clearly acknowledged. The "punch line" on page 86 is "should then be expressible" in line -7: beneath this simple phrase there lurks nothing less than Church's Thesis!

A few misprints were detected, as well as some slips, but none likely to cause difficulty.

R. A. Staal, The University of Waterloo


Report on Injective Modules, by Tsai Chi - Te. Queen's papers in pure and applied mathematics, No. 6, Kingston, 1966. 243 pages. $3.00.

This useful report includes many results on injective modules which have not previously appeared in book form. Proofs are given in great detail and there are few misprints. The bibliography includes ninety entries.

The book is divided into two parts, the first entitled "general properties of injective modules" and includes the proof of the existence of injective hulls, and the structure theory of the injective hull of a finite dimensional module and its ring of endomorphisms. The second part is called "injective modules over various rings" and these rings include principal ideal domains, Dedekind domains, Prüfer rings, integral domains, semi-simple (completely reducible), finite dimensional algebras (over a field) and rings with chain conditions.

W. D. Burgess, McGill University


Abstract Theory of Groups, by O. U. Schmidt. Translated from the Russian by F. Holling and J. B. Roberts; edited by J. B. Roberts. W. H. Freeman and Co., San Francisco, 1966. vii + 174 pages. $5.00.

The Russian original of this book was published in a small edition in 1916, at a time when Burnside's treatise was the only large scale work on group theory in existence. An apparently unchanged second edition appeared in 1933. It is truly regrettable that this work had not been made generally available much earlier. But it seems that few copies, if any, have ever left the USSR. An unchanged reprint appeared in 1959 in a small volume of Selected Works on Mathematics of Otto Schmidt (together with his original papers on group theory, all translated into Russian). Thus the book became accessible.

The first part, Chapters 1 - 4 (about one third of the whole work) includes the definition and the simplest consequences, as well as most general theorems concerning invariance, homomorphism, automorphisms together with a good deal of information on finite groups and permutation groups. Most proofs are clearly given with finite groups in mind; notions of infinite set theory are not introduced. The second part, Chapters 5 - 10, deals with finite groups only; it includes Landau's theorem, several

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fundamental theorems of Frobenius, Sylow's theorems, more about permutation groups, Remak-Schmidt's theorem, p-groups, "special" groups, followed by representation theory after Schur, with some of its applications in the last two Chapters.

This may show that even today the book is an excellent one to consider for a one-year's course in group theory at the advanced undergraduate or the early graduate level. Unimportant linguistic errors could easily be mended in a reprint edition, as e.g., on p.50 where the Russian transliteration of "C. Jordan" into "K. Jordan" has been taken over into the translation. In a few instances the translator-editor has made slight changes in terminology and proofs; not so in some cases when it could have been done as well, as e.g., in Chap.8, where the now unusual term "special" should have been replaced by "nilpotent". Consistently "when and only when" is used instead of "if and only if". In the later chapters examples are found of unusual wordings and, may-be, sloppy proof reading (cf. e.g. p.129-130); none, however, really disturbing.

Despite its age, this book can be considered a valuable addition to the more recent texts on group theory and it will be read with profit and pleasure by many who find group theory a worth while occupation.

[The reprint of the book in the Selected Works of Otto Schmidt (mentioned above) is preceded by a short summary on his life and activities from which the following notes have been prepared. Schmidt (1891-1956) studied mathematics in the University of Kiev under D.A. Grave, where in 1916 he became a Privatdozent. The first edition of his book earned him the Rachmaninov Gold Medal. Group theory remained his main mathematical interest throughout his life. Another medal had been awarded to him in 1913 for his student paper "On equations of prime power degree, solvable by radicals" also reprinted in the Selected Works. From 1917 on, Schmidt took active interest in mathematical education at all levels, was member and chairman of countless commissions on education, popular science, libraries, economics, etc., published and lectured widely on all these topics and on the history of science and mathematics. In 1923 he was sent to Western Europe where he met I. Schur; in 1927 he visited Göttingen, Hilbert and Emmy Noether. From 1928 on, while continuing his research in group theory, he took part in difficult scientific expeditions. In 1929 he became a government representative in Franz-Josef's Land and leader of an arctic expedition on an ice braker, in 1930, director of the Leningrad Arctic Institute and also Editor of the Journal Matematičeskii Sbornik. In 1933 he came to Moscow University as research professor in Algebra. At the same time he remained active in the exploration of the Arctic, this time as leader of the Cheljuskin expedition. In spite of the loss of the ship and a winter on the ice he continued mathematical research and lectured to the stranded crew. For recovery he came to Alaska and to the US where he was received by President Roosevelt. In 1937 he led an expedition to the North Pole. In 1942 he became first vice-president of the Soviet Academy of Sciences and, in 1944, the director of its Institute for theoretical Geophysics. Up to the end he combined research with his many administrative activities.

H. Schwerdtfeger, McGill University