremona and Klein were "leading figures" of their national schools. They also illustrate Klein's brilliant career, his activity with *Mathematische Annalen,* and his reflections on research in mathematics. (MM) #21.4.77

MESKINS, AD. Wine Gauging in Late 16th- and Early 17th-Century Antwerp, *Historia Mathematica* **21** (1994), 121–147. Wine gaugers are described as "true mathematicians in the 16th-century context." This article first discusses the practice in Antwerp, then analyzes the methods used. It also discusses relationships between wine gaugers and the excise office. The competency of wine gaugers is examined, and the question of whether they were arithmetic teachers is answered. The last section describes methods used for full and partial barrels. (DEZ) #21.4.78

MILL, JAN VAN. In Memorian: Eric Karel van Douwen (1946–1987), *Topology and Its Applications* **31** (1989), 1–18. A brief biography of the Dutch topologist Eric Karel van Douwen followed by a discussion of his work, which included general topology, Boolean algebras, and topological groups. For more on Van Douwen's contributions to mathematics see J. van Mill, Ed., *Erik K. Van Douwen, Collected Papers,* 2 vols. New York: Elsevier Science, 1984, 1564 pp., hardbound, $320/Dfl. 560. (DEZ) #21.4.79

MIXELOVICH, SH. KH. Évariste Galois' Position on Methodology and Education [in Russian], pp. 93–95 in #21.4.97. A brief note analyzing Galois' views on methodological and pedagogical problems in mathematics based on his notes, manuscripts, and correspondence. (DEZ) #21.4.80

MOTZ, LLOYD, AND WEAVER, JEFFERSON HANE. *The Story of Mathematics*, New York: Plenum, 1993, x + 356 pp., hardbound, $25.95. A sequential look at the major areas of mathematics through the early 1900s. The authors note the interrelationships that led from one discovery to another. (JD) #21.4.81

NASTASI, P., AND SCIMONE, A. Pietro Mengoli and the Six-Square Problem, *Historia Mathematica* **21** (1994), 10–27. An analysis of the contributions of Pietro Mengoli (1625–1686) to a Diophantine problem called the six-square problem, which is traced to the Jesuit priest Jacques De Billy. A solution due to another Jesuit priest, Jacques Ozanam, is examined. The reason for Mengoli's failed solution is ascribed to the lack of a systematic, algebraic treatment of such problems. (DEZ) #21.4.82

NAUENBERG, M. Newton's *Principia* and Inverse-Square Orbits, *The College Mathematics Journal* **25** (1994), 212–221. The author refutes several claims made by Robert Weinstock regarding the *Principia*. (*See* #21.4.120.) Weinstock replies on pp. 221–222. (DEZ) #21.4.83

NEEDHAM, ROGER M. Later Developments at Cambridge: Titan, CAP, and the Cambridge Ring, *Annals of the History of Computing* **14**(4) (1992), 57–58. A survey of research developments at Cambridge following the completion of the EDSAC 2 project up to Professor Wilkes's retirement in 1980. (LSG) #21.4.84

NEUENSCHWANDER, ERWIN. *See* #21.4.69.

OLEKHNIK, S. N. Recreational Problems in Russian Literature in the 19th Century [in Russian], pp. 96–102 in #21.4.97. The author extracts common problems in mathematical recreations from Russian books and journals during the period from I. Butter in 1844 to V. I. Obreimov in 1889. (DEZ) #21.4.85

PARMENTIER, MARC. Concepts juridiques et probablilistes chez Leibniz, *Revue d'histoire des sciences* **46** (1993), 439–485. The paper investigates Leibniz's attempt to rationalize jurisprudence as an instance of the contribution of legal concepts to the constitution of probabilistic concepts. In particular, the contrast between a computation and an estimate sheds light on the difference between the notions of maximum and optimum. (CG) #21.4.86

PECKHAUS, VOLKER. Logic in Transition: The Logical Calculus of Hilbert (1905) and Zermelo (1908), in *Logic and Philosophy of Science*, eds. D. Prawitz and D. Westerstähl, Dordrecht: Kluwer, 1994, pp. 311–324. The author draws on the *Nachlässe* of Hilbert and his follower Zermelo to illustrate their gradually emerging recognition of the place and contact of logic during Hilbert's first, and uncertain, phase of metamathematics. (IGG) #21.4.87

