

# Logique et fondements

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the first detailed study of their relatively brief but nonetheless influential foray into the field of mathematics. The careers of a generation of pathbreakers in modern mathematics, such as S. Banach, B.L. van der Waerden and André Weil, were decisively affected by their becoming fellows of the Rockefeller-funded International Education Board in the 1920s. To help promote cooperation between physics and mathematics Rockefeller funds supported the erection of the new Mathematical Institute in Göttingen between 1926 and 1929, while the rise of probability and mathematical statistics owes much to the creation of the Institut Henri Poincaré in Paris by American philanthropy at about the same time.

## *Logique et fondements*

John H. CONWAY. — **On numbers and games.** — Second edition. — Un vol. relié, 16 × 23,5 de XI, 242 p. — ISBN 1-56881-127-6. — Prix: US\$39.00. — Natick, Massachusetts, 2001.

ONAG, as the book is known, is one of those rare publications that sprang to life in a moment of creative energy and has remained influential for over a quarter of a century. Originally written to define the relation between the theories of transfinite numbers and mathematical games. By defining numbers as the strengths of positions in certain games, the author arrives at a new class, the surreal numbers, that includes both real numbers and ordinal numbers. These surreal numbers are applied in the author's mathematical analysis of game strategies. The additions to the second edition present recent developments in the area of mathematical game theory, with a concentration on surreal numbers and the additive theory of partizan games.

René CORI and Daniel LASCAR. — **Mathematical logic: a course with exercises, Part 1: propositional calculus, Boolean algebras, predicate calculus.** — Translated by Donald H. Pelletier. — Un vol. broché, 15,5 × 23,5, de XIX, 338 p. — ISBN 0-19-850048-3. — Prix: £25.00. — Oxford University Press, Oxford, 2000.

This text is based on a course to undergraduates and gives a clear and accessible introduction to mathematical logic. The concept of model provides the underlying theme, giving the text a theoretical coherence whilst still covering a wide area of logic. The first chapter considers propositional calculus; then Boolean algebras follow; Chapter 3 covers predicate calculus and this is followed by completeness theorems. Large numbers of examples appear throughout the text and each chapter concludes with a selection of exercises to reinforce the student's understanding. Answers to the exercises are given in an appendix.

J.P. MAYBERRY. — **The foundations of mathematics in the theory of sets.** — Encyclopedia of mathematics and its applications, vol. 82. — Un vol. relié, 16,5 × 24, de XX, 424 p. — ISBN 0-521-77034-3. — Prix: £55.00. — Cambridge University Press, Cambridge, 2000.

This book presents a unified approach to the foundations of mathematics in the theory of sets, covering both conventional and finitary (constructive) mathematics. It is based on a philosophical, historical, and mathematical analysis of the relation between the concepts of "natural number" and "set". This leads to an investigation of the logic of quantification over the universe of sets and a discussion of its role in second order logic, as well as in the analysis of proof by induction and definition by recursion. The subject matter of the book falls on the borderline between philosophy and mathematics, and should appeal to both philosophers and mathematicians with an interest in the foundations of mathematics.

Joseph R. SHOENFIELD. — **Mathematical logic.** — Un vol. broché,  $16,5 \times 24$ , de VII, 344 p. — ISBN 1-56881-135-7. — Prix: US\$35.00. — A.K. Peters, Natick, Mass., 2000.

This book embodies the author's view that "mathematical logic is not a collection of vaguely related results, but a method of attacking some of the most interesting problems which face the mathematician." The basic concepts are presented in an unusually clear and accessible fashion, in a way that helps and intrigues the working mathematician as much as the philosophically minded student of logic. The author keeps in mind the original purpose of mathematical logic—to build the foundations of this vast edifice of knowledge. Concentrating on the central topics of mathematical logic: proof theory, model theory, recursion theory, axiomatic number theory, and set theory, this book has served as a "rite of passage" for many mature and accomplished researchers.

## *Analyse combinatoire*

Ian ANDERSON. — **A first course in discrete mathematics.** — Springer undergraduate mathematics series. — Un vol. broché,  $17,5 \times 23,5$ , de VIII, 200 p. — ISBN 1-85233-236-0. — Prix: DM 59.00. — Springer, London, 2001.

As well as including standard topics such as binomial coefficients, recurrence, the inclusion-exclusion principle, trees, Hamiltonian and Eulerian graphs, latin squares and finite projective planes, the text also includes material on the ménage problem, magic squares, Catalan and Stirling numbers, and tournament schedules. The final chapter uses Hadamard matrices as the bridge from block designs to the idea of error-correcting codes, finishing with the construction of the perfect Golay code. The book contains many worked examples, and each chapter ends with a large number of exercises, with hints or solutions provided for most of them.

Jørgen BANG-JENSEN and Gregory GUTIN. — **Digraphs: theory, algorithms and applications.** — Springer monographs in mathematics. — Un vol. relié,  $16,5 \times 24$ , de XXII, 754 p. — ISBN 1-85233-268-9. — Prix: DM 189.00. — Springer, London, 2000.

*Digraphs* is the first book to present a unified and comprehensive survey of the subject. In addition to covering the theoretical aspects, including detailed proofs of many important results, the authors present a number of algorithms and applications. The applications of digraphs and their generalizations include, among other things, recent developments in the Travelling Salesman Problem, genetics, and network connectivity. More than 700 exercises and 180 figures will help readers to study the topic. Detailed indexes ease "navigation" through the book. Many open problems and conjectures will inspire further research.

Ervin GYÓRI, Vera T. SÓS, (Editors). — **Recent trends in combinatorics: the legacy of Paul Erdős.** — Un vol. relié,  $18 \times 25,5$ , de XX, 192 p. — ISBN 0-521-80170-2. — Prix: £35.00. — Cambridge University Press, Cambridge, 2001.

This is a collection of surveys and research papers on recent topics of interest in combinatorics, given at a conference in Mátraháza, Hungary. It is dedicated to Paul Erdős, who attended the conference and who is represented by two articles in the collection, including one, unfinished, which he was writing on the eve of his sudden death. Erdős was one of the greatest mathematicians of his century and often the subject of anecdotes about his somewhat unusual lifestyle. A new preface, written by friends and colleagues, gives a flavour of his life, including many such stories, and also describes the broad outline and importance of his work in combinatorics and other related fields.