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Book review

- Microcomputers: Fundamentals and Applications*, edited by G. Cain, 1975; 211 pages. (*Miniconsult*, £9.00)
- Minicomputer Evaluation and Selection*, edited by G. Cain, Y. Paker and P. Morse, 1975; 172 pages. (*Miniconsult*, £9.00)
- Minicomputers: In Industrial Process Control*, edited by G. Cain, Y. Paker and P. Morse, 1975; 172 pages. (*Miniconsult*, £9.00)

These three volumes form part of a series of (so far) six sets of course proceedings. They comprise the proceedings of three three-day courses given at the Polytechnic of Central London. It is one of the duties of polytechnics to provide education in technology by running both long and short courses. These volumes record how well short courses at a professional level are run by the Polytechnic of Central London. They are 'professional' in that they are aimed primarily at users and potential users of mini- and micro-computers. Though the courses are organised by academics, the authorship of the collected papers forms a nice mixture of academics and professionals each operating from their own standpoints.

The great advantage of organising courses as distinct from conferences, on technical subjects, is that the organisers can choose their authors and guide them as to what is wanted and how it should be presented. This allows the whole presentation to have continuity and completeness in a way that conferences often have not. It allows, too, the inclusion of papers and presentations of a basic and introductory nature. Thus the people attending the courses are all brought to within a common basis of knowledge and vocabulary so that they can benefit from the more advanced and specialised material which must, for many, be the main interest in the course. The organisers of these courses have had this point much in mind and so each of these volumes emerges as a text-book of a rather expensive, 'state-of-art' kind, even though it is a collection of papers by different authors. Thus, the books are truly useful to people who did not, or could not, attend the courses themselves. They are useful, too, in that they contain quite a lot of valuable basic and reference material such as glossaries, surveys and lists of participants which help the reader to gain an idea as to who, and what organisations, are interested in the subject material, in their capacities as makers, developers and users.

So much for the general review; the remainder of this review deals with the individual sets of proceedings in date order.

Minicomputers in Industrial Process Control, edited by Y. Paker,

G. Cain and P. Morse; the course was held in March 1973.

This volume is aimed at process control engineers. Since the organisers were aware that some of the course participants were not over familiar with the entrails of digital computers, the proceedings start with a paper by Y. Paker on 'Basic principles'. This is a subject covered by many people many times before but rarely so well. This paper would provide a good introduction to any text on digital computers, whether mini or otherwise. It would be a good set of proceedings, indeed, if all were as good as Paker's, which they are not and so they suffer by comparison. Cain's paper which follows, entitled 'The Minicomputer as a control element' attempts to bridge the gap between what computers can do and what control engineers want to do, or should want to do. It is somewhat more flowery than Paker's paper and it loses by contrast also by leaning towards selling the mini as a device. A third introductory paper by D. J. Fraade, of Swiss Ciba-Geigy, is entitled 'Minicomputers in process industries'. It is somewhat replete with 'overviews'—which are 'in' things and some comparative cost studies. It loses in objectivity by being largely an exhortation by an enthusiast. Nonetheless, these three papers do make up a useful introduction to the papers which follow, which become increasingly detailed and instructive. The first of this group by B. West of UMIST is entitled 'Control of processes' and is considerably more down to earth and objective than its predecessor. This is followed by useful contributions on interfacing, software and system design as general topics.

The final group is made up of three interesting and well assembled applications lectures on 'Control in the oil and chemical industries' by J. D. F. Wilkie of GEC-Elliott, 'Continuous control in rolling processes' by M. Dean of British Steel Corporation and 'Sequence control in fine chemicals, plastic and dyestuff production' by P. Burton of Kent Automation. It would be difficult to make a significant improvement on these three applications as a cross section of the subject. In all, this is a useful book both for reading and reference.

Minicomputer Evaluation and Selection, edited by G. Cain, Y. Paker and P. Morse, based on the course held in June 1973.

There are now many minicomputers available and many people who could afford to use them. A principal problem is to map the one

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- TIMMRECK, E. M. (1973). Computer Selection Methodology, *Computing Surveys*, Vol. 5, No. 4, December 1973.
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group onto the other. This course has this in mind.

The introductory paper starts, paradoxically, with the interjection 'STOP!' and then lists fifty-four, not always mutually exclusive, check-list questions about what you should have considered before buying 'that mini', followed by 'You haven't?—then read on'. If you do read on, you will be regaled with classification parameters, trendy diagrams and diagrams of trends, flowcharts and critical path methods of computer selection and system implementation. It may illustrate the problem or even deter you from adventures with minicomputers.

After this ebullient start, the remainder of the volume conforms in pattern and quality to the other volumes and provides a useful summary of the subject which, let it be admitted, is not an easy one either to practise or to teach.

