the book concludes with an Appendix, written by S. Eilenberg, axiomatising in a categorical framework the author's construction for a group of groups.

The text is not always easy reading and the reviewer must cavil at the use of the phrase " well-known principle " on p. 26. The only reference [73] is to a paper which is to appear in an unspecified journal; conceivably the reference should be [72] but there is no place of publication for this reference. The author has, however, written an illuminating account and one which forms a valuable springboard for further study in the mathematical theory of knots. R. A. RANKIN

HIRZEBRUCH, F., *Topological Methods in Algebraic Geometry*. 3rd edition with new Appendix. Translated from the 2nd German edition by R. L. E. Schwarzenberger, with an additional section by A. Borel. (Springer-Verlag, Berlin-Heidelberg-New York, 1966), xii+232 pp., DM 38.

The first edition of this book, which appeared in German in 1956, was essentially a monograph on the extension to n-dimensional algebraic manifolds of the Riemann-Roch theorem concerning the divisor classes on an algebraic curve. It was a landmark because it showed how the formidable apparatus of algebraic topology: sheaf theory, fibre spaces and cobordism, could be used to reformulate problems in algebraic geometry which had long resisted the classical methods, and to solve them.

This translation into English is also a new enlarged edition. The translator has added notes to each chapter and has written an excellent survey of the developments of the last ten years. The original work by Hirzebruch has been generalised in a number of ways, with unexpected consequences and contacts with other theories. This has considerably increased the number of people who will be interested in this book. For example, the far-reaching generalisation due to Grothendieck introduced a group of complex analytic vector bundles; similar constructions, now called Grothendieck groups, have since appeared in a purely algebraic context. Another development, due to Atiyah and Hirzebruch, has led to a powerful new cohomology theory, known as K-theory. This has had interesting contacts with operator theory, and Atiyah and Singer have been able to express the index of an elliptic differential operator in terms of topological invariants. Another generalisation of the Riemann-Roch theorem has been used to calculate the dimensions of spaces of automorphic forms.

The long introductory chapter may be recommended to anyone seeking a clear treatment of sheaves, or of vector bundles and their characteristic classes. The second chapter is a good introduction to the theory of cobordism.

The extremely clear and simple style of the original has been preserved in the translation. There is a full index and bibliography. D. J. SIMMS

MACINTYRE, SHEILA AND WITTE, EDITH, *German-English Mathematical Vocabulary*, 2nd edition (Oliver and Boyd, Edinburgh, 1966), ix+95 pp., 10s. 6d.

The first edition of this well-known reference book was published in 1956. In addition to the Vocabulary it contains a Grammatical Sketch by Lilias W. Brebner. Following Mrs MacIntyre's untimely death in 1960 the task of revision and incorporation of additional entries was completed by her co-author. Remarkably compact yet most helpful, this little dictionary gives excellent value for its very modest cost.

D. MONK

AHLFORS, L. V., *Complex Analysis*, Second edition (McGraw-Hill, New York, 1966), 317 pp., $8.95.

The first edition of this book, which appeared in 1953, has already established itself as a classic and the second edition containing additions amounting to seventy pages will be warmly welcomed by students and teachers alike. The principal changes that have been made are as follows. The section on topology has been rewritten and enlarged