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CONTEST: SOFTWARE ANACHRONISMS

If they could return to earth today, a lot of famous people of the past might well become promptly addicted to computing and, being great, to Apples. Undoubtedly, they would design custom software for their own purposes.

Imagine a *Softalk* bestseller list spanning the ages, for example:

1. *World Invaders*, by Genghis Khan
2. *Tabula Rasa Calculator*, by Isaac Newton and John Locke
3. L. da Vinci's *3-D Graphics Package*
4. *Super Type Set Word Processor*, by B. Franklin
5. *Computer Invasion: A Realistic Simulation of the Fall of Gaul*, by J. Caesar
6. *Tower Dungeon*, by Mary Q. of Scots
7. *Olympic Dodecathlon*, by Hercules
8. *Hi-Res Adventure #-83: The Wizard and the Wart*, by King Arthur
9. *Interactive Fiction*, by Will Shakespeare
10. *Hellfire Warrior*, by D. Alighieri

Any resemblance to actual products is purely intentional, with our apologies.

Now it's your turn. Come up with your top ten of software by famous names of the past, and mail it to *Softalk* by June 19, 1981, along with an entry form like the one below.

There'll be one prize worth $50 for the entrant whose list most nearly represents all lists submitted, and another $50 prize for the most imaginative, a propos entry; five entrants will win $10 prizes for the five cleverest individual items. All prizes must be chosen from goods manufactured or published by one of *Softalk*'s May advertisers. Because, in the past, it was necessary to point out that Apple Computer was not one of *Softalk*'s advertisers and therefore its products were not eligible, it's now important to point out that as of this month, Apple Computer is a *Softalk* advertiser and you may choose products from Apple as prizes.

Have fun, and enter as often as you like—we had trouble stopping at ten!

Send this entry form along with your imaginary bestsellers to Softalk Anachronisms, 11021 Magnolia Boulevard, North Hollywood, CA 91601, by June 19, 1981.

My famous people software list is attached.

Name: _____
Address: _____
City/State/Zip: _____

The prize I'd like if I win is _____
My local retailer is _____

Optional: Which of *Softalk*'s contests do you like best? _____. Are there any kinds of contests you'd like to see that we haven't used? _____.

Get in the Old Mill Stream

Ideas Contest. This contest is designed to further enhance the Apple environment. In Marketalk Reviews, you'll see a description of the Mill, the board that harnesses the powerful 6809 microprocessor to the Apple. The review points out the lack of current software support.

The contest has two sections: one for advanced programmers and one for thinkers whose imaginations may stretch well beyond their programming capabilities. Winner of each section will receive a Mill.

Entrants entering the programmers' section of the contest should detail their software concept and describe their capabilities for bringing the concept to fruition. Entries will be judged on the broad-based application of the concept and on the ability of the entrant to implement the concept should that concept be the winner.

Entrants entering the blue-sky section of the contest need only submit ideas on applications that could come from a marriage of the Mill and the Apple. These entries should be specific to an addressed marketplace and not too general; i.e., the idea of multitasking is a desirable, but too general, concept. A specific enhancement that multitasking might bring about would be adequate. Entries will be judged solely on the imaginative nature of the application conceived.

Send entries to Softalk Mill, 11021 Magnolia Boulevard, North Hollywood, CA 91601. Please indicate *programmer* or *blue sky* on your envelope.

More Contest Winners!

Oracle. Seven entrants got all three parts of the second section of the Oracle contest correct. The random generator drew Paul Shanberg of Moraga, California, as the winner. He chose Strategic Simulations's *Computer Quarterback* as a prize.

The contest asked entrants to predict the winners of best picture, best actor, and best actress at this year's Academy Awards. The winners were *Ordinary People*, Robert DeNiro, and Sissy Spacek, respectively.

In addition to awarding prizes for each section of the contest, an overall prize of a disk drive will be made for the cumu-

GOTO 35

dos boss
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Seeing is believing. See the SoftCard in operation at your Microsoft or Apple dealer. We think you'll agree that the SoftCard turns your Apple into the world's most versatile personal computer.

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EXEC EDU-WARE

Left then right: Facilities old and new. Below, left to right: Sherwin Steffin, Steve Pederson, David Mullich, Mike Leiberman, and Wendy Peterson.

BY ALLAN TOMMERVIK

If ever a cliche there was, it's the one about the impatience of youth. Among other things, we're told that youth will be served—and in that context the will is an imperative.

But as surely as a cliche may hold the germ of generalized truth, it also leaves room for powerful exceptions. Just such an exception to the opening cliche exists in Canoga Park, California, where Sherwin Steffin has marshalled a talented group of folks under the age of twenty-five to form Edu-Ware Services.

Any damn fool can con a bunch of wet-behind-the-ears youth into following him down a blind path to ruination. But Steffin lacks the qualifications to be a fool and ruination is now a destiny seemingly foreclosed to the Edu-Ware contingent.

Instead, by dint of painstaking effort—overcoming such odds as underfinancing and the initial lack of a really talented programmer—Edu-Ware has carved out a respected name for itself in the delicate area of educational software. Commercially, their games—now being marketed under the brand name of Interactive Fantasies—are also finding wider acceptance, with *The Prisoner* knocking on the door of *Softalk*'s Top Thirty.

Flying Against the Odds. Perhaps the most amazing facet of Edu-Ware's success is that it didn't come easy; but the company's youth hung in there, ever reaching for higher levels of achievement.

If ever a company were born to fail, Edu-Ware may have been it. Conceived as an alternative to the unemployment line, nurtured in one partner's apartment while the other attended college, addressing a market demanding perfection with the most imperfect of programming skills—these are not the elements one might choose to mix to maximize the chances for success.

But combatting those odds were some definite assets—Steffin's twenty years as an education professional, Steve Pederson's quick study of programming techniques, Mike Leiberman's tenacious sales activities, and, finally, the addition of David Mullich, a programmer worthy of the title.

From the Street to the Apple. All these people have been instrumental in Edu-Ware's growth, but the initial impetus came from Steffin, who currently serves as both president and chairman of the board of the company, although founder Steve Pederson will assume the mantle of president upon his graduation this spring from the University of California at Los Angeles.

Steffin has the bachelor's degree in experimental psychology and the master's degree in instructional technology. He served as a detached street gang worker in Detroit, combatting the increasing delinquency of the late fifties and early sixties. He then spent seven years teaching junior high school while pursuing his degree in instructional technology.

He subsequently served as a district media director for a suburban Chicago school district, was coordinator of the division of instructional systems development at Northeastern University for four years, spent a short time in instructional television at the National Technical Institute for the Deaf in Rochester, New York, and then migrated to California for a two-year stint as a senior research analyst at UCLA.

The Ailing School System. This last period, which ended in early 1979, was the critical one—when his past experience and present research led him to the conclusion that computer aided instruction was the trend of the future. His thinking, while representing perhaps more reasoned opinion than accepted fact, is an enlightened springboard for further discussion:

"First, the technology was in place. Apple had just hit its stride and other microcomputers were making CAI a more realistic alternative.

"Second, conventional education was in serious difficulty. The end product was being perceived as less competent, less skilled, less curious, and lacking in the desire to learn."

"Third, the schools were filled with frustration. The teachers were getting the brunt of the public's animosity, but the teacher had no mandate within which to work. It seemed that equally as important as teaching reading, writing, and arithmetic were his duties in teaching social skills, making the students patriotic, keeping them off drugs, and teaching them sex education without enlightening them about sex.

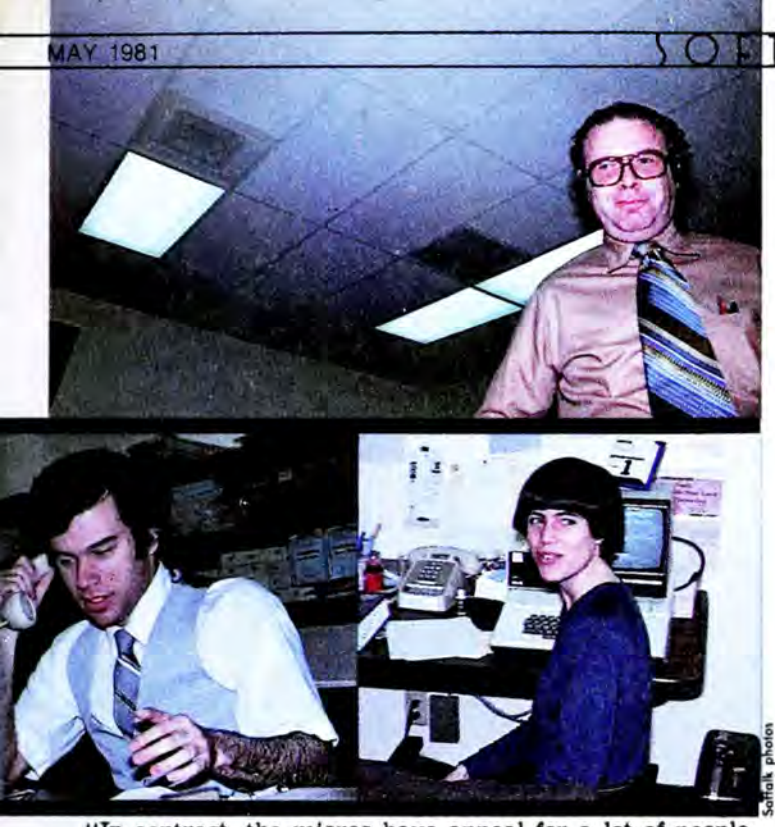
"In addition, demographics worked against the schools. The decline in births meant a declining school population that meant decreased funding from government sources outside the school district."

Microcomputers seem to be succeeding in the classroom environment where instructional television and the programmed learning machines so dear to the hearts of Steffin and his fellow instructional technologists failed.

Steffin sees this as stemming from a multitude of factors.

CAI to the Rescue. "The programmed learning machines didn't work. The kids hated them.

"The methodology of instructional technology was rejected by the classroom teacher. It was seen as a threat to the job security of the teacher and was accused of dehumanizing learning. A common criticism went along the lines of: 'You can't teach art by objectives.'



Softalk photos

"In contrast, the micros have appeal for a lot of people. They grew in a sense out of the game machines, so they are less threatening to the teacher. Everybody can use them, you don't have to be an audio-visual expert.

"It's a friendly piece of technology and there's a perception among teachers that if you use it, you're more professional.

"Demographics is beginning to turn back in the schools' favor. The birth rate stopped declining and school populations are beginning to grow again, making more money available.

"CAI is relatively cheap. The Plato time-sharing learning system costs approximately $2.50 per student-hour and with the micros that cost can be driven down.

"Finally, the marginal value of the learning output is high."

Diverging from the Norm. For all of this analysis, Steffin has one other reason for pursuing CAI his own way. He perceives the schools as specializing in convergent thinking, meaning that problems are posed and all students are brought to the same answer.

It is a tenet of Steffin's faith that divergent thinking should be as equally stressed and is equally valuable. In his words, "Thinking is the path to freedom," and he desired to promote divergency through CAI techniques.

While still at UCLA, he took the first steps in this direction by writing *Compu-Read,* a program that was originally marketed by Programma.

Also while he was at UCLA occurred the events that would eventually meld together to form Edu-Ware. First, he bought an Apple to help in some of the research he was conducting. Second, he became faculty advisor to the UCLA campus radio station, where he met both Pederson and Leiberman.

Succumbing to the Tempting Fruit. He introduced Pederson to his Apple and a fortuitous love affair ensued, which was surprising because Pederson had taken a computer course at UCLA and "I'd been totally turned off computers by the class." It took the Apple to reawaken his interest.

The heyday of the instructional technologists had long since passed, with most of them entering industry as training specialists. So it came as little surprise to Steffin when UCLA came to the determination that his services were no longer required in the spring of 1979.

By then his vision of a company supplying CAI had solidified. Pederson was showing some aptitude as a programmer so Steffin proposed they attempt to make a go of it.

The School of Hard Knocks. Pederson recalls, "We did everything wrong. We opened the doors and then tried to figure out what to do." Steffin now cheerfully admits that his years in

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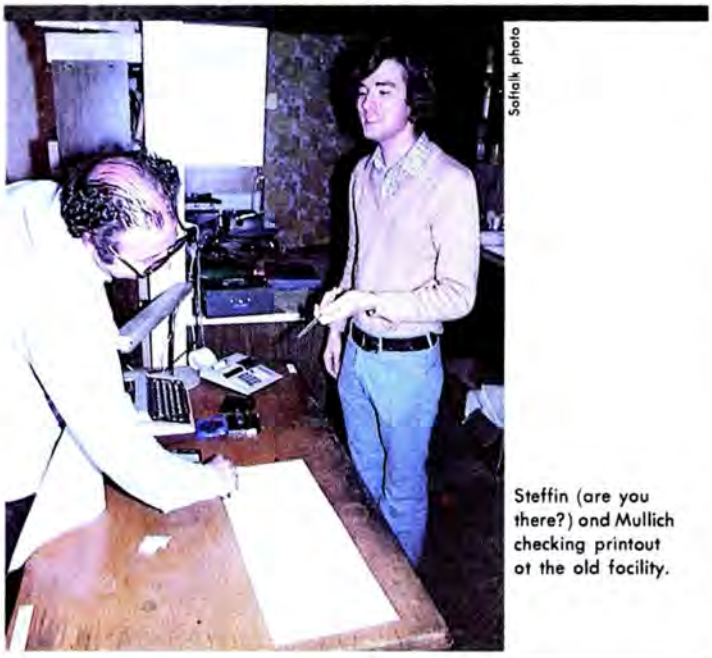
academia did not prepare him for the vagaries of the outside marketplace.

But sally forth they did, with Steffin laboring over what became the first of Edu-Ware's *Perception* series of programs.



Softalk photo

Steffin (are you there?) and Mullich checking printout at the old facility.

With the scenario for *Space* in hand, they convinced Gene Sprouse of Rainbow Computing to provide Pederson with an Apple in exchange for receiving product at cost.

"At the time, we didn't have a printer and I was just writing miles and miles of code without being able to see what was there. Steve came over and spent twenty-four straight hours debugging it because Rainbow had already printed the announcement of the program in their catalog," Steffin recalls.

The Windfall from Skilled Programming. In November, they introduced *Fractions* and then went all out to make a splash at the March 1980 West Coast Computer Faire. David Mullich, whom they had met at Rainbow long before Edu-Ware started, wrote *Space II, Windfall*, and *Network*. Pederson contributed *Terrorist*.

Mullich was the key in that he was a faster, more adept programmer. He had started out at California State College at Northridge with the intention of majoring in radio, television, and film. When he saw the long lines waiting to enroll for classes in that curriculum, he though to himself that all those people weren't eventually going to find work in that field and opted for computer science.

There he studied under Russ Sprouse, brother of Rainbow's owner, who got him a summer programming assignment at Rainbow. In addition, he worked in the mailroom for the company. It was at Rainbow that he met Steffin.

His arrival triggered a spate of products that enabled Edu-Ware to achieve many of their goals. He revised Steffin's *Fractions* program and wrote *Decimals* to Steffin's specifications.

Then he wrote *The Prisoner*, now Edu-Ware's leading seller, and *Arithmetic Skills*, which completed the company's elementary school math curriculum.

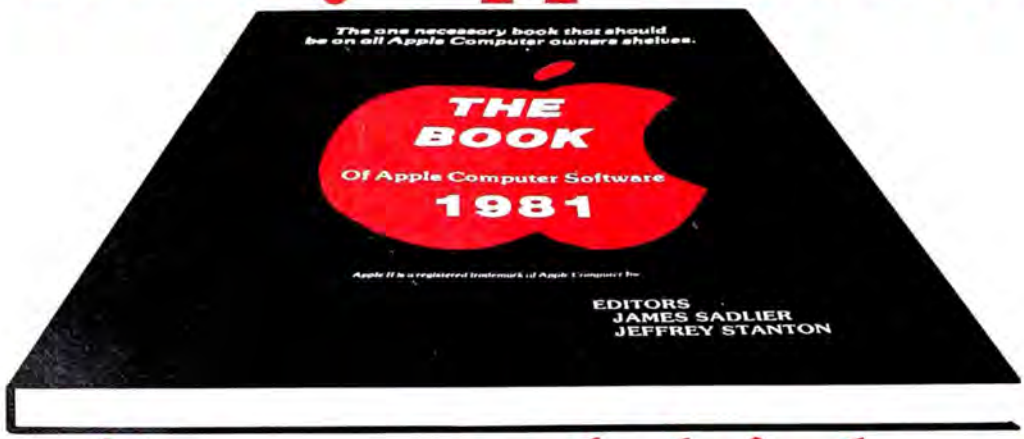
A Meeting of Minds. In the meantime, Pederson, who favors the Interactive Fantasy line, wrote *Compu-Spell* using a hi-res font of his own design that enhanced the visual fidelity of the program. In addition, the program featured such milestones as a file management module, provided for indices of progress and enhanced teacher control over the learning process.

Steffin designs the educational software, while Pederson and Mullich have free reign in the Interactive Fantasy realm.

But they're essentially of a mind on most of the important

GOTO 19

Don't buy Apple Software



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OPEN DISCUSSION

They Were Out-Boxed
This letter is an appeal to the readers of *Softalk*, especially those who have tried to contact us by mail following the article on our security and energy management interface cards in the March *Softalk*.

From March 1 through March 20, our post office box was inadvertently closed and we received no mail.

On the twentieth, the mistake was corrected and we would like anyone who is interested to know we're still here, P.O. Box 2768, Renton, WA 98056.
Zena F. George, Zena Micro Engineering, Renton, WA

Beagle Bros. Replaces Byte Ruler
I made my own programming paper with ruler, pencil, and friendly neighborhood Xerox machine.

Then I discovered in the "Tip Book and Catalog" from the Beagle Bros. that they have a programming paper form available.

Since they advertise in your magazine, give them a plug.
James Kaczmarek, Supervisor, Elmbrook School District, Brookfield, WI

You've done it better than we could!

Doublevision, Doublecapacity
In Jeff Mazur's article, "80-Column Boards for the Apple" (March 1981), he says "*Doublevision* board cannot be used at all with the Z80 *SoftCard* at present."

This is not true! Executing a CP/M file, "DV.COM," turns the *Doublevision* board on and gives full eighty-column upper and lower case and works flawlessly. Another file, "AP.COM," switches the Apple back to its normal forty-column mode.
Richard Shaw, Los Angeles, CA

Hi-Res Color Coming of Age
I am intrigued by the numerous references to twenty-one-color high-resolution graphics. Since I am working on some educationally oriented programs that use high resolution graphics, information on this would be of great help. Also, what other books, reference materials, etc., would you recommend that can further explain and assist in hi-res graphics work?
David Davies, Pleasant Dale, NE

I have a nice tidbit of information for hi-res users. I have figured out how to get the "extra colors" advertised in ads for graphics packages. Extra colors are achieved by alternating lines of different colors. Here is a list of some extra colors:

yellow = orange + green
salmon pink = orange + blue
blue violet = violet + blue
aqua = blue + green
pink = violet + orange

I hope many people can use this to make good displays.
James Seidman, Los Altos, CA

Making Friends Long-Distance
I am responding to the letter from Leonard Korney in Open Discussion (March 1981).

I am a programmer who lives in Belmont, twenty-five miles south of San Francisco. I, like Mr. Korney, don't go to Apple clubs; but that's because I can't get to San Francisco once a month (the San Francisco Apple Core is the only one worthwhile nearby that would suit my needs). I also have problems with TV-RF interference (my family thinks that the only way to fix this is to turn off my Apple).

But . . . my whole life is not problems. I don't know of any clubs by mail, but I cannot stress enough how I would love to start one with Mr. Korney. Also, not being able to afford a disk, I have been looking for a club that uses cassette for correspondence. This is the perfect chance, one that I could not pass up.

I commend you for picking, of all the letters you must receive, the one from Mr. Korney. Also, on the issue of magazines just for the Apple, *Softalk* and the S. F. Apple Core's *Cider Press* are about the best I have read or seen. So, in closing, please send me Mr. Korney's address so I can write right away.

P.S. My favorite application of my Apple is fun-and-games.
Alan Millar, Belmont, CA

Homespun Hopes
I enjoy receiving *Softalk*, but I would like to comment on the types of articles published. The software reviews and the best-sellers list cover the commercial aspect of computing excellently. The contests are fun digressions that spice up the magazine and Marketalk News is refreshingly informative.

However, I believe that the area of practical applications is an integral yet nonexistent portion of your magazine. There should be some "homespun" computing articles to counterbalance the sensationalistic, *Apple Magazine* type of lead articles found in *Softalk*. Who cares how an Apple computer was used in *The Empire Strikes Back*, about Apple's popularity soaring with business in New York, or about Apples and cable TV? These subjects do carry some interest, I'll admit, but not as lead articles.

In closing, I'd like to say that *Softalk* should carry some Basic programs and articles concerning any discoveries that would aid computer users. The discoveries, hardware hints, neat functions, and hidden monitor hooks could be contributed by anybody and published in *Softalk*.
Doug Chang, Cupertino, CA

Another of the Wunderkinder?
I am an eighth grader and, surprisingly, already fluent in Basic programming. I have an Apple II Plus with a 3.3 disk system. Since I already know Basic, I enjoy the article, Assembly Lines, by Roger Wagner.

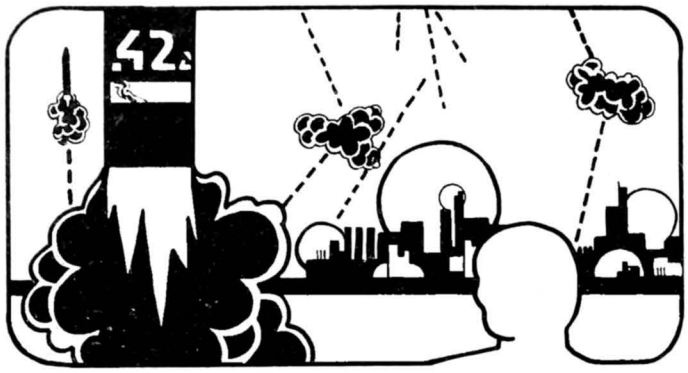
You could call me an adventure and fast-action game freak, because I spend most of my money on software for my Apple (I also write my own games). For this reason, I would like to obtain catalogs of programs and companies that make programs for the Apple II.

