collection of references to original material—at present there are only some isolated references scattered through the text.

The book is well-produced (as it should be at the price) although there are some (minor) misprints—e.g. I am not aware of the '*moral* superposition method' cited on the flyleaf.

I feel the book will not be of great interest to the general reader or to those not in the field (like this reviewer!), but those involved in structural analysis should find it a useful source of results.

F. H. BERKSHIRE

Department of Mathematics, Imperial College, London SW7 2BZ

Essential mathematics for applied fields, by R. M. Meyer. Pp 555. DM 34. 1979. ISBN 3 540 90450 6 (Springer)

In his preface the author states that "the purpose of this work is to provide in one volume a wide spectrum of essential (non-measure theoretic) mathematics for use by workers in the variety of applied fields". With this in view, he sets out to cover five main topics. The first part of the book—over a third in all—is entitled Basic Real Analysis and is a fairly conventional analysis course dealing with topics such as limits, convergence and differentiability. Unusually there is a chapter on doubly infinite sequences and a chapter on Abelian and Tauberian theorems. This is particularly welcome because of the usefulness of these theorems in considering asymptotic behaviour of integrals.

The second part deals with the topic of Riemann–Stieltjes integration both in one dimension and in n dimensions and includes a discussion of the properties of bounded variation functions.

The third part gives a short treatment of finite differences and of linear difference equations with constant coefficients, whilst the fourth part gives a conventional treatment of complex variable theory up to the residue theorem. The fifth part deals with linear algebra with a treatment of the usual topics of matrices, vector spaces, systems of linear equations and characteristic roots, and the book closes with a miscellany of chapters on convex sets, max–min problems and inequalities.

The treatment is clear, there is an adequate supply of examples and exercises, at the end of every chapter there is a bibliography for further reading, and the book achieves its purpose. However, it does seem to me that, from the point of view of those whose interests lie in the physical field, there are a number of omissions in the topics covered. In view of the importance of group theory in modern theoretical physics, it is surprising that there is no mention of this at all and there is no treatment of vector calculus, or of the use of Lagrange multipliers with non-integrable differential constraints.

The printing is by reproduction of typescript, and very few errors were noticed. The price is, in these days, not unreasonable. The book can be recommended and would, I feel, be satisfactory supplementary reading for those whose interests lie in pure mathematics.

LL. G. CHAMBERS

School of Mathematics and Computer Science, University College of North Wales, Bangor, Gwynedd, Wales LL57 2UW

Geometry of complex numbers, 2nd edition, by Hans Schwerdtfeger. Pp 200. £2·50. 1980. ISBN 0 486 63830 8 (Dover)

This book consists of an analysis of the group of Möbius transformations. It would be hard to find another part of algebra in which meaning and motivation can be so thoroughly geometrical, and so the geometry here should have an assured place in the undergraduate mathematics of the future. A fair amount of Durell's *Modern Geometry* is skipped through:

coaxal circles, cross-ratio and inversion. The group generated by the inversions contains the set of Möbius transformations

$$z \to \frac{az + b}{cz + d}, \quad ad - bc \neq 0$$

as a subgroup of index 2. Those Möbius transformations mapping the interior of a circle onto itself form the group of isometries of Poincaré's non-Euclidean geometry.

The review of the first edition (*Mathl Gaz*. Vol. 47, 1963, p. 170) said that this book was written at second year undergraduate level. For those who find the going rough, chapters 5 and 6 of D. Pedoe's *A course of geometry* would form an admirable introduction to the subject. The book is slim enough and cheap enough for every lecturer to keep a copy on his shelves. Yet the presentation here is not as easy to read as it might be. Gothic script for mathematical symbols is an unnecessary encumbrance. The homomorphism of 2×2 non-singular matrices to the Möbius transformations is used throughout, but never explicitly claimed as such. The author consistently lets geometrical interpretation follow algebraic proof, rather than allowing geometry to play a motivating role.

The second edition contains four new appendices and a supplementary bibliography of relevant material published since the first edition. It is encouraging to learn that this is a field in which research is proceeding. The republication is welcome, yet one has the feeling that in the hands of a Maxwell or a Pedoe, a more attractive book dealing with the same material could have been written.

R. P. BURN

Homerton College, Cambridge CB2 2PH

Basic mathematics, by Martin M. Zuckerman. Pp 386. £11·20. 1980. ISBN 0 442 21911 3 (Van Nostrand)

This book is aimed at the American student who wishes to acquire the basic mathematical skills of arithmetic, algebra and geometry and the contents can be guessed at without much difficulty. For the arithmetic, we have place value, the four rules with integers and rationals, exponentiation, factorisation, LCM's, decimals, percentages, roots, scientific notation, the metric system, areas and volumes. For the algebra, conversion of written expressions to algebraic form, polynomials, equations (simple, quadratic and simultaneous), variation, coordinates and straight line graphs; but surprisingly there is no work on using or transforming formulae. The geometry section is rather small consisting only of basic angles, triangles, and quadrilaterals, similarity and circles up to 'the angles in the same segment'.

As the book takes 386 pages to cover this material you will gather that it must be presented in a very detailed way. Each of the 11 chapters begin with a small diagnostic test which guides the reader through the various sections. The main teaching text is by short description, definitions (of which there are too many), examples (with full and precise solutions) intermixed with exercises for the student. Each section usually ends with over forty 'home exercises'; the chapters end up with 30 or so review questions.

Any student following this book, with a teacher or by themselves, will certainly master the techniques even if it is in a somewhat old-fashioned way (pg. 193—"To convert percent to a decimal: If there is no decimal point, insert one to the left of the percent symbol. Then remove the percent symbol and move the decimal point two digits to the left"). The student might also be tempted to learn some of the strange definitions (pg. 57—"The inverse of a polynomial P is the polynomial obtained by changing the sign of each term of P").

Unfortunately, despite a thorough and complete work, Mr Zuckerman's approach lacks any spirit or imagination and the book has no soul whatsoever. It presents mathematics as no more than a system of rules and procedures. He has made an attempt at integrating the arithmetic and algebra through the text, but if the student works sequentially through he will