All in all, the subject is certainly an interesting one, and Donoghue's book is a beautifully written, excellent account of it. It is to be highly recommended to expert and beginner alike.

As for mistakes, there do not seem to be many. The consistent misspelling of Hans Bremermann's name is probably nothing but the final proof that Springer has become a naturalized American publisher.

ADAM KORÁNYI

Homology in group theory, by Urs Stammbach, Lecture Notes in Mathematics, Volume 359, Springer-Verlag, New York, 1973, vii+183 pp., $7.00

Cohomology theory is still viewed by many group theorists with a mixture of suspicion and indifference. There are, of course, good reasons for this. Homology theory began to invade group theory just before the Second World War, but it was not until the early fifties that the theory had been satisfactorily rebuilt as a completely algebraic tool. Group theorists then discovered that they had actually been practising homological algebra for years without knowing it: in Schur's theory of covering groups; in extension theory as developed by Schreier and Baer; and even in Burnside's transfer map. But homological algebra did not seem to be more than a satisfactory setting for work already done.

This situation has begun to change in the last fifteen years. The reasons perhaps can be grouped under three headings. First of all, a number of distinctly nontrivial new results have been established by homological methods. Samples: the Stallings-Swan theorem that a group G is free precisely if every extension by G with abelian kernel is split; the result of Gaschütz that every finite p-group has an outer automorphism of order p; the very recent theorem of Bieri that a finitely presentable group, of cohomological dimension 2 and with a nontrivial centre, has a free commutator group.

Secondly, the outlook engendered by homological algebra can surely be held responsible for the spectacular development of integral representation theory, due to Swan and many others, as well as to important progress in modular representation theory such as Green's theory of sources and vertices.

Finally, the homological language has shown itself to be the natural one in which to express a good deal of the post-war work on generalised nilpotent groups.

Stammbach's book is, above all, a contribution under this third heading. A good two-thirds of it deals with centrality properties of groups: the lower central series (Chapter 4), central extensions (Chapter 5) and localization of nilpotent groups (Chapter 6). Probably a more realistic (albeit more cumbersome!) title for the book would have been *Homological methods in the study of nilpotency properties of groups.*

The treatment of these topics is smooth, coherent and often elegant. It should help to convince group theorists of the efficacy of homological