BOOK REVIEWS

KRA, IRWIN, *Automorphic Forms and Kleinian Groups* (Benjamin, 1972), xiv + 464 pp.

This book is an account of some impressive recent developments in an active area of complex analysis, namely the structure theory of Kleinian groups (groups of linear fractional mappings which act discontinuously on an open subset of the complete sphere). Two major results, Ahlfors' finiteness theorem and Bers' area inequalities, are treated; the theory the author develops to establish these results also enable him to obtain classical results on compact Riemann surfaces (including the Riemann-Roch theorem) as well as the relatively recent analogous theory for open surfaces (Behnke-Stein, Weierstrass, Mittag-Leffler and other theorems).

The author assumes a familiarity with elementary properties of Riemann surfaces and some basic facts about Kleinian groups. The topological classification of compact surfaces, and basic L^p theory, are also assumed.

The tools developed by the author include existence theorems for automorphic forms and the theory of Eichler cohomology groups of Kleinian groups. Bers' approximation theorem (Chapter 4) is also of independent interest (this concerns L^1 approximation of analytic functions on an open plane set by rational functions).

As the author states, his material has been selected according to personal preference and some important relevant topics are not included (for example, quasi-conformal mappings are not treated). However, the book is a stimulating introduction for anyone contemplating research in this field.

<div align="right">A. M. DAVIE</div>

KRALL, ALLAN M., *Linear Methods of Applied Analysis* (Addison-Wesley/Benjamin, Reading, Massachusetts, 1973), $16.00 (cloth), $9.50 (soft cover).

This is an interesting book, both for the contents and for the mode of printing.

The book is a systematic account of certain topics in linear analysis which are of fundamental importance in modern applied mathematics. Basic topics considered are Banach and Hilbert spaces; the Stone-Weierstrass theorem; linear ordinary differential equations and existence theorems; special functions; Lebesgue integral; an introduction to partial differential equations; distribution theory. These results are then applied to the study of a number of boundary value problems; these include both the regular and singular Sturm-Liouville problems; Laplaces's equation; the Heat and Wave equations.

This is a well organised book and there is much to interest the applied mathematicians, and theoretical physicists and engineers. In some places the pure mathematician would wish for a more accurate statement of some of the results, but here the author may have looked for making some economies in his presentation.

In the United Kingdom the book is likely to be beyond the reach of most Honours degree courses in mathematics. However it should be a very useful text for postgraduate students, particularly those working in the theory and application of differential equations and boundary value problems.

Some comment is called for on the printing of the book. This is a direct photo-offset from the typed manuscript; the book has not been set in normal mathematical type. Within the restriction imposed by a standard typewriter the typist, who is