

LEDERMANN, W., *Introduction to Group Theory* (Oliver & Boyd, 1973), viii + 176 pp., £1.50.

This book is "intended to cover the bulk of the work on group theory in an Honours course", starting right from the beginning. There are eight chapters, and their titles give a good idea of the material covered: The Group Concepts, Subgroups, Normal Subgroups, Finitely Generated Abelian Groups, Generators and Relations, Series of Subgroups, Permutation Groups, Sylow's Theorems. Readers will undoubtedly be reminded of the author's previous work on this subject "Introduction to the Theory of Finite Groups". In fact this is not a revision of that book, though it obviously shares some ideas and methods with it. The main changes are modern notation and nomenclature, much less emphasis on finite groups and several additional topics.

For someone who is teaching group theory to Honours students, this will be a useful addition to the literature. It covers the great majority of topics that one might wish to introduce, and it is well-written and fairly easy to read on the whole. Each chapter has about a dozen exercises and there are short answers to most of them at the end of the book. Often new ideas are illustrated by applications, thus making it easier for the student to see their relevance. Another very important point in its favour is that at £1.50, it is cheap enough to be put into a list of books that the student is recommended to buy.

There are several points, though, which stop me from being very enthusiastic. The author seems to assume that the student knows about equivalence relations and classes already. This is unlikely, and a short exposition would not be amiss. Another point is the fact that the criterion for a subset to be a subgroup: $x, y \in H \Rightarrow xy^{-1} \in H$, only appears half-way through the book, and then for Abelian groups. On more general grounds, some items get a very short treatment, e.g. nilpotent groups. The idea will never stick in the student's mind without reinforcement. Also some topics are treated rather quickly, e.g. direct products of more than two groups and free groups which most students find to be a very difficult idea to grasp. A more detailed and thorough treatment would help.

The order of treatment of topics is another point on which I do not agree with the author. For instance I would put permutation groups and the Sylow Theorems earlier. But there are strong arguments on both sides of this question. My overall impression is of a fairly good book and one that will be used a good deal *faute de mieux*. There are few books at this level and price which can compare with it. One final remark: the number of misprints was disappointingly high.

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