PECKHAUS, VOLKER. Von Nelson zu Reichenbach; Kurt Grelling in Göttingen und Berlin, in *Hans Reichenbach und die Berliner Gruppe*, eds. L. Kanneberg, A. Kamlah, and L. Schäfer, Braunschweig: Vieweg, 1994, pp. 53–86. A fine survey of the career and fate of Grelling, born 1886 in Berlin and eliminated in Auschwitz in 1942. His links to mathematics lay mainly via mathematical logic and set theory; one of the paradoxes is named after him. The article draws on extensive archival researches, and includes a full bibliography of Grelling's writings, most of which lay in the philosophy of mathematics and science, and in certain sociopolitical movements. (IGG) #21.4.88

PENGELLEY, DAVID J. *See* #21.4.68.

PETROVA, S. S. The Euler–Maclaurin Summation formula and Asymptotic Series [in Russian], pp. 103–108 in #21.4.97. An examination of various methods for approximating a sum $\sum_{k=0}^{n} f(k)$ by a series involving certain integrals and Bernoulli numbers, based on a paper of Euler written in 1749 but not published until 1768. (DEZ) #21.4.89

PINKERTON, JOHN M. M., WITH HEMY, DEREK, AND LENAERTS, ERNEST H. The Influence of the Cambridge Mathematical Laboratory on the LEO Project, *Annals of the History of Computing* **14**(4)

(1992), 41–48. This article describes the background of the LEO (Lyons Electronic Office) project, explaining how a food and catering business, J. Lyons and Company, built its own computer, and later built and supplied computers to others. (LSG) #21.4.90

PRITCHARD, C. *See* #21.4.26.

PROTASOVA, L. A. The Formation of Wing Theory in Soviet Educational Literature [in Russian], pp. 166–177 in #21.4.97. An account of the early work in Russia on wing theory, emphasizing three books by Vladimir Vasilevich Golubev published in 1927, 1931, and 1949. (DEZ) #21.4.91

RIDER, ROBIN E. *See* #21.4.73.

ROBINSON, PHILIP. Evangelista Torricelli, *The Mathematical Gazette* **78** (1994), 37–47. A biographical sketch of Evangelista Torricelli followed by a discussion of his work on projectile motion and his suggestions about the manufacture of an instrument to make his results of practical use to gunners. (JVR) #21.4.92

RODRÍGUEZ-CONSUEGRA, FRANCISCO A. Gödel's Last Works, 1938–1974: The Emerging Philosophy, *Modern Logic* **4** (1994), 318–327. A review of Kurt Gödel's *Collected Works. Volume II. Publications 1938.* (IA) #21.4.93

RUSSELL, BERTRAND. *Introduction to Mathematical Philosophy*, New York: Dover, 1993, viii + 208 pp., paperback, $6.95. An unaltered republication of the 1919 second edition of a classic on mathematical philosophy. (DEZ) #21.4.94

RUSSO, FRANÇOIS. Book Review, *Revue d'histoire des sciences* **46,** No. 4 (1993), 531. Review of Michel Blay, *La naissance de la mécanique analytique: La science du mouvement au tournant des XVIIe et XVIIIe siècles,* Paris: PUF, 1992. The reviewer states that the book is mainly devoted to the role of Varignon, which is described in detail from an historical and conceptual point of view. In particular, the book shows the process of algorithmization of the science of motion and how its classical questions (trajectories of planets, special curves, etc.) were reworked during the 17th and 18th centuries. (CG) #21.4.95

RYBNIKOV, K. A. An Outline of the History of Graph Theory [in Russian], pp. 109–122 in #21.4.97. This overview of the history of graph theory includes a letter of Leibniz to Huygens, Euler's Königsberg bridge problem, and works of Vandermonde, Goldbach, Legendre, Listing, Cayley, Kirchhoff, Hamilton, Veblen, and König. Even Karl Marx's *Mathematical Manuscripts* merits mention. (DEZ) #21.4.96

RYBNIKOV, K. A. (Ed.) *The History and Methodology of the Natural Sciences. Vol. 36. Mathematics and Mechanics* [in Russian], Moscow: Moscow University Press, 1989, 189 pp. A collection of papers on the history of mathematics and mechanics from medieval to modern times. All of the papers are abstracted separately. (DEZ) #21.4.97