Also, is there any way to obtain hardware for the Apple II at a discounted price? I am interested in this because, as a juvenile, I just can't seem to get my hands on a steady, well-paying job (I wonder why?).

Last, I would like to know about an inexpensive book that teaches introductory Pascal or 6502 assembly language in a clear, concise manner. Oh, and I almost forgot—your magazine is great! I love it!
Myles Greenberg, Andover, MA

At-Sea Adventure Wants Answers
I am trying to play Scott Adams's *Adventures* 7 through 9, but have solved only number 8. A more than reasonable effort to solve the puzzle has resulted only in obstinate rejection of sensible hunches and options by the program. In number 7, I cannot find what to attach the fuse to, and, in number 9, I cannot find the fuse (no transfer of data between the fun house and the ghost town is possible). In *Adventure 1*, I gave up long ago trying to get the fish, even with the net. I solved *Adventure 2*.

Please send any data on *Adventures* 7 through 9 to Paul R. Wilson, 19 Sunset Place, Bergenfield, NJ 07621. Those answer-



MISSILE DEFENSE

In this arcade-quality action game you command the Nation's missile defense center to defend against a foreign missile attack. As missiles drop from the sky, you must shoot them while trying to protect your six cities and three missile bases. An automatically esculated skill level ensures that the better you get the tougher missile defense gets!

- Fast machine language. Hi-Res animation and sound!
- Rapid fire capability - mark and shoot at many targets simultaneously!
- Works great with keyboard only, paddles or joystick!
- Seperate control over all three missile bases!
- Bonus cities awarded for high scoring!

WARNING: This game has been known to cause addiction and should be used with extreme caution!!!

Missile Defense runs on any 48K Apple II or II Plus, DOS 3.2 or 3.3. Available now for $29.95 on disk from your local computer store or you may order directly from:

ON-LINE systems

36575 MUDGE RANCH ROAD
COARSEGOLD, CA 93614
209-683-6858

ORDERS MAY BE CHECK, VISA, MASTERCHARGE OR C.O.D.

ing must (a) have played and mastered (solved totally) these two adventures and (b) be willing to give solid data and not just vague hints—like Adventure International gave me for eight dollars.
Paul R. Wilson, Bergenfield, NJ

An Engineering Apple
I am a civil engineering professional and have been using the Apple II professionally since October 1979. Due to a lack of commercially available software suitable for my professional use, I have been forced to develop much of the software I use on a day-to-day basis. In addition to becoming a fairly accomplished programmer, I have developed a passable typing speed. By now, I estimate that I have developed a library of about fifty programs, which range from a simple typewriter emulator to a fairly complex engineering calculation program that simulates on-site field work. All in all, I can safely say that the Apple II has been a tremendous help in developing me personally and professionally.

What I would like to see most in your publication is a survey of currently available engineering applications software; both that written for the Apple II and that written for operating systems that the Apple II now can access with the various accessory cards on the market. For instance, I would like to see a detailed discussion of the capabilities of the Microsoft SoftCard and the *CompuServe Network* in a future issue.
Johnson W. Yee, San Francisco, CA

A column just for SoftCard users begins in June. You can get a taste of the columnist's style in the review of Z-Term *in this issue.*

Where the Flying Fishes Play—or Thereabout
As you can see by the address on this letterhead, your magazine has a final destination halfway around the world from you. Consequently, we lack the opportunity of visiting a local computer store to witness a demonstration of hardware or to see how a software program operates. We must rely on articles that evaluate the merits of such items. From this information we then make a selection and airmail our order to a supplier in the Los Angeles area where we have established an account.

What is it that appeals most to us? Articles such as the one on eighty-column boards. Based upon this review I was able to make a selection and have placed an order for the board best suited for my needs. Your Top Thirty listing is a great help. We have invested good dollars for software programs hailed as "the greatest xxx ever," only to be disappointed with the results. Due to the great distance involved we cannot hurl the unacceptable program back to the supplier for refund. It sits in our cabinet gathering mildew (we don't have dust here—just mildew and fungus).

Your Top Thirty chart is about the best insurance we have that the program is what it claims to be, otherwise it would not sell as well as the chart indicates.

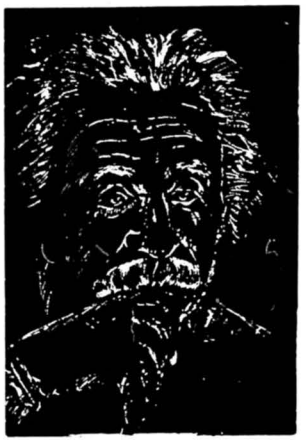
We have three preteen boys who attend a British-style school. The Apple is serving as a tutor, so we are investing in educational programs in the area of math, geography (Creative Software's CAI program with a USA map for the names of states and their capitals is great), reading and spelling are just a few of the educational categories we are investigating.

Thanks for a fine and helpful publication.
R. J. Noah, Square D Company, Singapore

Assembly Lines Leads to Aid
I wanted to let you know how valuable the monthly column, Assembly Lines, is to me. I hope Mr. Wagner makes a book of it. His tutorials have been invaluable to me in preparing a system for entry in the contest, "Personal Computing To Aid the Handicapped," which I believe was mentioned in your magazine some time ago.
Harry C. White, Awada, CO

The book will follow the series. ◨

An Intelligent Alternative



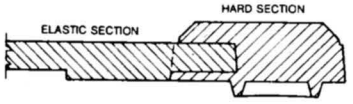
TYPRINTER 221

In the research you are doing before purchasing your computer printer, you are probably confused by the various claims, speeds, choices, shapes and prices. Well, we'd like to clear the air a bit and tell you about the most unusual computer-printer around — the TYPRINTER 221.

You see, it's unusual because it is **totally compatible** with **every** computer and word processing program . . . from the largest to the smallest. It's versatile to the point of incredibility . . . We'll discuss the broad advantages and explain the details.

THE DAISY WHEEL

The special daisy wheel supplied is of a unique design consisting of a 100 character carrying radii. Each radii is formed of two distinct types of plastic — an "elastic plastic" for the stalk of the radii, and a comparatively "hard plastic" used to form the character area. This, combined with a very narrow character profile and a special positioner on each of the 100 radii, guarantees a uniform character density. There is near perfect geometric positioning of the character with no character higher or lower than the others. And because of its unique dual material design, microvibrations have virtually been eliminated, leaving your final copy clean, clear and smudge free. The copy produced is comparable to that produced by metal daisy wheels and at a fraction of the cost.



THE KEYBOARD

The keyboard has been referred to as a triumph of human engineering - from the way the keys seem to have been custom designed to fit your fingers, to the way the special feature switches have been grouped. A flip of a switch (or under computer control of course) and the printer becomes a foreign language machine. Push a button, and like magic the printer automatically locates and lines up columns of figures, perfectly balanced between the margins. This incredibly fast, extraordinarily quiet electronic keyboard puts more programming power at you fingertips then printers costing five to ten times as much.

THE DISPLAY

The TYPRINTER 221 presents a new dimension in operator/machine communications. In the manual (typewriter) mode, the printer controls and verifies all entries before printing. The display exhibits the last 15 characters of the text, word-by-word, until the end of the line. The operator may control what will be printed before the actual printing takes place. This new found flexibility enables you to make modifications along the entire line and in both directions. This 20 character plasma display has the ability to scroll backwards as well as forwards; will give the operator a visual indication as to which print mode is currently being selected as well as the number of characters remaining before the right margin is reached. The display will also indicate to the operator:

- The number of characters available in the memory
- When the printer is in an error condition
- When a pre-programmed form lay out has been selected
- When the printer is operating from the internal memory.
- What characters will be inserted into an existing text.
- When the memory for the previous line has been selected
- A warning message that the end of the page is being approached
- That a hyphenation decision must be made

PRINT MODE

The TYPRINTER 221 will allow you to automatically highlight individual characters, words or complete sentences. Whatever is entered from the keyboard or from the computer, even an existing text file, can be printed in one or more of the five different modes:

- traditional printing;
- underlined characters;
- true bold characters where the horizontal component of the character is increased without disturbing the vertical component;
- characters which are both bold and underlined, and;
- a feature unique among computer printers-printing in reverse — white on black, sort of reverse video on paper.

MULTILINGUAL CAPABILITY

A unique and useful feature of the TYPRINTER 221 is its capability of being able to print in several languages without changing the daisy wheel. In addition to English, every standard daisy wheel has the ability and the necessary characters to print in French, Spanish, Italian and German.

THE FEATURES

Automatic justification of the right margin

The electronics of the TYPRINTER 221 have made right hand justification a simple, automatic operation.

Phrase and format storage

Phrases, dates, addresses, data, etc. that may be stored in your computer's memory may be sent over to the printer and stored in one of the "memory bins" of the printer. This information may then be used by the operator in the manual mode. This can save you hours when trying to get a form "just right."

Automatic centering

The TYPRINTER 221 will not only center any title between the pre-set margins, but will also center over one or more columns, or over any specific point and will even align copy with the right margin independent of the left margin.

Automatic vertical lines

A command from the computer enables an automatic feature which prints vertical lines at any point on the paper.

Automatic tab sequence recall

With the TYPRINTER 221 you may store and recall the most frequently needed margin and tab sequences for applications such as daily correspondence, statistical reports, etc. This guarantees consistent high quality appearance of each document.

Paragraph indent

A computer command instantly sets a temporary margin in order to print one or more indented paragraphs with respect to the right margin.

Automatic decimal point location

No matter how many figures to either the left or right of the decimal point, the TYPRINTER 221 will automatically line up the figures with the decimal point in any position you choose. Statistical printing has never been easier.

Column layout

This feature allows you to obtain automatic and perfect distribution of spaces between columns in respect to the margins. A perfect page balance is assured without the need to carry out calculations or additional operations.

There is a wide variety of options that you can add to TYPRINTER 221.

By now you are probably convinced that **we are sold** on our machine, and we hope you can understand why. In fact, why don't you use these facts to measure against any and/or all the other computer printers on the market.

When you do, you will realize the TYPRINTER 221 is an intelligent electronic typewriter, a text formatter — and a brilliant computer printer — available at a suggested list price of only $2850.

TYPRINTER 221 is available at your local computer shop — or we'll tell you where you can see and try one if you call us at

HOWARD INDUSTRIES
2051 E. CERRITOS AVE., 8C
ANAHEIM, CA 92806
714/778-3443

MARKETALK

News

☐ **Micro Logic Corp.** (Hackensack, NJ) offers reference card to assist 6502 programmers, user and students. The *6502 (65XX) Super Reference Card*, printed on a two-sided 8½" x 11" sheet of hard plastic, provides quick reference to ASCII characters, language instruction set, hex to instruction and hex to decimal tables, compare versus jump table, cycle, effect on flags, and pinouts. $4.95.

☐ *Write-On! II*, an enhanced version of the *Write-on!* word processor, is the latest release of **Rainbow Computing** (Northridge, CA). Designed for personalized form letters, checks, bills, and mailing lists, *Write-On! II* has special features for playwrights and screenwriters and can preformat texts for high-speed and unbuffered printers. Software allows data files from most accounting system and mailing list programs. 48K, ROM Applesoft. $150. Apple III version available soon.

☐ **Executive Computer Supplies** (Clearwater, FL) offers a catalog of peripherals and software for micros. Most recent edition includes hundreds of new products. To order free catalog, call, toll free, (800) 237-5915.

☐ **SSM Microcomputer Products** (San Jose, CA) presents the *Universal External Interface (UEI)*, manufactured by DiscoVision Associates (Costa Mesa, CA). *UEI*, which interfaces the Apple with the videodisk, requires an RS-232 serial board and a DiscoVision disk player. If user makes a master videodisk in a constant angular velocity mode, text storage capacity of one side of disk is equivalent to 54,000 pages in standard book form. If disk is mastered in constant linear velocity mode, storage capacity is roughly doubled. The system's capabilities turn the Apple into a massive library of information.

☐ **Howard W. Sams and Company** (Indianapolis, IN) offers *CP/M Primer*, by Stephen Murtha and Mitchell Waite. Written for Apple users with SoftCards (Microsoft, Bellevue, WA), the book provides a general introduction to CP/M systems, terminology, operation, and applications. Primer features a tear-out reference card, CP/M software list, disk allocation and extents specifications, and step-by-step familiarization exercises. 96 pp. $11.95.

☐ Level 10 software, **Dakin5**'s (Denver, CO) strategic fantasy game division, debuts with *Dragon Fire*, a game in which the forces of good—a huntress, a warrior, a wizard, an elf, and a dwarf—vie with the evil dragon Salmadon and his beastly, slimy allies. Object is treasure, for which player must traverse Salmadon's territory. Five skill levels; 48K, Integer Basic, DOS 3.2. Apple III version available. $49.95.

☐ An education software catalog from **Queue Inc.** (Fairfield, CT) lists more than seventy software publishers and their products. *Queue Catalogue IV A* categorizes the software by grade level and subject. $8.95.

☐ *The Docuwriter II Text Processor*, an extended text processor for the Apple with the Corvus hard disk, has been released by **Charles Mann and Associates** (Yucca Valley, CA). System can manage hard-disk file indexing, link files for large reports, and operate in a multiuser environment. Program is primarily designed for business and professional uses. Editor includes memory text merge, global replacement, error detection, text reformat, disk-to-memory and memory-to-disk block text moves, and special print format instructions. On-screen user instructions. System requires a 10mb or 20mb Corvus Apple-compatible hard disk and printer; ROM Applesoft, DOS 3.3. $299.95.

☐ *Rainbow Writer* brings graphics, text and music from **Personal Software** (Sunnyvale, CA). Allows user to create complete animation with music and sound effects supporting the moving images. Large scale graphics designed with educational purposes in mind. Select from nine sizes and eighteen different colors of upper and lower case English and Greek letters, or define a particular character font. Music features six chromatic octaves and tonal effects like note sustain. $39.95. Also, Personal has revised *Desktop/Plan. Desktop/Plan II* is enhanced by a moving cursor, hi-res graphics plotting, and capability to receive *VisiCalc* data. 32K, Applesoft. $199.95.

☐ **Hayes Microcomputer Products** (Norcross, GA) announces the *Smartmodem*. Requires RS-232C board. Program-controllable in any language with ASCII character strings. Has built-in auto-dial and auto-answer with automatic redial on busy signal. Compatible with touch-tone or pulse dialing to connect with any U.S. phone system. LED status indicators inform user of operations and malfunctions. User can control dialing speed, choose escape code character, set number of rings to answer on. The 300-baud modem comes with power pack and modular telephone cable. $279.

☐ **Inmac** (Santa Clara, CA) offers the *Floppy Manager*, a polystyrene container that can hold ten disks. *Floppy Managers* can be stored in file drawers in vertical stacks, or bookshelf-style because the containers interlock with each other either horizontally or vertically. Available for eight-inch or 5¼-inch disk; pressure sensitive identification labels included. $16.95 each for one or two; $14.95 each for three or more.

☐ **Mytopia Gameware Institute** (Sioux City, IA) presents the sights, sounds, and strategies of a World War I naval contest in *Battle Cruiser Action*. The Apple commands Vice-Admiral Von Hipper's German naval squadron, which you, as the British, must seek and destory. Careful reading of battle manual precludes note-taking of most strategy games. Game uses all naval war tactics with historical authenticity, even to the victory song played for the triumphant fleet. Fast response time. Product of three years of research and design. 48K, ROM Applesoft, 3.2 or 3.3. Introductory price, $39.95; $44.95 subsequently.

☐ **Computer Camp East** (East Haddam, CT), set in the hills above the Connecticut River at Beckett Academy, offers four two-week sessions during June, July, and August. Beginning to advanced classes cover Basic, Pascal, Pilot, and other languages. Private tutoring and consultation provided. Groups of as many as five campers take on special projects to complete by session's end. Athletics, swimming, fishing, and recreational activities keep campers busy outdoors. Computer games and optional typing classes augment regular computer courses. Campers ages ten through seventeen may attend more than one session, which are $795 each. For further information, write the camp at 6 Forest View Drive, Vernon, CT 06066.

☐ *Tray Scan 300CC* from **IEM Screening Systems** (North Hollywood, CA) combines the Apple with an agar tray scan system that analyzes bacterial specimens for medical lab applications. A command from the Apple moves tray of specimens across laser beam sensor, the readings from which are transferred into numerical data printouts structured in a curve based on milligram percentage concentration. The *300CC* is result of three years of international research and development. System includes tray scan, interface card and cable, printer, system and faulty diagnosis disks, and manual. Requires Apple II and disk. $6,000.

☐ **Strategic Simulations** (Mountain View, CA) presents *Torpedo Fire* (see Marketalk Reviews, Impressions, for other new games from this publisher). User constructs own scenarios based on World War II antisubmarine warfare.

Types of conflict such as single submarine versus escort of convoy combat may be chosen. Player can select from thirty classes of American, British, Japanese, and German ships or create custom model for battles engaging fifteen or more ships, including merchantmen and escort vessels as well as submarines. Radar, sonar, and visual reports can be used for secret attacks. Hi-res periscope view provided for submarine player. 48K, Applesoft RAM, disk. $59.95.

☐ An information package from **Talmis** (Saint Louis, MO) is designed for sellers and distributors of and educators using technology-assisted learning products. The *Talmis Keep in Contact* package combines the *Talmis Update,* a bi-monthly newsletter reporting on the latest education and business trends, with sixteen hours of phone or on-site consultation answering inquiries, solving problems, or assessing goals and directions of your firm or school. $1,500 per year.

☐ Three business packages are available from **Advanced Data Systems** (Saint Louis, MO). *Mailmaster* allows as many as five hundred mailing list entries per disk, labels of any width and length, full editing with global search, and selective printing of labels. $69.95. *ListPro* formats printouts of Applesoft and Integer Basic program listings for insertion into three-ring binders. Listings are provided with page numbers, program titles and dates, right-column justification, remarks area, and spotted control characters. $34.99. *Codex Catalog* reads, stores, and saves your disk catalogs with volume and five-digit index numbers that you assign to each program entry. Program titles can be added to or deleted from this disk catalog package one at a time or by disk. $29.95. All packages are 48K, DOS 3.3 or 3.2.

☐ With the *3636B,* **Intel** (Santa Clara, CA) claims to have the fastest 16K PROM in the industry. PROM is a sixteen-kilobit, bipolar fuse link with a maximum read access time of thirty-five nanoseconds. Organized 2K by eight bits, PROM is designed primarily for bit/splice equipment and CPU boards. It consumes only 800 milliwatts from a single five-volt supply—very low for 8K bipolar PROMS. Available only in quantities of one hundred. $50 each.

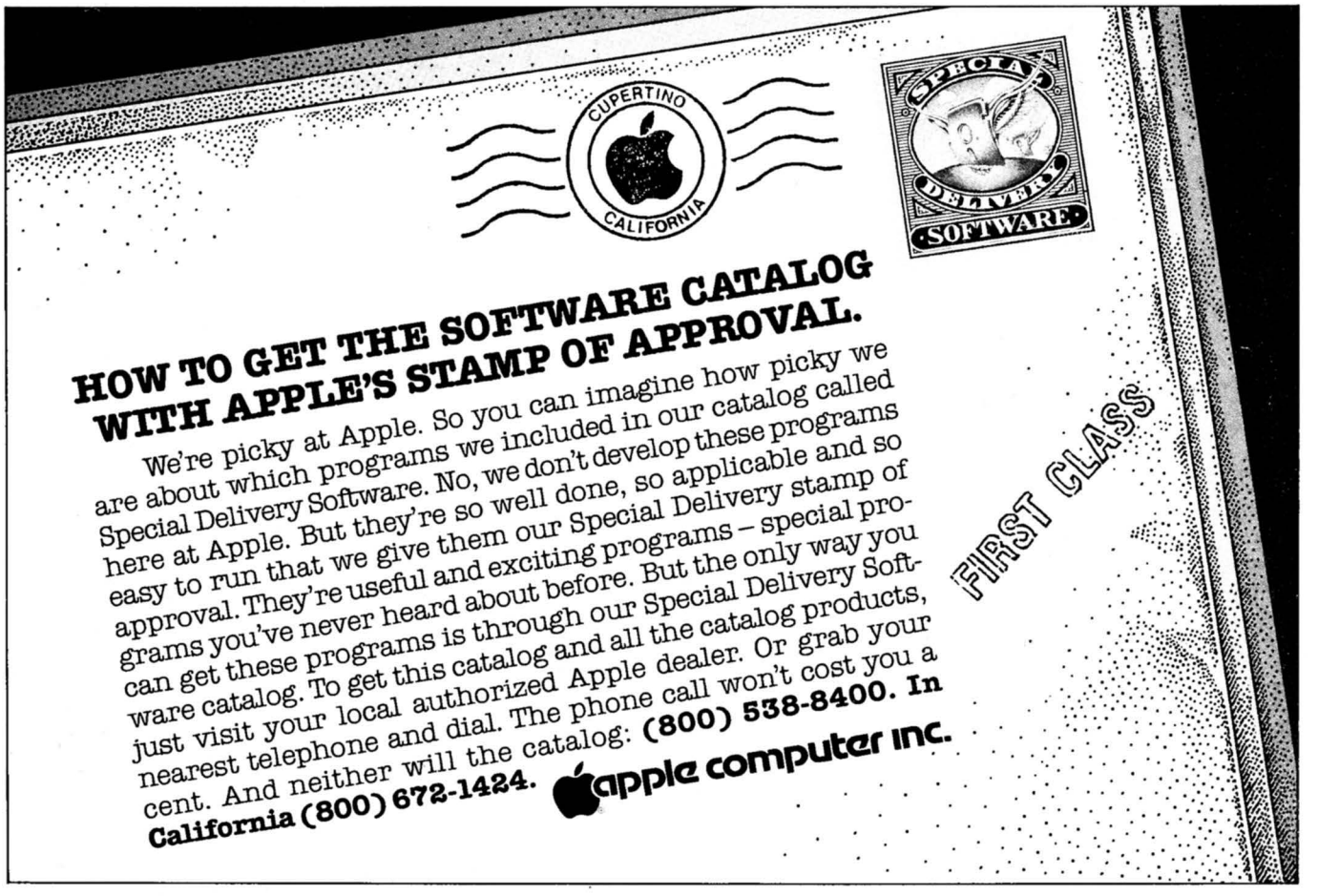
☐ **Imprint Editions** (Fort Collins, CO, and London, England) publishes comprehensive and specialized software directories. *The 1981 International Software Directory* lists software for all micros. A supplementary directory strictly for Apple software is also available. Extensive distribution to bookstores and computer stores is promised. International directory, $28.95; Apple directory, $14.95.

