

## 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.

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 12, Number 1, are numbered: 12.1.1, 12.1.2, 12.1.3, etc.

For reviews and abstracts published in Volumes 1 through 13 there is 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 Víctor Albis (Bogotá), Joe Albree (Montgomery, AL), Thomas Bartlow (Villanova, PA), Gary Brown (Collegeville, MN), Louise Grinstein (Brooklyn, NY), Susanne Hensel (Jena), James J. Kaput (North Dartmouth, MA), Robert E. Kennedy (Warrensburg, MO), Albert C. Lewis (Hamilton), Peter Ross (Santa Clara, CA), and David E. Zitarelli.

ADELE, GAIL H. 1989. When did Euclid live? An answer plus a short history of geometry. *The Mathematics Teacher* 82(6), 460–463. A classroom module based on a chronological table of the history of GEOMETRY. It omits the projective geometry of Desargues and Poncelet. (DEZ) #17.1.1

ALCOLEA BANEGAS, JESÚS. 1988. Arend Heyting. *Mathesis (México)* 4, 189–220. Succinct presentation of AREND HEYTING'S WORK ON INTUITIONISM. BROUWER. Heyting's BIBLIOGRAPHY. (VA) #17.1.2

ANDERSON, J. M. 1988. ELISHA NETANYAHU (1912–1986). *Bulletin of the London Mathematical Society* 20, 613–618. Netanyahu was a native of Warsaw, and his family emigrated to Palestine in 1920. He was influenced by MICHAEL FEKTE at the Hebrew University in Jerusalem in the 1930s, and his early mathematical career was concerned with COMPLEX ANALYSIS, in particular, Dirichlet series. This was interrupted by his service during World War II and in the early years of the state of Israel. "In a very real sense he was the creator of the Mathematics Department at the TECHNION" [in Haifa]. The "second flowering" of Netanyahu's mathematical career involved his work on UNIVALENT FUNCTIONS. The list of Netanyahu's 24 published papers omits his three papers in Hebrew; there is also a photo. (JA) #17.1.3

ANON. 1987. Academician Leonid Vitalevich Kantorovich (on the 75th anniversary of his birth). [In Russian] *Optimizatsiya* 40(57), 5–6. Brief biography of LEONID VITALEVICH KANTOROVICH. Other

articles in this volume of the journal dealing with his work are: D. A. Vladimirov, "The works of V. I. Kantorovich in the descriptive theory of sets and functions" (pp. 7–11, 159); L. T. Petrova, "Commentary on the works of L. V. Kantorovich on large-block programming" (pp. 12–16, 159); Ya. I. Fet, "The investigations of L. V. Kantorovich in the area of computer architecture" (pp. 17–25, 159); and A. G. Kusaraev and S. S. Kutateladze, "The contribution of L. V. Kantorovich to the theory of ordered vector spaces" (pp. 26–39, 159). PHOTOGRAPH. (DEZ) #17.1.4

ANON. 1988. Jan Mikusinski: 3 April 1913–27 July 1987. *Studia Mathematica* **89**(1), ii–xi. Brief obituary of JAN MIKUSINSKI. Bibliography of 26 books and 149 papers. PHOTOGRAPH. (DEZ) #17.1.5

ANON. 1988. Professor Raj Chandra Bose. *Journal of Geometry* **33**(1–2), 1–2. Brief obituary of RAJ CHANDRA BOSE. PHOTOGRAPH. (DEZ) #17.1.6

ANON. 1988. Recipients of the Korean Mathematical Society PRIZES for 1987. [In Korean] *Bulletin of the Korean Mathematical Society* **25**(1), 162–163. Brief biographies of two of the winners, CHIN MYUNG CHÖNG and JONGSIK KIM. PHOTOGRAPHS. (DEZ) #17.1.7

ARNOLD, V. I. 1989. A topological proof for the transcendence of the ABELIAN INTEGRAL of I. NEWTON's *Principia mathematica*. *Istoriko-matematicheskie Issledovaniya* **31**, 7–17. [In Russian] In this paper, which was presented at the 1987 Moscow Conference on the 300th Anniversary of *Principia mathematica*, a modern proof is given of an integral which appeared in *Principia* Lemma 18. Newton's proof is translated into Russian by A. N. Krylov and analyzed from a modern viewpoint. The author also generalizes the Newtonian theorem to the multidimensional case of smooth hypersurfaces in  $R^n$ . (SH) #17.1.8

BELLER, WALTER. 1988. Sicología y matemáticas: Convergencias y divergencias (PSYCHOLOGY and mathematics: Convergences and divergences). *Mathesis (México)* **4**, 393–412. (VA) #17.1.9

BINDER, CHRISTA. 1989. II. Österreichisches Symposium zur Geschichte der Mathematik. *Historia Mathematica* **16**(2), 166. Announcement of a week-long symposium in October 1989 on the history of mathematics. (DEZ) #17.1.10

BOROWCZYK, JACQUES. 1989. Université d'été d'histoire des mathématiques, 28 août au 2 septembre 1988. *Historia Mathematica* **16**(2), 167–168. A list of the speakers and the titles of their talks from five conferences, six presentations, and numerous workshops at the Third Interdisciplinary History of Mathematics Meeting, held at La Rochelle from August 28 to September 2, 1988. (DEZ) #17.1.11

BOWEN, K. C. 1988. A mathematician's journey through operational research. *Mathematical Programming* **42**(1) (Ser. B), 33–40. The author reminisces on how, as a pure mathematician in 1940, he gradually became involved in OPERATIONS RESEARCH. He also discusses his relationship with MARTIN BERLE. (DEZ) #17.1.12

BROWDER, FELIX E. 1989. Stone age of mathematics at the midway. *The Mathematical Intelligencer* **11**(3), 22–24. A tribute to MARSHALL STONE's chairmanship at the University of Chicago. See also #17.1.125. (DEZ) #17.1.13

BROWN, MORTON. 1987. The mathematical work of R. H. Bing. *Topology Proceedings* **12**(1), 1–25. A discussion of the work of R. H. BING on the Kline sphere characterization problem, the pseudoarc, homogeneity, metrization, convex metrics, 3-manifolds, and decomposition spaces. TOPOLOGY. (DEZ) #17.1.14

BULICHEVA, S. See #17.1.102.

CERUZZI, PAUL. 1989. Electronics technology and computer science 1940–1975: A coevolution. *Annals of the History of Computing* **10**(4), 257–275. An analysis of the continuous interplay between ELECTRONIC ENGINEERING and COMPUTER SCIENCE since 1940. Electronic engineering dominated the

activities from 1940 to 1955 but computer science dominated from 1955 to 1975. More recently both electronic engineers and computer scientists see their work as "the management of complexity." (LSG) #17.1.15

COLEMAN, A. JOHN. 1989. The greatest mathematical paper of all time. *The Mathematical Intelligencer* 11(3), 29–38. Coleman exceeds even Thomas Hawkins in his praise of the work of WILHELM KILLING. He chooses a paper by Killing as the greatest paper of all time, explains the main ideas and results in it, and describes its subsequent effects on E. CARTAN, COXETER, KAC, and MOODY. PHOTOGRAPHS. (DEZ) #17.1.16

DALE, A. I. 1989. THOMAS BAYES: A memorial. *The Mathematical Intelligencer* 11(3), 18–19. The family vault in Bunhill Fields, where Thomas Bayes is buried, was restored in 1969 but "is once again in a sorry state." (DEZ) #17.1.17

D'AMBROSIO, UBIRATAN. 1989. A research program and a course in the history of mathematics: ETHNOMATHEMATICS. *Historia Mathematica* 16(3), 285–287. The term ethnomathematics is defined, and a program for teaching a non-Eurocentric, ethnomathematical history of mathematics course is described. (DEZ) #17.1.18

DEBARNOT, MARIE-THÉRÈSE. See #17.1.69.

