

Gruppentheorie. By A. G. Kurosch. With a supplement by B. H. Neumann. Berlin, Akademie-Verlag, 1953. 12+418 pp. 28.00 DM.

This is a German translation of the first Russian edition (1944) of Kurosch's *Teoriya Grupp*. Although it appeared after the second Russian edition (1952), it is well worth owning for itself, even for those who read Russian easily. The supplement by B. H. Neumann is particularly valuable.

In a very refreshing way Kurosch frees the study of groups from unnecessary assumptions of finiteness. Free groups, defining relations, and free products appear early and account for chapters 4 and 10. The study of Abelian groups is very extensive and occupies chapters 5, 8, and 9. This includes the theorem of Ulm which completely characterizes countable periodic Abelian groups. Chapter 7 covers solvable and nilpotent groups. This has been an area in which research has been active in recent years, the theory of special groups having been developed by the Russian school. In chapter 11 Kurosch gives most of what was known about subgroup lattices at the time he wrote.

The German edition adds to the 1944 edition in two ways. First the bibliography has been brought up to date and numerous footnotes relate the more recent work to the text. But most notably there is an extensive supplement by B. H. Neumann giving among other topics the theory of amalgamated products. Also three important examples due to Graham Higman are included. One of these is a finitely generated group isomorphic to a proper subgroup. A more complicated example of this was given earlier by Neumann himself. This shows the Hopf conjecture to be false.

Unfortunately, in eliminating finiteness Kurosch has thrown out the baby with the bath and there remain only faint traces of finite groups. He promises another volume on finite groups which will indeed be welcome.

MARSHALL HALL, JR.

Theoretical elasticity. By A. E. Green and W. Zerna. Oxford University Press, 1954. 14+442 pp. \$8.00.

This book is mainly concerned with three areas in elasticity: nonlinear elasticity, complex variable methods in linear elasticity, and shell theories. Since even these are not treated comprehensively, it might more aptly be titled "Special Topics in Theoretical Elasticity." On the other hand, no other single work makes as serious an attempt to cover both linear and nonlinear elasticity.

Chapter I is devoted to purely mathematical results which are needed for later analyses. In Chapter II, the theory of stress and