end of the chapters which bring the reader up to date in the literature. Occasionally, there are omissions: the results on linearly ordered groups and rings have not received due attention in these remarks, e.g., real closed fields are totally ignored.

Rather modest background is needed to read the book; basic group and ring theory with some knowledge in lattice theory should suffice in general, but from time to time, additional knowledge is required (e.g., in the chapter on sheaf representations of lattice-ordered rings). The frequent motivations and the readable style make this volume a good choice for a graduate text.

The total impression about the material covered by this book is that, though the major motivation seemed to be more internal than external, there has been a commendable effort by the authors to relate their subject to other fields of mathematics. The theory of real functions lends its flavor throughout the subject, abstract group theory has penetrated so far only into the theory of totally ordered groups, while the few problems studied recently under the influence of modern ring and module theory have not had a great impact on the development of lattice-ordered structures (except for the attractive theory of free lattice-ordered groups). It is hoped that this excellent text will enhance the interest in lattice-ordered groups and rings, and their applications in various other fields.

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General lattice theory, by George Grätzer, Mathematische Reihe Band 52, Birkhäuser Verlag, Basel, 1978, xiii + 381 pp.

Lattice theory has come a long way in the last 45 years! Although Dedekind had written two penetrating papers on "Dualgruppen" before 1900, and insightful isolated theorems had been published in the 1920's by individual mathematicians such as by R. Baer, K. Menger, F. Riesz, Th. Skolem, and A. Tarski, it was not until the 1930's that lattice theory became studied systematically, and recognized as a significant branch of mathematics.

This recognition was largely due to realization that "many mathematical theories may be formulated in terms of [lattice-theoretic concepts], and the systematic use of these concepts gives a unification and simplification of the various theories"[1] In brief, it was due to the wide range of *applications* of lattice theory to other branches of mathematics, and emphasis on such applications pervaded the talks given at the first symposium on lattice theory [1], sponsored by the American Mathematical Society in 1938.

Indeed, success may have come too easily to lattice theory in the first decade of its renaissance. The very simplicity and pervasiveness of its basic concepts (greatest lower and least upper bounds of order relations), and the ready availability of general ('universal') algebraic techniques having well-known analogues for groups and rings, made some mathematicians (most

[1]O. Ore in Bulletin of the American Mathematical Society **48** (1942), p. 75.