chromatic number of random graphs; the result by Robinson and Wormald on the existence of Hamilton cycles in random regular graphs; a gentle introduction to the zero-one laws; ample exercises, figures, and bibliographic references.

W.D. WALLIS. — **A beginner's guide to graph theory.** — Un vol. relié, 16×24, de xviii, 230 p. — ISBN 0-8176-4176-9. — Prix: DM 78.00. — Birkhäuser, Boston, 2000.

The work strikes a balance between a theoretical and practical approach, consisting of carefully chosen topics to develop graph-theoretic reasoning for mixed audience. Familiarity with the basic concepts of set theory, a passing acquaintance with matrices and algebra, combined with a little mathematical maturity, are all the background requirements. This gentle introduction to graph theory connects readers to exciting areas beyond pure mathematics and has a distinctly applied flavor.

Théorie des nombres

R.P. BAMBAH, V.C. DUMIR, R.J. HANS-GILL, (Editors). — **Number theory.** — Trends in mathematics. — Un vol. relié, 17×24, de vi, 527 p. — ISBN 3-7643-6529-6. — Prix: SFr. 148.00. — Birkhäuser, Basel, 2000.

This book contains 23 papers on various branches of number theory by leading mathematicians, giving an overview of the developments in their respective fields together with open problems. These will be of interest to mathematicians at various levels. The interested reader will have ready access to meaningful problems and results, which have attracted the attention of some leading number theorists.

Franz HALTER-KOCH, Robert F. TICHY, (Editors). — **Algebraic number theory and Diophantine analysis.** — Proceedings of the International Conference held in Graz, Austria, August 30 to September 5, 1998. — Un vol. relié, 17,5×24,5, de xvii, 534 p. — ISBN 3-11-016304-7. — Prix: DM 368.00. —Walter de Gruyter, Berlin, 2000.

The conference was a satellite conference of the International Congress of Mathematicians held in Berlin in August 1998 and also a continuation of a traditional series of number theory meetings in Central Europe. The conference was open for all branches of number theory. Special emphasis was on algebraic number theory, on Diophantine and algorithmic problems and on Diophantine analysis including Diophantine equations, uniform distribution and discrepancy theory. Plenary lectures were delivered by Jörg Brüdern, Jan-Hendrik Evertse, Ernst-Ulrich Gekeler, Kálmán Györy, Stéphane Louboutin, Wladislaw Narkiewicz, Attila Pethö, Florian Pop, Andrzej Schinzel, René Schoof, Martin Taylor, Rober Tijdeman and Michel Waldschmidt. There was a special session on Diophantine equations, and there were about 70 contributed talks in which almost all branches of number theory were touched.

Haruzo HIDA. — **Modular forms and Galois cohomology**. — Cambridge studies in advanced mathematics, vol. 69. — Un vol. relié, 15,5×23,5, de x, 343 p. — ISBN 0-521-77036-X. — Prix: £42.50. —Cambridge University Press, Cambridge, 2000.

This book provides a comprehensive account of a key theory on which the Taylor-Wiles proof of Fermat's last theorem is based. The book begins with an overview of the theory of automorphic forms on linear algebraic groups and then covers the basic theory and recent results on elliptic modular forms, including a substantial simplification of the proof of Taylor-Wiles by Fujiwara and Diamond. It contains a detailed exposition of the representation theory of profinite groups (including deformation theory), as well as the Euler characteristic formulas of Galois cohomology groups. The final chapter presents a proof of a non-abelian class number formula and includes several new results from the author.

Franz LEMMERMEYER. — **Reciprocity laws: from Euler to Eisenstein.** — Springer monographs in mathematics. — Un vol. relié, 16×24, de XIX, 487 p. — ISBN 3-540-66957-4. — Prix: DM 129.00. — Springer, Berlin, 2000.

This book is about development of reciprocity laws, starting from conjectures of Euler and discussing the contributions of Legendre, Gauss, Dirichlet, Jacobi, and Eisenstein. Readers knowledgeable in basic algebraic number theory and Galois theory will find detailed discussions of the reciprocity laws for quadratic, cubic, quartic, sextic and octic residues, rational reciprocity laws, and Eisenstein's reciprocity law.

Wadysaw NARKIEWICZ. — **The development of prime number theory: from Euclid to Hardy and Littlewood.** — Springer monographs in mathematics. — Un vol. relié, 16×24, de VII, 448 p. — ISBN 3-540-66289-8. — Prix: DM 169.00. — Springer, Berlin, 2000.

This book presents the development of prime number theory from its beginnings until the end of the first decade of the XXth century. Special emphasis is given to the work of Cebysev, Dirichlet, Riemann, de La Vallée-Poussin, Hadamard, and Landau. The book presents the principal results with proofs and also gives, mostly in short comments, an overview of the development in the last 80 years. It is, however, not a historical book since it does not give biographical details of the people who have played a role in the development of prime number theory. The book contains a large list of references with more than 1800 items. It can be read by any person with a knowledge of fundamental notions of number theory and complex analysis.

Melvyn B. NATHANSON. — **Elementary methods in number theory.** — Graduate texts in mathematics, vol. 195. — Un vol. relié, 16,5×24, de XVIII, 513 p. — ISBN 0-387-98912-9. — Prix: DM 98.00. — Springer, New York, 2000.

