

The book by Hu, *Integer programming and network flows*, was the first in this area and remains a useful reference. The areas covered well are network flows, cutting planes, and Gomory's group problem. In particular, Gomory's original, ground-breaking papers on the group problem are reproduced here. Of the other books, only Salkin gives an adequate survey of this work and some of its present directions.

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Rings with involution, by I. N. Herstein, Univ. Chicago Press, Chicago and London, 1976, x + 247 pp., \$5.50.

For me, a "week-end" associative ring theorist, reading this book is like reading a letter from a not-too-distant relative who writes periodically to inform us (with a certain amount of pride and joy) of what his branch of the family has been doing. The recent work of Professor Herstein's immediate family (among them Baxter, Lanski, Martindale, and Montgomery) as well as the work of older family members (Jacobsen, Kaplansky, and Herstein himself) play a central role in this book. (This list of names is not meant to be a complete family tree.) The author states "I have tried to give in this book a rather intense sampler of the work that has been done recently in the area of rings endowed with an involution. There has been a lot of work done on such rings lately, in a variety of directions. I have not attempted to give the last minute results, but, instead I have attempted to present those whose statements and proofs typify." Such a "letter" must perforce have its main interest with those already familiar with the "family" and no effort is made to interest outsiders (aside from a careful and lucid presentation which highlights the intrinsic interest of the material). Applications and motivation from outside associative ring theory (from Jordan and quadratic Jordan algebras, and from operator and Banach algebras) are purposefully omitted in order to achieve the author's goal efficiently. Indeed, one really should be familiar with the letter of several years ago, *Topics in ring theory* [2] (= TRT in the remainder of the review) in order to read the present one. The general theme of the current letter is: Given a ring R with involution $*$: $R \rightarrow R$, define the subsets $S = \{x \in R | x = x^*\}$, $K = \{x \in R | x^* = -x\}$, $T = \{x + x^* | x \in R\}$, $K_0 = \{x - x^* | x \in R\}$ and then try to (1) determine what effect on R the imposition of certain hypotheses (e.g. regularity, periodicity, or the satisfaction of a polynomial identity) on the elements of S , K , T , or K_0 will have, and (2) characterize (or extend) mappings on R (or on S , K , T , or K_0) which preserve properties of, or operations on S , K , T , or K_0 . (Beware "linear" reader! The sets S and T are not necessarily the same since $\frac{1}{2}$ may not be present. Similarly R is not necessarily the span of its selfadjoint elements. In fact, one of the lessons that a nonspecialist, such as myself, can learn from this book is how nice it is to have linearity instead of just additivity.) In the absence of further restrictions, these questions usually cannot be answered so that R is almost always assumed to be simple (no two-sided ideals), prime