

Computer Center

Computer World Turns Upside Down Again

Theodore J. Crovello
Department Editor

Living in a revolution is exciting and frustrating. The *excitement* of the Computer Revolution stems from all of the new capabilities and insights into biology that are possible. The *frustration* comes from trying to anticipate and adjust to advances in hardware and software, and in attempts to find financial support on a recurring basis. When microcomputers like the TRS-80 Model I and the Apple II became widely available to educators around 1980, we had to learn to program them ourselves because no software was available; the hardware was ahead of the software. In 1982 bioeducation software became available but most programs fell short of educators' standards; the hardware was still ahead of the software. In 1983 an increasing number of programs (available from some of the vendors given below) appeared that were acceptable to many bioeducators; the software finally seemed to be catching up with the hardware!

Then in late 1983 IBM announced its Peanut Computer, Radio Shack and NEC introduced notepad computers, several vendors announced new or improved IBM PC-compatible computers at lower prices, other vendors announced more powerful but

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For use in The Computer Center, Ted welcomes suggestions on what subjects should and should not be treated, summaries of educational computing centers, innovative uses of computers, and information about relevant books and events.

incompatible computers, and in January 1984 Apple announced its long-awaited Macintosh Computer, Hang on, fellow and sister educators! Just as you are beginning to feel comfortable with your Apple II or IIfx, your TRS-80 Model 3, or your whatever, out comes all this new hardware with some clear advantages. The major advance, at least with some machines, is the presence of a 16-bit microprocessor (32-bit in the Macintosh); most earlier machines have a slower 8-bit microprocessor. But this also creates a problem, at least temporarily: there is no educational software

available for these machines yet. This leads to a serious dilemma for administrators and educators: to buy the new machines and have little software in the first year or two, or, to buy older models that have a lot of available software but for which little new software will be developed. No one solution is best for all departments or schools. You must seriously evaluate your particular educational computer system (hardware, software, people) and make decisions based on your needs over the next 1-3 years. If you bought wisely, it may be that your current computers and programs will continue to serve their original purposes in your courses. Then perhaps any additional purchases will be of the newer, better machines. They will not replace the older ones, but will perform the tasks that they cannot do.

Unfortunately, I have no information that the programs of an 8-bit machine like the Apple II will run on a 16-bit or 32-bit machine like the Apple Macintosh. By the way, the disks are totally physically different on these two. We can hope for "gateways" (the new term for software that allows one computer to access another of a different internal architecture), but at this point it is only a hope.

Let me summarize my estimate of the status of the bioeducation software and hardware relationship. The Apple II and TRS-80 Model 3 have significant amounts of reasonably good biology software available. IBM PC-compatible software is just beginning to appear. None is probably available for the Macintosh unless it can be adapted from another computer that has a compatible microprocessor. For example, the TRS-80 Color Computer has a Motorola 6809 chip and its programs *should* be upward compatible with the Macintosh's Motorola 68000 chip. The major question the answer to which is only in the future is: will most biosoftware producers concentrate on the IBM-PC or on Apple's Macintosh, or on something else? The question would not be so important if there were not so relatively few sources of biology software. Word processors are available for every machine because every user wants one. But not everyone wants a genetics program, so the profit margin is tighter. Let's hope for more vendors who believe in the large size of the educational market, and also for the development of more gateways and any other innovation that will increase hardware compatibility.

Some Software Sources

Here are some sources of biology software for the high school or college level. Contact them directly for catalogs, prices, computer requirements, preview policy, etc. Most have software available for Apple computers, and some also have programs available for other types of computers. The only company with software for the IBM PC is Classroom Consortia Media. Listing of these companies does not constitute our endorsement of them. Together they offer about 60 biology programs, which I estimate may be as much

as half of the total commercially available today.

BIOBUND, % Professor Ted Crovello, Department of Biology, The University of Notre Dame, Notre Dame, IN 46556. Phone (219)239-7496.

BioLearning Systems, Inc., 420 Lexington Avenue, Suite 2735, New York, New York 10017. Phone (212) 687-8061.

Cambridge Development Lab, 100 Fifth Avenue, Waltham, MA 02154. Phone (617)890-8076.

Classroom Consortia Media, 57 Bay Street, Staten Island, NY 10301.

CONDUIT, M310 Oakdale Hall, The University of Iowa, P.O. Box C, Oakdale, Iowa 52319. Phone (319)353-5789.

EduTech, 634 Commonwealth Avenue, Newton Centre, MA 02159.

