results obtained by computers in the investigation of groups, contains an extensive bibliography on applications of computers to problems in algebra.

Many of the leading experts in the use of computers in algebra are among the authors of these papers, and the book gives a fairly comprehensive picture of the quite diverse activity in the subject.

The number of available papers concerning applications of computers to problems in algebra is relatively meager considering the potential of such applications. This volume is a welcome and a significant addition to the literature on the subject.

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10[12].—R. D. PARSLOW, R. W. PROWSE & R. E. GREEN, Editors, *Computer Graphics: Techniques and Applications*, Plenum Press, London and New York, 1969, xiv + 247 pp., 23 cm. Price $16.00.

This book consists primarily of a collection of papers that were presented at the International Computer Graphics Symposium held in July 1969 at Brunel University, Uxbridge, England. The book, which was designed to cover the field of computer graphics, is organized into four parts.

Part 1 contains nine papers that deal with basic hardware/software concepts in computer graphics. This section of the book is intended to serve as an introduction to the field for the novice; unfortunately, only the first paper, "What has Computer Graphics to Offer?", is suitable for this purpose.

The paper "Computer Graphics Hardware Techniques," although well written, suffers from a lack of visual aids to guide the novice. The companion paper "Computer Graphics Software Techniques" provides a rather sketchy coverage of its subject matter. The highlight of this paper is an extremely good treatment of the concept of a graphic data structure and its relationship to a display file. A third techniques-oriented paper, "Interactive Software Techniques," suffers because of poor organization.

The paper entitled "Computer Display System Tradeoffs" provides an interesting discussion of the relative merits of the so-called buffered display, which contains its own refresh memory, and a display which uses the computer memory as the refresh memory. This discussion concentrates on the hardware aspects of the question and ignores the software considerations. This paper, although well written, may be lost on the novice.

The two papers "Computer Graphics in the United States" and "The U. K. Scene" are intended to provide an overview of computer graphics in the United States and in England. The poor presentation in the second paper is in very striking contrast to the better organized presentation in the first.

The paper "Low Cost Graphics" provides a very good coverage of the tradeoffs inherent in the three most commonly used types of CRT displays; random-scan refresh, sequential-scan refresh, and the direct-view storage tube (DVST). A strong case was made for the use of the DVST in those applications which are not highly interactive.

The final paper in Part 1, entitled "Remote Display Terminals," deals with the various types of display terminals suitable for use in a remote on-line interactive environment. The so-called low-speed terminals (e.g., teletype, incremental plotters, and alphanumeric CRT's) receive the bulk of the attention, while CRT's providing the full range of graphics receive very sketchy treatment.

Part 2 contains nine papers, eight of which describe graphic applications. The graphical discussions contained in these eight papers are, for the most part, not of a general nature and hence would be of little interest to anyone not familiar with the rather specialized applications covered. The final papers in this section consist of a collection of remarks and observations which were recorded during a discussion session at the Symposium.

There is only one paper in Part 3. This paper, "Present Day Computer Graphics Research," gives a good coverage of research efforts in low-cost terminals and in graphic software.

The reference section of the book, Part 4, consists of a series of advertisements for hardware manufacturers of graphics equipment, a glossary of computer graphics terms, and a consolidated bibliography for all of the papers appearing in the book. The glossary provides a comprehensive coverage of graphics-related terms, and is perhaps the most useful portion of the book.

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11[12].—A. VAN WIJNGAARDEN, Editor, B. J. MAILLOUX, J. E. L. PECK & C. H. A. KOSTER, *Report on the Algorithmic Language ALGOL 68*, Second Printing MR 101, Mathematisch Centrum, Amsterdam, 1969, v + 134 pp., 24 cm. Price $4.50. Also available as offprint from *Numerische Mathematik*, v. 14, 1969, pp. 79–218, Springer-Verlag, New York.

The report is the culmination of a five-year effort by Working Group 2.1 of the International Federation for Information Processing (IFIP) to design a successor to ALGOL 60. Section 0 of the report describes the aims and principles of design, the first of which is "completeness and clarity of description." By Section 1, the clarity has disappeared. Embedded among the specifications of syntax and semantics are comments, called pragmatics, intended "to help the reader understand the implications of the definitions." However, they are often little more than verbalization of the syntax rules. The reader well-versed in the language may find the report useful as an authoritative reference manual (provided he has learned all the new terminology), but even the reader experienced in programming languages is advised to seek other expositions to learn the language. (Such documents are beginning to be available in computer science literature.)

As for the language, although it is not strictly an extension of ALGOL 60, it is in the same tradition. (A brief comparison of ALGOL 60 and ALGOL 68 is given in Section 0 of the report.) The ALGOL 60 notion of type is generalized to the concept