The main topics of the book are divisibility, prime numbers, and congruences. There is also an introduction to Fourier analysis on finite Abelian groups, and a discussion of the *abc* conjecture and its consequences in elementary number theory. In the second and third parts of the book, deep results in number theory are proved using only elementary methods. Part II is about multiplicative number theory, and includes two of the most famous results in mathematics: the Erdős-Selberg elementary proof of the prime number theorem, and Dirichlet's theorem on primes in arithmetic progressions. Part III is an introduction to three classical topics in additive number theory: Waring's problem for polynomials, Liouville's method to determine the number of representations of an even number of squares, and the asymptotics of partition functions.

Paulo RIBENBOIM. — **My numbers, my friends: popular lectures on number theory.** — Un vol. broché, 15,5×23,5, de IX, 375 p. — ISBN 0-387-98911-0. — Prix: DM 79.00. — Springer, New York, 2000.

Paulo Ribenboim treats numbers as personal friends in this collection of expository essays. Topics include prime numbers, Fibonacci numbers (and the Arctic Ocean!), the classical work of Gauss on binary quadratic forms, Euler's famous prime producing polynomial, powers, and irrational and transcendental numbers. The essays are written in a light language without secrets and are thoroughly accessible to everyone with an interest in numbers.

Alain M. ROBERT. — **A course in *p*-adic analysis.** — Graduate texts in mathematics, vol. 198. — Un vol. relié, 16×24, de XV, 437 p. — ISBN 0-387-98669-3. — Prix: DM 109.00. — Springer, New York, 2000.

Kurt Hensel (1861-1941) discovered the *p*-adic numbers around the turn of the century. These exotic numbers (or so they appeared at first) are now well-established in the mathematical

world and used more and more by physicists as well. This book offers a self-contained presentation of basic *p*-adic analysis. The author is especially interested in the analytical topics in this field. Some of the features that are not treated in other introductory *p*-adic analysis texts are topological models of *p*-adic spaces inside Euclidean space, a construction of spherically complete fields, a *p*-adic mean value theorem and some consequences, a special case of Hazewinkel's functional equation lemma, a remainder formula for the Mahler expansion, and most importantly a treatment of analytic elements.

Daniel B. SHAPIRO. — **Compositions of quadratic forms.** — De Gruyter expositions in mathematics, vol. 33. — Un vol. relié, 17×24, de XIII, 417 p. — ISBN 3-11-012629-X. — Prix: DM 248.00. — Walter de Gruyter, Berlin, 2000.

The central topic of this book is the theorem of Hurwitz and Radon concerning composition formulas for sums of squares, first proved in the 1920's. Techniques from algebra and topology are used to generalize that theorem in several directions. The text includes worked examples and many exercises which develop still more variations of the central topic. The main audience is people who have had some graduate courses in abstract algebra, but many sections of the book are accessible to anyone with some training in linear algebra. Several major topics in this book will be of interest to students of topology and geometry. The author has attempted to make the presentation as clear and as elementary as possible.

Corps et polynômes

Karl RUBIN. — **Euler systems.** — Annals of mathematics studies, no. 147. — Un vol. broché, 15,5×23,5, de XI, 225 p. — ISBN 0-691-05076-7. — Prix: US$24.95. — Princeton University Press, Princeton, N.J., 2000.

Euler systems are special collections of cohomology classes attached to *p*-adic Galois representations. The author presents a self-contained development of the theory of Euler systems. Rubin first reviews and develops the necessary facts from Galois cohomology. He then introduces Euler systems, states the main theorems, and develops examples and applications. The remainder of the book is devoted to the proofs of the main theorems as well as some further speculations.

Andrzej SCHINZEL. — **Polynomials with special regard to reducibility.** — Encyclopedia of mathematics and its applications, vol. 77. — Un vol. relié, 16×24, de X, 558 p. — ISBN 0-521-66225-7. — Prix: £60.00. — Cambridge University Press, Cambridge, 2000.

This book is an attempt to cover most of the results on reducibility of polynomials over fairly large classes of fields; results valid only over finite fields, local fields or the rational field have not been included. On the other hand, included are many topics of interest to the author that are not directly related to reducibility, e.g. Ritt's theory of composition of polynomials. *Contents*: Arbitrary polynomials over an arbitrary field. — Lacunary polynomials over an arbitrary field. — Polynomials over an algebraically closed field. — Polynomials over a finitely generated field. — Polynomials over a number field. — Polynomials over a Kroneckerian field.

Géométrie algébrique

Jean-Benoît BOST, François LOESER, Michel RAYNAUD, (Editeurs). — **Courbes semi-stables et groupe fondamental en géométrie algébrique: Luminy, décembre 1998.** — Progress in mathematics, vol. 187. — Un vol. relié, 16×24, de VII, 289 p. — ISBN 3-7643-6308-8. — Prix: SFr. 98.00. — Birkhäuser, Basel, 2000.

The purpose of this volume is twofold. Firstly, it gives an account of basic facts concerning rigid geometry, stable curves, and algebraic fundamental groups, in a form which should make