SAMSÓ, JULIO. *Islamic Astronomy and Medieval Spain,* Aldershot (GB) and Brookfield (USA): Variorum, 1994, 335 pp. A collection of 20 essays in English and Spanish on Andalusian astronomy. The book surveys in particular the questions of the survival of Latin astronomy and astrology in al-Andalus, and the Eastern influence on Andalusian astronomy. Several essays are devoted to Alfonso X. A bibliography and general index are provided. (CG) #21.4.98

SAUL, MARK E. *A History of Mathematical Inequalities to 1850: Curricular Implications*. Dissertation for the Ph.D., New York University, 1987, 459 pp. Educators can look to the history of this subject to find the correct place of inequalities in mathematics education. Inequalities have often been treated as mechanical and algebraic problems. History, from Euclid to modern times, shows that their true nature is analytic. The solution of inequalities should be closely connected in the curriculum with ideas of continuity and of continuously varying quantities or locations. Source: Dissertation Abstracts International-A 49/01, p. 54, July 1988. Order No: AAC 8803601. (ACL) #21.4.99

SCHLOTE, KARL-HEINZ, AND DATHE, UWE. Die Anfänge von Gottlob Freges wissenschaftlicher Laufbahn, *Historia Mathematica* **21** (1994), 185–195. Frege's 1873 thesis dealt with the geometric representation of imaginary elements and was based on a generalization of the concept of visualization (Veranschaulichung). It was related to the work of K. von Staudt, F. Klein, and O. Stolz. Frege's philosophical views, briefly expressed therein, correspond to those of Kant and of Frege's teacher, K. Fischer. (ACL) #21.4.100

SCHREIBER, PETER. Zur Geschichte des sogenannten Steiner-Weber-Problems, *Wissenschaftliche Zeitschrift der Ernst-Moritz-Arndt-Universität Greifswald, Mathematisch-Naturwissenschaftliche Reihe* **35** (1986), 53–58. On the history of the so-called Steiner–Weber problem. The earliest predecessor is Pierre Fermat's formulation: for three given points in a plane, to find a fourth the sum of whose distances from the three is minimal. The problem had also been studied by E. Torricelli and, in a modified form, by Gauss. (ACL) #21.4.101

SCIMONE, A. *See* #21.4.82.

SHENITZER, ABE. How Hyperbolic Geometry Became Respectable, *The American Mathematical Monthly* **101** (1994), 464–470. An account of the contributions of Beltrami and Klein to hyperbolic geometry. (DEZ) #21.4.102

SHEYNIN, OSCAR. Ivory's Treatment of Pendulum Observations, *Historia Mathematica* **21** (1994), 174–184. A description of the papers of James Ivory (1765–1842) on the adjustment of pendulum observations, which apply to the ellipticity of the earth. The author provides an assessment of the work, concluding that "Ivory was an amateur." (DEZ) #21.4.103

SHIRONG, GUO. The Symposium on History of Science on the Occasion of the Founding of the Institute for the History of Science at Inner Mongolia Normal University, *Historia Mathematica* **21** (1994), 207–208. A report of a symposium held September 13–16, 1993, in Inner Mongolia, with a list of the papers that dealt with the history of mathematics. (DEZ) #21.4.104

SIDDOWAY, MICHAEL. *See* #21.4.67.

SIMON, P. *See* #21.4.60.

SINGH, D., AND SINGH, S. K. A Survey of Nonstandard Set Theory, *Modern Logic* **4** (1994), 237–255. An account of nonstandard set theory that elaborates the need for an axiomatic foundation for nonstandard analysis. The paper also discusses Nelson's internal set theory, Hrbáček's axiomatics, and Kawai's system, along with Kinoshita's refinements, and Fletcher's stratified nonstandard set theory. (IA) #21.4.105

SINGH, S. K. *See* #21.4.105.

SMIRNOVA, G. S. Geometric Solutions of Cubic Equations in the *Algebra* of Rafael Bombelli [in Russian], pp. 123–129 in #21.4.97. An explication of Bombelli's *dimostratione generalissima* taken from his *Opera su l'Algebra* (1550). The author explains why one case is solved in the plane instead of in space. (DEZ) #21.4.106

SMULLYAN, RAYMOND M. *Recursion Theory for Metamathematics,* New York: Oxford University Press, 1993, xiv + 163 pp. See the review by Leon Harkleroad in *Modern Logic* **4** (1994), 327–328. (IA) #21.4.107

STEPANOVA, L. A. *See* #21.4.65.