☐ A 16K RAM board, *Super RAM II,* from **R.H. Electronics** (Bakersfield, CA), does the work of the Apple Language System card, giving user ability to run Pascal, Fortran, and Pilot; it also supplies Applesoft or Integer Basic in RAM on card, with keyboard selection of RAM or mother board ROM language. Gives Apple 64K capacity. $195.

☐ *Bytewriter-1* from **Microtek** (San Diego, CA) is an eighty-column 7-by-7 dot matrix printer that toils at sixty lines per minute on single sheets or on roll paper as wide as 8½ inches. *Bytewriter-1* is sold only directly from Microtek. Check the price: $299.

☐ The *Friction Feed Kit* for Epson MX-70 and MX-80 printers comes from **Orange Micro** (Yorba Linda, CA). Converting the Epson's normal tractor mechanism to a pin-feed mechanism, the *Friction Feed Kit* allows printers to run single sheet letterhead stationery or multiple forms with as many as four thicknesses; 9½-inch fanfold paper can also run on the Epsons with the kit. Twenty-minute installation requires no drilling. $75.

☐ The *Thunderclock Plus* from **Thunderware** (Oakland, CA) works as clock and housekeeper. Clock/calendar gives month, date, day of week, hour, minute, and second accurately for four years—or until batteries must be replaced. Housekeeper sends signals via Apple to the Sears BSR/X10 home control system to manage household appliances, lights. *Thunderware Scheduler,* the accompanying software, lets user set specific times for each appliance in daily, weekly, or monthly cycles. Schedule is then executed in real time by software using the clock portion of card. $207. ◨



Apple Happening: applefest '81

What started out mostly as an event for their own Apple users group has blossomed into a happening now being heralded as the largest exposition exclusively devoted to the Apple computer in the world. At least that's the belief of Jonathan Rotenberg, who serves as chairman of Applefest '81.

Applefest '81, a two-day shindig being held at the Plaza Castle in Boston June 6 and 7, is perhaps the first major Apple-specific exposition conducted outside the sponsorship of Apple Computer Inc. The founders are adamant about the object of their affection—no non-Apple products need apply.

Big Names and a Hundred Exhibits. The festival will feature one hundred or so exhibits of software and hardware for the Apple as well as two days of seminars on practically any subject relating to the Apple. Some respected industry names are being imported as seminar speakers. Among them, fest organizers are looking for some top brass from Apple Computer to make an appearance.

The Plaza Castle is a registered national landmark that originally served as an armory. Now privately owned and refurbished, the colorful building is an example of Boston's upgrading of its downtown convention facilities.

The overall sponsoring organization for the exposition is the Boston Computer Society, which lays claim to being the largest organization in the world not dedicated to a specific computer. The society subsumes several special interest groups that revolve around either specific computers or specific interests, such as education, business, telecommunications through the Source and Micronet, and individual languages.

A Taste for Hosting. In the course of its regular activities, the society conducts general meetings with well-known speakers from many parts of the world, sponsors special meetings, runs an office in downtown Boston as a computer resource center to which prospective computer owners can go to be briefed on the assets of the various computers, and maintains libraries of software, periodicals, and books.

The society conducted a business computer exposition in 1978, and members found they liked producing shows. Because it houses one of the largest Apple user groups in the country, the society decided to host a festival on that group's behalf.

It became apparent to Rotenberg and others on the planning staff that the market was primed as never before for a specialized show, and because there were economies of scale in expanding the horizons of the festival, they chose to go first-class with national advertising and promotion.

Their initial success is indicated by the fact that more than seventy exhibition spaces had been reserved with more than a month remaining for reservations. Now they're planning for a minimum of ten thousand attendees and a maximum of twenty-five thousand.

Seminars will cover myriad subjects. Among the lecturers confirmed are Seymour Papert, Jack McClees, Dick Casabonne, Craig Vaughn, and Barbara Kemp.

See the Frolicking Peripheral. Papert, author of *Mind Storm: Children, Machines and Powerful Ideas*, and McClees will give a joint education seminar. Papert also had a hand in the development of the Logo programming language, a language specifically designed for children. McClees is one of the developers of the Terrapin robot, which (who?) walks, talks, and frolics about, driven by an Apple.

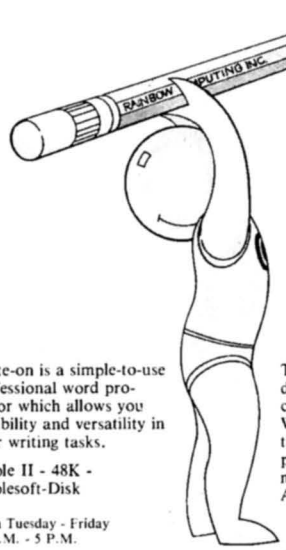
Casabonne, from the Unicom division of Bell & Howell, will conduct the seminar on "Microcomputers in the Classroom." Vaughn, now with the Source, will discuss "Design Responsibilities for the Eighties." Kemp, from Dakin5, will conduct a seminar on "Software for Small Businesses."

Microcom, a New England company, will conduct a seminar on telecommunications. Rotenberg has high hopes that On-Line Systems's Ken Williams will hold forth on adventure programming.

Seminars on Apple graphics will occupy several sessions, discussing such topics as the state of the art, three-dimensional graphics, use of color, and practical applications of Apple graphics. Among the other seminar subjects are an introduction to programming, home applications for the Apple, consumer instruction on how to buy software and peripherals, and several on specific business packages.

Getting Together with Apple World. The exhibits and seminars will form a comprehensive body of Apple knowledge gathered in one place. Because of this alone, the Boston Computer Society Applefest merits the attention—and attendance—of Apple owners everywhere. ■

YOUR APPLE SPECIALIST
HAS THE WORD PROCESSOR
FOR YOU...
WRITE ON!



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This program and more are described in Rainbow's catalog (produced using Write-on!) which represents the largest collection of products (from every major manufacturer) for your APPLE computer.

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BY
Jay Sullivan & Ken Williams

Hi-Res Soccer is the only real-time action Soccer game available for your computer! All tackling, goal kicking, throwing, corner kicks etc., are shown in full Hi-Res Graphics.

- **Play against a friend or against the computer**
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- **3 Levels of play**
- **8 players per team**
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- **Hi-Res scoreboard**
- **Realistic Soccer play - both indoor and outdoor Soccer rules.**

Hi-Res Soccer runs on any 48K Apple II or II Plus, DOS 3.2 or 3.3. Available now for $29.95 on disk from your local computer store or you may order directly from us.

This is the football game you always knew the Apple was capable of, but no one could deliver—UNTIL NOW.

Skill and strategy are combined as you call the plays and control the players in this exciting real-time action game. You can run, pass, kick, sack the quarterback, or fake-out the defense—all in fully animated Hi-Res Graphics. Play against a human opponent or against the computer.

Hi-Res Football runs on any 48K Apple II or II Plus, DOS 3.2 or 3.3. Available now for $39.95 on disk from your local computer store or you may order directly from us.

To order direct, send the purchase price plus one dollar for shipping to:

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Visa, Master Charge, C.O.D. or Checks Accepted.

Where Does the Money Go?

BY CRAIG STINSON

Last month we began a two-part review of single-entry home accounting systems with a look at Programma's *Checkbook, Check Register and Budget* from Spectrum Software, *The Home Money Minder* from Continental Software, and a new program, called *The Bookeeper,* from Delta Software. This month we consider three more such packages.

Program's Logic Makes Up for Manual's Slithy Toves. For those with a bit of patience and the willingness to put in some extra effort at first, Dennis Jarvis's *Financial Management System II* offers a lot of accounting capability for a modest price (D. R. Jarvis Computing, Simi, CA, $39.95). The system is flexible and general enough to track numerous different accounts against a common budget; it will keep records in six-field format that allows separation of memoranda from tax or budget coding; and it does what it does in a friendly and relatively fail-safe fashion.

The big drawback is not with the program but with its documentation. Even if you are by now a hardened reader of computer documents, accustomed to seeing the most astonishing variations upon the mother tongue therein, you may find Jarvis's thirteen-page manual a little tough to get through. On the other hand, to put credit where due, the thing is thorough. It's just hard to read.

Fortunately, *FMS II* is logical and orderly enough that once you know how to use it you'll seldom need the manual again. And there are a goodly number of beeps and prompts within the various programs to help you find your way.

One of the unique features about *FMS II* is its use of macros to abbreviate budget categories and transaction recipients (or sources, where the transaction is a deposit). A macro is a code of one to three characters that the user designates to represent a commonly recurring data entry. Like the system of predefined account numbers employed by the Spectrum *Checkbook Register* and Delta Software's *Bookeeper,* the macro approach reduces keystrokes and errors.

Micro's Macros Forestall Finger Fatigue. The macro approach has an advantage over the use of account numbers in that the user can make the tag relate logically to that which it abbreviates; computer purchases, for example, can be coded with something memorable like APL instead of something arbitrary like 41.

On the other hand, since you will probably want to establish a large number of macros, you are also probably going to need a list to refer to at data-entry time, and here *FMS II* lets you down somewhat. Users of the Spectrum or Delta systems can get a look at their numbered categories with just a couple of keystrokes, but there is no such convenience provided with *FMS II.* The best remedy is to print your macro list as soon as you set it up, and then keep that extra piece of paper around for reference when entering transactions.

The data-entry routine in *FMS II* is full of default features to reduce keystrokes further. Dates, for example, only have to be entered once for a given session, and check numbers increment automatically from one entry to the next.

The macros that are used to abbreviate check recipients are cross-referenced in advance by the user to their most commonly associated budget category. So, for example, if your macro for the local supermarket happens to be LSM, and your macro for food is F, you can link the two together ahead of time in such a way that when recording a purchase of F at the LSM, you only need to key in LSM; the system will fill out the budget field appropriately.

This does not mean that you can't override the connection if the need arises. If you happen one day to buy hardware at the market instead of eats, you can put in a different budget category and bypass the default.

The *FMS II* data entry module distinguishes four types of transactions: ordinary debits, like checks; charge debits, which might include service charges or automatic teller withdrawals; deposits; and memos.

Cash Is Cash—and So Recorded. The last are treated neither as credits or debits but are simply recorded and filed with

the appropriate budget categories. Later on, when you want to see a list of transactions in a given budget area, the memo items will be there, listed in a separate column with a separate total.

One thing you could do with this feature is record occasional cash purchases for a given budget slot alongside your checks for that category. Keeping a computerized account of all cash transactions can be a real pain, but if you just want to keep track of one kind of expenditure, like groceries, where you sometimes spend cash and sometimes write a check, the memo feature would be an easy way to do it.

With respect to file handling, *FMS II* is a little different from the other systems we've looked at. Nothing goes off to disk automatically—not even when you are finished for a given session. You have to call up a number on a menu to write your work onto the disk, and you must name the file yourself.

Furthermore, for the sake of the account auditor module, you have to be sure that the first three characters of the name of your data file represent the month. The system could use a prompt on this point; if you happen not to get that bit of information out of the manual, you may find yourself feeling a little annoyed later on when the auditor won't audit.

Easy Access To Fix the Books. On the other hand, while it takes a bit more effort to get stuff on and off the disk in *FMS II*, the system does give you a lot of editing capability. If there's something you need to fix, you can just fetch the file, search for the item or group of items you need, and modify at will. On some other systems, like *The Bookeeper*, you can't touch an entry once it's on the disk. The only way to make amends in that situation is to enter an offsetting pseudotransaction.

Another nice feature of *FMS II* is the reconcile routine. This module walks you through a file item by item, allowing you to tick off whatever has come in from the bank (or the creditor, if you use your *FMS II* to track a credit card account). When you're finished, a single keystroke will bring up three totals: your present checkbook balance, the sum of your outstanding items, and the balance as it should appear on your statement.

In addition to the *Account Manager*—the program used for data entry and editing—*FMS II* includes programs for setting up budgets (by month or by year), for auditing files by budget category, and for search records. Searching can be done on any of the six data fields.

Unique Qualities Would Appeal More with Less Bugs. *Home Finance System*, by Emma and Bruce Waldren (Computer Extenders, Wichita, KS, $45) has one feature not found on any of the other programs we've looked at. It will allow you to log in your bills as they arrive and record when you pay them. It will then compile a billing history for you for as many as thirty-six accounts.

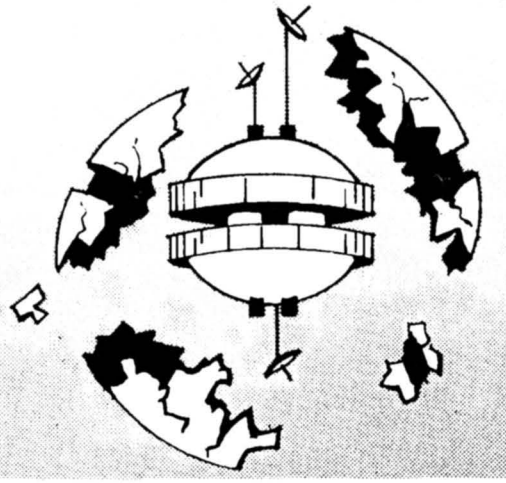
The system also allows you to categorize each billing account as monthly, quarterly, semi-annual, annual, or otherwise and will use data for the last three billings to make budget predictions for the future. When you enter checks and deposits, you will find each of your open accounts listed at the top of the screen with the amounts currently due.

There is also a separate module for recording credit card transactions.

Unfortunately, at the time we looked at it, the program still had some serious bugs. For example, the system will search through a file either from first entry to last or in the reverse direction, looking for transactions that fall within certain designated limits. However, when you try to print the results of such a search, in some cases the system stops on each record and asks if you want to continue. It also prints the query, so what you get is a lot of gratuitous dialogue with your computer instead of a printed list.

Other annoyances abound as well. The reconciliation module, for example, allows no exit, short of hitting Control-C and rerunning *Hello*.

Even where the print routines worked without irrelevant commentary, they were set up only for one kind of printer. Anyone with an eighty-column printer would have to modify the program in ways not specified in the manual.



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Software
For The Apple II*

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Star Cruiser

STAR CRUISER is a fast action arcade game that can be played by ages 3 and up. Softalk magazine rates this one number three in its first month of release . . . need we say more?

Both Barrels

This package features two games: HIGH NOON and DUCK HUNT. Fun for the very young and the young at heart . . . you'll love the bad guy that falls off the roof and the dogs fighting over the ducks.

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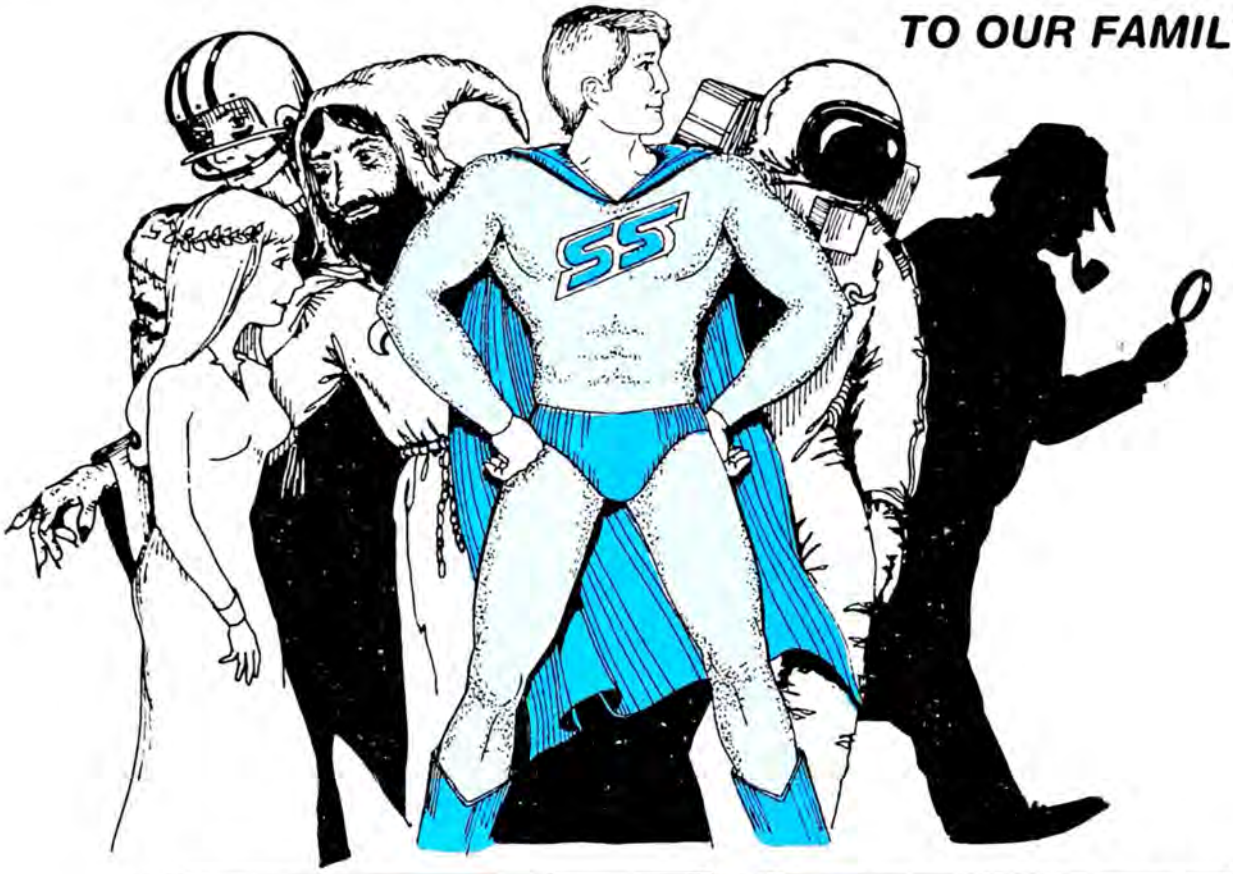

SuperScribe

(Formerly SuperScript)

SuperScribe is the most powerful and easiest to use Word Processor available for your Apple II or II Plus computer. Besides leaping tall buildings in a single bound it:

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- Edit not only letters but also any text or binary file, or even basic programs!
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- Globally search for or replace character strings.
- SuperScribe has a built-in instruction capability such that if you forget how to use a command and the manual is not close by - you may simply ask SuperScribe!
- Supports multiple disk drives!
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Setting up budget categories also requires one to go into the program list itself and modify certain lines. Here the manual at least tells you where to go and what to do.

In short, this system does offer features you won't find elsewhere, but be prepared to do some Applesoft detective work to get it running satisfactorily.

The New Generation of Powersoft's Checkbook. Powersoft Inc., Pitman, N.J., has just released a thoroughly revised and enhanced version of its checkbook program. Called *Super Checkbook III*, it is available until May 31 at an introductory price of $34.95; the system will then retail for $49.95.

The new program by Jim Powers and Tom Thorpe, retains the graphing module of Thorpe's *Super Checkbook II*, and bears some stylistic resemblance to that earlier version, but it also incorporates a substantial number of changes. Users of *Super Checkbook II* who want to buy the update will find a conversion program to bring their old files online.

Some of the new features make the input procedure more flexible and streamlined. There are now separate codes for entering automatic teller transactions and interest payments (handy for the new interest-bearing checking accounts). There are also separate codes for service charges and for making adjustments to one's balance.

An automatic payment feature enables the user to designate up to twenty recurring transactions—things like mortgage or loan payments—and enter them in at once from a separate menu. There is also now a separate menu item for making revisions to one's data.

Another new feature enables the user to convert data files from binary form to text, or vice versa. This has been provided partly to allow the user to interface data with other programs of his or her own devising, or with tax or finance programs that Powersoft may subsequently release, and partly to forestall a potential storage crunch.

Like Programma's *Checkbook* and unlike the other systems considered in these articles, *Super Checkbook III* organizes data into one large file rather than into separate monthlies. If the file gets too big it can slow down the search routines. The system allows either 1,350 or 1,850 transaction entries, depending on whether the user chooses to make budget codes strictly numeric or alphanumeric (the latter option reduces capacity about 27 percent). And the data entry module always displays the amount of space remaining in the system. But just in case things get overloaded, the user can break up that large binary file into smaller text files, then reconvert the most recent text file back to binary.