DEBNATH, LOKENATH. 1987. Srinivasa Ramanujan (1887–1920). A centennial tribute. *International Journal of Mathematical Education in Science and Technology* 18(6), 821–861. A tribute to SRINIVASA RAMANUJAN on his 100th birthday. The first part gives an account of Ramanujan's life. The remainder is a synopsis of his contributions and their importance. See *Mathematical Reviews* 89g:01048 for a review by Bruce Berndt, who states that "much of this material is incorrect or misleading." (PR) #17.1.19

DEL PINO ARABOLAZA, PILAR, AND VALERA, MANUEL. 1988. Análisis estadístico y sociométrico de la producción matemática española a través de la *Revista Matemática Hispanoamericana* (Statistical and sociometric analysis of the Spanish mathematical production through the *Revista Matemática Hispanoamericana*). *LLULL* 11, 263–284. Evolution of Spanish mathematical production from 1919 to 1936 through the study of papers that appeared in *Revista Matemática Hispanoamericana*, from a bibliometrical viewpoint. SPANISH MATH. (VA) #17.1.20

DEMIDOV, S. S. 1988. Der philosophische Kontext der Herausbildung der Moskauer funktionentheoretischen Schule. *NTM-Schriftenreihe für Geschichte der Naturwissenschaften, Technik und Medizin* 25, 25–31. The philosophical context of the development of the MOSCOW SCHOOL OF FUNCTION THEORY. D. F. EGOROV; N. N. LUZIN; N. G. BUGAEV. (ACL) #17.1.21

DEMIDOV, S. S., PARSHIN A. N., AND POLOVINKIN, S. M. 1989. On the correspondence of N. N. LUZIN with P. A. FLORENSKI. *Istoriko-matematicheskie Issledovaniya* 31, 116–190. [In Russian] This continues the account, started in Vol. 30, of the source materials for the history of the MOSCOW SCHOOL in function theory found in the Florenski archives. An overview of the history of the Moscow school is followed by an analysis of the historical relevance and the content of the correspondence from 1904 to 1922. The correspondence for these years is published on pages 125–190. (SH) #17.1.22

DUTT, SUKOMAL. 1988. Bibhuti Bhusan Datta (1888–1958) or Swami Vidyaranya. Pp. 3–15 in #17.1.45. Biography of the Indian historian of mathematics, BIBHUTI BHUSAN DATTA, who is known for his work on ancient HINDU contributions, especially the decimal number system. At age 45 Datta left his professorship at Calcutta University for the ascetic life of Sannyas, where he was known as VIDYARANYA. There is a bibliography of Datta's publications in the history of mathematics. INDIAN MATHEMATICS. PHOTOGRAPH. (DEZ) #17.1.23

EMERSON, ROGER. 1988. SIR ROBERT SIBBALD, Kt, the Royal Society of Scotland and the origins of the Scottish enlightenment. *Annals of Science* 45(1), 41–72. The author claims that there existed in

late 17th century SCOTLAND a sizeable virtuoso community whose leaders were abreast of European developments in philosophy, history, and science. There is little mention of this community's knowledge of mathematical developments. (GB) #17.1.24

ERMOLAEVA, N. S. 1989. New biographical material on N. N. LUZIN. *Istoriko-matematicheskie Issledovaniya* 31, 191–272. [In Russian] An introduction to newly revealed correspondence between Luzin and A. N. KRYLOV between 1928 and 1942. The letters are preserved in the archives of the USSR Academy of Sciences in Moscow and in its Leningrad division. The author provides not only biographical information but also a history of the mathematics concerned, especially of the MOSCOW SCHOOL in the theory of functions of real variables. The author also reconstructs the beginning of the relationship between Luzin and Krylov. Following the article, on pages 203–272, the correspondence is reproduced along with additional documents: (1) Luzin's travel report for the 1928 International Congress in Bologna which he presented to the USSR Academy of Sciences in 1930; (2) Luzin's notes on a 1931 paper by A. Kaz; (3) a 1942 letter from Luzin to the Remembrance Jubilee Commission for Newton's 300th anniversary. (SH) #17.1.25

ERMOLAEVA, N. S. 1989. The dissertation of G. W. KOLOSOV and its evaluation by V. A. STEKLOV. *Istoriko-matematicheskie Issledovaniya* 31, 52–74. [In Russian] Kolosov's "On the application of the theory of complex variables to the plane cases of the mathematical theory of elasticity," is considered for its theory of functions and the fact that not all of Kolosov's ideas have been further developed later by other researchers. Further, several circumstances relating to Kolosov's dissertation defense in 1911 at Petersburg University are clarified on the basis of manuscripts of the two referees (Steklov and Bobylev) and of two letters from Kolosov to Steklov. These concern the differences of opinion during the defense which, though they have been known, have not hitherto been explained in the historical literature. (SH) #17.1.26

EVANS, JAMES. 1987. On the origin of the Ptolemaic star catalogue. I. *Journal of the History of Astronomy* 18(3), 155–172. Provides evidence to dispute earlier accounts that claim that PTOLEMY borrowed HIPPARCHUS's star catalogue instead of establishing the catalogue himself in *Almagest* 7–8. GREEK ASTRONOMY. *Mathematical Reviews* 89h:01003. (DEZ) #17.1.27

EVANS, JAMES. 1987. On the origin of the Ptolemaic star catalogue. II. *Journal of the History of Astronomy* 18(4), 233–278. A continuation of #17.1.27. Suggests various solutions to account for a shift of 40' in PTOLEMY's star longitudes, thus providing further evidence of Ptolemy's paternity of the star catalogue in the *Almagest*. *Mathematical Reviews* 89h:01004. (DEZ) #17.1.28

FAUVEL, JOHN. 1989. Platonic rhetoric in distance learning: How Robert Record taught the home learner. *For the Learning of Mathematics* 9(1), 2–6. This article analyzes the pedagogic style of ROBERT RECORD, who was one of the best and most successful textbook writers of all time. His geometry was the reverse of Euclid, and his arithmetic provided the foundation for the practical mathematics of navigation and science of Elizabethan times. (JJK) #17.1.29

FENTON, P. C. 1989. An extremal problem in Harriot's mathematics. *Historia Mathematica* 16(2), 154–163. This note provides an elementary geometrical proof to refute the suggestion that THOMAS HARRIOT needed to use INFINITESIMALS to solve an optimization problem. (DEZ) #17.1.30