The introduction to hardware, this time, is by M. Healey, of University of Cardiff: 'Minicomputer fundamentals'. Very properly, in this course, it lays more stress on input and output and interrupt aspects than Paker's introduction to the earlier course; it provides a useful and readable introduction to the subject. The next paper by D. Schilling of Arbat Consultants is entitled 'Generation of user system specifications'; it is fairly brief, pithy and professionally put together. 'Minicomputer hardware evaluation' by D. Turtle of ERA is even shorter and gives a brief sound summary of a subject that must be treated either briefly or at excessive length. 'Minicomputer software evaluation' by J. Levy of SEAS, France, follows, and maintains the same high standard, picking the bones of the subject neatly and succinctly, with useful and informative examples and specimen calculations.

There then follow three short and good papers on computer and system selection: 'System design and selection' by A. St. Johnstone of Vaughan Programming Services, 'Sensitivity analysis for selection factors' by L. G. Woodruff of Logica, which shows how to put the responsibility for choice where it should be put, and 'The OEM viewpoint in the selection of minicomputers' by P. Herke of Computer Equipment Company. These three, as might be expected from their authors, are valuable and rich in good advice based on experience.

Once more the applications lectures put some tasty icing on what is quite a good cake. Although it is invidious to single out a single paper, David Shirley, of Computer Information Centre, deserves a special mention for his 'Selection case history—A real-time investment banking system' which is excellent and convincing reading, and really makes the case for the use of the small computer in a specialised business environment. The second application paper, also good, is also different: 'Minicomputer network for control of a large nuclear particle accelerator' by M. C. Crowley-Milling, of CERN. It gives interesting insight into the problems of choice for a multi-national co-operative enterprise such as CERN and goes into detail of the specification technique for a big and complicated system. It covers so much that, surely, many people will find some of it useful to study.

The final offering of this volume is also welcome and useful, a Glossary of Minicomputer and Interfacing terms, of nearly thirty pages which is in itself a useful document to anybody who is entering this field where so many terms are written as strings of initials and so many innocent sounding phrases often mean a lot more than they

seem.

Micro-computers; Fundamentals and Applications, edited by G. Cain based on the course held in March 1974.

This volume is particularly welcome when there is so much being written and so many misconceptions are prevalent. This time the organisers have drawn almost entirely on authorities outside their own organisation.

The first three papers are by three well-known authorities on the general aspects of microcomputers and microprocessors. First 'An introduction to microcomputers' by Jan Stuart of Warren Spring Laboratory, the 'Microprocessor survey' by D. Wright of STL, followed by 'The hardware of the microprocessor' by Erik Daglass of University College Swansea. There are here some seventy pages of uncontroversial valuable material, including summaries of devices and their sources, tables of specifications and the like.

There follow papers by H. Kornstein of Data Applications International on 'Software and programming', J. Lederrey of Oxy Micro Computer Applications, Switzerland, on 'System design and applications' and J. B. Peatman of Georgia Institute of Technology, USA on 'Designing in self test capacity'. All of these are worth reading: Kornstein writes after much experience with the Intel 8008 and 8080 and compares them with the IMP 16 as 'Mini-like microcomputers'. Lederrey produces a useful algorithmic description of putting a system together and choosing to use a microcomputer. Peatman, a well-known writer of textbooks on digital system design, presents a gentle commonsense approach to his topic.

The enormous possibilities for the use of devices so cheap and so versatile as microprocessors pose a difficult problem indeed for the organisers in finding either a cross section or typical examples of applications. In the event they have chosen three widely different ones, typical or otherwise—who can tell?

P. J. Watson of GEC Measurements presents 'A remote data collection and transmission system' which describes neatly and briefly the system designed for the Electricity Generating Board for collecting, converting and transmitting measured data from points all over their network. This is probably typical of what may well become a great number of similar applications.

The second example is an instrumentation application, probably also typical of the future or even the present 'A blood gas analyzer using a modular microcomputer system' by S. C. Krough of Radiometer, Denmark. Finally D. Dack of Hewlett-Packard presents a paper on microprocessor display systems, which is less an application study on what a microprocessor may be used for, but rather how its use may be facilitated. Since a major problem area of microprocessors is that of how to get data in and out of them, this is a useful contribution.

The volume ends with the only 'in house' presentation, an ambitious and quite successful attempt to convey 'Elements of logic design' in the small compass of 35 pages. This paper by R. C. S. Morling of the PCL is necessarily rather compressed but covers a large area and contains a good deal of practically useful material in the form of Logic family tables, typical circuits, codes and similar information.

There are not yet available any text books on microprocessors. Until there are, this volume will help to fill the gap.

B. S. WALKER (Reading)