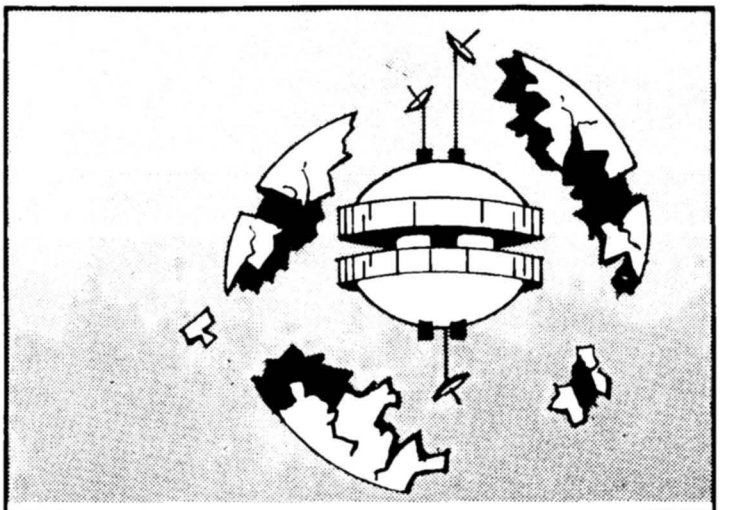
The plotting module draws monthly bar graphs, using text characters so the graphs can be run on any printer. The user gets four kinds to choose from: income, expenses, net gain or loss, and code. The last of these will show how your expenses or income in any given category vary from month to month.

The reconcile program allows you to distinguish the outstanding from the not outstanding and provides summations of each. It also interfaces with the search routines so that subsequent displays or lists show at a glance wha' 's left to come in at the bank.

The documentation is vastly expanded and improved over that of the older version. The manual comes in looseleaf form to allow for expansion or the incorporation of errata.

On the other hand, some of the limitations of *Super Checkbook II* have been carried over into the update. The system, for example, does not have a budget program per se to compare actual expenditures or income against user projections. There is a code data field that will generate reports or graphs by tax or budget category, but there is no feature to display or list the user's codes all in one place. So when entering data you either have to have memorized your codes or resort to old-fashioned methods, like pencil and paper.

Furthermore there is no data field for memorandum. The system appears to have six fields, but the transaction date takes up two of them. Month has to go on a line by itself for search purposes, since the system does not generate individual monthly files. ■



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Software
For The Apple II*

Space Eggs

SPACE EGGS . . . It'll crack you up. An arcade game that has you hatching spiders, lips, wolves, and fuzzballs. Destroy these creations, if you can. SPACE EGGS has many levels of play, variety, action, and sound . . . INCREDIBLE! A full 48K of assembly language which runs under DOS 3.2 or 3.3 and either an Apple II or Apple II+. Programmed by Nasir.

Phantoms Five

An action-packed arcade-style game for the Apple II Computer, PHAMTOMS FIVE simulates a fighter-bomber mission in real time three dimensional color graphics. While you try to make your bombing run you have to avoid being hit by anti-aircraft fire, and you have to fight off enemy aircraft as well. With five levels of play there is plenty of action for the novice as well as the advanced player. Uses the game paddle and either 13 or 16 sector Apple II or Apple II+ with 48K.

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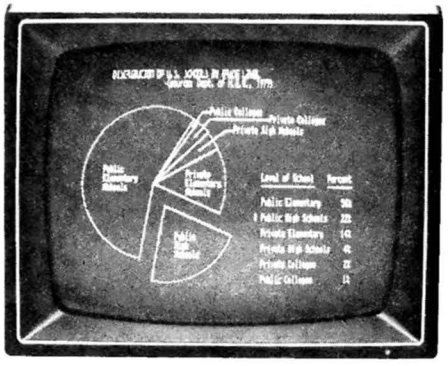

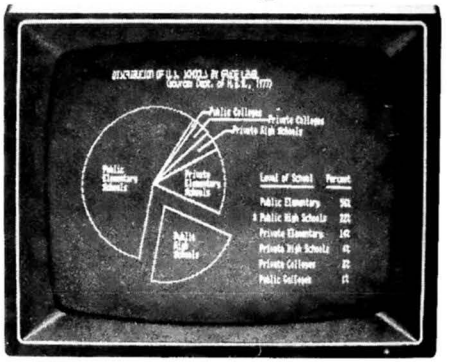

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EXEC EDU-WARE

from page 6

details about all of their programs. Educational or gaming, these programs are intended to make the user think. Nothing is done without forethought.

Pederson points out that the clumsiness of operation of *Terrorist* is intentional. "You are no longer the operator of a computer, you are simulating the role of a decision maker. Your decision may not be executed, or may be executed too late. Just because a head of state or leader of a movement gets credit for whatever actions are taken does not mean that they are in full control of all events."

Likewise, *Space II* represents a conscious effort on the part of Mullich to introduce risk-benefit analysis to gaming. The character you generate has options of various degrees of danger throughout the program.

The *Prisoner* is an exercise in problem solving and individuality.

Edu-Ware compares their Interactive Fantasies with good novels—they have a theme that can be absorbed, or they can be taken as pure entertainment.

Consistent with Edu-Ware's goal of making the user think is their latest educational package, *Algebra.* The user must not only think to learn the material being taught, he must even think about how he wants to learn it. Four cognitive approaches to the material are taken and the user must choose the one he wants to pursue. Hopefully, this approach will instill in the student some feeling of responsibility for his own actions as well as teaching him the material.

A Serious Sales Pitch. Games with a theme and educational programs that encourage divergent as well as convergent thinking have presented an unusual selling challenge to Leiberman. He's been Edu-Ware's sales manager since before his graduation from UCLA, calling upon his experience as sales manager for the student radio station, where he opened up several national accounts with major ad agencies.

Leiberman points out that the product "does not sell itself. I try to maintain monthly contact with all the dealers to let them know what we've got and that we'll stand behind it and service it."

He does not set easy goals for himself. "I want to establish the name Edu-Ware as being synonymous with quality educational software. I want our service and support to be so good, it will become the industry standard."

Further support for this effort is now forthcoming from Wendy Peterson, recently assigned the role of overseeing Edu-Ware's expanded advertising plans as well as being responsible for documentation. She's already overseen the revision of Edu-Ware's packaging to reflect the differences between their educational products and their interactive fantasies.

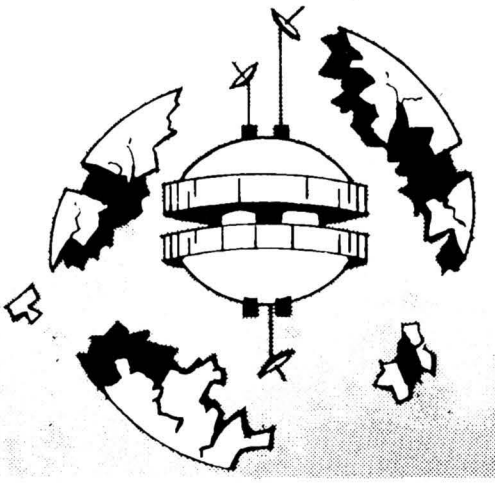
Peterson remains a consulting editor for the Psychology of Women Quarterly, a publication of the American Psychological Association.

Interactive Stimulation. The dominant auras at Edu-Ware are collegiality and intellectual stimulation. The key people are constantly challenging each other intellectually to achieve greater things. Each programming advancement drives them to find the next one.

Mullich particularly finds the atmosphere conducive. "I get tired of just coding educational programs and like to write a fantasy. But, by the time I've created a fantasy, I'm wrung out and ready to go back to straight coding for a while."

Steffin believes their success can be partially attributed to the complementary relationship of him and Pederson. "I'm an empiricist. I want to start from facts. Steve is more willing to go on instinct. It's taken us a couple of years to sort it all out, but it works well for us."

Mullich is now working on *Chronicles of Jorach,* a fantasy role-playing game. In the educational area, the company seeks to field a full line of institutional software by late 1982. Considering the odds they've overcome, you'd have to bet on it. ◨



SIRIUS SOFTWARE PRESENTS:

Software
For The Apple II*

E-Z Draw 3.3

E-Z DRAW is the software that started it all the poor man's graphic tablet. But now it has been updated to 3.3 DOS and completely rewritten for the professional user. E-Z DRAW now includes the powerful HIGHER TEXT character generator written by Ron and Darrel Aldrich. With our new routines the fonts or any part of the picture can be flipped upside down, slanted left or right, rotated 90 or 180 degrees, mirrored or any combination of the above. Also the fonts or parts of the screen can be expanded in width or height, or compressed in height and width. You can mix portions of pictures together, or save only a portion of the screen on disk. Now fully keyboard controlled for better accuracy. Professional documentation and 20 different and imaginative type styles included. Also included are commands to print the hi-res screen on the Trendcom or Silentype printers. Updates are available for the customer who already purchased E-Z DRAW 2.0. The update is only $10.00 for those who return their original disk to us by May 1, 1981. After that date the update will cost $30.00. Return your disk directly to us — please don't bug your dealer for the update.

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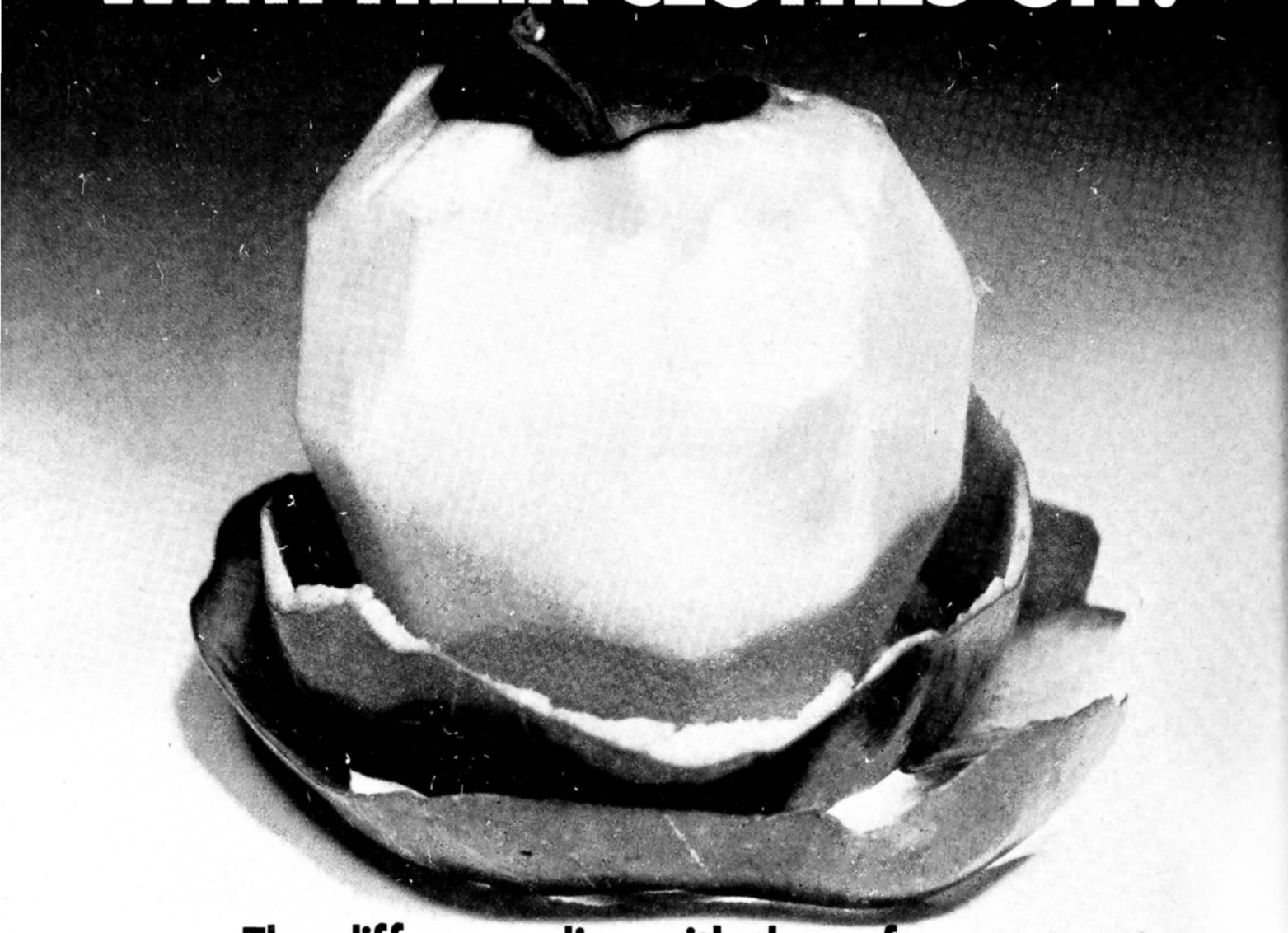

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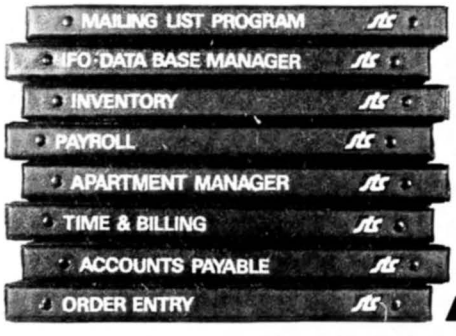

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VENTURES WITH VISICALC

BY FRANK MALONE

VisiCalc Auditions for HeeHaw

Well, you can call me Agri, or you can call me Calc, or you can call me VisiCow, or you can call me AgriCalc—which, for the record, is the correct name. Whatever the moniker, *VisiCalc* responds with, "Hi ho the Derry O, the farmer's in the dough re mi."

Farming is big business these days. The career farmer not only must be proficient in biology, zoology, home economics, agronomy, horticulture, and a few other sciences but must understand and practice good farm management as well. A personal desktop computer helps tremendously—and not only in the latter task.

The farmer who manages well also gives careful attention to various details of his or her business such as depreciation, financial statements, agricultural cost analysis, personal budgeting, cash flow, interest calculations, checking accounts, loan schedules, vehicle data, commodities, kitchen recipes, and more. The list may seem staggering, but it is by no means unmanageable.

The immensity of it all greatly impressed Kevin Lemke who, with his brother Dale, owns and operates a computer store in Grand Forks, North Dakota. Lemke has worked with computers for ten years in a thriving agricultural area. Working with farmers and listening to their business challenges has given him a sense of appreciation and some fertile ideas. So he turned to *VisiCalc*. He had seen it work wonders with other business associates who use *VisiCalc* in a number of applications, such as forecasting, budgeting, and generating financial analyses and reports.

Why, he reasoned, couldn't *VisiCalc* do the same thing for farmers? In answering his own question, Lemke has developed a software package called *AgriCalc*. He is just completing version 3.0, the result of evolutionary development growing out of meetings with local farmers and spurred by having them use the program themselves. Thus, out of one retailer's knowledge of *VisiCalc* and several Dakotan farmers' combined experience, a successful management tool is emerging.

AgriCalc contains thirteen sheets, one of them giving instructions for using *AgriCalc* and another being a worksheet menu. The rest are useful primarily for farm analysis rather than for record keeping. To take care of that end of things, the Lemke brothers are developing a record-keeping software

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package called *Farm* (Farm/Agricultural Records Management).

It will be an agriculturally oriented general ledger system that allows either single-entry or double-entry bookkeeping, designed to interface with *AgriCalc*. A real one-two punch—typical of *VisiCalc* programs.

Here are brief summaries of each *AgriCalc* analysis worksheet.

The depreciation worksheet allows you to enter information on equipment you own and figure depreciation schedules for as many as twenty-five years. One feature is that investment tax credit is prorated correctly; as a result, you can determine the most favorable depreciation method for your situation.

The financial statement worksheet allows entry of the current status of your farm. A number of schedules, when entered, will give an accurate representation of assets, liabilities, and net worth. When you print the resulting information, you'll have a complete balance sheet.

The agricultural cost analysis worksheet is for calculating production costs that can be displayed on a per acre basis. You can enter historical information, then update it with actual figures. Thus, it will be possible to determine whether a particular crop and estimated yield are sufficient to cover production expenses.

The personal budget worksheet begins as a typical homeowner's budget. It shows monthly income and expenses as well as expense percentages of income.

The cash flow worksheet allows you to obtain results to find needed sources of income; you estimate the amount of cash needed at various times of the year. Comparing best estimates of expenses with known income, you can determine cash flow by manipulating expenses to other months, draw on lines of credit, or sell assets, all in clear view on your worksheet picture.

The worksheet for interest calculations allows you to perform simple-interest calculations. It can be used for notes or lines of credit for which the interest rates are fixed on the borrowed amount.

The checking account worksheet is a checkbook plus. As checks are entered, totals appear under appropriate expenses and are updated automatically. Deposits are appropriately entered and updated. Using *VisiCalc* commands, you can generate profit and loss statements, both current and year-to-date.

The loan schedules worksheet calculates loan amortization schedules. When you enter interest rate, loan amount, loan period, and number of payments per year, the program will give you the total number of payments and amounts of each, including principal and interest.

On the vehicle data worksheet, you can enter the specifications, serial numbers, and replace part numbers on any vehicle. This record becomes a handy reference file for insurance and maintenance purposes.

The commodities worksheet figures the current value of commodities and records the value of commodities you sell. It also keeps a running balance in the commodities account.

Slightly out of the realm of business is the recipe worksheet. This recipe filing system allows you to enter a number of ingredients and quantities for the desired serving size. Once quantities are entered, a new serving size will result in automatic recalculation of the needed quantities for that serving. Using a split window (*VisiCalc* commands /W and ;), you enter recipe instructions and scroll window (ingredients or instructions) up and down as needed to complete the recipe.

As city folks must have realized by now, several of Lemke's worksheets will be very useful for you, too, such as those on personal budget, cash flow, checking accounts, loan schedules, and recipes.

With thinking such as that which created *AgriCalc*'s applied to *VisiCalc*, you won't have to wait 'til the cows come home to get results.

The actual program for *AgriCalc* is scheduled for commercial distribution in late summer of this year. ■

Business Graphics

```
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-->EDIT
1:                    ? TANDY 30
2:                    ? APPLE 40
3:                    ? OTHER 30
4:                    ? END
3 LABELS LOADED
3 POINTS LOADED
-->SET TITLE "PROJECTED MARKET SHARES"
-->DRAW PIE
```

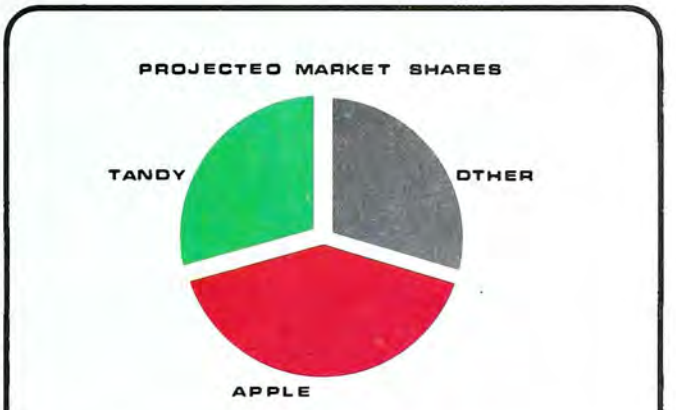


```
-->SET VERTICAL RANGE 0 100
-->DRAW BAR
```

Data is entered using appleGraph or taken from a user supplied text file in the proper format

(DOS 3.2, DOS 3.3, PASCAL, FORTRAN)

Data may also be taken from a VISICALC* print file (/PD) or DIF file

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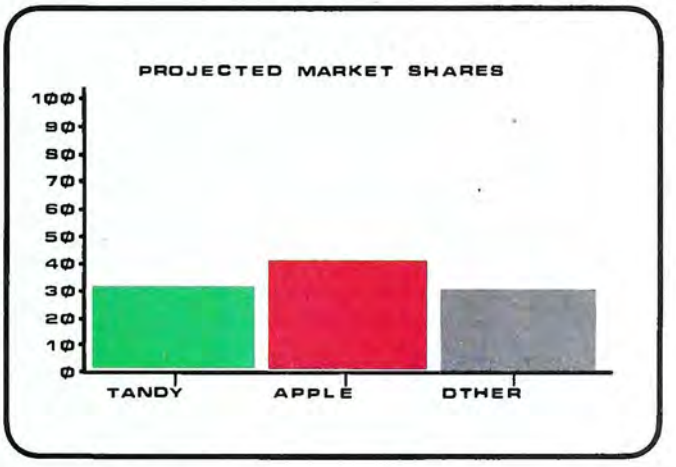

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MARKETALK

Reviews

The Mill. Designed by Jim Hinds. While many other microcomputers have seemed to reach their peak, the Apple II just keeps on growing. Much of the Apple's success lies in the wealth of peripheral equipment available for it from many sources. One such peripheral is *The Mill* from Stellation Two.

The Mill is best described as a processor board that contains another central processing unit (CPU). This puts it in the genre with the SoftCard from Microsoft. However, the Mill uses the 6809E, one of the new generation of high-powered eight-bit microprocessors. The 6809 boasts many advanced features, such as 8/16-bit architecture, direct page register, and extensive addressing modes. The company claims that this alone can double the speed of the normal Apple.

The E version of this CPU is specifically designed to integrate into a multiprocessor system.

Here is where the Mill really shines: it has the ability to allow the Apple's 6502 to run simultaneously (although at a much slower rate) with the 6809. This can lead to further speed increases and to the capability for multitasking. Since the 6809 shares the same address space with the 6502, it can access all of the Apple's RAM and peripherals; to avoid memory conflicts, however, the 6809 can select to see the Apple's address space shifted by 32K. A socket is also included on the board for up to 4K of ROM storage for the 6809.

Before you rush out to get the Mill, there is one catch: at present, the board is supplied without software. This means you will have to write all 6809 programs in machine language—not a task for the newcomer. So, unless you're already fluent in 6809 programming or you have an urgent need to use the power that the Mill provides, you probably should wait until there is at least a suitable operating system available to run with the Mill. Presently, you're most likely to see the Apple running FLEX, a popular 6809 operating system, with the Mill and eight-inch drives; it shouldn't be long before this can be adapted for use with standard Apple peripherals. An even brighter hope is for a multiprogramming system such as Microware's OS9.