FLEMING, WENDELL, AND KLEE, VICTOR. 1989. EDWARD JAMES McSHANE 1904–1989. *Notices of the American Mathematical Society* 36(7), 828–830. Brief biography with an indication of McShane's contributions to the calculus of variations, integration theory, control theory, and stochastic calculus. (DEZ) #17.1.31

FLETCHER, COLIN R. 1989. Fermat's theorem. *Historia Mathematica* 16(2), 149–153. Arguments are given to support the claim that the usual interpretation regarding FRENICLE's challenge to FERMAT to find a perfect number with at least 20 digits is flawed. (DEZ) #17.1.32

FOLKERTS, MENSO, AND KNOBLOCH, EBERHARD. 1989. Christoph J. Scriba—60 Jahre. *Historia*

- Mathematica* **16**(3), 207–212. Biographical comments on the historian of mathematics, CHRISTOPH J. SCRIBA, with a bibliography of his works. (DEZ) #17.1.33
- FOLTA, JAROSLAV. 1988. Some remarks on the history of numerical analysis especially in the area of Prague. *LLULL* **11**, 217–233. The concept of NUMERICAL ANALYSIS in Goldstine's *History of numerical analysis from the 16th century through the 19th century* is contrasted with that of computational mathematics of the Babylonians, the Egyptians, BRAHE, WITTICH, BÜRGI, and KEPLER as related to ASTRONOMY. (VA) #17.1.34
- FREGUGLIA, PAOLO. 1989. Study centre for scientific thought between 1500 and 1600. *Historia Mathematica* **16**(2), 170. Report of a seminar held at Perugia University on "Moments of the mathematical culture between the 16th and 17th centuries," including a list of speakers and the titles of their lectures. (DEZ) #17.1.35
- GOLDSTEIN, BERNARD R. 1986. Levi ben Gerson's theory of planetary distances. *Centaurus* **29**(4), 272–313. Presents LEVI's theory as found in Chapters 130 and 131 in his *Astronomy*. A translation of the two chapters is included. ASTRONOMY. (TB) #17.1.36
- GORDAN, PAUL. 1987. *Vorlesungen über Invariantentheorie. Erster Band: Determinanten. Zweiter Band: Binäre Formen*. New York: Chelsea. Vol. I: xii + 201 pp.; Vol. II: xii + 360 pp. \$49.95. A new printing in one book of the second edition of two classic volumes that were first issued in 1885 and 1887, *Lectures on invariant theory. Vol. I: Determinants. Vol. II: Binary forms*, edited by Georg Kerschensteiner. The book contains an elaboration of two series of lectures by PAUL GORDAN, the first of which dealt with the theory of DETERMINANTS and the second with INVARIANTS OF BINARY FORMS. See the review by Jean Dieudonné in *Mathematical Reviews* 89g:01034. (DEZ) #17.1.37
- GOWER, B. 1987. Planets and PROBABILITY: Daniel Bernoulli on the inclinations of the planetary orbits. *Studies in History and Philosophy of Science* **18**(4), 441–454. A review of DANIEL BERNOULLI's different approaches to the problem of the inclination of planes of the planetary orbits with the plane of the solar equator. Also looks at criticisms by JEAN D'ALEMBERT and ISAAC TODHUNTER of these approaches. ASTRONOMY. (GB) #17.1.38
- GRAEF [FERNÁNDEZ], CARLOS. 1988. Espacio matemático y espacio físico (Mathematical space and physical space). *Mathesis (México)* **4**, 327–353. In *Cuadernos del seminario de problemas científicos y filosóficos*. Cuadernos y Suplementos. Primera Serie, México: Universidad Nacional Autónoma de México. 1956, 1–25. (VA) #17.1.39
- GRAEF [FERNÁNDEZ], CARLOS. 1988. Mi justa con ALBERT EINSTEIN (My tilt with Albert Einstein). *Mathesis (México)* **4**, 413–422. Spanish version from *The American Scientist* **44** (1956), 204–211. (VA) #17.1.40
- GRIGORYAN, A. T. 1988. Lev Davidovich Landau (on the 80th anniversary of his birth). [In Russian] *Voprosy Istorii Estestvoznaniya i Tekhniki* **1988**(1), 116–119. A brief biography of LEV DAVIDOVICH LANDAU. (DEZ) #17.1.41
- GRUENBERG, K. W. 1988. KURT AUGUST HIRSCH (1906–1986). *Bulletin of the London Mathematical Society* **20**, 350–358. Hirsch was first influenced by I. SCHUR at the University of Berlin, 1925–1930, but began his career as a journalist. He fled the Nazis in 1934 and settled in Cambridge where he came under the influence of PHILIP HALL and earned a second PhD. His mathematical interests were in GROUP THEORY. "His most impressive achievement" was his leadership in the 1950s in transforming the department of pure mathematics of the UNIVERSITY OF LONDON into "an active, internationally respected centre for research in ALGEBRA, without being in overall charge of the department. . . ." Furthermore, "internationally, the mathematical community owes him a debt of gratitude for the immense amount of work he devoted to the translation of Russian mathematics" over the 40 years from the end of World War II until his death. Unfortunately, a complete list of these translations is not included. There is a list of Hirsch's 20 papers and there are two photos. (JA) #17.1.42

