CHAPTER I

INTRODUCTION TO ALGOL

ALGOL is an international algorithmic programming language designed for problems whose solution can be expressed in algebraic notation. It is international in that its specifications have been agreed upon by an international committee and it has received wide acceptance throughout the world. It is algorithmic in that it is designed for the natural representation of algorithms. It permits the programmer to write his code in such a way that it is highly readable with an obvious flow of control. The existence of an ever-growing body of published algorithms increases the utility of the language to the user.

The ALGOL language as it exists at Carnegie Tech contains essentially all the features which have been specified for the international language, the only major exception being recursive procedures. Thus the user of ALGOL at Carnegie Tech is using a language with worldwide acceptance and understanding. Our local version has been augmented by certain features not now available in the international language, the most notable of which is an extensive input/output facility.

It is not the purpose of this document to provide the user who is unfamiliar with ALGOL with an introduction to that language, since the literature now includes several very fine works which perform this function admirably. For the user who is learning programming at the same time that he is learning ALGOL, McCracken's Guide to ALGOL Programming is an easy introduction. (See the bibliography at the end of this chapter for a complete citation.) It is used as the text for the introductory programming course at Carnegie Tech. Chapter II of the present work contains a detailed listing of the ways in which the ALGOL system at Carnegie Tech differs from ALGOL as described by McCracken, including references to section numbers in McCracken's text. Unfortunately, McCracken does not give an adequate discussion of ALGOL procedures or of the structure and syntax of conditional statements and expressions.

Bottenbruch's tutorial article in the ACM Journal is a complete introduction, and features good discussions of ALGOL procedures with explanations and examples and of conditional statements and expressions.

For the more experienced programmer who wishes to learn ALGOL, Christian Anderson's text will be worthwhile. Anderson provides a readable introduction to what is important in ALGOL-60.

Another introduction which might be considered is that of E. W. Dijkstra. This is a very complete book describing all of ALGOL. It contains some commentary which is not elsewhere available on the effects of the limited range of number representation in computers. It also contains a good discussion of ALGOL esoterica including Sneaky Procedures.

The basic document which defines the ALGOL language is the <u>Revised Report on the Algorithmic Language ALGOL-60</u> edited by Peter Naur. This report defines the language completely and unambiguously. It is, however, not easy reading and it is not recommended to the beginner in ALGOL. It is reproduced as Chapter 7 of this report.

Bibliography

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Dijkstra, E. W., <u>A Primer of ALGOL 60 Programming</u>, Academic Press, London, England.

McCracken, D. D., <u>A Guide to ALGOL Programming</u>, John Wiley and Sons, Inc., New York.

Naur, P., editor. <u>Revised Report on the Algorithmic Language ALGOL 60</u>, Communications of the ACM, 6, No. 1 (1963), 1-17.