The Mill package includes a copy of Motorola's *MC6809 Preliminary Programming Manual*, a small document on the Mill, and registration in the Millionaires User Group, through which information and software is hoped to be rapidly exchanged. JM

The Mill, designed by Jim Hinds. Stellation Two, Santa Barbara, CA. $275.

Raster Blaster. By Bill Budge. Bill Budge has written best-selling software for two different software publishers—Stoneware and California Pacific—and he now strikes out on his own with a tour de force in graphics and animation.

Raster Blaster is more than just the definitive version of pinball for the Apple computer. It is also a prime exhibit on the state of the art of microcomputer programming.

It was only a few months ago that *Alien Rain*, nee *Apple Galaxian*, by Tony Suzuki, was getting rave notices for programming techniques in handling graphics and animation. Budge has put the ball back in the Japanese court.

There never has been a true pinball game programmed for the Apple. There have been a few pallid imitations, including a Budge entry on his *Trilogy* disk. But here Budge creates the illusion of pinball in every detail.

Even the script on the backboard of the electronic pinball machine that announces it to be "Billy's Raster Blaster" is true to the type style of the Bally graphics for the popular electro-mechanical version.

No less faithful has Budge been in the game itself. The motion of the ball in play is virtually identical to that of the real article. The rounded bumpers at the top of the board blink, kick the ball off in realistic directions and with realistic force, and give off realistic sound effects when hit.

The rubber bumpers near the base of the machine likewise are faithful to their pinball counterparts. Flipper maneuverability is virtually indistinguishable from the real thing.

The illusion of actually being at a pinball machine is so total that several players have been observed making hand motions with the paddles that replicate similar movements against a pinball machine to add extra oomph to a bumper's kick of the ball.

Reproduced in striking hi-res colors—but eminently playable in black and white—Budge's months of work at perfecting this program show in the quantum jump he's made in animation. The ball reacts exactly as its pinball counterpart. The bumpers appear to give way and kick off the ball exactly as they do at your favorite arcade.

The game will accommodate up to four players and has options to play either easy or hard levels.

Perhaps a salient question might be: what's a programming whiz like Budge doing messing around with relatively trivial things like pinball games? But then, that's probably like criticizing Charles Schulz for not painting a modern *Mona Lisa*. ART

Raster Blaster, by Bill Budge, BudgeCo., Oakland, CA. 48K, DOS 3.2 or 3.3, paddles. $29.95.

Z-Term. By Bill Blue. Although there is a considerable amount of software surfacing now for use on the Z-80 equipped Apple, most of it has been running on other CP/M systems for some time. The *Z-Term* communications package is one of the first products written specifically for this environment.

The overall impression after testing the program is that *Z-Term* has that one attribute that most programmers strive for but not many attain: finesse. From *Z-Term*'s smooth operation to its wide flexibility, it's clear that the programmer has delivered a complete, quality package.

The tests were designed to exercise as many as possible of the claims made by the advertising and documentation. In the course of performing them, the Apple was at various times directly connected to a PDP 11/70, with SSM's AIO Serial/Parallel card in Serial mode as the Apple interface, or linked to a number of different host systems via two separate modems. The hosts ranged from TRS-80s and Apples to a DEC 20/20. Modems used were the Hayes *Micromodem II*, consisting of both interface card and modem in a two-part package, and the Microperipheral Corporation's *Microconnection*, which is able to use an existing serial card as the interface; in this case, the card was the AIO, although *Z-Term* is compatible with the Apple Communications Card and California Computer Systems's Asynchronous Serial Card as well. With the *Micromodem II*, *Z-Term* suports the auto-dial and hang-up features. Although the latest version of the *Microconnection* also has these features, the current version of *Z-Term* does not recognize this face. A way of manually invoking the auto-dial feature for this type of modem would be a nice addition in a future release.

In terms of hardware compatibility, no difficulties were noted with any of the components or configurations tested, and no modifications were required other than adjusting the baud rate on the AIO. Since *Z-Term* is primarily intended for use with modems, the documentation makes mention of only 110-baud and 300-baud transmission rates. In direct connection mode, however, without hardware handshake, the program

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Maximum number of fields/record ..	100	_____
Handles files with more than one diskette of data	YES	_____
Custom disk operating system (DOS) for faster data retrieval and program chaining	YES	_____
User-designed screen formats	YES	_____
Up to 9 screen "pages" per record...	YES	_____
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Automatic data compaction for increased disk storage capacity.	YES	_____
Wild card, partial string, range and Boolean search capabilities...	YES	_____
Dynamic prompting (tm) - lists all available functions on screen—no need for quick reference card.	YES	_____
Password file protection	YES	_____
Four function calculator mode	YES	_____
Daily update lists for printout of all records added/edited on any day or range of dates	YES	_____
REPORT GENERATOR:		
Send reports to screen or printer....	YES	_____
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Column subtotals and totals	YES	_____
Subtotal and page breaks	YES	_____
Up to 24 computed fields per report .	YES	_____
Up to 9 lines of column titles	YES	_____
Up to 9 lines for each record	YES	_____
Maximum number of fields per report	100	_____
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Comment lines and footnotes	YES	_____
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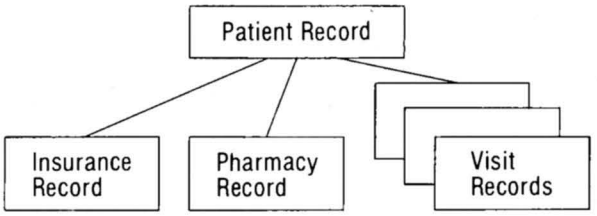

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had no difficulty at 1,200 baud as well. Although 1,200 baud exceeds the claims made for *Z-Term*, it was pushed still higher to find its limit. At 2,400 baud an occasional character was lost while at 4,800 baud and at 9,600 baud character loss became severe. Rather than consider the character loss a drawback, the unpromised 1,200-baud capability should be considered a bonus. *Z-Term* also recognizes and immediately vectors output to eighty-column video cards installed in slot 3. A Videx Videoterm was fully compatible as was the M&R Sup'R'Term.

From an operational standpoint, the program is especially nice. When you don't wish to see it, *Z-Term* obediently becomes totally transparent; yet, at a moment's notice, its full power is available. A single Control-O produces the *Z-Term* cursor (*>), meaning that *Z-Term* is ready to accept one of twenty-three single-letter commands. An additional Control-Q at this point produces a visible menu of seventeen of them; the remaining six are used infrequently and aren't displayed.

Uploading and downloading ASCII files to and from the host system is trivial with this program. *Z-Term* had no difficulty with the output of any of the many systems it was tested with. If you can cause the host to list out a file, you can capture it in the buffer that *Z-Term* automatically maintains when the COPY option is in effect. Then, transferring the buffer to disk is as easy as giving the new file a name. To give it an extra test, a file of 11/70 object code was downloaded. Despite the bizarre visual display, *Z-Term* remained totally unaffected by the non-ASCII output and even managed to preserve a reasonable facsimile of the file. Uploading ASCII files, whether Basic programs or text files created with an editor, requires little or no special care either. Whether the host machine is the DEC 20/20 or Washington's Applecrate II, *Z-Term* gives it what it wants with just a few keystrokes. This ability to create messages for bulletin boards and time-share systems off-line should save considerable money in long distance and system charges also. Add to all this the ability to toggle the printer on and off, display hidden control characters, change the logged drive, list a disk directory, and so on, and you have some idea of *Z-Term*'s power. *Z-Term* also has a feature called Macro that allows transmitting commonly used protocols (name, ID number, for example) with three keystrokes from as many as twelve different sets of such protocols on disk.

As if that weren't enough, Bill Blue has made it easy for the user to customize *Z-Term* for special uses. A program designed especially to modify *Z-Term*, called Z-Mod, is included on the disk. The necessary addresses to change for all sorts of special mods are listed in the documentation. For example, using Z-Mod, one can cause *Z-Term* to alter CP/M's screen function but only while *Z-Term* itself is active. As soon as *Z-Term* exists, normal terminal configuration returns. Incredibly useful, that's only a small sample of the potential of this particular feature.

Although this review only skims the surface of this complex product, hopefully it will give you some insight into the *Z-Term*'s usefulness. Southwestern Data Systems and Bill Blue have brought forth a truly class product, one that every Apple CP/M owner needing a flexible communications package will want to have. CT

Z-Term by Bill Blue. Southwestern Data Systems, Santee, CA. Disk, Microsoft SoftCard: $99.95.

Bingo. By Larry T. Grodin, Continental Software (Los Angeles, CA). *Bingo* is Bingo is Bingo and there's really nothing more to say about Continental's newest software offering—except that this *Bingo* hooks up to Street Electronic's *Echo II Speech Synthesizer*, and therein lies the interest in the product.

The software will generate numbers for playing the game either on the monitor for the thousands of Apple owners without an Echo or it will actually call out the numbers for the hundreds who have the Echo. The software will also generate Bingo cards if you have a printer and this is a neat option since the game plays with one hundred numbers, twenty per column, instead of the traditional seventy-five numbers, fifteen to a column.

Paddle or joystick settings control the rate at which new numbers are announced.

For those Apple owners who love to show off, this package is a must. You may never play *Bingo,* but you'll sure startle your friends. This is the first of a projected series of talking software packages from Continental that will harness the Apple to the Echo.

The Echo II uses a Texas Instruments speech synthesis chip to perform its magic. While speech synthesis is still a developing technology that leaves something to be desired in the final output, great strides have been made. In this application, the Echo could be heard and understood clearly. The Echo is a dandy to use, being easy to program; but nobody could stand yet to sit through a dissertation of complicated thoughts—the enunciation isn't quite there yet. ART

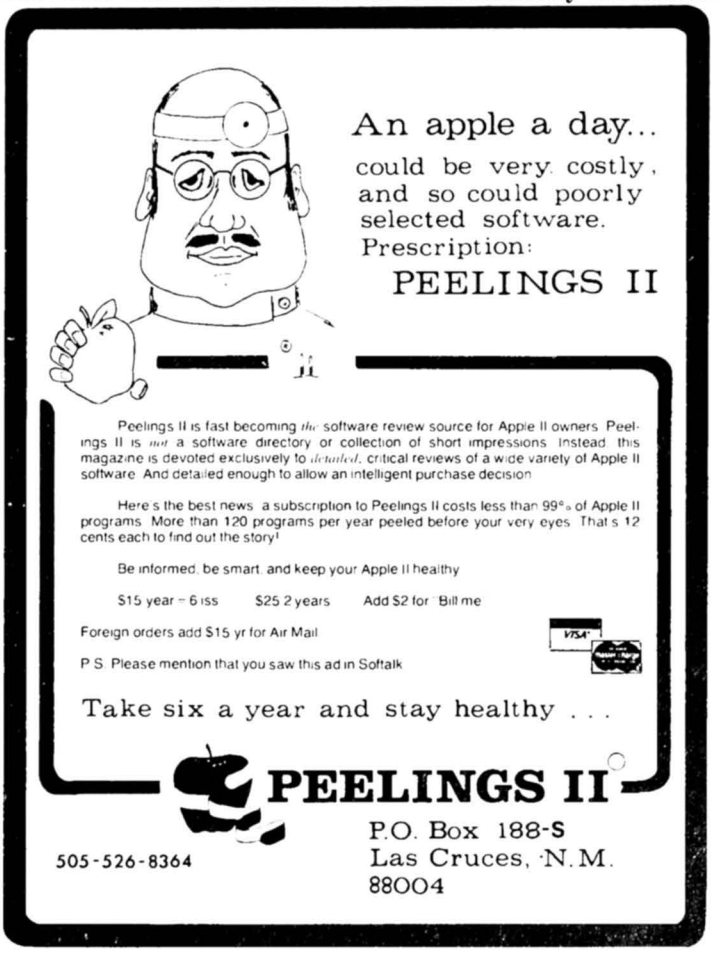
Bingo, by Larry T. Grodin. Continental Software, Los Angeles, CA. 48K, Applesoft ROM, paddle or joystick, DOS 3.2 or 3.3 disk. $24.95.

Monty Plays the Scrabble Brand Crossword Game. By Ritam. *Monty Plays the Scrabble Brand Crossword Game* is a pretty long name for what is essentially a simple concept. Monty, the lo-res gamesman created by Ritam Corporation, does in fact play Scrabble with you and as many as two of your friends.

Many of you met Monty in Ritam's first release, *Monty Plays Monopoly*, and this is the same good old Monty, polite to a fault and ready to beat your brains out if you give him the opening. Between releases, he's earned a college degree.

Scrabble is a more cerebral game than Monopoly, so it figures that Monty, being an alter ego of your Apple, might be a stauncher competitor at Scrabble, and this proves to be the case. In fact, if you don't strictly adhere to the rules disallowing foreign words or proper nouns, Monty will wax you nine times out of ten.

If you enforce the rules on acceptable words, and use your Webster's instead of the official Scrabble dictionary, you'll deprive Monty of some score at the higher levels. Although he carries a 54,000-word vocabulary, he likes to use the kind of two-letter and three-letter words most normally associated



with crossword puzzles—the kind found only in the Scrabble dictionary. Challenging these constructions is not only legal, it gives you a fighting chance.

After all, any Scrabble player who can conjure up the word *piccolo* for triple word value is a truly formidable opponent.

Monty has four levels of play, so you can adjust his skill level to yours. At the lower levels, dressed casually in shirtsleeves or sports jacket, he'll play quickly and usually content himself with one of the first smaller words he can play. At the top level, having donned cap and gown, he may spend two or three minutes in deep thought before laying a high-counting—and possibly obscure—word on you.

If you liked Monty as a Monopoly opponent, you'll delight in him as a Scrabble opponent. For one thing, he's learned a little sportsmanship. Unlike Monopoly, where he'd take his dice and go home if he lost, now he stays to the bitter end and thanks you for the game regardless of the result.

The game allows for all the features of Scrabble, including challenging of words and losing turns for unsuccessful challenges. It also includes a save feature so you can continue a game at a later date. The Scrabble board is a necessary adjunct to this program, as it was intended to be, because the computerized board is not always visible, nor does it indicate extra value squares. ART

Monty Plays the Scrabble Brand Crossword Game, by the staff of the Ritam Corporation (Fairfield, Iowa). Distributed by Personal Software, Sunnyvale, CA. 48K, DOS 3.3. $39.95.

Doom Cavern/Sorcerer's Challenge is a new offering from Synergistic Software (Bellevue, WA). Two Clardy games on one disk seems like a great bargain—until you find that only one is by Bob Clardy. That one—*Sorceror's Challenge*—seems the afterthought on the disk. It is also the highlight.

Located on a typical Clardy island, an old, established sorcerer and a young, ambitious upstart battle in a purely necromantic manner for control of the kingdom. A two-player strategy game, *Sorcerer's Challenge* sets as each player's objective the surrounding of the other with unfit environment, rendering him incapable of moving; whoever achieves this wins.

Each sorcerer has a number of environment destroying spells, the quantity set by his skill level; thus a child can fairly play an adult. On each turn, a sorcerer must move one space, then must choose a square to cast a spell on; the spell can be of three to seven hours' or of eternal duration. After the chosen number of hours (turns), the noneternal spells disappear.

Since sorcerers can move in eight directions, cornering one is not so easy. This rather simple appearing game is actually rather deep in strategy and, if you like chess-type games, humanized and in Clardy's unique hi-res graphics, worth the price of the disk.

That is a good thing, because *Doom Cavern* is a great disappointment. A fine Dungeons and Dragons type game, it starts out looking like great fun. Even when you have traversed the majority of level one and have found only a few ogres, an insane old man, and a giant for monsters, the rather delightful humor and fun of exploration the author has provided make you eager to move on to the lower levels that you figure are bound to be harder, more complex.

However, there are no lower levels. You must wait for a disk yet to be produced for level two.

Hi-res graphics in clean, line-drawn style with occasional animation are excellent. While a disappointment to veterans, the program has proven to provide a delightful introduction to fantasy gaming for the uninitiated and for youngsters who may have found other offerings of the genre too hard. MCT

Doom Cavern/Sorcerer's Challenge, by Morwe/Robert C. Clardy. Synergistic Software (Bellevue, WA). $20.

Impressions

☐ **Alien Typhoon.** By Tony Suzuki, Broderbund Software (Eugene, OR). The three-month bestseller, *Apple Galaxian*, has had its name changed to *Alien Rain*. Given that, it doesn't take too much extension of thought to guess at the nature of *Alien Typhoon*. Twice as many aliens swooping down on your ship at a time, twice as many to be done in to gain a win flag.

There are other differences, too. The arrangement of the alien army makes it easier to miss, so it's best to shoot on a slant. The aliens' shots often precede them, giving a solid advantage to a good dodger. That advantage becomes insignificant because of another change: new ships come at 5,000-point intervals, not 3,000. Because there are so many aliens on the screen, though, they are a bit slower for a good part of each siege. Of course, so are you.

If you are a *Galaxian*—strike that—*Rain* fan, you aren't apt to change your primary loyalty to *Typhoon*. But the challenge is a new one, and, chances are, you'll find the differences well worth the investment. 48K, DOS 3.2/3.3. $24.95.

☐ **Hi-Res Soccer.** By Jay Sullivan and Ken Williams, On-Line Systems (Coarsegold, CA). Team sports as arcade games have been tried a thousand times and have died a thousand deaths. But technology is changing, and one of its beneficiaries may eventually be just this genre. Whether *Hi-Res Soccer* is capable of winning the breakpoint is difficult to say.

Best played by two—the Apple will only play on the lowest level with you—*Hi-Res Soccer* fields two complete teams and each player manipulates all the men on one of them. Game paddle dials control player movement, depending on where the players are and how many are moving already.

Where the ball is in relation to a player's feet determines the direction of a kick. It is possible to pass strategically. Other players can steal the ball.

Paddle control is tricky and subtle and very hard to get used to. But persevere, and you'll be rewarded with some lifelike plays.

Three levels of play are offered for two players: the first level, the equivalent of indoor soccer, the ball bounces back into play when it hits sidelines or ends. On the middle level, end kicks are recognized and result in a throw in. The advanced level, played with outdoor rules, recognizes that balls hitting the sidelines are out of bounds and calls for another throw in. 48K, DOS 3.2 or 3.3. $29.95.

☐ **Rubik's Cube.** By Joseph Links, Software Alternatives (Toledo, OH). Links credits Ideal Toys for the subject, the cube that presumably is driving America nuts—at least, that part of America not too busy with their microcomputers to try it. Alas, our computerist excuse for avoiding the annoying, compelling toy has been toppled, for this is, indeed, Rubik's cube on disk for the Apple. To make things worse, you can't feel it, of course, so you have to orient yourself to the movement entirely visually. What's more, the main view shows two sides and top; you toggle to the rear view for the other two sides and bottom. Try relating rear to front—it's an added challenge.

Basically, Rubik's is a cube made up of six sides with nine small cubes showing on each side. When you begin, each side is a solid color. Each column and row is movable, and affects the extensions of itself on all sides. In the real game, you must masochistically create your own problem and frustration: you must mess around with it until all the colors are mixed up. The challenge is to restore your mess to one solid color per side again.

Although beginning it yourself is available on the disk version, the computer allows less destructive alternatives. You can have your Apple generate a cube randomly and start from there. Or, if you are trying to solve the physical cube, you can input its current state and have your Apple help you solve it.

There's a certain frustration level that won't be denied, and you'll reach it. Fortunately, you can save the cube as is and come back for it another day. Even when you turn off your Apple in disgust and vow never to run the disk again, you'll find yourself going back to the game time after time. 48K, Applesoft, DOS 3.2 and 3.3 (separate disks). $19.95. ◨

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In this particular HI-RES ADVENTURE game, you are transported to the front yard of a large, old victorian house. When you enter the house, you are pulled into the mystery, murder and intrigue and can not leave until you solve the puzzles. Your friends are being murdered one by one. You must find out why, and who the killer is. Be careful, because the killer may find you! As you explore the house there are puzzles to be solved and hazards to overcome. The secret passage way may lead you to the answer.

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Taking Apples for Granted

Softalk photo

Left to right: Jo Plato, Peggy Redpath and Corolyn Stauffer of the Foundation for the Advancement of Computer-Aided Education

COMPILED BY RENNY MARYS

CRAIG STINSON AND MARGOT COMSTOCK TOMMERVIK

Very early in the development of Apple Computer Inc., its leaders recognized the tendency of large corporations to support the community, especially its educational arm. Spurred by early Apple executives such as Mike Markkula and Roger Cutler, and feeling a responsibility to demonstrate its commitment to education and to society, the budding corporation decided not to wait until it attained the expected size to found a program offering just such support.

Thereupon, bringing in Carolyn Stauffer and Greg Smith to set up the organization, Apple established the Apple Educational Foundation. As it often is with Apple, they weren't satisfied with the normal approach to the problem—in this case simply putting computers in classrooms.

Instead, Apple's idea was to create a showcase through which to set an example of programming excellence for education. They wanted to encourage the development of software from society in general; and in the process to foster excellence. They determined to recognize the programs that would help in these goals and that would set examples for others to follow.

Toward these ends, the foundation was formed in August, 1979, to provide hardware to individuals to write such programs. The second—and equally crucial—function of the foundation was to disseminate information about successful programs.

In other words, the object was to create programs exemplifying excellence and get them into the world; and, in the process, to get the microcomputer into the educational system.

Others Want To Give a Piece of the Action. Later, peripheral manufacturers joined the foundation bandwagon, and grants were broadened to include peripherals from Bell & Howell, Mountain Computer, M&R, and others.

Recently, the manufacturers of other microcomputers have requested admission to the foundation's programs; they'd like to give away some of their micros, too. As a nonprofit organization whose goal was intended to transcend brand names, Apple quickly changed the name of the foundation to one that would show neutrality; the new name is the Foundation for the Advancement of Computer-Aided Education (FACE).

The Movers. Three people form the backbone of the foundation. Executive director and chairman of the board of FACE is Greg Smith, who came onboard at the outset along with Carolyn Stauffer. Stauffer, besides being secretary and treasurer of the foundation, is manager of the Educational Program Information Center (EPIC), the information disseminating branch of FACE.

