

**Zeitschrift:** L'Enseignement Mathématique  
**Herausgeber:** Commission Internationale de l'Enseignement Mathématique  
**Band:** 46 (2000)  
**Heft:** 3-4: L'ENSEIGNEMENT MATHÉMATIQUE  
  
**Kapitel:** Histoire

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G.C. YOUNG, W.H. YOUNG. — **Selected papers.** — Edited by S.D. Chatterji, H. Wefelscheid. — Un livre relié,  $17 \times 24,5$ , de IX, 870 p. — ISBN 2-88074-445-8. — Prix: SFr. 149.00. — Presses polytechniques et universitaires romandes, 2000.

The purpose of the present essay is two-fold. First, to give a brief overview of the totality of the mathematical work of the Youngs from a modern viewpoint; it is hoped that this would be an useful complement to the obituary articles of Hardy and Cartwright which are included in this volume. Second to explain the rationale behind the choice of the 52 articles selected for inclusion in the present volume, out of a total of 215 which appear in the mathematical bibliography of the Youngs. This mathematical work is divided into three broad categories: theory of real functions, Fourier analysis and miscellaneous.

## *Histoire*

Philip J. DAVIS. — **The education of a mathematician.** — Un vol. relié,  $16 \times 24$ , de x, 353 p. — ISBN 1-56881-116-0. — Prix: £29.95. — A.K. Peters, Natick, Mass., 2000.

This collection of interwoven anecdotes offers a reflection not only of the author's life, but of its surrounding historical context as well. Prof. Davis contemplates issues that he and his fellow mathematicians faced through the decades, such as the ramification of being a mathematician during World War II, and the influence of mathematics on the computer and entertainment industries. He also speculates on the future of mathematics in light of recent technological advances, and whether the field will advance or suffer as a result. The author's accounts span the past 80 years, as well as several countries, wars, and changes of societal philosophy. Readers will emerge from this lighthearted yet touching memoir with a fresh view of mathematics and how it has shaped the world today.

Jeremy J. GRAY. — **Linear differential equations and group theory from Riemann to Poincaré.** — Second edition. — Un vol. relié,  $16 \times 24$ , de xx, 338 p. — ISBN 3-7643-3837-7. — Prix: SFr. 128.00. — Birkhäuser, Boston, 2000.

This book is a study of how a particular vision of the unity of mathematics, often called geometric function theory, was created in the 19<sup>th</sup> century. The central focus is on the convergence of three mathematical topics. The hypergeometric and related linear differential equations, group theory, and non-Euclidean geometry. The text for this new edition has been greatly expanded and revised, and the existing appendices enriched with historical accounts of the Riemann-Hilbert problem, the uniformization theorem, Picard-Vessiot theory, and hypergeometric equations in higher dimensions. The exercises have been retained, making it possible to use the book as a companion to mathematics courses at the graduate level. This work continues to be the only up-to-date scholarly account of the history of a branch of mathematics that continues to generate important research, for which the mathematics has been the occasion for some of the most profound work by numerous 19<sup>th</sup> century figures: Riemann, Fuchs, Dedekind, Klein, and Poincaré.

Albert W. GROOTENDORST. — **Jan de Witt's *Elementa curvarum linearum*, liber primus.** — Text, translation, introduction, and commentary by Albert W. Grootendorst, with the help of Miente Bakker. — Sources and studies in the history of mathematics and physical sciences. — Un vol. relié,  $16 \times 24$ , de VIII, 296 p. — ISBN 0-387-98748-7. — Prix: DM 198.00. — Springer, New York, 2000.

This book is an English translation of the first part of the first textbook on analytic geometry, written in Latin by the Dutch statesman and mathematician Jan de Witt soon after Descartes invented the subject. In the *Elementa curvarum linearum*, liber primus, the familiar conic

sections are generated entirely without reference to a cone, but rather kinematically, as the locus of a point moving according to mathematical laws. Thus, ellipses are produced by a point on a sliding line segment, parabolas by the intersection of one arm of a rotating angle and a sliding line, and hyperbolas by the intersection of a rotating line and one arm of a sliding angle. All other properties of the curves can be derived from the properties given them by their modes of generation, which thus serve as the basis for a purely algebraic treatment of the curves – the subject of the *Liber secundus*. In addition to the translation and annotations, this volume contains an extensive commentary, including a discussion of the role of conics in Greek mathematics.

Thomas HAWKINS. — **Emergence of the theory of Lie groups: an essay in the history of mathematics 1869-1926.** — Sources and studies in the history of mathematics and physical sciences. — Un vol. relié, 16×24, de XIII, 564 p. — ISBN 0-387-98963-3. — Prix: DM 159.00. — Springer, New York, 2000.

The first part of the book describes the geometrical and analytical considerations that initiated the theory at the hands of the Norwegian mathematician, Sophus Lie. The main figure in the second part is Weierstrass's student Wilhelm Killing, whose interest in the foundations of non-Euclidean geometry led to his discovery of almost all the central concepts and theorems on the structure and classification of semisimple Lie algebras. The scene then shifts to the Paris mathematical community and Elie Cartan's work on the representation of Lie algebras. The final part describes the influential, unifying contributions of Herman Weyl and their context: Hilbert's Göttingen, general relativity, and Frobenius-Schur theory and characters. The book is written with the conviction that mathematical understanding is deepened by familiarity with underlying motivations and the less formal, more intuitive manner of original conception.

