Reference	*Source*
(*e*) *Literature valuable as a source of references*	
46. Magnetic Recording 1900–49. J. Crerar Libr. Bibl. Ser. No. 1, 66, p. 1950. '399 Abstracts and Titles.'	A
47. Magnetic Stores. K. Sattelberg *Arch. Tech. Messen*, 304, Jo83–5. 'Includes Tapes and Long List of References.'	A
48. A Contribution to the History and Systems of the Magnetic Storage Technique. H. Volz *Hochfrequenztech U Elek Aust.*, Vol. 74, pp. 47–56, May 1965. 'History 1900–62.' 162 References.	A

Book Review

Handbook for Automatic Computation. Vol. 1, Part *a*, *Description of ALGOL* 60, by H. Rutishauser, 323 pp. Vol. 1, Part *b*, *Translation of ALGOL* 60, by A. A. Grau, U. Hill and H. Langmaack, 397 pp. (Berlin: *Springer-Verlag*. Part *a*, DM 58; Part *b*, DM 64.)

In the words of the publishers 'the aim of the Handbook for Automatic Computation is to supply the computing scientist with a selection of tested algorithms. . . . written in the algorithmic language ALGOL 60'. The first two parts, which are reviewed here, are introduced to provide the theoretical background and are concerned with a description of ALGOL 60 and a description of translating ALGOL 60, respectively.

Part *a* restricts itself to the IFIP subset of ALGOL and thereby eliminates discussion of the more controversial aspects of the language. This is in keeping with the stated intention for the whole handbook in that all programs shall either adhere to this subset or the deviations shall be clearly stated. The collected algorithms will then run successfully with most existing ALGOL compilers. The bulk of the book was modelled after lectures given at the Swiss Federal Institute of Technology, Zurich.

There seem to be two possible strategies for writing a book such as this. One is to exhibit the revised ALGOL report (and/or the IFIP subset) and to supplement these by examples so chosen that they illustrate the semantic content of the language, highlighting any areas of ambiguity. The other is to reformulate the definition of ALGOL and to illustrate this in like manner. Both methods are used here. To my mind the revised ALGOL report still serves as the best available definition of the language, although the syntactic diagrams presented do constitute a useful alternative viewpoint. The value of the work lies in the fact that it does enable the reader to obtain a clear impression of how the ALGOL language can be used to solve numerical problems, not with elegance alone but also with effect and with economy of effort. In consequence it can be claimed to supplement the revised ALGOL report in a very desirable manner.

Part *b* is concerned with an ALGOL translator whose main purpose quite escapes me. It transforms an unspecified dialect of ALGOL into the symbolic assembly language for a non-existent machine. The presentation of the translator program, which takes more than half of the available space, is in the style of a novel written in an original form of ALGOL, complete with Greek, Gothic and other symbolic notation. It is extremely curious that all questions of syntax analysis and statement recognition are largely ignored, being assumed to have been performed in an undiscussed pre-preparatory pass, whilst it is pedantically footnoted that a symbol, which approximates the reflection of a question mark, is used to denote ; in an ALGOL comment. It is just this type of inconsistency which leaves me with the feeling that the book is not a good introduction to compiler writing. The written text is mainly concerned with questions of storage allocation and choice of object code, and can be used to build up a reasonable picture of the state of a compiled ALGOL program for an 'average' implementation. This can be used to illustrate the basic inefficiencies of machine utilisation which comprise the premium paid to gain the many advantages in using a language such as ALGOL. The increased readability obtained through presenting the translator program written in 'ALGOL' itself highlights one of these advantages. It becomes apparent that the first entry into the procedure 'check for the same identifier in the same block' on page 175, during the initialisation of the identifier list, prejudices the entire translation.

This is not the first venture of the publishers into the production of a Handbook of this type, which is intended to be used by workers in the field. In particular I am familiar with their Handbook of Physics and a very useful set of volumes it is. If the Handbook for Automatic Computation maintains the standard set in other fields then undoubtedly the volumes will constitute a very desirable addition to the literature. However, one would hope that they have the strength of mind to keep to the two ideals of a restriction to the IFIP subset and to publish only tested algorithms. It is with these features that the primary value of the Handbook rests.

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