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Nicolas ROUCHE. — **Pourquoi ont-ils inventé les fractions?** — L'esprit des sciences. — Un vol. broché, 14,5 × 19, de 126 p. — ISBN 2-7298-5824-5 — Prix: FF 49.00. — Ellipses, Paris, 1998.

Les fractions sont un des premiers et principaux terrains où se développe le dégoût des mathématiques... Pourtant, les fractions sont une clé des partages de grandeurs, des rapports et donc des mesures, des proportions, des figures semblables, des probabilités, du calcul des exposants, des notations algébriques. Cet ouvrage s'adresse aux grands élèves, aux parents, aux enseignants, à toutes les personnes qui voudraient, en partant du bon sens et de l'univers quotidien, reconstruire leur savoir en s'appuyant à chaque pas sur le pourquoi des choses. Et reprendre en chemin confiance dans leur capacité à comprendre les mathématiques, à en apprécier la pertinence, le sens et la beauté.

Histoire

Benno ARTMANN. — **Euclid - The creation of mathematics.** — Un vol. relié, 16 × 24, de xvi, 343 p. — ISBN 0-387-98423-2. — Prix: DM 98.00. — Springer, New York, 1999.

Even if the material covered by Euclid may be considered elementary for its most parts, the way in which he presents essential features of mathematics, in a much more general sense, has set the standards for more than 2000 years. He displays the axiomatic foundation of a mathematical theory and its conscious development toward the solution of a specific problem. We see how abstraction works and how it enforces the strictly deductive presentation of a theory. We learn what creative definitions are and how the conceptual grasp leads to the classification of the relevant objects. This is a book for all lovers of mathematics with a solid background in high school geometry, from teachers and students to university professors.

Georges BARTHÉLEMY. — **2500 ans de mathématiques. L'évolution des idées.** — L'esprit des sciences. — Un vol. broché, 14,5 × 19, de 122 p. — ISBN 2-7298-9982-0. — Prix: FF 49.00. — Ellipses, Paris, 1999.

Cette histoire des mathématiques raconte, de l'Antiquité au XX^e siècle, ce que chaque époque a cherché, inventé et trouvé. Elle évoque le rôle des acteurs célèbres ainsi que les interactions avec les sciences voisines. Mais la visée principale est de permettre une compréhension d'ensemble du développement des mathématiques. Or celui-ci ne s'est pas fait selon un chemin simple et uniforme. Il s'est organisé autour de grandes idées, qui ont connu quelques vicissitudes. C'est donc surtout l'histoire de ces idées majeures qui est ici présentée.

Midhat J. GAZALÉ. — **Gnomon: from pharaohs to fractals.** — Un vol. relié, 16 × 24, de xiv, 259 p. — ISBN 0-691-00514-1. — Prix: US\$29.95. — Princeton University Press, Princeton, 1999.

Every page of *Gnomon* proves the author's passion for numbers, as he combines graceful mathematical explanations with compelling anecdotes and a rich variety of illustrations. He begins by explaining the basic properties of gnomons and tracing the term — which originally meant “that which allows one to know” — to ancient Egyptian and Greek timekeeping. Gazalé examines figurate numbers, which inspired the Greek notions of gnomon and number similarity. He introduces us to continued fractions and guides us through the intricacies of Fibonacci sequences, ladder networks, whorled figures, the famous “golden number”, logarithmic spirals, and fractals.

Ioan Mackenzie JAMES, (Editor). — **History of topology.** — Un vol. relié, 17,5 × 24,5, de IX, 1056 p. — ISBN 0-444-82375-1. — Prix: Dfl. 375.00. — Elsevier, Amsterdam, 1999.

Topology, for many years, has been one of the most exciting and influential fields of research in modern mathematics. Although its origins may be traced back several hundred years, it was Poincaré who “gave topology wings» in a classic series of articles published around the turn of the century. While the earlier history, sometimes called the prehistory, is also considered, this volume is mainly concerned with the more recent history of topology, from Poincaré onwards. The articles cover a wide range of topics. Some are more technical than others, but the reader without a great deal of technical knowledge should still find most of the articles accessible. Some are written by professional historians of mathematics, others by historically-minded mathematicians, who tend to have a different viewpoint. Most of the material has not been published before. Topology is a large subject, with many branches, and it proved quite impossible to cover everything. The emphasis is on what might be called classical topology rather than on general (or point-set) topology. The order in which the articles are arranged is partly chronological and partly according to subject matter. The last part of the book is more concerned with the people who were important in the development of the subject.

Detlef LAUGWITZ. — **Bernhard Riemann 1826-1866: turning points in the conception of mathematics.** — Translated by Abe Shenitzer, with editorial assistance of the author, Hardy Grant, and Sarah Shenitzer. — Un vol. relié, 16 × 24, de XVI, 357 p. — ISBN 0-8176-4040-1. — Prix: SFr. 148.00. — Birkhäuser, Boston, 1999.

