AEPPLI, A., CALABI, E., AND RÖHRL, H. (Editors), *Proceedings of the Conference on Complex Analysis, Minneapolis*, 1964. In English. (Springer-Verlag, Berlin-Heidelberg-New York, 1965), viii+308 pp. (7 figs.), cloth DM 38.

The Conference referred to in the title was held in March 1964, and the volume contains 26 papers contributed by 25 of the 31 invited participants. The subjects covered represent only a fraction of the work currently being done under the name of Functions of a Complex Variable. Thus although there are several papers on different types of complex analytic spaces, there appears to be nothing on univalent or entire functions; modular and automorphic functions do appear, however. A selection of 26 unsolved problems is given in the appendix.

R. A. RANKIN

CUNNINGHAM, J., *Complex Variable Methods in Science and Technology* (Van Nostrand, London, 1965), 178 pp., 45s. (paperback 21s.).

This book, which makes no pretence at rigour, can be commended to students of physics or engineering who are not attending honours courses in pure mathematics and who, through lack of both time and knowledge, are unable to pursue a proper course on complex variable theory. The topics considered in the book include the Cauchy-Riemann equations, Cauchy's theorem (proved by Green's theorem), Cauchy's integral formula, Taylor and Laurent expansions, contour integration, Rouché's theorem, conformal mapping and contour integral solutions of differential equations. The exposition is clear, although one unfortunate blemish must be pointed out; it is *not* true that $\arg(x+iy)$ is defined to be the principal value of $\tan^{-1}(y/x)$ as stated on p. 114 and implied in a loosely worded sentence in the middle of p. 29 and in one or two other places. About a dozen examples on the average are appended to each chapter of the book and these appear to have been quite carefully chosen. Altogether, the book is very suitable for the type of student for whom it is intended.

D. MARTIN

NEUWIRTH, L. P., *Knot Groups*, Annals of Mathematics Studies No. 56 (Oxford University Press, 1965), vi+114 pp., 28s.

In this monograph the author presents some aspects of the theory of the group of a knot. His account is not elementary and he assumes at least familiarity with the book *An Introduction to Knot Theory*, by Crowell and Fox.

After two short introductory chapters, the author gives, in Chapter III, material which is entirely new and which deals with covering space theory for 3-manifolds. This chapter is mainly geometric and the exposition might have been improved by a more judicious use of diagrams. The author has aimed at giving insight into knot theory and, to this end, he gives in Chapter IV two descriptions of the Alexander matrix and polynomials. This chapter also contains a number of theorems, some merely stated; but mention may be made of one of the author's theorems, which is proved, and which clarifies the structure of the commutator subgroup of a knot group. Later work relates the Alexander polynomials to the commutator subgroup. In Chapter VI the author considers homomorphisms of a knot group into a metacyclic group and poses the question as to whether a knot group may be residually finite. This question he answers affirmatively for the case of a knot group whose commutator subgroup is finitely generated. The existence of outer automorphisms and of a group system of a knot group is considered in Chapter VII. In Chapter VIII the author introduces a construction, analogous to the operation of tying two knots together, which yields a group of groups. Chapter IX contains some characterisations of a knot group and it is proved, in the following chapter, that the group system determines the topological type of the complement of a knot if the commutator subgroup of the knot group is finitely generated. The final chapter consists of research problems and