- GUPTA, R. C. 1988. Kurt Vogel (1888–1985), the veteran German historian of mathematics. Pp. 16–20 in #17.1.45. Brief biography of KURT VOGEL, who, among other things, was responsible for founding the Institute for the History of Science in Munich. Also included is some of Vogel's correspondence with the INDIAN mathematicians B. B. DATTA (see also #17.1.23) and A. N. SINGH. PHOTOGRAPH. (DEZ) #17.1.43
- GUPTA, R. C. 1988. On values of  $\pi$  from the Bible. Pp. 51–58 in #17.1.45. An examination of several explanations of the biblical quotation "a molten sea, ten cubits from the one brim to the other; it was round all about; . . . and a line of thirty cubits did compass it round about." PI. (DEZ) #17.1.44
- GUPTA, R. C. (Ed.) 1988. Tenth anniversary volume. *Gaṇita-Bhārati* 10(1–4). The Datta-Vogel centenary issue celebrating 10 years as the official Bulletin of the Indian Society for History of Mathematics. Articles by Sukomal Dutt, R. C. Gupta, Parmeshwar Jha, J. N. Kapur, Kripanath Sinha, and B. L. van der Waerden are abstracted separately. (DEZ) #17.1.45
- GUPTA, R. C. 1988. Tombstone mathematics. Pp. 69–74 in #17.1.45. Brief discussions of 12 mathematical EPITAPHS ranging from Archimedes to Sierpinski. (DEZ) #17.1.46
- HALD, A. 1986. Galileo's statistical analysis of astronomical observations. *International Statistical Review* 54(2), 211–220. A statistical analysis carried out by GALILEO in 1632 contains the rudiments of a theory for comparing hypotheses by means of the sums of the absolute deviations of the observations from the hypothetical values. STATISTICS. (DEZ) #17.1.47
- HANSEN, VAGN LUNDSGAARD. 1988. From geometry to topology. *Normat* 36(2), 48–60, 90. [In Danish with a summary in English] A discussion of the development of TOPOLOGY from its origins up to the Brouwer fixed point theorem and the Borsuk-Ulam theorem. *Mathematical Reviews* 89h:01042. (DEZ) #17.1.48
- HEINZMANN, GERHARD. 1988. Poincaré et la philosophie des mathématiques. *Cahiers du Séminaire d'Histoire des Mathématiques, Univ. Paris VI* 9, 99–121. A discussion of POINCARÉ and his PHILOSOPHY of mathematics, which he called "pragmatism," a synthesis of his intuitionistic requirements followed by a descriptive analysis of the mathematical constructions. See *Mathematical Reviews* 89h:01043 for a list of corrections to the references in the paper. (DEZ) #17.1.49
- HENTSCHEL, KLAUS. 1988. Die Korrespondenz Duhem-Mach: Zur Modellbeladenheit von Wissenschaftsgeschichte. *Annals of Science* 45(1), 73–91. The preserved part of the hitherto unpublished correspondence between PIERRE DUHEM and ERNST MACH, kept in the Archives de l'Académie des Sciences, Paris, and in the Ernst Mach Institute of the Fraunhofer Society, Freiburg im Breisgau, is documented and commented upon. (GB) #17.1.50
- HEWITT, EDWIN. 1986. What Pavel Sergeevich Aleksandrov meant to me. [In Russian] *Uspekhi Matematicheskikh Nauk* 41(6)(252), 205–208. Hewitt's remembrances of his personal contact with PAVEL SERGEEVICH ALEKSANDROV, and the influence exerted on him by Aleksandrov's books. Translated into English in *Russian Mathematical Surveys* 41(6), 247–250. *Zentralblatt* 621:01010. (DEZ) #17.1.51
- HEYDE, C. C., AND SENETA, E. (Eds.) 1988. Bicentennial history issue. *The Australian Journal of Statistics* 30 (Special Vol. B), 1–130. Contents: E. Seneta, "Silhouettes in early Australian STATISTICS" (pp. 2–22); C. C. Heyde, "Official statistics in the late colonial period leading on to the work of the first Commonwealth Statistician, G. KNIBBS" (pp. 23–43); John D. Kerr, "Introduction of statistical design and analysis by the Queensland Bureau of Sugar Experiment Stations" (pp. 44–53); J. B. F. Field, F. E. Speed, and J. M. Williams, "Biometrics in the CSIR: 1930–1940" (pp. 54–76); David B. Duncan, "Australian BIOMETRY and multiple comparisons" (pp. 77–98); H. O. Lancaster, "Statistical Society of New South Wales" (pp. 99–109); E. J. Williams, "A survey of experimental design in AUSTRALIA" (pp. 110–130). (DEZ) #17.1.52

HOGENDIJK, JAN P. 1984. al-Kūhī's construction of an equilateral pentagon in a given square. *Zeitschrift für Geschichte der Arabisch-Islamischen Wissenschaften* 1, 9–54. AL-KŪHĪ was a mathematician and astronomer working in Iran in the 10th century. He was a leading figure in a revival and continuation of Greek GEOMETRY in the MEDIEVAL ISLAMIC world. His method for constructing an equilateral pentagon in a square involves the intersection of hyperbolas and the solution of a quartic equation. CONIC SECTIONS. ALGEBRA. *Mathematical Reviews* 89g:01011. (DEZ) #17.1.53

HORMIGÓN, MARIANO. See #17.1.91.

HOUZEL, CHRISTIAN. 1989. Colloque d'histoire des mathématiques sous le patronage de la Société Mathématique de France. *Historia Mathematica* 16(2), 169. A list of the speakers and the titles of their talks at the Conference on the History of ALGEBRAIC EQUATIONS held June 17–22, 1985, in Marseille. (DEZ) #17.1.54

HOYNINGEN-HUENE, P. 1987. Context of discovery and context of justification. *Studies in History and Philosophy of Science* 18(4), 501–515. The author argues that the traditional argument between "positivist" philosophers and "historicist" philosophers can be clarified by focusing on the distinction between the "context of discovery" versus the "context of justification." PHILOSOPHY OF MATHEMATICS. (GB) #17.1.55

HUGHES, BARNABAS. 1989. The arithmetical triangle of Jordanus de Nemore. *Historia Mathematica* 16(3), 213–223. An analysis of Book IX, Proposition 70, of *De arithmetica* by JORDANUS DE NEMORE. Three illustrations suggest a knowledge of PASCAL'S TRIANGLE. Appendices include an English translation and a critical edition of the material. (DEZ) #17.1.56

HUNTER, M. 1988. Promoting the new science: HENRY OLDENBURG and the early Royal Society. *History of Science* 26(2), 165–181. Analyzes why Oldenburg came to be so dominant in his correspondences with early members of the ROYAL SOCIETY. (GB) #17.1.57

ILLY, J. 1989. Einstein teaches Lorentz, Lorentz teaches Einstein: Their collaboration in general relativity, 1912–1920. *Archive for History of Exact Sciences* 39(3), 247–289. This paper discusses the cooperative work of EINSTEIN and LORENTZ in developing the theory of general RELATIVITY between 1913 and 1920. (GB) #17.1.58

INDORATO, LUIGI, AND NASTASI, PIETRO. 1989. The 1740 resolution of the Fermat–Descartes controversy. *Historia Mathematica* 16(2), 137–148. An examination of a booklet from 1740 by PIETRO DI MARTINO disputing the prevailing view that FERMAT'S law of refraction was obtained by DESCARTES from an opposite hypothesis. There is also an explanation of the reason why Di Martino stated his minimum principle only for OPTICS, unlike the similar principle discovered by MAUPERTUIS and extending to DYNAMICS. ISAAC NEWTON. ITALY. (DEZ) #17.1.59

IOSIFESCU, MARIUS. 1986. Obituary notice: Octav Oniciscu, 1892–1983. *International Statistical Review* 54(1), 97–108. Brief biography of OCTAV ONICISCU, a description of his major contributions, and lists of his 222 papers and 32 books. STATISTICS. (DEZ) #17.1.60

JANUSZ, GERALD J. 1988. Irving Reiner 1924–1986. *Illinois Journal of Mathematics* 32(3), 315–328. A biography of IRVING REINER, a discussion of his work, a list of his students, and a bibliography. (DEZ) #17.1.61

JHA, PARMESHWAR. 1987. Mm. Hemāṅgada Ṭhākura and his work "Rāhūparāgapañji." *The Mathematics Education* 21(2), 38–43. HEMĀṄGADA ṬHĀKURA was the grandson of a king whose family ruled Mithilā for four centuries. The work, whose title means "table of eclipses," gives a list of predicted lunar and solar eclipses from 1620 to 2708. ASTRONOMY. *Mathematical Reviews* 89g:01014. (DEZ) #17.1.62

