get so much of the widespread theory into one volume. The book grew out of Part 3 courses given at Cambridge, and contains a great deal of material not otherwise available in book form. There are almost 450 pages of text, and 607 references of which 303 belong to the last ten years. The debt to Paul Erdös is clear from the 70 papers listed, and recent work is seen to be greatly influenced by the author's own contribution of 47 papers. The topics covered include connectivity, matchings, cycles, diameter, colourings, existence of complete subgraphs; the final chapter is on complexity and packing, where a lot of work of Bollobás and Eldridge is presented.

The flavour of the book can perhaps be appreciated from a brief sketch of one of the sections, that on fundamental matching theorems. The König-Hall theorem, earlier deduced from Menger's theorem, is proved in its generalised form due to Marshall Hall. It is remarked that transversal theory as such is outside the scope of the book, but it is pointed out that Philip Hall's result is contained in Dilworth's theorem on partially ordered sets, which is then proved. Here, as elsewhere, the author presents elegant simple proofs whenever possible (some of them new), thus attempting to unify the work. Tutte's theorem on 1-factors is then proved using Hall's theorem, and generalisations of Berge and Lovász are quickly deduced. But then follows a quick deduction of the Erdös-Gallai result that, if β denotes the maximal number of independent edges of G, where G has $n > 2\beta$ vertices, then the maximum number of edges possible in G is

$$\max\left\{ \binom{3\beta+1}{2}, \binom{\beta}{2} + \beta(n-\beta) \right\},$$

the bound being attained if and only if G is one of listed extremal graphs. The structure of graphs which in a sense "just" satisfy the conditions of Tutte's theorem is then studied (but the work of Sumner on minimal antifactor sets is not mentioned), and this leads to a study of the number $F(G)$ of 1-factors of G. The chapter then continues with f-factors, and recent work on matchings in graphs with given maximum and minimum degrees.

The book is a valuable contribution to the literature, collecting together in a coherent way a vast amount of work in a fast-growing subject, and bringing the reader right up to date. The exercises at the end of each chapter include a variety of recent research results (with references), conjectures and unresolved problems. My one criticism is that there are signs of haste in some irritating printing errors; within half a dozen pages on matchings there are several mathematical slips, two wrong references and at least three occasions when 1-factors are called 2-factors. But, such minor blemishes apart, this is a book which should be in every university library.

I. ANDERSON

BAKER, A. and MASSER, D. W. (editors), *Transcendence Theory: Advances and Applications* (Academic Press, 1977), £11·00.

Transcendence theory: advances and applications is the proceedings of a small technical conference held in Cambridge in 1976. Thus its primary function is the publication of recent work in transcendental number theory. As such it is surprisingly accessible to the student and the non-specialist.

The contributors to this volume have made, by editorial policy, a noteworthy attempt to expound the context of their contributions. Each article commences with the history and motivation of the problem and terminates in a substantial bibliography. It would be unreasonable to expect such a volume to be self-contained, and many fundamental lemmas are quoted from earlier publications. However the authors have made significant efforts to minimise this dependence by sketching background areas in preliminary sections and, on occasion, re-proving key results. Thus the reader who wishes to become acquainted with the current state of transcendence theory would be well-advised to turn first to this volume.

To the general reader the first four chapters will have most interest. These present the theory of linear forms in logarithms of algebraic numbers, and applications. The current state of the theory is summarised in two chapters, one on the latest form of Baker's estimate for such forms (which includes or surpasses almost all previous estimates) and the other on the analogous p-adic problem. There follows a history of the application of these tools to Diophantine equations, illustrated with some new examples, and a chapter on the application to primitive divisors of Lucas and Lehmer numbers.

Other topics of transcendence have not found such application outside the theory. There are several chapters on transcendence theory of elliptic and abelian functions, which can now prove, for example, that $\Gamma(\frac{1}{4})$ is a transcendental number. Then follows a section on independence results concerning meromorphic functions and polynomials in several variables. This includes an exposition of Čudnovskiĭ's new concept of the semi-resultant of two polynomials—an idea that could have wider application. Finally there are some new applications of a method due to Mahler for proving the transcendence, at algebraic points, of a function satisfying certain functional equations.

Often it is unclear why conferences should produce proceedings volumes; for their contents would be as appropriately published, and more widely circulated, if it appeared in research journals. In this instance the editors intended to mould the contributions into an advanced graduate text that would bring the reader to the frontiers of research in transcendence theory. They have achieved a praiseworthy degree of success.

D. A. BURGESS

HALMOS, P. R. and SUNDER, V. S., *Bounded Integral Operators on L^2 Spaces* (Ergebnisse der Mathematik und ihrer Grenzgebiete, Springer-Verlag, 1978), 132 pp., Cloth DM 33, U.S.$18.20.

This book is concerned with the common area of the classical theory of integral equations and the modern algebraic approach to bounded linear operators on Hilbert space. The three principal questions dealt with are: (a) which operators on L^2 of a prescribed measure space are integral operators; (b) which operators are unitarily equivalent to integral operators; (c) which operators are such that their unitary equivalence class consists only of integral operators. Many classical examples, associated with such names as Abel, Volterra, Hilbert, and several important classes of integral kernels (in particular Carleman kernels and "order-bounded" kernels) are discussed. The book gives a systematic presentation of current knowledge and the unsolved problems and suggests lines of further research. It is clearly and concisely written and should prove invaluable both to specialist and non-specialist alike.

H. R. DOWSON

SKORNJAKOV, L. A., *Elements of Lattice Theory* [Translated from original Russian edition (*Elementi Teorii Struktur*) by V. Kumar.] (Adam Hilger Ltd., Bristol 1978), vii + 148 pp., cloth, £15·00.

This compact introduction to Lattice Theory deals with the following topics (each is a chapter heading): partially ordered sets; ordinal numbers; complete lattices; lattices; free lattices; modular lattices; distributive lattices; boolean algebras. The author assumes only that his reader has a grasp of the fundamentals of elementary set theory. On the whole, this slim text is well-written, though there are places where the reader has to do some work to solidify the arguments, especially where translational difficulties arise. For example, the enunciation of Theorem 4 (p. 120) is quite wrong (and obviously so in view of the preceding result); and in Theorem 17 (p. 109) we have an expression $a = b_1 \dotplus p_1 \dotplus \dots \dotplus p_m$ followed by the statement that "$m = 0$ is possible". These minor difficulties apart, this is an interesting text and covers a lot of basic material. The section on ordinal numbers covers the equivalence of the axiom of choice and those of Zorn, Zermelo, Hausdorff; and also the Cantor-Bernstein theorem. Complete lattices and closure mappings are dealt with (unusually) before lattices. In the section on lattices the author considers congruences and proves Dilworth's theorem (that any two congruences on a relatively complemented lattice commute) and relates congruence kernels to the standard ideals of Grätzer and Schmidt. There then follows a rather difficult chapter on free lattices. The rest of the text is less of an ordeal and deals, in a nicely compact way, with standard results in modular, distributive and boolean lattices. In particular, these include the Kurosh-Ore theorem (on irredundant $\wedge$-representations in modular lattices), Hashimoto's theorem (that a lattice is distributive if and only if every ideal is a congruence kernel) and the Glivenko-Stone theorem