Stauffer is hard at work now on the first foundation publication of reviews of all educational software, to be called the

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EPIC Journal of Courseware Review. The purpose of the journal—and a major purpose of EPIC—is to assist educators in the selection of quality software for education. Programs are reviewed by subject-area experts; they include the foundation's model programs—those that evolve from successful grant projects—and programs selected from outside submissions.

A related function of EPIC is the opening of channels of distribution for courseware. The journal is the first step in this process.

Newest member of the foundation triumvirate is Margaret Redpath, formally FACE's administrator. Redpath runs the grant process, taking care of the submissions, follow-ups—the paperwork in general.

Purgatory for Proposals. Smith, Redpath, and Stauffer review all proposals for grants submitted to the foundation and screen them for certain qualities and practical considerations. They look for universal value; consider whether the application can fill a need for a large number of users; then evaluate its innovative and unique qualities.

By a process of elimination on these bases, a number of applications are chosen to go on to stage two of the selection process.

This stage involves another, if not full-time, arm of the foundation: the technical board of advisors, consisting of key people in the computer-assisted (or aided) education (CAI) field. Applications that have passed the screening are sent to the advisors, who fill out evaluation score sheets. From their forms, a physical score is given.

Technical Testing and Judgment Day. Twice a year, the technical board and the FACE staff meet. Together, they conduct a panel discussion on each proposal, covering how they were scored and applying standard deviations. The final choices are based on the average scores of the proposals. How many are chosen is based entirely on the foundation's budget.

The judgments then go to the foundation board of directors, each of whom has seen all proposals submitted to the foundation. This distinguished body meets on the proposals. At this time, the directors can ask questions, add information, even revive a proposal that has been rejected in the screening process. The board of directors is the last step for the proposals; final approval is granted here.

On the foundation's first screening of proposals, sixty-five grants were made—this cycle—number two—there were two hundred fifty. Of the recipients, 95 percent are institutions; although many of the proposals are the work of individuals, most of them are connected with an institution, which becomes the recipient. The hardware then belongs to the institution when the grantee's work is done; the foundation hopes these facilities will be used after that for further development in the field. Many are used in the schoolroom after the grant work is completed.

On to the Projects. FACE administrator Peggy Redpath emphasizes that the major story of the foundation is not the story of the foundation at all, but the stories of the people who have succeeded in the unique projects for which the foundation supplied them with grants. Now, we hope you'll enjoy meeting several of these unique people and taking a look at the ways they've used their Apples.

A Curator Named Apple. In June 1978, Dr. Eve C. Van Rennes began using her Apple Foundation grant computer to research the possibility of computer-assisted museum exhibits at the Cranbrook Institute of Science in Bloomfield Hills, Michigan.

Van Rennes's research was successful, and today you can enjoy two exhibits at Cranbrook Institute with the aid of three Apple computers. At each exhibit, the visitor sets up a dialogue with the computer that lasts from ten to thirty minutes.

Two of the computers are part of the anthropological exhibit, "Man's Past Revealed." At "Man's Past Revealed," which includes a primitive man's fossil skull and stone tools, the computer asks a series of questions and makes comments,

Cranbrook Institute photo

An Apple runs and explains the Foucault Pendulum at the Cranbrook Institute.

based on the exhibit, inviting visitors to reflect, synthesize, interact, analyze, and hypothesize on what it means to be human. The dialogue can be broad and varied, depending on the visitor's questions and answers.

The computer might ask, for example, "When in the course

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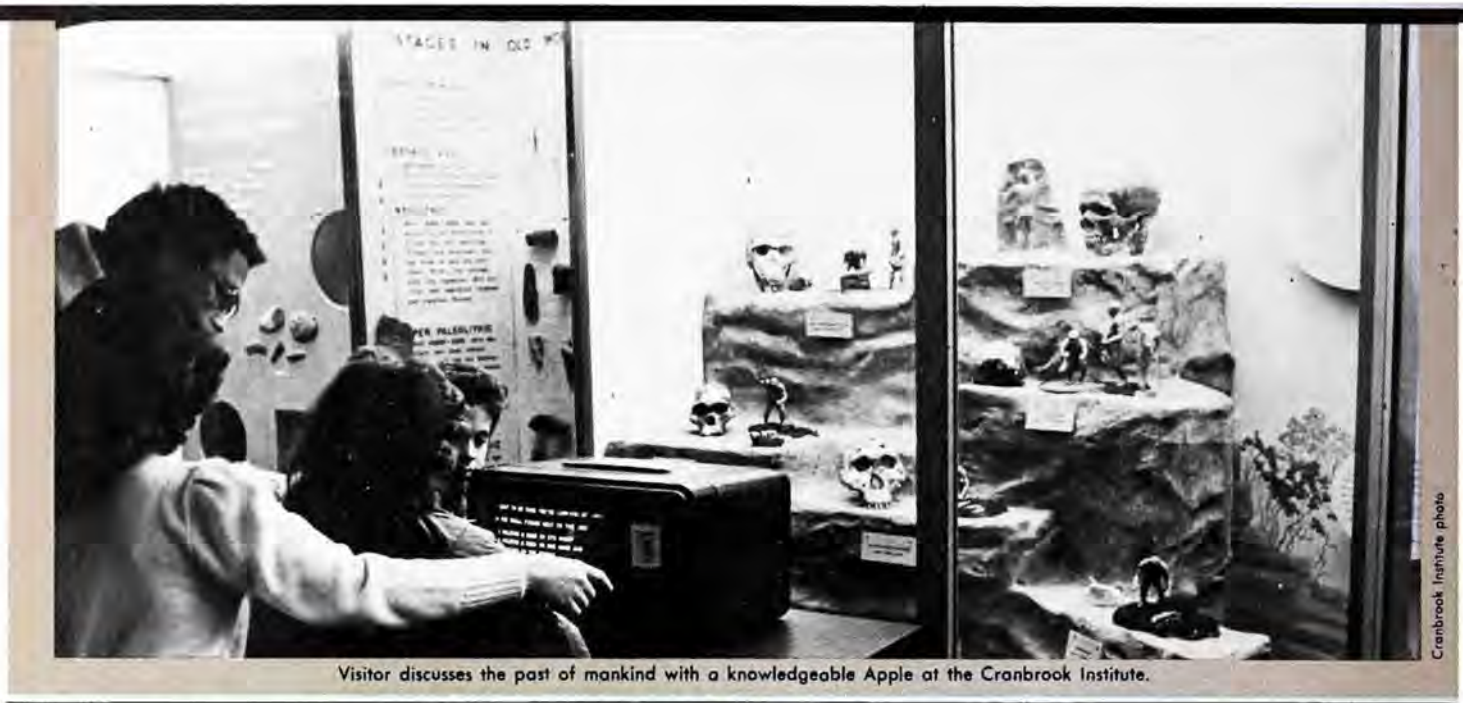


Cranbrook Institute photo

Visitor discusses the past of mankind with a knowledgeable Apple at the Cranbrook Institute.

of evolution did our ancestors become fully human? When did they make tools, speak language, produce art? When did they walk on two feet?"

The third serves as the creator and motor of a different exhibit; its program is the Foucault Pendulum, an exhibit on physics that proves the rotation of the earth.

When a French visitor to the museum returned to Paris, he encouraged the director of the Palais de la Decouverte (the French National Science Museum) to invite Van Rennes to set up a similar program there, which she did in 1979.

These computer-assisted exhibits are the first of their kind anywhere in the world.

A Very Special Success. Marguerite Mason is the coordinator of Project MASS (Microcomputer Assistance for Special Students) for the Charleston Community Unit Number One in Mattson, Illinois. The thrust of this project is to facilitate learning in educable mentally retarded and learning-disabled students by developing materials that tap into multiple sensory channels.

Mason believes that the mainstreaming of such children (putting them into regular classrooms with resource help from a specialist) is failing because of a combination of inappropriate instruction, poor teacher attitude, and lack of communication between special education and regular education staff.

She has used her foundation grant Apple to adapt and develop materials specifically geared toward learning-disabled children, using such methods as color-coding, sound reinforcement, and light pens. Mason stresses particularly the value of the Apple's color graphics.

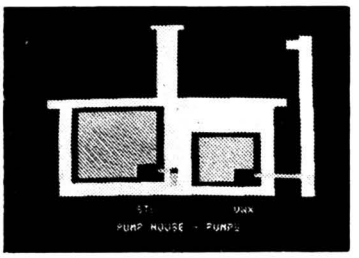
The success of the program has already been so substantial that the federal government has provided $105,000 of Title IV-C money for its continuance. The district now has nine Apples, and Mason supervises several teams of teachers to reach learning disabled students from kindergarten through senior high school.

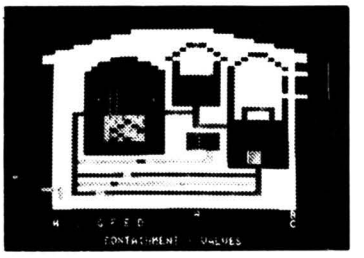
The students typically have either three fifteen-minute or two twenty-minute periods with the computer per week. Attendance is significantly higher on computer days (could the use of *Super Invader* as a reward have anything to do with that?)

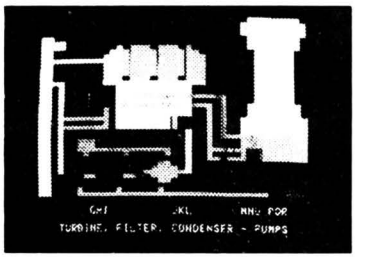
The Artful Appler. Dr. Beverly Jones of the University of Oregon's Art Education Department is using her Apple grant to uncover microcomputer applications in art education. Her project is just getting underway, but she hopes to introduce secondary art teachers to the Apple's unique potential as an art medium.

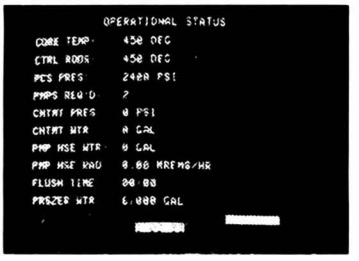
Jones believes that the Apple is the perfect computer for this application because of the excellence of its graphics and the clarity of Apple's manuals.

One of her ideas for software is a special graphics tablet that will enable a student, using a light pen, to draw directly on the screen. She also wants to develop courseware that will use the Apple's color graphics to teach design.



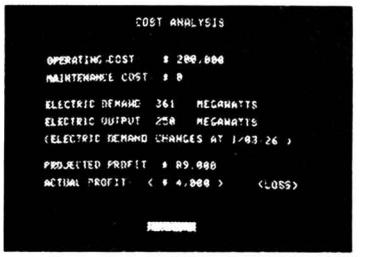






THREE MILE ISLAND

by Richard Orban



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Victor Fricke, Nuclear engineer in the March 1980 issue of Creative Computing.

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Robert Elliot Purser, publisher of Purser's Magazine, A Software Directory.

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Jones hopes that her work will eventually become part of an instructional media center. She intends to reach secondary teachers through workshops and college courses and by going into high school classes herself to demonstrate the possibilities of computer graphics.

Changing Keys for Powerful Results. Dr. Jim Garson of the University of Illinois received an Apple grant to develop interactive graphics courseware for computer literacy on the junior high through high school levels. Acting on the premise that the imaginative use of graphics can demonstrate and teach subjects that would be cumbersome and tedious to handle with two-dimensional print media, Garson is engaged in satisfying people's curiosity about the technology that surrounds them.

His initial project consisted of four programs dealing with the functional structure, or architecture, of hand calculators. These programs and their accompanying workbooks cover everything from a simple, two-register, four-function calculator to a programmable calculator. Garson relabeled the Apple keyboard to resemble a calculator's keyboard.

The guiding principle to his efforts, however, is interactivity. Garson believes that mechanical relationships can best be taught by getting the learner actively involved, and to that end he uses a combination of animated graphics and explanatory text.

The scope of this project goes beyond calculators and computers. Models of an atomic power plant and an internal combustion engine are already in the works.

An Apple a Day . . . The University of Minnesota Medical School used a foundation grant to enhance patients' awareness and understanding of personal health issues. Under the guidance of doctors Lynda B. M. Ellis and John R. Haines, the school developed a five-part educational program covering the following topics: coronary risk, exercise, weight, lifestyle, and smoking.

The package was placed in the waiting room of a general medical clinic in a low-income inner city community. Patients were either referred to the computer by staff members or were encouraged by a large poster to play the "Health Awareness Games."

The games were designed to be played by people with no prior computer experience. A study conducted after six months showed that patients were using the package more than twelve times per day.

The patients were asked at the end of each program to answer two questions: "How helpful was the game to you?" and "Will you change any living habits because of this game?"

"Some nut named Atlas . . ."

Banx/The Bulletin/Sydney
reprinted from World Press Review/January 1981

Of the users, 70 to 84 percent reported that the program had been helpful, and 24 to 42 percent said they would change a living habit because of it.

A resounding 80 to 90 percent of the medical staff felt that the system was more effective than traditional and more costly methods of patient education.

Distinguishing Left from Right. Teaching fundamental spatial concepts to preschoolers is the project for which Dr. Anne M. Piestrup received her Apple grant. Piestrup, of Stanford's Bing Nursery School, divided the computer's keyboard into four zones in order to help children learn the meanings of above and below, left and right.

The software employed graphics, music, and a Mountain Computer Supertalker to catch the children's attention and present concepts. The voiced segment of the program provided the crux of the teaching. Each lesson had two voiced portions that made comments and gave directions.

Typical voice commentary might be, "That key was on the right. Now touch a key on the left." The computer was programmed to accept new inputs only after the full lesson sequence had been completed.

Graphics and music were also used as rewards for successful learning of the material. Children discovered that after finishing a lesson they could press the space bar and produce rainbows, color rain, melodies, and dancing butterflies.

Eventually they were allowed to control the graphics with game paddles. Learning to play with Ribbit, the jumping frog, provided mastery of a different kind.

Fifty children, ages three and four, many of them bilingual, made up Piestrup's project. Each child spent ten to twenty minutes a day at the computer.

Results were significant. The children used the concepts and concept names frequently in the classroom and at home. The computer piqued a lot of curiosity and provoked a lot of questions and discussions.

The students were eager to use the computer and were not inhibited in using either the hardware or the software. The implications for interactive computer experiences, even with children so young, are overwhelming. ■

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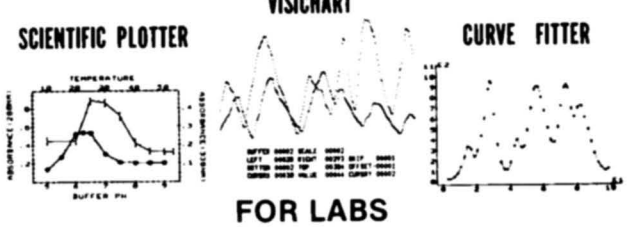

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More Contest Winners!

from page 2

lative winner based on a scoring system explained in the December issue.

Both negative and positive points are awarded. At this point more than twenty entries have positive point totals. Leading the pack with scores of plus eleven are Shanberg, Jim Ganz of West Hartford, Connecticut, and Tom O'Brien of Portland, Oregon.

Limerick Contest. A limerick written by Eric Marks of Mount Tabor, New Jersey, was voted by *Softalk*'s readers as the best of the finalists in the Limerick contest.

His limerick, which was listed as number one in the March issue, was

My wife spent last week in the loft.
I know she's alive; she just coughed.
She has found no new suitor;
It's that Apple computer;
I'm afraid that she's gone micro soft.

Marks asked for a selection of On-Line Systems software as his prize.

Marks was the only limerick author with two entries in the ten finalists. His other entry was number three.

Other authors of the final entries, who will receive $10 merchandise certificates for use in purchasing goods from *Softalk*'s advertisers were:

Frank DeGrasse, Danbury, Connecticut, number two; Mike Leavitt, Reston, Virginia, number four; G. Bass, Williamsburg, Virginia, number five; Greg Biel, Marshall, Texas, number six; Boris A. Karaman, Philadelphia, Pennsylvania, number seven; Daniel Miller, M.D., Worcester, Massachusetts, number eight; Paul J. Friedman, La Jolla, California, number nine; and Clayton E. Ruth, Dyner, Indiana, number ten.

The entries from Miller and Ruth were tied for second in a very tight race.

The Unknown A. Jim Cook of Scenery Hill, Pennsylvania, was chosen as the winner of the Unknown A contest. More than one thousand correct entries were submitted. The contest involved solving an equation and correctly identifying the solution as being Apple Computer's street address on Bandley Drive in Cupertino, California.

Cook asked for his $100 prize to be applied to the purchase of *Data Factory* from Micro Lab.

A second prize in the contest was offered for all who correctly solved the equation, whether or not they could identify the significance of the number.

The winner chosen by the Apple random generator was Charles F. Harderson, Corning, Iowa. He requested *Hi-Res Cribbage* by On-Line Systems as his prize.

Look for a similar contest in the June issue of *Softalk*.

Lord British. No one actually solved the clues to come up with an appropriate description of Lord British. As explained last month, certain insiders in his home locale had prior knowledge of his identity and one of them was declared an additional winner. In the course of the contest, when we reprinted Akabyramben Schwartz American's letter postulating a possible Lord British identity, we challenged readers to solve the mystery of who this writer might be.

David Williams of Pasadena, Texas, was the first insider to identify Lord British and wins the extra "insider's" prize of $50 in merchandise from *Softalk*'s advertisers. Ben M. Schwartz of Andover, New Jersey, wins a like consideration for a combination of his imagination and stumping readers as to the methodology behind his explanation of Lord British's identity.

Explanation of clues and revelation of Lord British's identity will occur in the June issue of *Softalk*.

Secret Orders Deadline. No deadline was given for entering the Secret Orders contest printed in the March issue. This establishes the deadline as June 15, with the winner to be announced in the August issue of *Softalk*. ■

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On Planting Seeds in Our Schools

BY GEORGE HOPMEIER

Although the personal computer is gradually becoming a more familiar and accepted part of American life, it is also encountering resistance from some educators and school principals.

If you are a teacher or the parent of a school-age child, you would probably like to see Apples used in the school you're associated with. Interested parents and teachers in Florida who wanted to introduce computers into the schools decided to develop a strategy for overcoming official resistance. The Florida group posed several questions that may be helpful starting points if you are hoping to promote the introduction of computers into your local school system.

What Kids Love and Teachers Fear. Why do childen enjoy using the computer? Most of today's children grew up watching television. Unlike television, the computer is a two-way communications system, one that requires interaction. Children enjoy and grow from such interaction, benefitting from the individual instruction and attention and being able to work unselfconsciously at their own pace. In fact, as you may have guessed, children are far from reluctant to use computers; rather, it is adults who feel such discomfort.

Why do some educators fear the computer? Fear of the computer seems to be directly related to lack of computer familiarity and education. One convenient way of remediating these lacks is through in-service workshops sponsored by the school system. Perhaps an even more direct and powerful way to alleviate this problem is for parents who are computer-educated to organize and teach such workshops, with the primary objective of helping teachers to learn and become more at ease with this technology.

Such workshops would stress that the computer is another tool, like chalk and chalkboard. Just as chalk will not write on the blackboard of its own volition, neither will the computer do anything other than what the programmmer has directed. Learning that the computer is simply a powerful educational tool may help educators to feel less threatened by it.

Don't Forget the Principal of the Matter. Why do educators have problems getting computers for use in their school systems? Naturally, there are many possible answers to this question, ranging from ignorance to lack of funds. In order to create a receptive environment for the introduction of computers into your school system, it is important to become aware of what the possible barriers to their use might be. In addition, it is crucial to remember that the principal of the school is the school manager. Since requisitions for funds are signed by the principal in most school systems, forgetting to include him or her in your plan will almost certainly mean you can forget about trying to obtain a computer for your school.

Evaluating Educational Software. What constitutes a good computer program for the classroom? In the author's view, a good computer program is one that encourages group participation in the learning process. Traditionally, computer education has relied primarily on individual instruction. Although such instruction is useful and can help a student to learn at his own pace, it does nothing toward helping the individual develop the skills for dealing with the demands of the real world. Instead, it may add to the problems engendered by the one-way learning system of television.

Socrates Had the Right Idea. Use of the Socratic method—an interactive learning process between computer and user—can be beneficial to students. As may be imagined, it is much more difficult to formulate a computer program that facilitates a dialogue between computer and user, rather than a program that calls for one particular answer. Yet, creating such a program increases the effectiveness of information transfer and enhances the learning process of students. Resistance to the development of such programs has more to do, in the author's opinion, with the difficulty of creating such programs than with their usefulness.

Good educational software is difficult to find. One reason for this is that educators who are going to be attempting to use the software are rarely involved as participants in its development. Interesting educators in the use of the microcomputer in the classroom will have the valuable side effect of involving more educators in the field of software development.

Look Before You Buy. In your efforts to promote the use of computers in your school, become familiar with software that will be useful and worth the price. When you do buy software, exercise your right to report your opinion of its value. Such reporting will promote the improvement of existing programs and encourage the development of even more satisfactory ones.

Overall, computers offer a fantastic opportunity for learners to participate actively and effectively in the educational process. This can only occur, however, if CAI is approached with an awareness of the possible resistances that may be encountered, and with a thoughtful strategy for dealing with them. ■

George Hopmeier is owner of Gulf Coast Computer Center in Milton, Florida. He has degrees in physics and mathematics and the master's degree in educational leadership; he is currently working on his doctorate in education. For the last three years, Hopmeier has been involved with computers in education, along with optimizing the educational process based on personality, and cognitive modality determination.