- JHA, PARMESHWAR. 1988. Study of history of mathematics in Bihar. Pp. 59–63 in #17.1.45. A description of research activity in the history of mathematics that has taken place in Bihar, INDIA. It includes biographical comments about several of the present researchers. (DEZ) #17.1.63
- JONES, F. BURTON. 1987. R. H. Bing. *Topology Proceedings* 12(1), 181–186. Some personal reminiscences of R. H. BING. TOPOLOGY. (DEZ) #17.1.64
- KAPUR, J. N. 1988. A brief history of mathematics education in India. Pp. 31–39 in #17.1.45. Eight periods in the MATHEMATICS EDUCATION in INDIA are discussed: ancient India (up to the 15th century), medieval India (16th and 17th centuries), the transition period (18th century), early British period (1780–1834), pre-university period (1835–1857), post-university 19th century (1857–1900), pre-independence 20th century (1900–1947), and post-independence 20th century (1947– ). (DEZ) #17.1.65
- KAUFMANN-BÜHLER, WALTER. 1987. *Gauß: Eine biographische Studie*. Berlin/Heidelberg: Springer Verlag. viii + 191 pp. DM 56. A German translation of *Gauss: A biographical study*. This edition of a biography of GAUSS contains some corrections and “alters some historical explanations that can be omitted for an edition intended for a German-speaking reader.” Reviewed by Karin Reich in *Historia Mathematica* 16(1989), 178–179. See *Mathematical Reviews* 82j:01066 for a review of the English original. (DEZ) #17.1.66
- KAUNZNER, WOLFGANG. 1987. Über Charakteristika in der mittelalterlichen abendländischen Mathematik. *Mathematische Semesterberichte* 34(2), 143–186. The characteristics of MEDIEVAL OCCIDENTAL mathematics are described in three periods. In the 13th and 14th centuries the primary concern was practical problems, even though the material appeared to be strongly theoreticized; between 1450 and 1550 the theoretical direction dominated in symbolic ALGEBRA; the 1600s again witnessed the dominance of the practical side. *Zentralblatt* 638:01004. (DEZ) #17.1.67
- KEIDING, NIELS. 1987. The method of expected number of deaths, 1796–1886–1986. *International Statistical Review* 55(1), 1–20. The expected number of deaths was calculated in 18th century ACTUARIAL MATHEMATICS but the method seems to have been forgotten, and was reinvented in connection with 19th century studies of geographical and occupational variations of mortality. STATISTICS. (DEZ) #17.1.68
- KENNEDY, EDWARD S., AND DEBARNOT, MARIE-THÉRÈSE. 1984. Two mappings proposed by Biruni. *Zeitschrift für Geschichte der Arabisch-Islamischen Wissenschaften* 1, 145–147. Two ways of mapping a hemisphere upon a plane by AL-BIRUNI. (DEZ) #17.1.69
- KERSCHENSTEINER, GEORG. See #17.1.37.
- KILMISTER, C. W. 1988. J. T. COMBRIDGE (1897?–1986). *Bulletin of the London Mathematical Society* 20, 156–158. Cambridge was a student of MATHEMATICAL PHYSICS. The major intellectual influence in his life was Sir ARTHUR EDDINGTON, with whom he carried on an important scientific correspondence from the end of World War I until 1936. His major scientific contributions were two: “Notes on RELATIVITY,” a survey of the most important literature of the 1920s and 1930s in three volumes, now in the archives of King’s College, London; and, a bibliography of general relativity covering the same time period and published in a limited edition in 1965. In 1937, he moved into the administration of King’s College, LONDON. He was president of the MATHEMATICAL ASSOCIATION in 1961–62 and wrote a history of the Association in 1971, apparently never published. There is a photo. (JA) #17.1.70
- KLEE, VICTOR. See #17.1.31.
- KLEINER, ISRAEL. 1989. Evolution of the function concept: A brief survey. *The College Mathematics Journal* 20(4), 282–300. After a glimpse of precalculus notions, the paper considers the 18th and early 19th century view of a FUNCTION as a formula or a geometric curve, DIRICHLET’s definition in terms of an arbitrary correspondence, the study of various pathological examples, BAIRE classifica-



tion, the controversy relating to the use of the axiom of choice,  $L_2$  functions in functional analysis, distributions, and category theory. (DEZ) #17.1.71

KNOBLOCH, EBERHARD. 1989. Analogie und mathematisches Denken. *Berichte zur Wissenschaftsgeschichte* 12, 35–47. ANALOGICAL THINKING in mathematics, especially in the works of KEPLER, WALLIS, LEIBNIZ, EULER, and LAPLACE. (ACL) #17.1.72

KNOBLOCH, EBERHARD. See #17.1.33.

KNORR, WILBUR. 1985. Archimedes and the pseudo-Euclidean *Catoptrics*: Early stages in the ancient geometric theory of mirrors. *Archives Internationales d'Histoire des Sciences* 35(114–115), 28–105. Part 1 supports the viewpoint that the work *Catoptrics* on the reflections of light was written by THEON of Alexandria and not by EUCLID. The connection with ARCHIMEDES is explained. Part 2 discusses the correspondences between *Catoptrics* and other works on OPTICS by DAMIANUS, PTOLEMY, HERO, and DIOCLES in relation to the dating question. Appendix I excludes Damianus. Appendix II discusses Ptolemy's authorship of the *Optics* ascribed to him. ANCIENT GREECE. *Mathematical Reviews* 89g:01005. (DEZ) #17.1.73

KOBLITZ, ANN HIBNER. 1988. Science, women and the Russian intelligentsia: The generation of the 1860s. *Isis* 79(297), 208–227. Discusses how the 1860s in Russian history offered greater opportunities for WOMEN in science and medicine. RUSSIA. (GB) #17.1.74

LAM, LAY-YONG, AND SHEN, KANGSHEN. 1989. Methods of solving linear equations in traditional CHINA. *Historia Mathematica* 16(2), 107–122. A survey of the methods used by ancient Chinese mathematicians to solve problems that today can be solved by the modern methods of linear equations. The ROD NUMERAL notation encapsulates the complexity of the underlying concept. ALGEBRA. SIMULTANEOUS EQUATIONS. (DEZ) #17.1.75

LANCASTER, H. O. 1986. A bibliography of statistical bibliographies: An eighteenth list. *International Statistical Review* 54(1), 109–114. Another list of bibliographies in STATISTICS. The 13th list contained national bibliographies [49(2), 177–183] while the 14th listed biographies [50(2), 195–217]. (DEZ) #17.1.76

LARROYO, FRANCISCO. 1988. *Filosofía de las matemáticas (Philosophy of mathematics)*. México: Editorial Porrúa. MATH PHILOSOPHY. (VA) #17.1.77

LAUGWITZ, D. 1987. Hidden lemmas in the early history of INFINITE SERIES. *Aequationes Mathematicae* 34(2–3), 264–276. Certain results are put into the language of infinitesimals (as in NONSTANDARD ANALYSIS) and then claimed to be implicit in the work of EULER, POISSON, and CAUCHY. *Mathematical Reviews* 89g:01031. (DEZ) #17.1.78

LAUGWITZ, D. 1989. Definite values of infinite sums: Aspects of the foundations of infinitesimal analysis around 1820. *Archive for History of Exact Sciences* 39(3), 197–245. Usually the reorganization of ANALYSIS during the 19th century is attributed to the textbooks of CAUCHY. The foundational changes, the author claims, are not just a result of teaching obligations but also a result of the study of convergent and divergent SERIES. The convergent series studied by EULER are first reviewed, followed by a discussion of Cauchy's banning of divergent series, and finally a discussion of the need for divergent series in FOURIER ANALYSIS and its applications to partial differential equations of mathematical physics. (GB) #17.1.79

