picture of coding theory as currently known. Most of the material does not appear elsewhere in book form, and a considerable amount is original.

The style of writing is remarkably successful in developing insight and intuition without appreciably sacrificing rigor or conciseness. The book is almost self-contained and includes a development of the required algebraic concepts and theorems. A discussion of ways to implement algebraic operations, particularly on polynomials and Galois field elements by shift register circuits, should help the engineer to understand and use modern algebra, both in coding theory and elsewhere.

The first part of the book discusses linear codes, which are group codes or parity-check codes generalized to include non-binary alphabets. This includes a general treatment, some theoretical bounds on error-correcting ability, and a discussion of several specific classes of linear codes. Next, after some mathematical development, the theory and implementation of cyclic codes is discussed from several different viewpoints.

Bose-Chaudhuri codes, which are the most important of the known algebraic codes, are elegantly treated after cyclic codes. A simple derivation of their error-correcting capabilities is given, and two decoding techniques are presented. The remainder of the book treats burst-error correction, other approaches to decoding, recurrent codes, and the checking of arithmetic operations.

The appendices include a table of irreducible polynomials over the field of two elements. They are arranged in order as minimum polynomials of the elements of Galois field, and this makes it possible to find generator polynomials for Bose-Chaudhuri codes almost by inspection.

The book is highly recommended to engineers and mathematicians interested in coding, information theory, communication, and computers.

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17[Z]. A. UNGAR, Proceedings Editor, *Proceedings of the 1959 Computer Applications Symposium*, sponsored by the Armour Research Foundation of Illinois Institute of Technology, Chicago, 1960, x + 155 p., 23 cm. Price $3.00.

Like most symposia, this little book contains quite a variety of papers, some of them excellent, and some of them only mediocre. The paper entitled "Fortran Experience and Remote Operation by Non-computer Specialists" in conjunction with its subsequent panel discussion is, in the opinion of this reviewer, alone well worth the price of the book. This is by no means the only interesting paper. Each paper is followed by the type of bantering discussion that usually takes place in a meeting of a group of specialists.

The papers include: "Shareholder Record-Handling with the Aid of Character-Recognition Equipment," "Around the World in Eighty Columns," "Cost Reduction Through Integrated Data-Processing," "Some Aspects of Computer Technology in the USSR," "Experience and Plans for Marketing-Research Operations," "A Modern Approach to Inventory Control Utilizing a Large-Scale EDPM," "Current Developments in Common-Language Programming for Business Data Systems," "Linear Programming on the Bendix G-15 Computer," "The Design

and Use of the APT Language for Automatic Programming of Numerically Controlled Machine Tools," "A Quasi-Simplex Method for Designing Suboptimum Packages of Electronic Building Blocks," "The International Algebraic Language and the Future of Programming," "Training for Engineers and Scientific Applications via Compilers, Interpreters, and Assemblers," "Scientific Design Procedure Utilizing a Small Computer," and "FORTRAN Experience and Remote Operation by Non-Computer Specialists."

This inexpensive book is recommended for inclusion in the libraries of computation laboratories and of individual programmers.

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