

Computer checks . . .

Computer Chess. (ACM Monograph Series.) By Monroe Newborn. Pp. xii+200. (Academic: New York and London, April 1975.) \$15.00; £7.20.

1975 SEES the 25th anniversary of Claude Shannon's *Programming a Digital Computer for Playing Chess* (*Phil. Mag.*, 41, 356; 1950), and it is an appropriate time for a review of the developments which have occurred in this field since the appearance of that classical paper.

The better computer programs in the US and USSR are now achieving standards of play which make them interesting, not only to the computer scientist, but also to the chessplayer, for, in the games of computers, the chessplayer can recognise patterns of play which are familiar among human chessplayers. Indeed, for me, a principal fascination of this book arises from the existence in computer games of traits which I would, in human players, regard as personal styles, and yet which are, in the computer, seen to be consequences of simple arithmetical processes. This is not to imply, however, that the computers have yet reached human capability, even on the chessboard, for the absence of that indefinable human quality known as 'common sense' is all too evident in the computers' deliberations. That absence is perhaps the outstanding feature of all computer chess, and makes it unmistakably different from the human variety, for, unlike the human player of comparable ability, the computer will often engage in study of local minutiae, while obvious catastrophe threatens in another sector. Examples of this amusing behaviour are frequent in the book, and will reassure the reader who fears that his mind may soon be superseded.

The full appreciation of this book requires from the reader a moderate knowledge of chess. Fortunately, there is no corresponding requirement regarding a familiarity with computer programs. Thus, in my view, the other principal success of the book lies in its presentation of the structure and mechanics of computer chess programs in a manner which is not subject to obscuration by computer software jargon. Using simple language, the author presents a short, general survey of the techniques common to most chessplaying systems, and he includes a more detailed description of one of his own, quite successful, programs.

The central part of the book consists of some 36 analysed computer games. In the analysis, both the situation as interpreted by a competent chessplayer, and the rather different interpretations made by the computers, are presented in parallel as the games proceed. The games are taken principally from American intercomputer tournaments,

and cover the period 1967-74, thus enabling the reader to assess the progress, up to quite recent times, of this rapidly evolving art.

Overall, I would say that this book represents a successful navigation of the straits between the Charybdis of obsolete tedium and the Scylla of trivial immediacy which flank this rapidly developing subject.

Nigel J. Holloway

. . . into the past

Mathematics and Computers in Archaeology. By J. E. Doran and F. R. Hodson. Pp. xi+381. (Edinburgh University Press: Edinburgh, 1975). n.p.

FEW, if any, archaeologists now hold the view that 'science' has no place in archaeology, and in recent years mathematics and computing have become increasingly recognised as indispensable archaeological aids. The authors of this book rightly criticise some previous workers who have attempted to become 'scientific' by seizing on fashionable theories and forcing archaeological data into them, with a concomitant naïve and empirical use of borrowed 'hypothetico-deductive' jargon. This is an eminently readable book, refreshingly free from such jargon, which is intended for the archaeologist with no specialised mathematical knowledge, and which serves as an introduction to the subject, a critical summary of previous work, and an invaluable reference manual. It is written with simplicity but without condescension, the style being marred only by frequent confusion over the use of the first and third person and by an unnecessary proliferation of exclamation marks.

In Part 1, which deals with basic archaeological and mathematical tools,

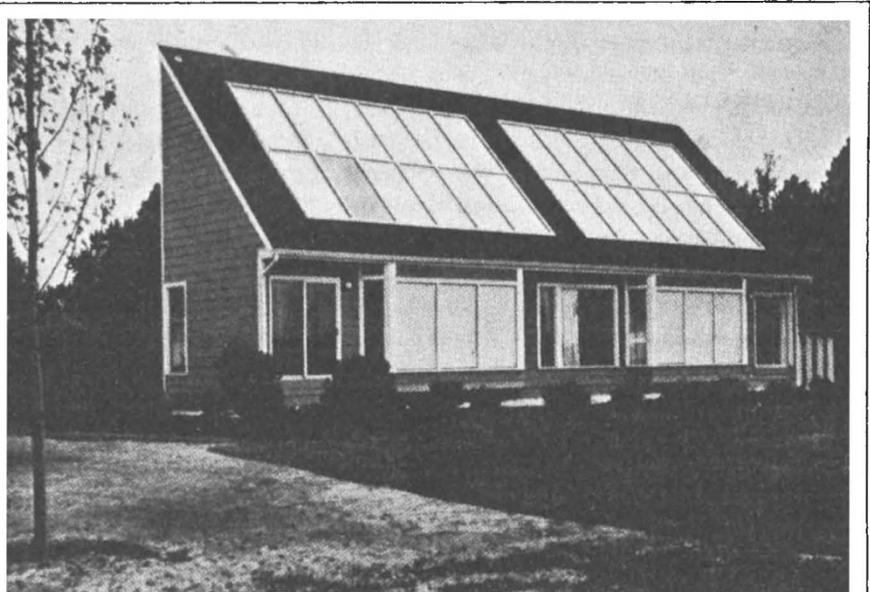
care is taken to explain fundamentals such as algorithms, vectors and functions, in terms quite comprehensible to the intelligent innumerate. Simple examples are chosen to illustrate such concepts as probability, and there is an excellent section on sampling and significance testing.

Part 2, which is devoted to data analysis techniques, presents a number of ways of dealing with the regularly recurring archaeological problem of classifying great masses of highly complex items. Reasoned, if caustic, arguments are levelled against much of the mythology of the 'New Archaeology', and at the many invalid approaches to taxonomy which have been used in the past with only partial understanding of the numerical methods involved. The section closes with a useful series of examples of data analyses, including Hodson's comparative taxonomy and seriation of the Münsingen La Tené fibulae.

Part 3, which is concerned with problems and prospects for the future, includes especially helpful sections on automatic seriation techniques and the use of computer-based archaeological data banks.

This is a volume to be thoroughly recommended, both as an introduction to first principles and as a practical comparison of the different techniques, including an assessment of their theoretical value. The general presentation of the book is of a high standard, but suffers from occasional erratic spacing and printing, together with poor reproduction of some of the simpler sketch-diagrams. At £8.00 for nearly 400 pages it is expensive but not overpriced, and it will undoubtedly remain the standard introduction to the subject for several years to come.

M. L. Shackley



Solar one, a solar electric home built by the University of Delaware. From *Energy Resources*. By Andrew L. Simon. Pp. x+165. (Pergamon: Oxford and New York, 1975.) £6.40, \$15.00, boards; £3.40, \$8.00, paper.