LÉVY, TONY. 1987. *Figures de l'infini: Les mathématiques au miroir des cultures*. Paris: Edition du Seuil. 279 pp. Paperbound. F 99. Reviewed by Karen Hunger Parshall in *Isis* 79(1988), 325–326. The author wishes to unify the various "faces of the infinite." According to Parshall, Levy has produced an eminently readable and engaging book on an ever-tantalizing subject. INFINITY. (GB) #17.1.80

LINTON, MATTHEW. 1988. BABYLONIAN TRIPLES. *Bulletin: The Institute of Mathematics and Its Applications* 24(3–4), 37–41. Brief discussion of Plimpton 322. See also *Historia Mathematica* 8(1981),

- 277–318, in which J. Friberg came to the same conclusions. *Mathematical Reviews* 89h:01002. (DEZ) #17.1.81
- LIU, DUN. 1989. International symposium for the commemoration of MEI WENDING and the CHINESE third annual meeting on the history of mathematics. *Historia Mathematica* 16(3), 281–282. A list of the 21 speakers, and the titles of their talks, from a symposium held November 1–5, 1988, in Mei's hometown of Xuanzhou. (DEZ) #17.1.82
- LLOMBART PALET, JOSÉ. 1987. *Ciencia y libertad: El papel del científico ante la independencia americana (Science and freedom: The role of the scientist in the presence of American Independence)*. Cuadernos Galileo de Historia de la Ciencia, 7. Centro de Estudios Históricos. Consejo Superior de Investigaciones Científicas. Madrid. 350 pp. (VA) #17.1.83
- LOZANO, JUAN MANUEL. 1988. Carlos Graef Fernández. *Mathesis (México)* 4, 309–310. Biographical sketch of the Mexican physicist and mathematician C. GRAEF. MEXICO. (VA) #17.1.84
- MAEYAMA, Y. 1988. The Keplerian and mean motions: A geometric study. *Archive for History of Exact Sciences* 38(4), 365–383. Mathematical derivation of the point from which Keplerian motion of a planet appears most regular to an observer. The author seeks to keep "historical statements to a necessary minimum" and has attained a minimum of one, in the penultimate sentence of the paper. ASTRONOMY. (TB) #17.1.85
- MAINZER, KLAUS. 1988. *Symmetrien der Natur: Ein Handbuch zur Natur- und Wissenschaftsphilosophie*. Berlin/New York: de Gruyter. xi + 739 pp. Illustrated. Bibliography. Index. Hardbound DM 365 (*SYMMETRY in nature: A handbook for natural philosophy and philosophy of science*). A comprehensive historical account of symmetry in science, philosophy, and art. The mathematical topics include Galois theory, Lie groups, representation theory, and Hilbert spaces. (ACL) #17.1.86
- MANCOSU, PAOLO. 1989. The metaphysics of the CALCULUS: A foundational debate in the Paris Academy of Sciences, 1700–1706. *Historia Mathematica* 16(3), 224–248. A sketch of L'HÔPITAL's *Analyse des infiniment petits*. A description of the debate on the logical admissibility of the differential calculus in the Parisian Academy of Sciences from 1700 to 1706. The most outspoken adversary for the finitist faction was MICHEL ROLLE. FOUNDATIONS. INFINITESIMALS. (DEZ) #17.1.87
- MARCHISOTTO, ELENA ANNE. 1989. Mario Pieri: His contributions to the foundations and teaching of GEOMETRY. *Historia Mathematica* 16(3), 287–288. A discussion of the work and influence of MARIO PIERI, a member of PEANO's school of Italian geometers. An appeal is made for additional information on Pieri's influence. (DEZ) #17.1.88
- MEDVEDEV, F. A. 1989. The HORN ANGLE in the works of NEWTON. *Istoriko-matematicheskie Issledovaniya* 31, 18–37. [In Russian] Applications are looked at in *Methodus differentialis* and in *Principia mathematica*. On the basis of two extracts from these texts the author analyzes Newton's treatment of the infinitely small from the standpoint of NON-STANDARD ANALYSIS. (SH) #17.1.89
- MEHRTENS, HERBERT. 1989. The *Gleichschaltung* of mathematical societies in Nazi Germany. *The Mathematical Intelligencer* 11(3), 48–60. A translation by Victoria M. Kingsbury of the article "Die 'Gleichschaltung' der mathematischen Gesellschaften im nationalsozialistischen Deutschland," which appeared in 1985. It is a report on how three MATHEMATICAL SOCIETIES were brought into line with Nazi ideology. The roles played by some pivotal people are discussed: LUDWIG BIEBERBACH, WILHELM BLASCHKE, WILHELM SÜSS, GEORG HAMEL, and LUDWIG PRANDTL. The conclusion contains an analysis of the histories of the three organizations. GERMAN MATHEMATICS. PHOTOGRAPHS. (DEZ) #17.1.90
- MILLÁN GASCA, ANA. 1987. *El matemático Julio Rey Pastor (The mathematician Julio Rey Pastor)*. Logroño: Instituto de Estudios Riojanos. 105 pp. Foreword by Mariano Hormigón. The life and works of the SPANISH MATHEMATICIAN JULIO REY PASTOR. (VA) #17.1.91