E.M.E. Corporation, P.O. Box 17, Pelham, NY 10803. Phone (914)576-1121.

Encyclopaedia Britannica Educational Corp., 425 North Michigan Avenue, Chicago, IL 60611.

Hayden Software Company, 600 Suffolk Street, Lowell, MA 01853.

HRM Software, Human Relations Media, 175 Tompkins Avenue, Pleasantville, NY 10570. Phone (914)769-6900.

J & S Software, 140 Reid Avenue, Port Washington, NY 11050. Phone (516)944-9304.

Professor John Jungck, Department of Biology, Beloit College, Beloit, WI 53511.

Microcomputer Workshops, 225 Westchester Avenue, Port Chester, NY 10573. Phone (914)937-5440.

Professor James E. Randall, 609 South Jordan Avenue, Bloomington, IN 47401.

SUMIT Courseware Project, % Professor James Spain, Department of Biology, Michigan Technical University, Houghton, MI 49931.

A genetics program written in PASCAL for the Apple II was published in *Creative Computing* (February 1981: 94ff). Called

Genepool, it allows users to simulate genetic crosses of mythical creatures called Zarkons. Genes for hair color and face color can be tracked, and the two sexes distinguished. The approximately 600 lines of program code are given in the article, so readers with good typing skills can keystroke the program into their machines. The rest of us probably would prefer to write the author (J.D. Eisenberg, 1630 Ottawa Ct., Apt. K., Sunnysvale, CA 94087), throw ourselves on his mercy, and plead for a copy of the program on a disk for a modest price.

Please keep in mind that once I receive from readers two reviews of any bioeducation program (using the form in the March ABT), and offer the vendor a chance to respond, we will try to publish the reviews and response in this column. Get to work and help your fellow educators nationwide!

1984 Workshops for Bioeducators

June 17-22, at The University of Nevada, Reno; "Computers in Bioeducation," led by Ted Crovello. \$450 tuition. Contact Professor Ted Crovello, Department of Biology, The University of Notre Dame, Notre Dame, IN 46556.

June 18-29, at Michigan Tech University; "Microcomputers for Modelling and Simulation in Undergraduate Life Science Instruction." \$750 tuition. Contact Professor James D. Spain, Department of Biology, Michigan Technical University, Houghton, MI 49931.

August 5, at Colorado State University, at the AIBS meeting. "Computers in Bioeducation." One-day workshop led by Ted Crovello. \$60 tuition. Contact AIBS, 1401 Wilson Blvd., Arlington, VA 22209.

August 12-17, at The University of Notre Dame; "Computers in



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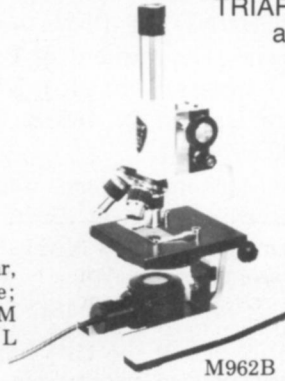
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Bioeducation," led by Ted Crovello; and "Microcomputers in the Laboratory and Classroom," by H. Esch. For either course, tuition is \$450; contact Ted Crovello at the aboveaddress.

November 8, at Purdue University, at the NABT meeting. "Computers in Bioeducation: An Overview and Update"; One-day workshop led by Ted Crovello. \$60 tuition. Other 1-2 hour presentations are planned for November 9-11. Contact Professor Floyd Nordland, Department of

Biological Sciences, Purdue University, West Lafayette, IN 47907.

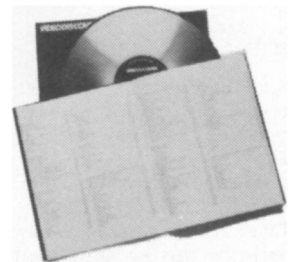
Instructor's Guide Available

Professor Robert Keen (Biology Department, Michigan Technical University, Houghton, MI 49931) has written an extensive Instructor's Guide to accompany courses that use Jim Spain's book, *BASIC Microcomputer Models in Biology*. The book was reviewed in this column in January 1984. Contact Keen for more information.

A Request To You

For inclusion in your *ABT's* Computer Center Department please send me information on other sources of bioeducation software, publications, meetings and workshops. Information on events must be received about six months in advance. Thanks for your help!

The **Bio Sci Video Disc** — a teaching aid for the biological science professional. This single disc contains a stellar in-depth variety of 6,000+ high quality color images of general biology subjects, from biochemistry to plant and animal diversity.



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