STILLWELL, JOHN. *Classical Topology and Combinatorial Group Theory, 2nd ed.* New York/Berlin/Heidelberg: Springer-Verlag, 1993, xi + 334 pp., hardback, $49. A textook that presents an historical development of topology emphasizing geometric aspects and focusing on connections with complex analysis, mechanics, and group theory. (DEZ) #21.4.108

STILLWELL, JOHN. What Are Algebraic Integers and What Are They Good For? *The American Mathematical Monthly* **101** (1994), 266–270. A glimpse of the work of Euler, Gauss, Eisenstein, and Dedekind on algebraic integers. (DEZ) #21.4.109

SUNGURTSEV, YU. V. The role of S. A. Chaplygina's Doctoral Dissertation in the Founding of Modern Gas Jet History [in Russian], pp. 178–183 in #21.4.97. A discussion of the significant role that S. A. Chaplygina's *Gas Jets* (1902) played in the subsequent development of compressible fluid dynamics. Brief descriptions of other papers in the field are also given. (DEZ) #21.4.110

SWETZ, FRANK. Right Triangle Concepts in Ancient China: From Application to Theory, *History of Science* **31** (1993), 421–439. Examines material on right triangles in classical Chinese texts. Concludes that "their theories were substantiated by proofs and presented in a coherent and pedagogically attractive manner. Early Chinese mathematicians were both systematic and thorough . . ." but that a complete theory of right triangles was developed in China only in the 18th century. (TLB) #21.4.111

TAMÁSSY, ISTVÁN. Interview with Rózsa Péter, *Modern Logic* **4** (1994), 277–280. Translation by Leon Harkleroad of an interview with Rózsa Péter that first appeared in the Fazekas high-school newspaper *Diakszo* in 1970–1971, including a "Translator's Preface." (IA) #21.4.112

TARANOVSKAYA, T. D. The Theory of Determinants in the Works of 19th-Century Russian Mathematicians [in Russian], pp. 130–138 in #21.4.97. This article aims to complete standard histories of determinants by considering Russian contributions during the period 1834–1877. It begins with a chapter from a book by N. I. Lobachevsky, and includes works by A. K. Zhbikovskii, D. M. Delaryu, and M. E. Vashchenko-Zakharchenko. (DEZ) #21.4.113

TERLIZZI, GIULIA. Roberto Marcolongo: Un fondo di lettere e manoscritti [Roberto Marcolongo: A Font of Letters and Manuscripts], *Rivista di storia della scienza, 2d ser.* **1** (1993), 227–233. A description of the archive of Marcolongo (1862–1943), an Italian physicist–mathematician who worked mainly on vector calculus and homographic calculus, and published the first book on relativity theory in Italy. After a brief account of his professional life there is a list of 170 correspondents whose letters are found in the archive, and a survey of his own manuscripts, mainly those concerned with the history of mathematics and the publication of the works of Leonardo da Vinci. (LN) #21.4.114

TODD, JOHN. G. H. Hardy as an Editor, *The Mathematical Intelligencer* **16**(2) (1994), 32–37. Reviews some of the history of the Cambridge Tracts in Mathematics and Mathematical Physics and presents some "slightly edited" letters from Hardy to Todd concerning editorial work on a manuscript for a tract that was not published. (TLB) #21.4.115

TURPANOVA, V. M. *See* #21.4.3.

TYULINA, I. A. The Foundations of Newtonian Mechanics (On the Tricentennial of the *Principia*) [in Russian], pp. 184–196 in #21.4.97. A history of the events leading up to the publication of the *Principia* by Isaac Newton in 1687. (DEZ) #21.4.116

VOGT, ANNETTE. Symposium on History of Mathematics and Mathematics Teaching, *Historia Mathematica* **21** (1994), 74. Report of a meeting held April 2–4, 1993, in the Czech Republic to honor the historian of mathematics Jaroslav Folta. (DEZ) #21.4.117

WAGNER-DÖBLER, ROLAND, AND BERG, JAN. *Mathematische Logik von 1847 bis zur Gegenwart. Eine bibliometrische Untersuchung,* Berlin/New York: Walter de Gruyter, 1993, x + 271 pp., 140 DM. Applies a bibliometric analysis of data in the *Ω-Bibliography of Mathematical Logic* (G. H. Müller (ed.), Berlin, 1987) to the historical development of mathematical logic. Has the "publish or perish" imperative, for example, actually increased the productivity of mathematical logicians? Matrices are studied that reflect the interactions and relative growth of 60 subfields within mathematical logic. (ACL) #21.4.118