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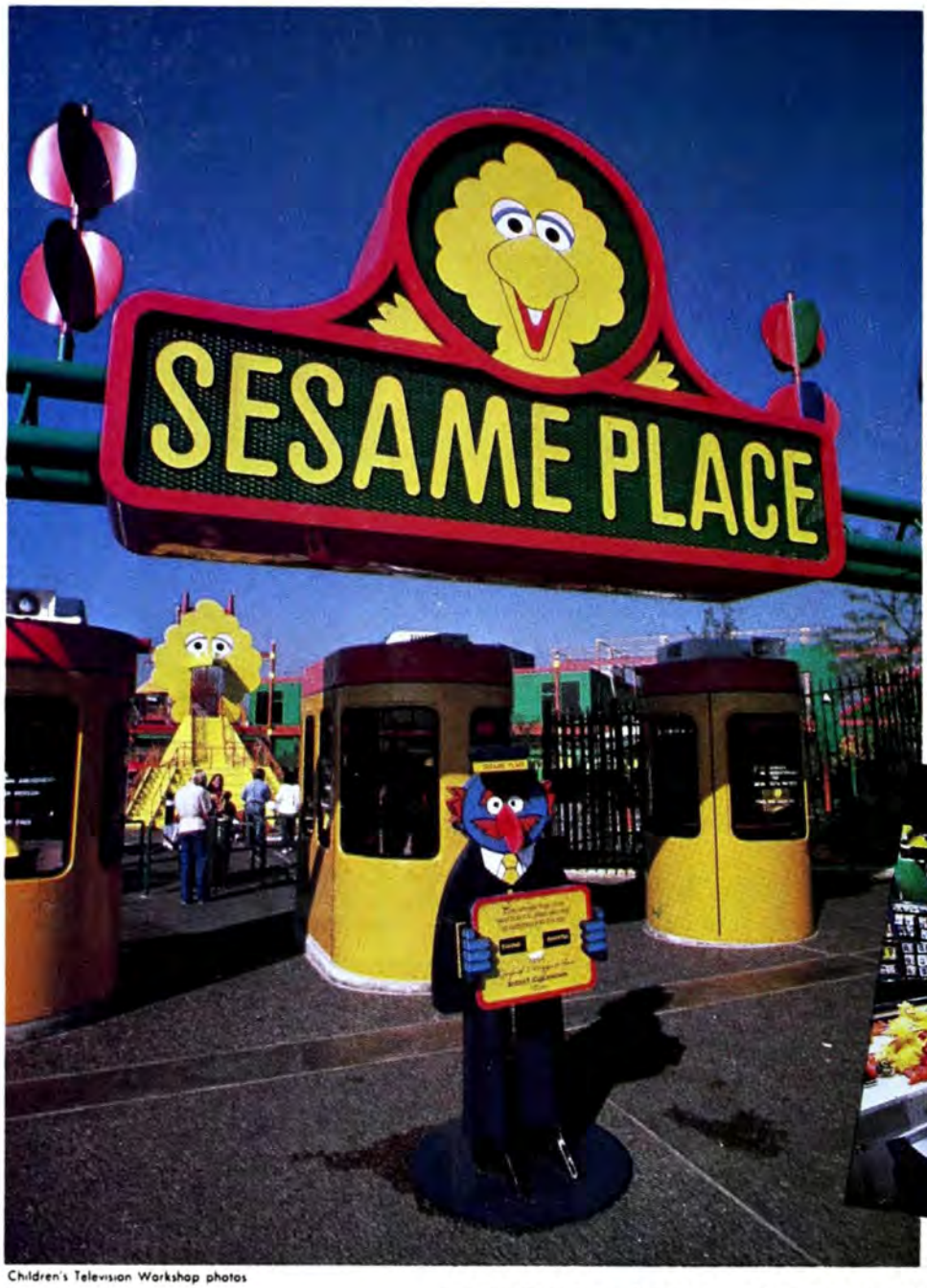

Children's Television Workshop photos

BY MARGOT COMSTOCK TOMMERVIK

What's it like to walk on water? If I could step out of the plane onto those fluffy clouds, and not fall, what would it feel like? How would it feel to move on a planet with a different atmosphere?

You know those old movies where the buccaneers were always climbing the netting to the top of the sails on their ships—I'd sure like to try that! Or to scale the walls of an old castle.

What if I could run a computer on a spaceship? What if I could run a computer at all?

At Sesame Place, you can do all these things. A joint venture of the Children's Television Workshop, creators of *Sesame Street*, and Busch Entertainment Corporation, creators of Busch Gardens and subsidiary of Anheuser-Busch of Clydesdale horse (and other) fame, Sesame Place is a family recreational and educational area for everyone, but targeted at children three to thirteen and their parents. At Sesame Place, kids can learn more about themselves and their environment while having an awfully good time.

The park's intention is to create an environment for interactive, participatory play, with an emphasis on its educational nature. As purely fun as any park activity may seem, CTW can tell you its educational value in detail. Sometimes that value is inherent in the element; sometimes it rests in the way you use it.

An Apple by any other Name. No explanation of the value of the park's computer center is likely to be required by *Softalk*'s readers. The Computer Gallery sports fifty-six computers, all just like those pictured. Why are we featuring such rather strange and unique computers when everyone knows this is exclusively an Apple magazine? Well, you see, they're all Apples. Not exactly the way you know them, but Apples nonetheless.

The Computer Gallery is not the first stop on the Sesame Place itinerary, though.

The entrance to much of Sesame Place is through a giant Big Bird. The first thing the kids are apt to go for are the forty outdoor elements designed by Eric McMillan. These are called elements because they aren't rides. In other theme and amusement parks, you get on a ride and it goes. At Sesame Place you get on a ride and you make it go—as fast or slow, as high or low, as you wish. There are old cargo nets for climbing as

high as forty feet above the ground; Rubber Duckie Pond—an actual pond surfaced with plastic, which gives the sloshing, rippling effect that walking on water might, more clearly pictured if you imagine trying to run around on a giant waterbed; Grover's Rubber Band Bounce, a giant rubber band inside which you walk, run, and jump—if you dare; the Count's Ballroom, which is precisely that—a room filled with eighty thousand small balls through which you walk (sort of), slip, slide, or swim, as if you were in a totally different atmosphere. You may climb Swiss cheese walls—as high as you want to build them.

The Shadow Knows. Twenty-four hands-on exhibits form a science section. Speak into a microphone and see the shape of your voice—in full color—on a TV screen, or hear your voice squeezed and stretched; ride a stationary bicycle that generates the power to illuminate an electric display; become part of a kaleidoscope in a mirrored enclosure that infinitely reflects your image every which way. In the Shadow Room, a section of the light gallery, your shadow appears to separate from yourself, remaining full size, and join others' shadows; then watch your shadow's interpretation of any weird and wonderful things you think of to do.

The science section is located in the Sesame Studios, the main feature of which is a full-size replica of the actual Sesame Street television set. Kids may roam the set and watch themselves on Sesame Street on closed-circuit television.

Hall of Addiction—The Computer Gallery. During the testing stages for Sesame Place, planners for the Computer Gallery found themselves forced to charge for an activity intended to be free. It became evident that the computers became addictive, even on a short-range basis. To avoid having individual kids—or adults!—monopolize a computer, it was necessary to institute a pay-for-play program. Now a token (three for a dollar) buys approximately four minutes at an incognito Apple.

Approximately, because no one is ever stopped in the middle of a game. If your four minutes runs out in midgame, your turn is up when the game ends. On the other hand, if you end one game with only fifteen seconds or so to go, the computer won't let you start a new one without another token.

Credit for the idea of incorporating a whole building full of computers into Sesame Place goes to creative consultant Chris Cerf. A self-avowed computer games addict, he became the moving force behind the creation of the Computer Gallery.

But credit for the seventy games currently available on the fifty-six Apples goes to Joyce Hakansson, who was recruited from Lawrence Hall of Science in Berkeley, California, where she was director of the community access program. CTW discovered Hakansson when they were combing the country for computer facilities to determine which computer would work best for their park. Lawrence had the largest educational computer facility in the country, and CTW was sold. The computers at Lawrence were—and are—all Apples.

GOSUBS for Original Apple. Hakansson's responsibility at CTW included designing the Apple's disguise, better known in Sesame Place circles as the Sesame Place housing, to make the computer even more friendly to the youngest of children as well as amenable to oldsters. The keyboard is in alphabetical order for the learning benefit of very young and for ease of the typewriter-uninitiated. Keys are much larger for young,

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not-so-coordinated hands, and the return key has been replaced by a humongous GO button.

The go button is significant because directions in all the games have been standardized. No longer do some programs prompt you to "hit return" to go on, others to "hit any key," "press space bar," and on and on; they all say "push GO."

The intent here is that of every aspect of Sesame Place: to create a friendly, positive atmosphere, where the environment is never a threat, never confusing.

As with the rides, control lies with the user, not with the computer, and this is particularly emphasized here for the benefit of adults with a preconceived notion about who controls whom when people and computers get together. Instructions are easy to read, and how fast you read them is up to you. When you're finished, the ever useful go button moves you on. Thus parents and kids can pace themselves comfortably.

For Those Who Are Game. Besides becoming comfortable with computers, what is the educational value of playing games on the Apples? A lot of us can think of quite a few answers to that that are independent of the nature of the game played, but Sesame Place's computer games offer some specific reasons of their own.

Each of the games has been designed to teach specific things, either openly or indirectly. Overall, they involve solving puzzles, forming patterns, creating musical compositions, making words and letters, exercising hand-eye coordination, or competing.

Choices of games span all age ranges. An example of a game for the very young child is Muppet Quiz. All the muppets come on the screen. Then the child is given clues that lead to the identify of one muppet; a character's voice might say, "I like garbage and I hate kittens." Then the screen might ask, "Is it Big Bird, Oscar, Kermit . . ." and so on. The child pushes a button to identify the muppet being described. To play the simple game, the child must use skills in reading, logical deduction, memory, for example.

A game for a somewhat older child shows a flashlight in the lower left corner, a number of objects on the right, and a mirror in the middle. The child must manipulate the mirror to where it would reflect the beam of the flashlight onto one of the objects. At this point, the flashlight comes on, lights the object, and something happens to the object; if the object is an egg, for example, upon being lit it might hatch and a baby chick come out. Lessons in this game involve the physics of the world—angles of reflection, and so on.

The Sesame Think Tank. Sesame Place's games are devised by a staff of ten led by Hakansson. Program design—story boarding, critiquing, testing—is done by the team. Then the members of the team go off individually to implement those aspects of the process at which they're expert: research, artwork, coding, technical processes. They rejoin forces to merge their achievements into the whole game.

Hakansson is particularly proud of the compatibility of their team, which is made up of many very diverse backgrounds.

Once a week, a bunch of kids from local schools have their arms twisted to come in and test play the newest games and the games in progress. Kids who come more than once are dubbed by the CTW staff their Panel of Experts.

Even the preparation of Sesame Place is fun and educational.

The first Sesame Place is up and running with great success in Pennsylvania, just north of Philadelphia and just west of Trenton, New Jersey. But it won't be the last. CTW and Busch want the parks to remain local in their flavor; the prices are low to encourage local people to come often.

So, they are planning to make Sesame Place a nationwide chain of parks throughout the country, spreading, they hope, the concept of family learning through fun, and, with it, we hope, the benevolent pleasure and value of the personal computer, especially the one—regardless of dress—named Apple. ◨

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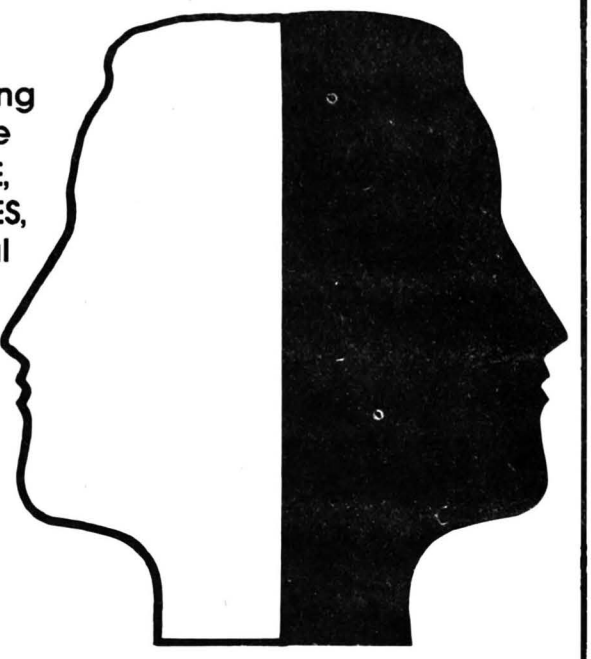

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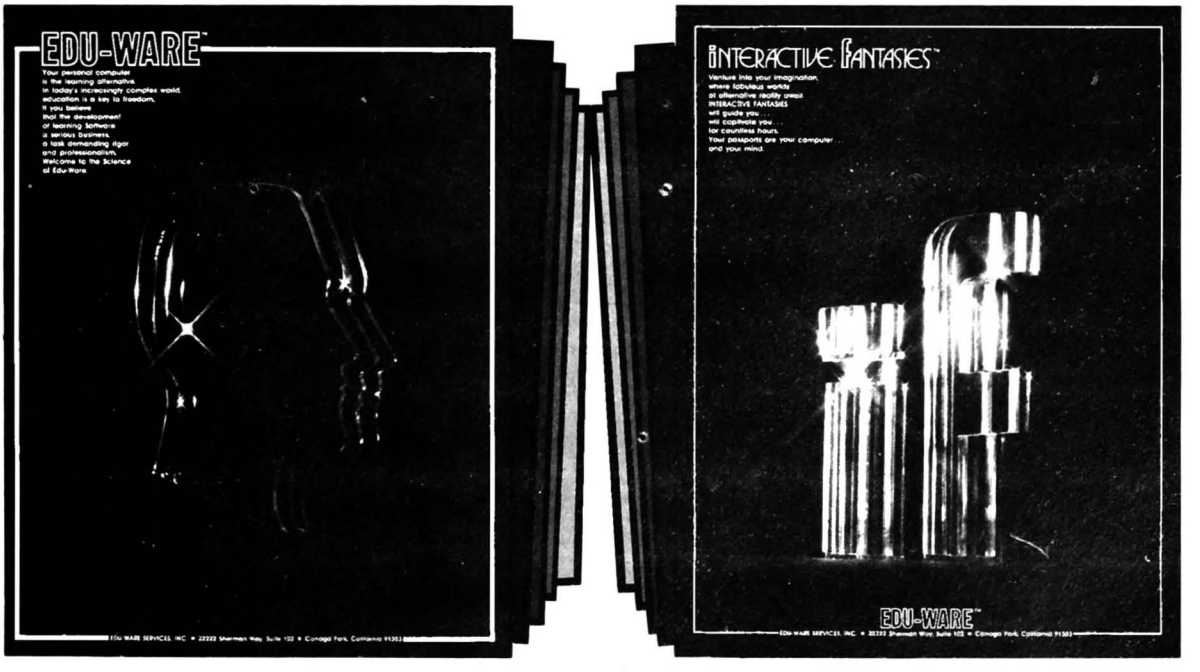

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THE BASIC Solution

By Wm. V. R. Smith

This month's subroutine is called "Read Screen." It reads a line of text from the Apple screen and assigns a string variable to it. It also converts the screen text into regular string ASCII.

```
400 REM ******************************
410 REM **
420 REM ** READ A LINE OF
425 REM ** THE CURRENT CURSOR
430 REM ** POSITION
435 REM **
440 REM ******************************
450 T$ = ""
460 BA = PEEK (40) + PEEK (41) * 256
470 FOR X = PEEK (36) TO 39
480 C = PEEK (BA + X)
490 T$ = T$ + CHR$ (C)
500 NEXT X
510 RETURN
```

When you plan to use the subroutine, you must remember to position the cursor on the point at which you want the subroutine to begin reading the screen before you call the subroutine. Using Htab and Vtab does this quite adequately.

The brevity of "Read Screen" enables us to include a short program using the subroutine. The program gives a format to your disk catalog; from the format, you can run any program on a disk with a single keystroke. You may want to use this auto-run program as the Hello program on some of your disks.

The subroutine is given with line numbers appropriate to the auto-run program. For your own uses, the line numbers may be changed.

```
10 REM ******************************
15 REM **
18 REM ** SOFTALK AUTO RUN
20 REM **        PROGRAM
22 REM **
25 REM ******************************
30 PRINT : HOME
40 O = 188
50 PRINT CHR$ (4);"CATALOG"
60 FOR V = 5 TO PEEK (37)
70 VTAB V: HTAB 4
80 PRINT "—"; CHR$ (V + O);"—";
90 NEXT V
100 VTAB 1: POKE 35,4: HOME
110 HTAB 5: PRINT "SOFTALK HELLO PROGRAM"
120 TEXT
130 PRINT "YOUR CHOICE";: GET A$
140 P = ASC (A$) — 60
150 IF P < 5 OR P > 23 THEN END
160 VTAB P: HTAB 1: GOSUB 400
170 T1$ = MID$ (T$,2,1):T$ = RIGHT$ (T$,33)
180 C = ASC (T1$)
190 IF C = 193 THEN C$ = "RUN": GOTO 230
200 IF C = 201 THEN C$ = "RUN": GOTO 230
210 IF C = 194 THEN C$ = "BRUN": GOTO 230
220 GOTO 10
230 HTAB 8: INVERSE : PRINT T$: NORMAL
235 TEXT
240 PRINT CHR$ (4);C$," ";T$
250 END
```

The "Read Screen" subroutine can be used in many different applications, such as dual screen scrolling or making paper copies for the text screen.

Can you figure out how to implement these applications or new applications for the subroutine? The reader who sends in the most interesting brief application by June 15, 1981, will win a $10 gift certificate at their local dealer.

Also, if there are problems you'd like to have solved in The Basic Solution, please send them in. ■

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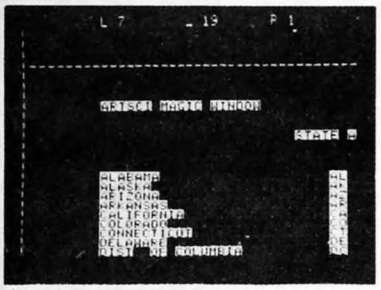
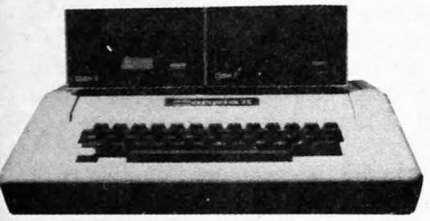
The MAGIC WINDOW transforms your Apple Computer into a sophisticated Word Processor/Text Editor. All types of documents can quickly be written, revised, edited, and printed. MAGIC WINDOW typing is so simple you can perform any editing task with a simple key stroke, from correcting typographical errors to moving paragraphs.



A Closer Look

MAGIC WINDOW uses a new and creative software function to allow you to see 80 column paper on your video screen. Four way scrolling gives you the ability to view your full sized letter from any position.

The most impressive feature of the WINDOW is the way it emulates a standard typewriter. You actually can see the edges of the paper you are typing on. This feature lets you position your text on the paper when you type it. You don't need to review your text and insert formatting commands.



Expandability

You have probably purchased one or more of the peripheral products available for you Apple (language system, lower case adapter, printer, etc.) The MAGIC WINDOW will automatically use these new products if you have them. MAGIC WINDOW will boot on 3.2 or 3.3 DOS systems. And if you have a language system it will use the extra memory.

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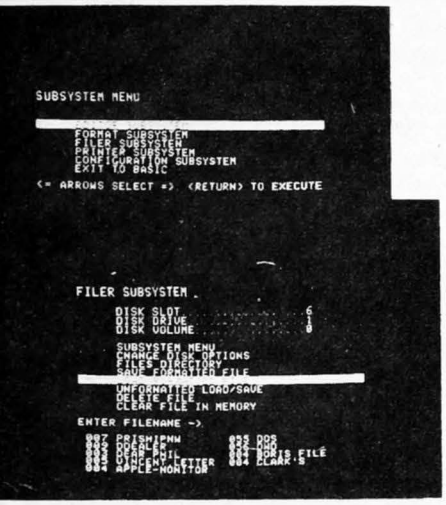

Efficiency

With the MAGIC WINDOW you may never need to hit return. When your text touches the right margin the last word will automatically be picked up and placed on the next line allowing you to continue typing. When you reach the bottom of the page the WINDOW will jump to the top of the next page without causing any interruptions. The search function will help you find any occurrance of a word for correction or deletion.

Text storage, printing, and system configuration are controlled by a unique menu structure. This avoids complicated command sequences. Function selection is simple and syntax free.

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TRADETALK

☐ The **West Coast Computer Faire** generated some news in terms of software and peripherals, but the news of probably greatest consequence took place off the exhibition floor, where software publishers and software authors independently made starts toward trade associations.

Participating in the meeting to set the course for the **Software Publishers' Association** were **Barney Stone**, Stoneware; **Stan Goldberg**, Micro Lab; **Ken Williams**, On-Line Systems; **Roger Wagner**, Southwestern Data Systems, and **Stanley Crane**, Alpine Software.

The participants agreed on a commonality of interest and set Applefest '81 as the site of a formal organizational meeting. At that time, a board of directors will be chosen and a committee will be formed to write a constitution and bylaws.

Among the potential goals of the association, as discussed in the meeting, are the establishment of industry standards for software and hardware, writing of a code of ethics, taking common action on copyright protection issues, formation of a clearinghouse for information of mutual interest, and development of closer relations between publishers and authors.

Stone and Goldberg are the contacts for further information and can be reached at their respective companies.

The **Alliance of Independent Software Authors** is the brainchild of **Scot Kamins** and **Bruce Tognazzini**, who have some experience in organization, having been cofounders of the San Francisco Apple Core. Kamins is an independent author who wrote *Aristotle's Apple* for Stoneware and has *The Learning System* now being published by Micro Lab. Tognazzini wrote some of Apple Computer's early educational software and is still employed there.

The goals of AISA are not all that dissimilar from the goals of the SPA, except that industry problems are seen from the perspective of the author rather than from the perspective of the publisher.

