

- SDDT Task Group of the CODASYL Systems Committee (1977). *Stored-Data Description and Data Translation: A Model and Language*, *Information Systems*, Vol. 2, No. 3.
- SENKO, M. E., ALTMAN, E. S., ASTRAHAN, M., and FEHDER, P. (1973). *Data Structures and accessing in data base systems*, *IBM Systems Journal*, Vol. 12, No. 1.
- SENKO, M. E. *et al.* (1970). *Formatted file organization techniques*, IBM Research Lab., San Jose, California, March 1970.
- SENKO, M. E. *et al.* (1971). *Semi-operational evaluation of file modeling techniques*, IBM Research Lab., San Jose, California, February 1971.
- SEVERANCE, D. G. (1972). *Some Generalized Modelling Structures for Use in the design of File Organizations*, Ph.D. Dissertation, University of Michigan, Ann Arbor.
- SHNEIDERMAN, B. and SCHEUERMANN, P. (1974). *Structured Data Structures*, *CACM*, Vol. 17, No. 10.
- SILLER, K. (1974). *A Model for the evaluation of large scale data retrieval systems*, Proc. of 1974 *Winter Simulation Conference*.
- SMITH, D. P. (1971). *An approach to Data Description and Conversion*, Moore School Report No. 72-20, Moore School of Engineering, University of Pennsylvania, December 1971.
- STONEBRAKER, M. (1972). *Retrieval efficiency using combined indices*, Proc. 1972 ACM-SIGFIDET *Workshop on Data Description, Access and Control*.
- STONEBRAKER, M. (1974). *Functional View of Data Independence*, Proc. of the ACM-SIGFIDET Conference.
- TURKSEN, I. B. and HARRISON, R. E. (1974). *Interactions of Particular Boolean Queries and Attributes in Data Bases*, *INFOR*, Vol. 12, No. 3.

## Book reviews

*Modern numerical methods for ordinary differential equations*, edited by G. Hall and J. M. Watt, 1976; 336 pages. (Clarendon Press: Oxford University Press, £9.75)

This book is strongly recommended as a reference book and as a textbook for a second course in numerical analysis. It is based on the material presented at a summer school organised in July 1975 by the Department of Computational and Statistical Science of the University of Liverpool and the Department of Mathematics of the University of Manchester. Its 21 chapters are organised into four parts dealing with initial value, stiff, boundary value and functional differential problems respectively. Some of the chapters provide background survey, the rest give an account of the methods currently in use for particular problems in industry and research. Special attention is paid to problems of implementation on a computer and general computer library programs. An extensive and up to date collection of references at the end of the book is used throughout the text.

I. M. KHABAZA (London)

*An Optimized Translation Process and Its Application to Algol 68*, by P. Branquart, J.-P. Cardinael, J. Lewi, J. P. Delescaille and M. Vanbegin, 1976; 334 pages. (Springer-Verlag, US\$12.30)

As more than one speaker at the ALGOL 68 conference held recently at Strathclyde University pointed out this book is a must for anyone seriously interested in implementing ALGOL 68. It is not however intended for the casual reader and should not be regarded as an introduction to compiling ALGOL 68-like languages.

Branquart and his colleagues describe in considerable detail the algorithms used in the code generation phase of their compiler. Representation of values, storage allocation, scope checking and generation of a machine independent intermediate code are all described, mainly in a sort of ALGOL 68 which is quite easy to follow, at least after a little familiarisation. The book however does not cover parsing, representation of modes or the detection of coercions.

The reader, unless he has been actively involved in implementing ALGOL 68, may find the first section of the book heavy going and the authors could, with benefit, have provided more introductory material to help the reader get in to the book. However few compiler writers have produced such a detailed description of their work and the book will be much appreciated by implementors of ALGOL 68, numerous as they now seem to be.

R. B. HUNTER (Glasgow)

*Computer and Job/Shop Scheduling Theory*, edited by E. G. Coffman Jr, 1976; 299 pages. (John Wiley, £10.75)

Computers are not to my knowledge really used to produce job shop schedules; then again salesmen don't solve travelling salesman problems before going on their rounds. However, certain types of problems from the real world may be abstractly modelled and labelled with such names. Starting from this premise this collection of edited contributions makes an excellent volume on this topic. The chapter headings of the book and their respective authors are listed.

Chapter One Introduction to deterministic scheduling theory, E. G. Coffman, Jr.

Chapter Two Algorithms for minimal-length schedules, Ravi Sethi.

Chapter Three Scheduling algorithms for minimising the mean weighted flow-time criterion, J. L. Bruno.

Chapter Four Complexity of sequencing problems, J. D. Ullman.

Chapter Five Bounds on the performance of scheduling algorithms, R. L. Graham.

Chapter Six Enumerative and iterative computational approaches, W. H. Kohler and K. Steiglitz.

I found the first chapter stimulating and a good introduction towards studying the rest; the other chapters are specialised in the stated problems of schedule construction. This book should be of interest to someone researching in this problem area.

G. MITRA (Uxbridge)

*Data Compression*, edited by L. D. Davisson and R. M. Gray, 1976; 407 pages. (Distributed by John Wiley, £18.00)

This book is concerned with techniques for the removal of redundancy from data and with the determination of the optimum trade off between bandwidth reduction and acceptable distortion in data transmission. The main emphasis is on analogue data and the book is more likely to be of interest to the designer of data transmission systems than to the data processing specialist.

One is tempted to wonder who might buy this book or others like it. The volumes in the 'Benchmark Series' consist of reproductions of published papers, with a minimum of linking editorial material. The papers selected represent major contributions to the literature. As a consequence a good library will already contain the majority of the material in its normal run of periodicals, and the remainder is likely to be accessible via the British Lending Library. The price of £18 (4½p per page) is not likely to appeal to the private buyer, and the librarian will not be anxious to duplicate material already available.

M. WELLS (Leeds)