This book, originally written in German, is the first attempt to examine Riemann's scientific work from a single unifying perspective. Laugwitz describes Riemann's development of a conceptual approach to mathematics at a time when conventional algorithmic thinking dictated that formulas and figures, rigid constructs, and transformations of terms were the only legitimate means of studying mathematical objects. David Hilbert gave prominence to the Riemannian principle of utilizing thought, not calculation, to achieve proofs. Hermann Weyl interpreted the Riemann principle-for mathematics and physics alike-to be a matter of “understanding the world through its behavior in the infinitely small”.

Ronald MERMOD. — **De l'électron aux quarks: une physique particulière.** — Un vol. broché, 15 × 21, de XI, 123 p. — ISBN 2-88074-406-7. — Prix: SFr. 39.00. — Presses polytechniques et universitaires romandes, Lausanne, 1999.

La physique des particules est la plus fondamentale des sciences expérimentales puisqu'elle étudie dans ses limites les plus reculées la composition de la matière et les forces qui la gouvernent. Cet ouvrage se propose de présenter l'évolution chronologique de cette discipline depuis le XIX^e siècle avec, pour fil conducteur, la succession des découvertes et des inventions qui ont jalonné la connaissance de la composition de la matière. Avec un minimum de développements mathématiques afin de rendre l'ouvrage plus accessible, l'auteur retrace le chemin qui mène des premières observations de spectres lumineux des gaz aux tentatives récentes d'unification des théories sur les interactions faibles et fortes. Il s'adresse à toute personne disposant d'une formation scientifique de base, aux ingénieurs en formation continue ou étudiants de premier cycle.

Michael MONASTYRSKY. — **Riemann, topology, and physics.** — Second edition. — With a foreword by Freeman J. Dyson. — Translated by Roger Cooke, James King, Victoria King. — Un vol. relié, 16 × 24, de XIII, 215 p. — ISBN 0-8176-3789-3. — Prix: SFr. 98.00. — Birkhäuser, Boston, 1999.

This significantly expanded second edition of this title combines a fascinating account of the life and work of Bernhard Riemann with a lucid discussion of current interaction between

topology and physics. The author takes into account his own research at the Riemann archives of Göttingen University and developments over the last decade that connect Riemann with numerous significant ideas and methods reflected throughout contemporary mathematics and physics. Special attention is paid to new results on the Riemann-Hilbert problem and to recent discoveries in field theory and condensed matter such as the quantum Hall effect, quasicrystals, membranes with nontrivial topology, “fake” differential structures on 4-dimensional Euclidean space, new invariants of knots, and more.

Reviel NETZ. — **The shaping of deduction in Greek mathematics: a study in cognitive history.** — Ideas in context. — Un vol. relié, 16×23,5, de xvii, 327 p. — ISBN 0-521-62279-4. — Prix: £40.00. — Cambridge University Press, Cambridge, 1999.

The aim of this book is to explain the shape of Greek mathematical thinking. It can be read on three levels: first as a description of the practices of Greek mathematics; second as a theory of the emergence of the deductive method; and the third as a case-study for a general view on the history of science. The starting-point for the enquiry is geometry and the lettered diagram. Reviel Netz exploits the mathematicians' practices in the construction and lettering of their diagrams, and the continuing interaction between text and diagram in their proofs, to illuminate the underlying cognitive processes. Two crucial chapters set out to show how mathematical proofs are structured and explain why Greek mathematical practice manages to be so satisfactory. A final chapter looks into the broader historical setting of Greek mathematical practice.

Jacques SESIANO. — **Une introduction à l'histoire de l'algèbre: résolution des équations des Mésopotamiens à la Renaissance.** — Un vol. broché, 15,5×22,5, de viii, 168 p. — ISBN 2-88074-394-X. — Prix: SFr. 39.00. — Presses polytechniques et universitaires romandes, Lausanne, 1999.

L'auteur retrace l'histoire de la résolution des équations et montre comment la résolution d'équations de degrés croissants conduit aux extensions successives du domaine des nombres: négatifs, irrationnels, complexes. Il amène ainsi le lecteur à comprendre quels types de problèmes ont causé les diverses extensions du domaine des nombres. La traduction littérale de problèmes et la reproduction des originaux grecs, latins, arabes et italiens sont données en appendice. Ce livre intéressera les enseignants en mathématiques, les étudiants en sciences et les personnes intéressées par l'histoire des sciences.

Logique et fondements

S. Barry COOPER, John K. TRUSS, (Editors). — **Models and computability.** — Invited papers from Logic Colloquium '97 - European Meeting of the Association for Symbolic Logic, Leeds, July 1997. — London Mathematical Society lecture note series, vol. 259. — Un vol. broché, 15,5×23, de ix, 419 p. — ISBN 0-521-63550-0. — Prix: £29.95. — Cambridge University Press, Cambridge, 1999.

Together, *Models and Computability*, and its sister volume *Sets and Proofs* will provide readers with a comprehensive guide to the current state of mathematical logic. All the authors are leaders in their fields and are drawn from the invited speakers at “Logic Colloquium '97” (the major international meeting of the Association of Symbolic Logic). It is expected that the breadth and timeliness of these two volumes will prove an invaluable and unique resource for specialists, post-graduate researchers, and the informed and interested nonspecialist.