WALTON, KAREN DOYLE. Albrecht Dürer's Renaissance Connections between Mathematics and Art. *The Mathematics Teacher* **87** (1994), 278–282. A discussion of the contributions of Albrecht Dürer to geometry, especially mathematical perspective, magic squares, instruments, and High German. (DEZ) #21.4.119

WEAVER, JEFFERSON HANE. *See* #21.4.81.

WEINSTOCK, ROBERT. Isaac Newton: Credit Where Credit Won't Do, *The College Mathematics Journal* **25** (1994), 179–192. A "carefully considered dissident appraisal" of several results attributed to Isaac Newton: universal gravitation, binomial theorem, orbital motion, constitution of light, and "Newton's rings." (DEZ) #21.4.120

WEINSTOCK, ROBERT. *See also* #21.4.42, #21.4.83, #21.4.121, and #21.4.126.

WESTFALL, RICHARD S. In Defense of Newton: His Biographer Replies, *The College Mathematics Journal* **25** (1994), 201–205. Counters Robert Weinstock's views on Isaac Newton's primacy in the binomial theorem and the composition of light. (*See* #21.4.120.) Discusses the danger of evaluating Newton's work by 20th-century standards. (DEZ) #21.4.121

WHEELER, DAVID J. The EDSAC Programming Systems, *Annals of the History of Computing* **14**(4) (1992), 34–40. This article deals with the process of designing a programming system that made the best possible use of available hardware. (LSG) #21.4.122

WHEELER, JOYCE M. Applications of the EDSAC, *Annals of the History of Computing* **14** (1992), 27–33. Early applications of EDSAC involving the calculation of prime numbers, solutions of algebraic equations, and experimental learning programs are described, along with the initial work in wave mechanics, economics, crystallography, and radio astronomy. The EDSAC 2, and its importance to many of these topics, is also discussed. (LSG) #21.4.123

WILKES, MAURICE V. EDSAC 2, *Annals of the History of Computing* **14** (1992), 49–56. EDSAC 2, the first computer to have a microprogrammed control unit, came into operation early in 1958. It was designed by the team that built and operated EDSAC 1. A detailed description of the principal hardware features of EDSAC 2 is given. (LSG) #21.4.124

WILSON, CURTIS. Newton on the Equiangular Spiral: An Addendum to Erlichson's Account, *Historia Mathematica* **21** (1994), 185–195. An investigation into the reason why Newton made an error in his proof of Proposition IX of Book I of the *Principia*. The root of the problem is a figure that deals with centripetal force in equiangular spirals. *See also* #20.2.27. (DEZ) #21.4.125

WILSON, CURTIS. Newton's Orbit Problem: A Historian's Response, *The College Mathematics Journal* **25** (1994), 193–200. The author takes Robert Weinstock to task for overestimating Robert Hooke's role in universal gravitation. (*See* #21.4.120.) He also describes Isaac Newton's contribution to Johann Bernoulli's proof of the binomial theorem. (DEZ) #21.4.126

WILSON, ROBIN. Stamp Corner. Russian Mathematics I, *The Mathematical Intelligencer* **16**(2) (1994), 76. Stamps of Lobachevskii, Chebychev, and Kovalevskaya. (TLB) #21.4.127

ZAIDULLINA, I. I. Bhaskara and His Works [in Russian], pp. 45–49 in #21.4.97. An analysis of the relationships between the works of the Indian mathematicians Bhaskara and Aryabhatiya on indeterminate equations and trigonometry. (DEZ) #21.4.128

ZAITSEV, EVGENY A. In Memoriam: Fyodor Andreevich Medvedev (1923–1993), *Modern Logic* **4** (1994), 283–285. A sketch of the life and work of the historian of mathematics F. A. Medvedev. (IA) #21.4.129

ZAITSEV, EVGENY A. Peano's Concept of "the" and the Possibility of Eliminating It from the Theory [in Russian], pp. 50–58 in #21.4.97. The origin and development of the distinction between an element and a class consisting of that element, in the logic of Giuseppe Peano. (DEZ) #21.4.130