

# Book Reviews

## Introduction to Computer-Assisted Experimentation

KENNETH L. RATZLAFF

*John Wiley and Sons, Chichester, 1987, pp. 438, £43.25*

A book which starts with a quotation from Einstein and ends with one from Woody Allen promises to be a little out of the ordinary. This book is in fact unusual in that it covers much of the field of computer-assisted experimentation in a comprehensible manner in a little over 400 pages and yet manages to give sufficient detail to allow a naive reader to get started. Another unusual and admirable feature of the book is the fact that each chapter can be read alone and does not rely on those preceding it.

The author, an analytical chemist who now directs an instrument design laboratory, clearly has a good grasp of the field and is able to express simply ideas which are often considered difficult.

The main theme of the book is the computer and how it is used and interfaced with the real world. Very little is said about experimental methods, data processing or interpretation of results, and it is assumed that the reader is familiar with, or has other access to, this knowledge.

The book starts with a brief, interesting but rather incomplete, historical review of the development of computers and goes on to outline the various modes of operation of these machines in the modern world. The second chapter covering the fundamentals of computer hardware is adequate rather than exhaustive and is likely to be out-of-date soon. Nothing is said about multiprocessor architecture (other than the use of specialized co-processors) or of specialized signal processing chips or reduced instruction set processors which are now becoming important. However, it is perhaps one of the strengths of this book that it does not confuse the reader with detail in areas of minority interest.

The chapter on computer software is very useful for the non-expert choosing both the operating environment and the language for his particular task. Sensible advice is given and the key advantages and disadvantages of each language are brought out.

The main problem of interfacing the real world to the computer is tackled next, again starting with the computer as the point of reference. Direct memory access, parallel and serial interfaces are considered in sufficient detail to allow the user to understand what is going on and to specify and use commercially available equipment. Analogue interfaces

are given somewhat more detailed coverage and this provides the user with some design opportunities.

The following two chapters give brief sketches of analog and digital electronics and these take the reader away from the computer and towards the transducer and the actual experiment. Although these reviews are necessarily rather superficial, they again contain enough information to get sensible designs underway. There then follow two chapters on transducers in which a wide variety of devices are reviewed and their characteristics described. This review is ended by a brief consideration of laboratory robotics in which the author sensibly warns the reader of the relatively primitive state of this technology.

Chapter 9 brings the reader back to the computer again, this time by consideration of the problems of data communications. An admirable summary of the standard laboratory communications interfaces (RS-232-C and IEE-488) is given and some others (RS449 and centronics, for example) also receive a brief mention.

The book proceeds with an excellent chapter on the elements of software and hardware for graphical display and provides the reader with a good introduction to the various man-machine interfaces available. This is followed by a less satisfactory chapter on data processing which is weak as a review, and without much justification concentrates on those methods which one presumes the author has historically used.

The final chapter of the book is a disappointment in that it merely talks round the subject. It would, I think, have been more appropriate and stimulating for the reader to provide a concrete example of a laboratory instrumentation task and take the reader through the detailed design and selection procedures.

In spite of the somewhat weak final sections of this book, it is a good general overview of the field of laboratory experiment control by computer which takes readers into the subject without overburdening them with theory. It can be recommended as a starting point for someone who has definite ideas on what needs to be done experimentally, but does not know how to incorporate computer assistance. It is not useful as an aid in experiment design or in the assessment of results.

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## The Lipid Handbook

FRANK D. GUNSTONE, JOHN L. HARWOOD and  
FRED B. PADLEY (Editors)

*Chapman and Hall, London, New York, 1986, pp. 571 + 314  
(dictionary section), £95.00*

The annual world production of castor oil, the fatty acid composition of buffalo gourd oil or the design of an industrial deodorizing plant can all be revealed to you by inspection of *The Lipid Handbook*. Of course, publication of a book with this title raises for the lipid biochemist hopes that

at last he will have at hand the up-to-date compendium of data and technical information he so long has sought. Short reflection, however, soon brings the realization that all our knowledge of lipids will not be encompassed in a book of 571 pages, albeit with a further 314 pages of dictionary section.

In fact, the first part of the book consists of a series of short reviews. They cover topics from industrial chemistry to disease. The first three chapters (170 pages in all) are concerned with the structures of different lipids and the

educational efficacy. Computer assisted learning through. Introduction. Abstract. To evaluate student opinion on use of CAL in the MBBS 2nd professional experimental practical. pharmacology curriculum. Also to get their views on the advantages and disadvantages of using CAL over. traditional methods. A cross-sectional questionnaire based study was conducted at HIMS, Dehradun and. Uttarakhand. An alternative. It is an interactive computer assisted learning. program without the involvement of real experimental. tools. In the era of rapidly changing trends in teaching. methods and practices, CAL comes as a mixed bag of. package with both advantages and limitations. The. program can be repeated over and again, any number of. Computer assisted style editing of English language medical texts for readers in developing countries. Journal of Research Communication Studies, 3, 281-288. Crispin, Anthony (1981). An Introduction to computer-assisted second language education. Australia: Massey University, Mimeo, 10 pp. Luehrmann, A. W. (1972).