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Book reviews

Structural Design by Computer, by E. W. Wright, 1976; 411 pages. (Van Nostrand Reinhold, £12·50)

There have been relatively few books which have been concerned with the philosophy of structural engineering design. Most of those which purport to do so end up with large sections on structural analysis and really miss the fundamental discussion of the why and the wherefore.

Professor Wright's book is in a different category. Many of his thoughts and ideas are concerned with the processes of engineering design itself and one feels that the problem of the computer applied to structural engineering has provided a stimulus for the consideration and statement of a number of universal truths which transcend the particular problem of the introduction and efficient use of this relatively new and undoubtedly powerful tool. Perhaps it is simply that the arrival of the computer has emphasised the need for a sounder and more logical, and indeed a more aware, approach to the design process.

The book has been built round the discipline of the computer and its impact upon the structural engineer and the author has carefully and explicitly avoided giving more than a synoptic view of certain aspects of structural analysis which it must be said is rather biased towards elastic procedures. This is perhaps because the main systems, such as ICES and GENESYS, which he describes have a similar bias at present.

Of course one could take issue with him on a number of points; for example the influence of the form and nature of loading and material properties on structural forms appear to this reviewer to be insufficiently emphasised. There is perhaps an unduly strong bias towards the big machine and its systems at the expense of the currently popular minicomputer in use in many offices in Britain at present, although really the coverage is comprehensive.

By using a fair number of appendices the author has enabled the non-expert to find his way through the considerable jargon and mystique which still surrounds the subject and has been generous but careful with his references for further reading.

It is a book which should be read by all who teach structures and by those who practice structural engineering and will surely repay careful study.

P. B. MORICE (Southampton)

Introduction to Computer Science, by Harry Katzan Jr. 1975; 500 pages. (*Petrocelli/Charter: Input Two-Nine*, £8·75)

When I first saw it I had a very favourable impression of this book. So many introductory texts in computer science lack the broad coverage that this one clearly has. Having now read it more closely, I am disappointed. It is not that my expectations are inherently unachievable: the author has come close enough to demonstrate that. The balance of material is good but the book is spoilt by sloppiness: the thinking behind the choice of material for some sections is awkward, much of the writing is inept and the proof reading is incompetent. Good books, such as this one should have been, are needed. Perhaps several ha'porths of tar will be made available for a second edition.

Obviously much omission and trimming of material across the whole range of topics is necessary in a single volume introduction. The author has aimed, rightly in my opinion, to convey the flavour of each chosen area rather than attempt completeness. The opening chapters contain good outlines of standard preliminaries. Chapter 4 on number systems is mercifully short but could have been further squeezed into a section elsewhere. Chapter 9 on programming languages illustrates the danger of producing in the cause of brevity more of an *aide memoire* for an experienced lecturer than an outline for a student novice. The final chapters on applications present considerable problems. The author, in striving after flavours, has too often missed the substance of his menu, its relevance. I was particularly offended by the triviality of Chapter 9 on numeric computing which fails to convey anything of challenge, interest or value in a major application area of computers. Chapter 15 on automata drops most of its catches; various more or less formal topics are concatenated but there is no sense of purpose.

A number of detailed slips will mislead students. On page 137 the relative efficiency of one- and two-address instruction codes is examined, but the sample of one-address coding wastes two instructions on an unnecessary auxiliary location. The binary addition on page 139 omits a carry and prints the sum in the wrong columns. Was the reference to vacuum tubes on page 141 written with a quill pen? In the figure A on page 142 the wires do not thread the cores, and indeed this whole section is incomprehensible without mention of the concept of hysterisis. The point about the black-box concept on page 146 is that it is surprising, not unusual. On page 160 we find 'The data channel subsequently performs . . . simultaneously': I suspect that a prerequisite for understanding this sentence is to have understood it. In page 179 the author uses 'all . . . are not' where it is clear (to me) that he intends 'not all . . . are'. However on page 188 he correctly notes that punched cards occupy a relatively large space when a large volume is involved. The Basic session on page 324 has 1 for I in line 140 and the GOTO address in line 180 should be 100 not 110. On Page 370 an 'if' should be 'IF' and on page 372 the loop is executed while the until test is false not true.

C. M. REEVES (Keele)

Introduction to the Study of Ternary Switching Structures, by S. Thelliez, 1975; 186 pages. (*Gordon and Breach Information and Systems Theory* series volume 4, £7·60)

This book attempts too much in too little space. I cannot consider it a satisfactory 'Introduction' for students, even advanced ones, because the academic standard and level of detail vary so widely. The book is based on a bibliography of 123 items on ternary logic (combinational and sequential) covering the years 1920 to 1968 (developments since 1968 are not included). About half the book is at the rarefied level of a research monograph. Other sections are less demanding but sometimes the style is so terse as to become little more than a set of notes of limited use without reference to the original papers. There is no index and I have noted over twenty errors.

D. A. H. BROWN (Malvern)