- MILLS, A. A. 1988. The mercury clock of the *Libros del Saber*. *Annals of Science* **45**(4), 329–344. Translation of the section of the *Libros del Saber de Astronomia* dealing with a mercury clock, preceded by an introduction and followed by a description of a model constructed by the author. ASTRONOMY. (TB) #17.1.92
- MILTON, J. R. 1987. INDUCTION before Hume. *The British Journal for the Philosophy of Science* **38**(1), 49–74. This paper demonstrates that in the centuries before DAVID HUME virtually everyone was affected by doubts about the reliability of inductive inferences. The last two sections of the paper criticize both Ian Hacking's and the author's own explanations of the emergence of the modern problem of induction. *Mathematical Reviews* 89g:01032. (DEZ) #17.1.93
- MITCHELL, CHARLES E. 1989. HENRY WADSWORTH LONGFELLOW, poet extraordinaire. *The Mathematics Teacher* **82**(5), 378–379. Five problems written by this American poet attest to his interest in mathematics. (DEZ) #17.1.94
- MONASTIRSKI, M. I. 1989. The FIELDS MEDALLISTS. *Istoriko-matematicheskie Issledovaniya* **31**, 88–115. [In Russian] After a short account of its history, the author takes up the conditions under which the medal is awarded, the method of selection and the conferral. The members of the Fields committee from 1950 to 1986 and the medallists from 1936 to 1986 are introduced. In the second part of the article the author gives summary descriptions of the medallists' work. (SH) #17.1.95
- MONNA, A. F. 1988. Marcel Brelot (1903–1987) hommage posthume. [In French] *Nieuw Archief voor Wiskunde* (4) **6**(1–2), 63–68. A homage to MARCEL BRELOT and his contributions to POTENTIAL THEORY. The author recalls his relationship with Brelot beginning in the 1930s. (DEZ) #17.1.96
- MÜLLER, CLAUS. 1986. Zum 100. Geburtstag von Hermann Weyl. *Jahresbericht der Deutschen Mathematiker-Vereinigung* **88**(4), 159–189. On the 100th anniversary of the birth of HERMANN WEYL. Describes the historical background, mathematical content, physical motivation, and applications of Weyl's work. Also includes the philosophical context and implications. *Mathematical Reviews* 89h:01077. (DEZ) #17.1.97
- NASTASI, PIETRO. See #17.1.59.
- NEWING, ANGELA. 1988/1989. The life and work of H. E. Dudeney. *Mathematical Spectrum* **21**(2), 37–44. A popular account of H. E. DUDENEY's contributions to mathematics, particularly recreational mathematics. In his day Dudeney was known as "The Puzzle King." Includes some biographical information. (PR) #17.1.98
- ORTIZ, EDUARDO L. 1988. Una alianza para la ciencia: Las relaciones científicas entre Argentina y España a principios de este siglo (An alliance for science: Scientific relations between SPAIN and ARGENTINA at the beginning of this century). *LLULL* **11**, 263–284. (VA) #17.1.99
- PALTER, R. 1987. Saving Newton's text: Documents, readers and the ways of the world. *Studies in History and Philosophy of Science* **18**(4), 385–439. A discussion of ISAAC NEWTON's *De Gravitatione*. In this work, Newton criticizes DESCARTES' formulation of physics and definition of motion. Palter raises the following questions about this criticism: (i) why is Descartes the sole target of Newton's criticism; (ii) who if anyone influenced this criticism; (iii) how closely does the natural philosophy of *De Gravitatione* resemble that of Newton's later writings; and (iv) how closely does Newton's physics compare with modern physics? (GB) #17.1.100
- PARSHALL, KAREN. 1988. The art of ALGEBRA from AL-KHOWARIZMI to VIÈTE: A study in the natural selection of ideas. *History of Science* **26**(2), 129–164. The "natural selection of ideas" is an approach to the study of the historical and evolutionary development of mathematical ideas that may include a mathematician's false starts, ill conceived techniques, and imperfectly formed theories. The author argues that the development of algebra from Al-Khowarizmi to Viète provides a good "test case" for this model of the natural selection of ideas. (GB) #17.1.101

PARSHIN, A. N. See #17.1.22.

PETROVA, S. S., AND BULICHEVA, M. G. 1989. On the history of NEWTON'S POLYGONAL METHOD. *Istoriko-matematicheskie Issledovaniya* 31, 38–51. [In Russian] Three matters are taken up. First is the view, represented by Yushkevich, that Newton did not consider the question of the number of developments of an implicit function in the neighborhood of the point  $x = 0$ . Second is Chebotarev's objection that the term "Newton's diagram" would not be appropriate for the method since Newton himself did not use a polygon but rather only drew a straight line in the diagram. And the third is the position that the analytical representation of the polygonal method is almost exclusively tied to the name of LAGRANGE, although D. M. Sinzov has already indicated an analytical approach to the question in Newton. The authors base their review on Newton's manuscripts published by D. T. Whiteside in 1971 and in particular on the incomplete work of 1684 on series. (SH) #17.1.102

PICUTTI, ETTORE. 1989. Pour l'histoire des sept premiers nombres parfaits. *Historia Mathematica* 16(2), 123–136. The history of the first seven PERFECT NUMBERS. Two manuscripts from 1458 and 1460 by ALLIEVO DEL VAIAIO contain the fifth and sixth perfect numbers, respectively. The criteria followed by PIETRO CATALDI are also explained. NUMBER THEORY. See also #17.1.32. (DEZ) #17.1.103

PLACKETT, R. L. 1988. Data analysis before 1750. *International Statistical Review* 56(2), 181–195. The focus is on nonstatistical DATA ANALYSIS in pneumatics, sound, and physiology during the period 1650–1750. STATISTICS. (DEZ) #17.1.104

POLOVINKIN, S. M. See #17.1.22.

REY PASTOR, JULIO. 1988. *Julio Rey Pastor. Selecta*. Madrid: Edition of the Real Acad. Cie. Exact. Fis. Nat. Fundación Banco Exterior. 724 pp. Comments by Sixto Ríos, Luis A. Santaló, and Ernesto García Camarero. A selection of REY PASTOR'S publications on Analysis, Algebra, Geometry, and Topology. SPANISH MATH. (VA) #17.1.105

RODRÍGUEZ CONSUEGRA, FRANCISCO. 1988. Bertrand Russell, 1900–1913: *Los principios de la matemática (parte 1)* (Bertrand Russell, 1900–1913: *The principles of mathematics (Part 1)*). *Mathesis (México)* 4, 355–392. The last of three papers dealing with the genesis of BERTRAND RUSSELL'S "Principles." PEANO. CANTOR. (VA) #17.1.106

RODRÍGUEZ CONSUEGRA, FRANCISCO. 1988. Elementos logicistas en la obra de Peano y su escuela (Logicist elements in Peano's work and his school). *Mathesis (México)* 4, 221–299. MATH LOGIC. FOUNDATIONS. PEANO. (VA) #17.1.107

ROERO, C. S. 1989. Giornate di storia della matematica. *Historia Mathematica* 16(2), 171–172. Report from an international symposium held September 8–12, 1988, in Cetraro (Cosenza), Italy, dealing with the birth and first developments of CALCULUS, and the achievements of modern mathematics beginning with the last decades of the 19th century. A list of speakers and the titles of their lectures is included. (DEZ) #17.1.108

ROSE, H. E. 1988. R. L. GOODSTEIN (1912–1985). *Bulletin of the London Mathematical Society* 20, 159–166. Goodstein was "greatly influenced by LUDWIG WITTGENSTEIN," and he "was the first person whose main interests were in mathematical LOGIC to hold a chair in a British university." To be more specific, his interests included RECURSIVE FUNCTIONS, FOUNDATIONS, and the PHILOSOPHY OF MATHEMATICS. In addition to being a member of the faculty, Goodstein held several administrative positions at the University of LEICESTER, 1948–1977. Also, he was quite active in the MATHEMATICAL ASSOCIATION, serving as editor of the *Mathematical Gazette*, 1956–1962, and as president of the Association, 1975–1976. Included is a list of 12 of Goodstein's research students, a list of his 11 books and 132 papers and notes, and a photo. (JA) #17.1.109

ROSS, GEORGE. 1989. Lagrange conference. *Historia Mathematica* 16(2), 174–175. Report of a one-day conference held at King's College, London, to mark the 200th anniversary of LAGRANGE'S *Mécanique analytique*. (DEZ) #17.1.110

Rowe, David E. 1989. Symposium on the history of modern mathematics. *Historia Mathematica* 16(3), 271–280. Abstracts of 29 papers, about half of which deal with the interface between pure and applied mathematics, from a symposium held June 20–24, 1988, at Vassar College. (DEZ) #17.1.111

SALIBA, GEORGE. 1986. The determination of new planetary parameters at the Maragha Observatory. *Centaurus* 29(4), 249–271. Analysis of the determination of Jupiter's eccentricity according to the Ptolemaic model, using observations of Yahya b. Abi al-Shukr al-MAGHRIBI in his 13th-century text *halkhis al-majisti*. There is also a brief comment on Maghribi's use of a clock. ASTRONOMY. (TB) #17.1.112

SCANLAN, MICHAEL J. 1988. Beltrami's model and the independence of the parallel postulate. *History and Philosophy of Logic* 9(1), 13–34. A treatment of NON-EUCLIDEAN GEOMETRY in which BELTRAMI'S original model is contrasted with its later presentation that occurred after the shift in attitude toward the axiomatic method in the 1890s. LOGIC. *Mathematical Reviews* 89h:01037. (DEZ) #17.1.113

SENETA, E. See #17.1.52.

