

- FLAKE, P. L., MUSGRAVE, G., and SHORLAND, M. (1975). The HILO Logic Simulation Language, *Proceedings Workshop on Computer Hardware Description Languages and Their Applications*, New York.
- FLAKE, P. L. and MUSGRAVE, G. (1975). A Digital System Simulator—HILO, *Digital Processes*, Vol. 1, pp. 39-53.
- FOO, S. Y. and MUSGRAVE, G. (1975). Comparison of Graph Models for Computation and their Extension, *Proceedings Workshop on Computer Hardware Description Languages and their Applications*, New York.
- FRIEDMAN, T. D. and YANG, S. C. (1969). Methods used in Automatic Logic Design Generator (ALERT), *IEEE Trans. on Computers*, Vol. C18, No. 7, pp. 593-614.
- IVERSON, K. E. (1972). *A Programming Language*, John Wiley, New York.
- LEWIN, D. W., PURSLOW, E. J., and BENNETTS, R. G. (1972). Computer assisted Logic Design—The CALD System, IEE Conference on CAD, *IEE Conf. Pub.* Vol. 86, pp. 343-351.
- LINDSEY, C. H. and VAN DER MEULEN, S. G. (1971). *Informal Introduction to Algol 68*, North Holland Publishing, Amsterdam.
- PETRI, C. A. (1962). Kommunikation mit Automaten, Ph.D. Thesis, University of Bonn. English translation: Communication with Automata Supplement to RADC-TR-65-377, Vol. 1, US Air Force, Griffiss AFB, New York, 1966.
- RICHARDS, M. (1969). BCPL—A Tool for Compiler Writing and System Programming, *AFIPS Proc.*, Vol. 34, pp. 557-566.
- VAN WIJNGAARDEN, A., MAILLOUX, B. J., PECK, J. E. L., and KOSTER, C. H. A. (1970). Report on the Algorithmic Language Algol 68, *Numerische Mathematik*, Vol. 14, pp. 80-218.

Book reviews

Computers in Neurobiology and Behaviour, by B. Soucek and A. D. Carlson, 1976; 324 pages. (John Wiley, £13·85)

Computer Technology in Neuroscience, by P. B. Brown, 1976; 650 pages. (John Wiley: Halsted Press, £17·75)

These two books are aimed at widely differing audiences. Consequently it is perhaps most useful to treat them individually before comprising their relative qualities.

Branko Soucek and Albert Carlson have considerable experience in writing books about computing. This book, as its name implies, is designed to provide the reader with an insight into the application of computers to the life sciences. The problem is that it is extremely difficult to provide useful information about data acquisition, computer programming, signal analysis, and simulation, in the space of less than two hundred pages. For someone fresh to the field, chapter one, although rather short, contains some interesting ideas on the mechanisms underlying neural processes. Unfortunately, the next two chapters switch from biology to the logical operations underlying the working of a computer rather rapidly. It is also difficult to believe that anyone trying to learn BASIC could get very far with the aid of this book. Nevertheless, the mere fact that the authors have included something on correlation and spectral analysis might allow biologists unfamiliar with these techniques to gain some idea of their importance.

Computer Technology in Neuroscience edited by Paul Brown is aimed at a completely different audience, namely research workers in the general area of neuroscience. A good deal of the material is, however, fairly basic. For example the chapters by A. S. French, while only providing an introduction to the analysis of neural spike trains, do provide some very useful references and have the distinct advantage of having been written by one of the leading people in the field. One of the main disadvantages of the book is that there are too many contributors which makes it rather long; consequently one had the feeling whilst reading it that you were always likely to pick up some useful ideas but a proper explanation of the work described could only be obtained by reading the original papers. Another difficulty is that the book, because of its origin in a symposium, comprises presumably the extended versions of the papers originally presented, it therefore lacks any real structure. The editor has for example, made no attempt to group the chapters in any definite way. In fact, there is loose grouping within the text, but division of papers into proper subsections with the appropriate editorial introduction would have helped enormously.

In summary both books have their good and bad points. Soucek

and Carlson's book is well laid out and is therefore readable. Its disadvantages are that it tries, perhaps, to cover too much, too quickly, and jumps too rapidly from biology to computer technology. Paul Brown's book contains a great deal of valuable information for research workers, the main difficulty being that it often takes rather a long time to find it.

R. I. KITNEY (London)

Programs, Machines and Computation, by K. L. Clark and D. F. Cowell, 1976; 176 pages. (McGraw-Hill, £5·25)

Programs and Machines, An Introduction to the Theory of Computation, by Richard Bird, 1976. (John Wiley, £7·90)

As their titles suggest, these two books cover the same ground indeed, since all the authors acknowledge Scott (1967) as their inspiration, their similarity is even less surprising.

Each book covers adequately the definitions of machines and the establishment of the correctness and equivalence of programs. Both are intended primarily for computer science undergraduates and have been field tested in the authors' own teaching establishments. The authors assume, very reasonably, that their readers will have minimal pre-knowledge and a willingness to learn. Any reader who is unfamiliar with 'modern mathematical notation', and that includes most of us over 30, will find that these books are not too easy to read. They need to be studied carefully, which is not a bad property of a book intended for undergraduates. Having read both of them within a short time I am unable to decide if my clearer understanding of the one is simply due to my having read the other first. Both books are well presented and substantial; neither is too expensive by today's standards.

On the whole I feel that either of these books represents a good buy for a student involved in the second and third year studies of most good computer science courses; there are more exercises in Bird but the Clark and Cowell is cheaper. I shall recommend to my students (and colleagues) that they invest in Clark and Cowell, mainly because of the price and a common affinity for the thinking of Dijkstra *et al.*

I leave the denotation of the (not many) typographical errors as an exercise for the (I hope many) readers.

ALAN CHANTLER (Yelvertoft)

Reference

- SCOTT, D. (1967). Some definitional suggestions for automata theory, *J. Comp. Sys. Sci.*, Vol. 1, pp. 187-212.