WHO-97 (Sept. '84)

The May/June issue of Access (Vol. 3(3), p. 24-34) features an article by Robert T. Kintz entitled "Turning Your Computer into a CAT: Signal Averaging on a Microcomputer". The article contains listings of the assembly language and BASIC programs used by the author with his Ohio scientific microcomputer. Also, this issue of Access contains on p. 41-44 a description and BASIC listing of a program which calculates the molecular weight and percent elemental composition of a compound, when the molecular formula is entered. (D.R.)

WHO-98 (Sept. '84)

The July issue of Communications of the ACM (Vol. 27(7), p. 638-648) contains an interview with Andres van Dam entitled "Computer Graphics Comes of Age". This article summarizes major advances in computer graphics over the past 25 years. (D.R.)

WHO-99 (Sept. '84)

The September 1984 issue of Scientific American is a special issue on computers and contains many general articles of interest. (D.R.)

BOOK REVIEW

Alan Smith (Chemistry Department, University of Southern Main, Porland, ME 04104) has served as Book Review editor since December 1982 and contributed a great deal to the success of this section. Because of the pressure of other activities, Alan has asked to be relieved of his duties as editor. I am pleased to announce that Dr. Harry E. Pence (Department of Chemistry, State University College, Oneonta, NY 13820) has agreed to serve as editor beginning with the December issue. Anyone willing to review books for the Newsletter or wishing to suggest books for review should communicate directly with Harry. (D. Rosenthal)

The Fifth Generation—Artificial Intelligence and Japan's Computer Challenge to the World
by Edward A. Feigenbaum and Pamela McCorduck
Addison-Wesley, 1983, 288 p., $15.95
One Jacob Way, Reading, MA 01867
ISBN 0-201-11519-0
Reviewed by Brian Pankuch*

I don't know about you, but the idea of artificial intelligence has never been particularly appealing to me. Perhaps because many articles and books consist of long winded arguments on whether systems can or will be able to 'think". Being fortuitously snowbound, thanks to an unseasonable snowstorm, I found myself quickly engrossed in this very readable book. Feigenbaum is a leading computer researcher and McCorduck an experienced science writer in this field. Their collaboration is hard to put down.

For instance, the movement from general theories on learning to using specific knowledge bases in real applications is described. What is the difference between a data base and a knowledge base? An example of a data base is a compilation of the known facts on a given molecule, versus a knowledge base which would include the data base plus all you learned in graduate school, specialized courses, from journals, from actual practice and experience on molecular structure. The knowledge base would be much more complete, not just facts, but how to use the facts.

Use of a knowledge base with appropriate programming gives an expert system. In use these expert systems have given medical diagnosis comparable to that of a specialist and above the level of a nonspecialist physician. One system created at Stanford, DENDRAL, infers chemical structure and data and provides details of molecular structure which exceeds the human designer's capability.

The systems seem to work best on projects which require large amounts of specific knowledge. These systems which use the appropriate information to solve a problem can save a lot on the cost of data collection and analysis. At their best, they function as an intelligent assistant and can explain lines of reasoning taken or why certain paths were not taken. They seem to work well where a lot of reasoning is needed.

I found the approach taken by a knowledge engineer, the person who is the kingpin in putting the expert system together, particularly interesting. First a specialist in a given field must be convinced to spend a lot of time with the knowledge engineer. Both work together on a substantial problem in the specific field. Often the specialist first gives the textbook version of the solution. The expert system written on this basis generally doesn't work well. Next the knowledge engineer watches how the specialist actually manipulates the data - not how he says he does it, how he actually does it. This is where the difficult part, the heuristic part, (where to go by the book and where to ignore the usual) comes in.

The knowledge engineer's job is so difficult and critical that many believe it must be automated if expert systems are to succeed in general.

Where does the Japanese challenge come in? The Japanese have a ten year plan to build a fifth generation computer which includes these expert systems and the ability to be programmed in a natural language. Other Japanese challenges have certainly displaced workers in autos and electronics, but resulted in a more efficient marketplace with a wider choice of products for consumers. Is this challenge different?

The authors argue persuasively that the results of this race are much more important and will drastically affect leadership in the information society to come. Or perhaps more important, they and we may be the ones to lose our jobs this time. In the future, our country could lose one of the few areas of excellence we have left. Some interesting statistics: Japan has five times the engineers, 1/20 the lawyers, 1/7 the accountants as the U.S. on a per capita basis.

To put the book in perspective, I tried to interest my better half in reading it, but the immediate demands of changing plans for her Brownie troop took precedence. A ten year competition is hard to take seriously; the Brownie troop is much more immediate. All views on sweeping national and world forces and future events are certainly arguable, but this is an interesting book to read. I recommend it highly.

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MS-DOS and PC-DOS User's Guide
by Peter Norton
Robert J. Brady Co., 1984, 250 p., $15.95
Routes 197 & 450, Bowie, MD 20715
Reviewed by Harry E. Pence*

Microsoft's microcomputer disk operating system, MS-DOS, is not only widely used on IBM-PCs under the name PC-DOS but is also a common operating system on many of the other 8088/8086 based personal computers. The new versions of MS-DOS, such as DOS-2.0 and DOS-2.1, include many new features that have improved the power and flexibility of DOS but have also made it more complicated for the novice to learn. This book is intended to teach the fundamentals of DOS and also to suggest ways in which the system can be employed most effectively.

Norton's book has been designed to satisfy a broad range of DOS users. It discusses not only the IBM version of the operating system, but also the alternative forms of the various commands that are found on other IBM compatible personal computers, such as Columbia, Compaq, etc. In addition, commands that appear only in the 2.x versions of DOS are placed in bold-faced type, to accomodate readers who are still using older DOS versions such as 1.10 or 1.25.

Norton utilizes the analogy of an office worker's desk very effectively to introduce the basic concepts which are needed to understand DOS. The disk storage is explained as being like a filing cabinet, the computer memory like the desk top, etc. These explanations are very clear and important ideas are reinforced by cartoons, some of which are rather clever. Unfortunately, I did not find the book encourages the type of hands-on approach that I prefer. Even though the author suggests that the reader should try various techniques on the computer, the text does not provide the type of assistance that is normally needed by someone who is working with a computer for the first time.