SHEN, KANGSHEN. 1988. Historical development of the Chinese remainder theorem. *Archive for History of Exact Sciences* 38(4), 285–305. Discusses the appearance of problems on simultaneous congruences, and their solution methods, in China, Japan, India and Europe, from ancient Chinese calendrical reckoning to Gauss' *Disquisitiones Arithmeticae*. ALGEBRA. (TB) #17.1.114

SHEN, KANGSHEN. See #17.1.75.

SHERRY, D. 1987. The wake of Berkeley's *Analyst*: Rigor Mathematicae? *Studies in History and Philosophy of Science* 18(4), 455–480. Questions the traditional view that BERKELEY'S *Analyst* impugned the foundations of the newborn CALCULUS and spurred mathematicians to situate their edifice more securely. Instead, the author reexamines the *Analyst*'s criticisms both in the context of Berkeley's philosophy and the development of the calculus. The author argues that there is some of Berkeley's "idealism" that is more congenial to Newton's approach to the calculus. (GB) #17.1.115

SHEYNNIN, O. B. 1989. Letters from A. M. LYAPUNOV to K. A. ANDREEV. *Istoriko-matematicheskie Issledovaniya* 31, 306–313. [In Russian] Six letters from the archives at Lomonossov University in Moscow are published and commented upon. (SH) #17.1.116

SHIELDS, ALLEN. 1989. BANACH ALGEBRAS, 1939–1989. *The Mathematical Intelligencer* 11(3), 15–17. A discussion of some contributions of I. M. GELFAND to FUNCTIONAL ANALYSIS, including his collaboration with D. A. RAIKOV and G. E. SHILOV. (DEZ) #17.1.117

SHIMURA, GORO. 1989. YUTAKA TANIYAMA and his time: Very personal reflections. *Bulletin of the London Mathematical Society* 21, 186–196. In his tragically short life, Yutaka Taniyama (1927–1958) was "one of the most brilliant and pioneering minds of the time" (the middle 1950s) and "the moral support of many of those who came into mathematical contact with him" at the UNIVERSITY OF TOKYO. This affectionate and intimate memoir also recounts the start of Taniyama's promising career (ALGEBRAIC NUMBERS). There are two photos and a list of Taniyama's five papers and two books (with G. Shimura). (JA) #17.1.118

ŠIKIĆ, ZVONIMIR. 1986. Joseph Louis Lagrange (on the 250th anniversary of his birth). *Matematika (Zagreb)* 15(4), 47–50. A brief treatment of the influence of JOSEPH LOUIS LAGRANGE on French mathematics. FRANCE. (DEZ) #17.1.119

- SIMSON, DANIEL. 1988. In memoriam. *Journal of Pure and Applied Algebra* 52(1–2), 76. Obituary of ROMAN KIELPIŃSKI (1939–1987). ALGEBRA. (DEZ) #17.1.120
- SINGH, PARMANAND. 1987. "Ratna Mañjusā," a Jain work on Sanskrit prosody and binomial coefficients. *The Mathematics Education* 21(2), 44–50. Written about 800 A.D., this work of an unknown author contains two rules for the formation of BINOMIAL COEFFICIENTS. PERMUTATIONS. *Mathematical Reviews* 89g:01015. (DEZ) #17.1.121
- SINGH, SUKHJIT. 1987. Publications of R. H. BING classified by the year. *Topology Proceedings* 12(1), 27–37. A list of 115 publications and one preprint from 1943 to 1986. TOPOLOGY. (DEZ) #17.1.122
- SINHA, KRIPANATH. 1988. Vyakṛtagaṇitādhyāya of Śrīpati's *Siddhāntaśekhara*. Pp. 40–50 in #17.1.45. An English translation of, with an introduction to, ŚRĪPATI'S *SIDDHĀNTAŚEKHARA*, a major work on ASTRONOMY written during the period 1039–1056 A.D. The 13th chapter, titled vyakṛtagaṇitādhyāya, contains 55 verses, some of which deal with SERIES and MENSURATION. INDIAN MATHEMATICS. (DEZ) #17.1.123
- STIGLER, STEPHEN M. 1988. A look backward on the occasion of the centenary of the JASA. *Journal of the American Statistical Association* 83(403), 583–587. A discussion of the history of this PROFESSIONAL ORGANIZATION, including extracts from the first two volumes of JASA. (DEZ) #17.1.124
- STONE, MARSHALL H. 1989. Reminiscences of mathematics at Chicago. *The Mathematical Intelligencer* 11(3), 20–25. MARSHALL STONE served as the Chairman of the Mathematics Department at the University of Chicago for 7 years. Here he discusses his drastic revision of the curriculum. See also #17.1.13 for an accompanying commentary. AMERICAN MATHEMATICS. (DEZ) #17.1.125
- STRIUK, D. J. 1988. Dirk Jan Struik. *NTM-Schriftenreihe für Geschichte der Naturwissenschaften, Technik und Medizin* 25, 5–23. Interview with David E. Rowe covering aspects of Struik's life and work. (ACL) #17.1.126
- SWETZ, FRANK J. 1989. Using problems from the history of mathematics in classroom instruction. *The Mathematics Teacher* 82(5), 370–377. There are several sets of problems for students to solve that interested early mathematicians. The problems are drawn from different time periods of China, Egypt, Babylonia, India, Europe, and America. EDUCATION. (DEZ) #17.1.127
- TYRRELL, J. A. 1989. PATRICK DU VAL (1903–1987). *Bulletin of the London Mathematical Society* 21, 93–99. Du Val was a student of H. F. BAKER in ALGEBRAIC GEOMETRY, and he also was influenced by FEDERIGO ENRIQUES and other Italian geometers of the 1930s. His most important mathematical contributions were concerned with ALGEBRAIC SURFACES. His book (1973) "is the best source, in English, for the geometric applications of ELLIPTIC FUNCTIONS." He made many geometric models, some of which are still to be seen at University College, London. There are two photos and a list of 60 of Du Val's publications, but omitted are his works published in Turkish while he was on the faculty of the University of Istanbul. (JA) #17.1.128
- VALERA, MANUEL. See #17.1.20.
- VAN DEN DRIES, LOU. 1988. Alfred Tarski's elimination theory for real closed fields. *The Journal of Symbolic Logic* 53(1), 7–19. A description of the history of some of ALFRED TARSKI'S contributions to LOGIC. *Mathematical Reviews* 89h:01040. (DEZ) #17.1.129
- VAN DER WAERDEN, B. L. 1987. The astronomical system of the Persian tables, II. *Centaurus* 30(3), 197–211. A continuation of the paper entitled "Das Astronomische System der Persischen Tafeln I" that appeared in *Centaurus* 13(1968), 1–28. In that first part, 16 horoscopes recorded by the

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