

Redwood City, CA 94063) is in charge of the SOFTSWAP project.

LOGO software is available from the Young People's Logo Association Software Exchange, 1208 Hillside Drive, Richardson, TX 75081. Ten Apple disks (or tapes), one Atari disk, three Commodore disks, six MIT disks and six TI disks are available and their contents are listed. If you submit a working program, you may select any tape or disk from the catalog. YPLA will copy the programs onto a tape or disc. A blank disk or tape and return postage must be included. Alternatively, \$10 can be sent for any tape or disk in the catalog. Information on eleven other sources of public domain software is included.

The December/January issue (Volume 11(5)) featured a number of articles on LOGO. (D.R.)

BOOK REVIEWS

Alan Smith (Chemistry Department, University of Southern Maine, Portland, ME 04104) is Editor of the Book Review section of the Newsletter. Anyone willing to review books for the Newsletter or wishing to suggest books for review should contact Alan.

With this issue, we are pleased to publish two reviews by a new reviewer, Dr. Harry E. Pence. Harry is Professor of Chemistry at the State University of New York College at Oneonta, Oneonta, NY 13220. He is an inorganic chemist by trade, and is interested in instructional uses of computers, especially in general chemistry. He programs in FORTRAN, BASIC and Pascal, and is beginning to explore the caverns of C. We think that readers will find these reviews to be interesting and informative.

PASCAL PROGRAMS FOR SCIENTISTS AND ENGINEERS

by Alan R. Miller

SYBEX, 374 pages, 1981, \$17.95

Reviewed by Harry E. Pence

Pascal is strongly recommended as a teaching language by many computer scientists and enthusiastically endorsed by columnists in some computer magazines. However, chemists who set out to learn about chemical applications of this language may encounter some frustrations. Although there are many Pascal textbooks, few of them deal with problems of interest to chemists, and the sample programs in chemistry books are usually written in FORTRAN or BASIC. Miller's book provides an excellent opportunity to learn more about Pascal while also developing a "toolkit" of scientific programs that may be used for either teaching or research.

This book was developed from a course in computer methods for engineering students taught at the New Mexico Institute of Technology, and the list of topics covered is very impressive for what I presume is a one semester course. An elementary knowledge of Pascal is assumed, and it is helpful to have one of the standard Pascal textbooks at hand for reference. The author intends the material to be read sequentially, so that the techniques introduced initially, such as random number generation, sorting, plotting, and matrix manipulations, are used in later programs. This can make it somewhat difficult to run an isolated program for a specific application, but it does make the topic development very logical and understandable.

Miller presents an extensive discussion of computational methods, including topics such as numerical integration, the Newton-Raphson Method, linear and nonlinear curve-fitting, and the solution of simultaneous equations. He not only suggests several different approaches for each of these techniques but also points out some of the complications which may arise. The text includes roughly sixty-five complete Pascal programs that demonstrate these various techniques. The discussion of the various subjects is quite clear, but as might be expected from the number of topics covered, the coverage of the mathematical background is sometimes rather brief. Those who wish a more extensive mathematical treatment can either consult the books mentioned in the bibliography or else go to one of the more mathematical references, such as A.C. Norris' book on computational chemistry.

I have found this book to be very enjoyable, and one of my students who is currently working through it has expressed a similar response. The discussion is clear, the organization is good, and the programs are presented in a format that is easy to follow. The author reports that he has tested most of the programs on several different Pascal compilers. I have tried many of the programs, and the few cases where minor modifications were necessary to make them run may well be because our Pascal compiler is not one of the common commercial versions. In order to make the programs as portable as possible, the author has used only a fundamental set of Pascal commands. I regret not having the chance to see examples where some of the more elegant structures are used, but this regret is more than balanced by the fact that the programs run so well. I do wish that exercises had been provided, and I hope that this omission will be corrected in the next edition.

In summary, I have found much that I like in this book and very little that I dislike. Because of its clarity and organization, it should be useful to many different individuals having a broad range of computer experience. It is especially welcome to find such a readable book that covers so much valuable material on computational methods.

BASIC PROGRAMS FOR SCIENTISTS AND ENGINEERS

by Alan R. Miller

SYBEX, 318 pages, 1981, \$15.95

FORTRAN PROGRAMS FOR SCIENTISTS AND ENGINEERS

by Alan R. Miller

SYBEX, 280 pages, 1982, \$16.95

Reviewed by Harry E. Pence

Despite my personal interest in Pascal, there is no doubt that for many chemists the computer language of choice continues to be either FORTRAN or BASIC. While working on the review of Miller's Pascal book, I was pleased to learn that he had also written versions of his book in both of these other languages. Although I received copies of these editions too late to examine them extensively, they are both very similar to the original, and so I wished to mention them for the benefit of those who find the description of Miller's book to be interesting, but prefer to work in one of the more traditional computer languages.

In each case, the approach and list of topics covered is almost exactly the same as that in the Pascal book; however, there are a few significant differences. The most important change is the addition of problems at the end of each chapter. Although the number of exercises provided is still rather small (only a total of thirty), they should increase the usefulness of the books for both self-study and classroom instruction. As in the previous volume, the author has gone to great lengths to assure that the programs will run on a wide variety of different systems.

Unlike the situation in Pascal, there are a number of books available which provide scientific subroutines and programs in BASIC or FORTRAN. However, Miller's books do offer a clear well-integrated approach to a large number of useful computational techniques. Chemists who use BASIC or FORTRAN may well find these books to be a worthwhile addition to their libraries.

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