Don HOWARD, John STACHEL, (Editors) — **Einstein: the formative years 1879-1909.** — Un vol. relié, 16×24, de VIII, 258 p. — ISBN 0-8176-4034-4. — Prix: SFr. 108.00. — Birkhäuser, Boston, 2000.

This volume brings together some of the best recent scholarship on what might be termed Einstein's formative period, that is, the thirty years before he obtained his first academic position in 1909. Topics covered include Einstein's early reading and his university education, his early views on scientific method and some of the crucial philosophical influences shaping those views, his early work on statistical mechanics, Brownian motion, quantum theory, relativity theory, and his youthful vision of a unified foundation for physics. An engaging book examining the young Einstein from a variety of perspectives – personal, scientific, historical, and philosophical. The contributors draw extensively upon much of the interesting new documentation, such as personal letters, including love letters to his fiancée, and unpublished manuscripts, that has come to light in the course of work on the first several volumes of *The Collected Papers* of Albert Einstein.

Arild STUBHAUG. — **Niels Henrik Abel and his times: called too soon by flames afar.** — Translated from the Norwegian by Richard H. Daly. — Un vol. relié, 16,5×24, de x, 580 p. — ISBN 3-540-66834-9. — Prix: DM 79.00 — Springer, Berlin, 2000.

Arild Stubhaug, who is both a historian and a mathematician, has written the definitive biography of Niels Henrik Abel. The Norwegian original edition was a sensational success, and Arild Stubhaug was awarded the most prestigious Literary prize (Brageprisen) in the category non-fiction. Everyone with an interest in the history of mathematics and science will enjoy reading this book on one of the most famous mathematicians in the 19<sup>th</sup> century.

Ian TWEDDLE. — **Simson on porisms: an annotated translation of Robert Simson's posthumous treatise on porisms and other items on this subject.** — Sources in the history of mathematics and physical sciences. — Un vol. relié, 16×24, de x, 274 p. — ISBN 1-85233-306-5. — Springer, London, 2000.

In this book, Ian Tweddle, a recognised authority on 18<sup>th</sup> century Scottish mathematics, presents for the first time a full and accessible translation of Simson's work. Based on Simson's early paper of 1723, the treatise *Tractatus de porismatibus*, and various extracts from Simson's notebooks and correspondence, this book provides a fascinating insight into the work of an often-neglected figure. Supplemented by historical and mathematical notes and comments, this book is a valuable addition to the literature for anyone with an interest in mathematical history or geometry.

## **Logique et fondements**

André DELESSERT. — **Gödel: une révolution en mathématiques: essai sur les conséquences scientifiques et philosophiques des théorèmes gödéliens.** — Un vol. broché, 16×24, de XVIII, 268 p. — ISBN 2-88074-449-0. — Prix: SFr. 79.50. — Presses polytechniques et universitaires romandes, Lausanne, 2000.

Ce livre, à la fois œuvre de documentation historique et de réflexion philosophique, se propose de décrire l'avant et l'après Gödel en retraçant l'histoire de la notion de nombre depuis Platon et Aristote jusqu'au renversement révolutionnaire des fondements mathématiques induit par les théorèmes de Gödel. Les notions mathématiques nécessaires pour aborder le principe des démonstrations de Gödel sont données et commentées par l'auteur, permettant ainsi à cet ouvrage inédit de s'adresser à un large public de mathématiciens, de logiciens, d'historiens et de philosophes des sciences.

Sy D. FRIEDMAN. — **Fine structure and class forcing.** — De Gruyter studies in logic and its applications, vol. 3. — Un vol. relié, 17×24, de x, 221 p. — ISBN 3-11-016777-8. — Prix: DM 178.00. — Walter de Gruyter, Berlin, 2000.

This book is intended for the student familiar with the basics of axiomatic set theory, including an introduction to Gödel's theory of constructibility. It presents a thorough analysis of the first two approximations to the set-theoretic universe, given by the universes  $L$  and  $L[0\#]$ . Gödel's constructible universe  $L$  provides the setting in which the most thorough understanding of set theory can be achieved, through use of the fine structure theory. The book's further applications of class forcing to genericity, admissibility, descriptive set theory and set-theoretic definability are sure to be of interest to a wide community of set theorists.

Deirdre HASKELL, Anand PILLAY, Charles STEINHORN, (Editors). — **Model theory, algebra, and geometry.** — Mathematical Sciences Research Institute publications, vol. 39. — Un vol. relié, 16×24, de VII, 227 p. — ISBN 0-521-78068-3. — Prix: £ 30.00. — Cambridge University Press, Cambridge, 2000.

This book gives the necessary background for understanding both the model theory and the mathematics behind the applications. Aimed at graduate students and researchers, it is unique in that it contains introductory surveys by leading experts covering the whole spectrum of contemporary model theory (stability, simplicity, o-minimality and variations), and introducing and discussing the diverse areas of geometry (algebraic, diophantine, real analytic,  $p$ -adic and rigid) to which the model theory is applied. The book begins with an introduction to model theory by David Marker. It then broadens into three components: pure model theory (Bradd Hart, Dugald Macpherson), geometry (Barry Mazur, Ed Bierstone and Pierre Milman, Jan Denef), and the model theory fields (Marker, Lou van den Dries, Zoe Chatzidakis).