The original statement of purpose written by the pair calls for the organization to ensure the professional well being of its members and to contribute to the maturation of the microcomputer industry.

AISA is open to, and in fact solicits membership from, other authors with an identical interest in the growth of the industry. Included in that category are authors of technical books about the industry and writers of manuals for microcomputer products.

General membership guidelines invite participation by software authors who derive financial benefit from the microcomputer industry, partial payment for which is in the form of royalties, or those who are dependent on the growth of the industry.

Inquiries may be directed to Alliance of Independent Software Authors, care of Scot Kamins, 4262 24th Street, San Francisco, California 94114.

News of the progress of these two organizations will be regularly covered in this column.

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DEATH RUN is similar to the popular arcade game but with a twist. Gremlins have infiltrated the earth and are now on a rampage of destruction. You must pursue them in your scout car and eliminate them before they can do any more damage. But beware, some of them have bombs and can destroy you and your car if you are not alert and fast.

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Washington residents add 5.4% sales tax.

that the only workspace left to put two new programmers and one more full-time staffer was that between the current desks and the ceiling, they moved **Synergistic Software** (Bellevue, WA) to larger quarters. In a twist worthy of the best adventuring mind, Synergistic's address remains unchanged but their phone number doesn't! (206) 226-3216 is the new one.

☐ Three industry shows convene on the East Coast this summer. The spring edition of **COMDEX** takes place at Madison Square Garden and the Statler Hotel in New York City, June 23-25. Six hundred booths of exhibitors show their latest wares. Dealers, distributors, and manufacturers' representatives are encouraged to attend. The Atlantic City, NJ, Convention Center hosts the **Computer Industry Trade Expo (CITE)**, June 24-26. CITE is geared for dealers, distributors, consultants, OEMs, turnkey vendors, and service organizations. Schedule allows attendees to peruse mini and microcomputer products exhibits without missing seminars devoted to surveying business trends, marketing and management techniques, and technological innovations. CITE is sponsored by the Microcomputer Industry Trade Association. For information call (800) 225-4698. August 26-29, the **Fifth Annual Small Computer Show** takes over the New York (City) Coliseum. Director **Ralph Ianuzzi** scheduled the August dates to avoid conflicts with similar shows. Business systems and software are emphasized on the floor and in the seminars. Registration, $10; seminars, $200 apiece. For information, write the National Small Computer Show, 110 Charlotte Place, Englewood Cliffs, NJ 07632.

☐ A $2.1 million private placement of company stock with six venture capital groups has been announced by **Personal Software** (Sunnyvale, CA). The investors include Venrock Associates, the Rockefeller family's venture capital arm; David Karetsky; and investment fund manager Fayez Sarofim. Majority ownership of Personal remains with company employees after financing.

☐ The new vice-president of marketing for **Ferox Microsystems** (Falls Church, VA) is **Phillip W. Evans**. As a technical marketing support representative for Control Data's Cybernet Services, Evans gained the expertise he will bring to the coordination of customer support, consulting services, marketing strategy, and training programs for Ferox's line of financial and business software.

☐ **Lee Reynolds**, a familiar name to many readers of microcomputer magazines including *Softalk*, is contributing his talents to **Turnkey Mini-Computer Systems** (Plantation, FL). Reynolds's title is senior programmer and analyst. Company president **Dan Pincu** reports that a new division has been created to sell Apple application software through a national dealer network.

☐ On a mild, clear day in Bristol in the British county of Somerset, you can see the southern coast of Wales and the city of Cardiff across the Bristol Channel. But, in any kind of weather, you can see rolling down the streets of the largest city in western England a green double-decker bus, festooned with a string of bitten multicolored Apples and the name of Bristol's authorized Apple dealer, **Datalink**. The moving advertisement is thought to be the first in England for any micro. It's the unique brainchild of Datalink's advertising agency, Wedge Wilson Marketing Services Ltd. of Bristol. Can New York's subways or San Francisco's cable cars be far behind?

☐ **Automated Simulations**'s (Mountain View, CA) line of entertainment software, EPYX, has a new senior designer—**Bernard De Koven**. An authority and consultant on games in all media for the past ten years, De Koven is a contributing editor to *Games* magazine and the author of *The Well Played Game*. Developing a curriculum of active social games for children; founding the Games Preserve, a library of thousands of games that doubles as a group therapy center; and lecturing at the University of Pennsylvania, Trinity College, and Harvard are but a small portion of his accomplishments.

☐ **Edu-Ware Services** (Canoga Park, CA) is dividing its products into two generic lines. The Edu-Ware line is comprised of educational products such as *Compu-Spell*, *Arithmetic Skills*, and *Algebra I*. Interactive Fantasies is the name under which Edu-Ware is distributing its games, such as *The Prisoner* and *Space*. ■

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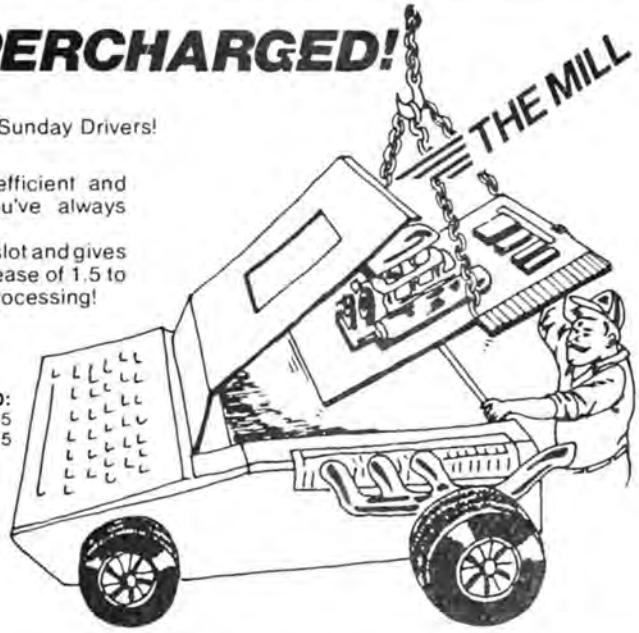

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Softalk photo

A Flight Plan for Teaching

with Comments from Its Apple Pilot

BY CRAIG STINSON

T:What relatively new Apple
:software product is ideal for
:teachers who want to develop
:interactive educational programs
:without having to become expert
:computer programmers?
A:
M:Pilot
TY:Right you are! Apple Pilot,
:released in December 1980, was
:designed specifically for the
:teacher, enabling him or her to
:concentrate on developing
:courseware, not on learning
:computer code.

This dialogue is an example of what a piece of a program written in Apple Pilot might look like. The *T* code tells the computer to *type* on the student's monitor the words that follow. The *A* says *accept a response from the student. M* is a *match* instruction, telling the Apple what to check for in the student's response, and *TY* is a conditional instruction; in the example, if any part of the student's response has included the letters making the word Pilot, then the match is considered to be successful and the computer types the statement that follows. If not, it moves on to the next instruction, which could be an alternate message followed by a return to the original question, or a jump to an entirely new section, or any number of other choices, depending on the needs of the situation. The colons of the beginnings of carryover lines simply continue the command initiated above them.

The same bit of dialogue, coded in Basic, would require a print statement, an input statement, the establishment of a string variable, an if . . . then statement to check the contents of that string variable, and another print. And, of course, line numbers.

Herein lies one part of the beauty of Pilot. It is set up to do what a teacher needs it to do. It might not be the ideal language for writing an accounts payable package, but it is tailormade for creating an interactive session between student and computer.

Furthermore, you don't need a degree in computer science to use it. If you don't know an algorithm from a logarithm, it doesn't matter.

Code by Logical Initials. Most of the syntax is as simple as what's shown at the top of this article. With few exceptions, the codes are one or two letters. Different sections of the program can be identified to the computer with labels, such as "*introduction" or "*review," and then if you want to jump to a particular section you can write a simple code like *J:review.*

Not only is the language designed for dialogue, but it has a number of features that help make the computer's end of the dialogue fluid and responsive to varying needs of individual students. For example, the match instruction can be modified to allow for a selectable amount of misspelling, so, if you choose, the student will not get hung up if he understands the concept but doesn't know how to spell the answer.

Or the computer can be told to look just for a certain combination of letters or symbols, regardless of what else may appear in the student's response. Numerous different acceptable matches can be coded in a single instruction, separated by exclamation points, as, for example, *M:story!narrative!tale! yarn!whopper.*

Each time the student responds to a particular accept line in the program, an internal counter gets advanced automatically by one, so that, for example, if you want to handle an incorrect response with a message or clarification, followed by a return to the original question, you can do so without having to worry about tying the student up forever in a loop if he or she doesn't come up with the answer; merely program the machine to accept some number of incorrect replies and then move on.

That, too, could be done in Basic, but it would require the establishment of a separate variable, an instruction to increment it, another to evaluate it, and so on. In Pilot, it's done for you.

The Return of Maxwell. Furthermore, *Apple Pilot* has enhanced earlier versions of the language with a wealth of graphics and sound possibilities that will make lessons more entertaining and enjoyable for students and a more creative endeavor for the teacher/programmer. The Apple version includes three special editors for graphics, alternate character sets, and sound effects.

The package comes with a small demonstration lesson in map reading, called "Legends," that exemplifies some of the things that can be done with these editors.

As the lesson begins, the Apple speaker plays a few notes to get your attention, and then you watch the word *legends* being written out in cursive script across the top of your screen. The figure of a man appears on the left, pointing to the title. He introduces himself as Maxwell and asks your name.

Anyone familiar with Apple's *DOS Tool Kit* will recognize Maxwell. He is the

same little fellow that scurries back and forth across the screen and waves his arms about in a demonstration there of animation generated by one of Apple's hi-res character sets.

With the alternate character generator on the *DOS Tool Kit* or the similar one on *Apple Pilot,* you can create non-ASCII alphabets, like Greek or Hindi (the disk comes supplied with Japanese Katakana). So if you want to write a lesson in a language that doesn't use Latin letters, you don't have to resort to transliteration. The editor gives you a blown-up eight-by-seven hi-res grid and lets you move a cursor around to draw whatever characters you need.

Maxwell in the Raw. By butting several grids together you can also draw larger than normal letters, or even pictures, and that's how Maxwell came to be. Maxwell standing with his arms at his side looks like this in no-res:

DAB
EBH
FC

Different combinations of characters in this set will show him in profile, or with his arms pointing various directions, or walking.

The Maxwell alphabet is available on the disk for use in your own lessons, or you can use the editor to make you own animations. You just name the character set when you've finished creating it, then call it up with a two-stroke command in your lesson program and proceed from there.

Although Maxwell, who looks anything but alphanumeric, was created through the hi-res character editor, the word *legends,* at the beginning of the lesson demonstration, was not done with a character set but through the graphics editor.

This utility starts you out with a single hi-res dot in the middle of your screen. That's your cursor. The I, J, M, and L keys let you extend that dot toward the four points of the compass, and U, O, N and the comma give you diagonal mobility. Actually what you're doing is not transferring the cursor but stretching out that dot like a rubber band. If you want to pick it up and move it, you hit S for skip. Or if you like the line drawn by your rubber band, hit D for draw.

If you want to make a box, you can stretch your rubber band cursor along the four sides, or you can just draw it out in one direction and hit F for frame. The graphics editor will then draw a rectangle using your cursor line as the diagonal. Or hit B and it will give you a solid box, filled with the currently chosen color. If you hit C, instead of a rectangle you get a curve—either a circle, if your cursor line would be the diagonal of a square, or an ellipse.

A Feast of Shapes and Colors. After you've drawn an enclosed shape of some sort, if you want to fill it up with a particular color, just select the color and hit an A for area fill. If you want text along with your pictures, hit T and type away.

Should you change your mind about something you've created, an E will cause the screen to go dark, and then every command you've issued to that point will be reexecuted one by one, omitting the last.

When you are satisfied with what you've wrought, a couple of easy commands and a name will save your graphics on disk, so you can incorporate them later into lesson programs. Two forms of recall are possible. One is a step-by-step redrawing of your graphics, just as you entered them into the editor; in this mode, you can cause a word to be written out in large cursive letters, stroke after stroke. The other option is a quick draw, in which the whole image appears at once. The latter procedure uses more storage on disk after your lesson is compiled.

The sound effects editor allows you to write music on the Apple, by specifying the octave, the name of the note and the duration. Besides ordinary notes you can also get sweeps and warbles for special effects. And you can incorporate your compositions into a lesson with a few keystrokes, so, if you want to enliven your history lesson with some patriotic songs or if you want to combine graphics and sound effects to make funny creatures make funny noises, all that is quite easily done.

Math Pilots Pilot. In addition to the text-handling and graphics capability, Pilot will do normal mathematical functions like any other computer language. It has, in fact, some direct mathematical commands that Applesoft does not. For example, FIX(X) removes any numbers to the right of a decimal point and gives the remaining integer, whether the integer is larger or smaller than x; INT (X) behaves the same way it does in Applesoft. In Pilot, unlike Applesoft, you have two different direct commands for logarithms: LN (X) for natural logs and LOG (X) for base ten.

Apple Pilot is a superset of a four-year-old version of the language, known as Common Pilot, which in turn is a superset of the original version, called Pilot 73. The original language, created by John Starkweather of the University of California at San Francisco medical school, had only eight commands and was entirely teletype oriented. Because it was so simple, it was also easily extensible, and before long there were a number of variant Pilots about, most of them nonportable, meaning that they ran only on the machines for which they were created. Common Pilot was an effort to restandardize the language and make it compatible with the new microcomputers. It also added some elementary graphics capability to the instruction set.

The newest Pilot, from Apple, was about a year in development, and is the work primarily of two programmers:

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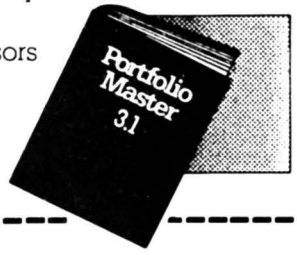

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Charles Kellner and J. D. Eisenberg. With some exceptions, Kellner did the design and Eisenberg the coding.

Like Papa Pascal, Pilot Needs Two Drives. The two of them worked in conjunction with a group at Western Washington University called MicroPi, who had developed a version of Common Pilot that ran with Pascal. *Apple Pilot* is the first example of an Apple language to be implemented using Pascal as a development language. This does not mean that you need to have Pascal in your system to use Pilot; the latter uses a runtime version of Pascal, transparent to the user.

You do need two disk drives to create lessons in Pilot. An author disk, supplied by Apple, goes in drive one; as you put together your program, it gets compiled into executable form on a lesson disk in drive two. The student works only with the lesson disk and needs only one drive.

One of Kellner's objectives in designing *Apple Pilot* was to make the language "as friendly as possible" to the user. "We don't want to him to spend an hour and a half doing valuable work and then lose it through some trivial mistake."

So one of the things you'll notice is that Pilot will give you a lot of prompting. If you hit the question mark in any of the editors, for example, you'll get a whole screenful of instructions. And you'll find it hard to kill anything accidentally. If you want to edit some graphics set you composed earlier, for example, Pilot will first display the names of all sets currently on the disk. As soon as you type enough letters for the system to make out your intent, it will supply you with the rest of the name as a prompt and let you hit return to go on. If you want to delete something, on the other hand, you're on your own; you have to type in the whole name.

Similarly, if you should create a new character set and then decide that you don't really like it after all and don't want to save it, you can't just sneak out of the editor by hitting return a couple of times. You have to go through several steps to confirm your intentions explicitly.

Programming Made Easy, or, No More Byting the Bit. These fail-safe touches are in keeping with one of the larger objectives shared by programmers at Apple: as Kellner put it, "to create a friendly environment where the user can develop software without having to deal with the machine on a bit and byte level."

The *DOS Tool Kit*, Kellner says, was a beginning in this process. *Apple Pilot* is a second step. "The process is accelerating because we're using our own tools now. We're programmers, too, after all, and we're taking advantage of our own work."

That being the case, there ought to be some very exciting things coming out of Cupertino this year. ■

The Schoolhouse Apple from Minnesota to Florida

With Reviews of Schoolroom Software

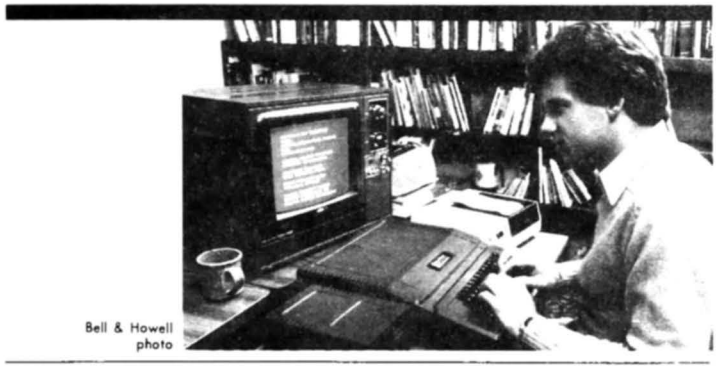
Serving almost as the point man for Apple's thrust into the educational world has been Bell & Howell, which markets a machine affectionately known in many places as the black Apple.

Actually called the Bell & Howell microcomputer, what's encased in the familiar Apple form is pure Apple II. The housing is a chocolate brown, and B&H has made no other changes of significance to the computer. They've made some enhancements as add-ons that they feel make the machine more suitable for the educational market.

Extra Module Allows Accessories. Under their marketing name of the second generation microcomputer, B&H has added a module to the back of the Apple chassis that complements that basic Apple with a cover lock for protection from inquisitive students, an audio amplifier and volume control, external speaker jack, headphone jack, two BNC video output jacks, three AC outlets, and two simulation control connectors.

The easiest way to look at these enhancements is that they effectively hook up videotape, videodisk, and audiotape machines to the Apple.

The value of these accessories lies in their educational uses.



Bell & Howell photo

B&H has a long and honored reputation as a marketeer of audiovisual supplies to the educational market, and they've brought that expertise to bear on the new technology of computer assisted instruction.

Because they already have the best in hardware—the Apple—B&H has been able to turn its attention to the areas of on-site service through its nationwide network of service centers and to software support for the educational market.

Software for Building Software. Just released in the month of April is B&H's *Professional Authoring Software System (PASS)*, reputedly a revolutionary tool for the use of educational professionals in the development of computer courseware.

So new that fewer than a dozen systems are presently in use, the software reflects B&H's experiences in the educational market. Among the things they have discovered is that course development activities are not likely to occur at the classrom level—that just as the individual teacher does not prepare audiovisual presentations for the classroom, neither has the teacher assumed the onus of preparing CAI courseware.

The implication is that courseware must either be marketed off-the-shelf, developed at the school district level, or written by commercial courseware developers. B&H addresses the latter two possibilities with the PASS package.

Like so much of the serious software being developed these days, PASS has the attribute of being so easy to use that the intricate programming needed to provide its routines goes unnoticed by the user.

Easiest Language You'll Ever Learn. Developed under the tutelage of Carl Roetter and written in its own PASS language, the system enables nonprogrammers to develop interesting and dynamic courseware with a minimum of start-up time.

The system prompts the instructor each step of the way, accepting English-language responses as it builds the instructional module from the teacher's input.

A complete management module provides for monitoring each student's progress through the lessons. In this regard, special emphasis is placed on answer-judging. PASS is capable of searching a written paragraph answer for the proper key words and also of finding negative words that would negate the use of the key words. Its answer-judging abilities are compared with Plato, the mainframe time-sharing system.

PASS encompasses a full range of graphics capabilities, from hi-res shape tables to graphics tablets, videotape and videodisk machines, and slide and filmstrip presentations.

This description of PASS was gleaned from B&H literature and a discussion with Roetter. Once the system is in more general circulation and review copies are made available, *Softalk* plans a comprehensive review of PASS.

Super Nova Sends Forth Apple Stars. It isn't exactly located in a hub or social center of the United States, but Nova University, ensconced in the Fort Lauderdale, Florida, suburb of Davie, is attracting people from every part of the country to its computer education program. The ultimate teacher's aide, the program is intended to instruct instructors on the myriad uses of microcomputers in the classroom.

The results of all this have been spectacular, according to program director Robert Burke. Burke bases his pronouncement on a standard the entire university measures itself by: how many of their alumni are having what kind of impact in their chosen professions. It's a concrete measure by which to judge their innovative curriculum; witnessing the actual accomplishments of graduates in the field satisfies those who must critically determine whether Nova's characteristically progressive programs, such as the microcomputer courses, are working.

Where They Go after Nova. Joel Levine is a case in point. After graduating from the program three years ago, still impressed with the laboratory full of Apples that Nova has, he used the skills he honed there to take charge of the coordination of instituting microcomputers and their applications in the Broward County school system, one of the largest in the country. The district is 7,500 teachers strong and, for the third straight year, has committed to further purchases of Apples, making them a familiar fixture in every Broward school. Nova is located in Broward County, so the hometown flavor of this success story is especially sweet to Burke and cohorts.

The director reports that Levine's story is hardly unique, but typical. Recent Nova graduates have been enlisted in the microcomputer steering committees of other Florida counties and in county-based teams writing grants for micro applications. Others have been hired by the local community college to teach data processing. But most are carrying on the tradition of their Nova mentors and teaching computer literacy and applications on the kindergarten through twelfth grade levels. Some are, on the side, good salespeople: more than one principal, convinced by the pitch delivered by a teacher for a learning tool he or she simply could not do without, has fired off a purchase order for Apples.

Worldview Tack toward Computing. The courses and labo-

Dr. Anne Mae Burke photos

Left: Robert Burke, program director at Nova. Right: The Bell & Howell Apple at work.

ratory do not emphasize arcane or theoretical aspects of computer science. Those matriculating for the Master's degree or taking part in the specialist program—a customized series of courses for those not in need of a degree—usually have some computer science knowledge at their fingertips. "Besides," adds Burke, "we're not terribly interested in graduating research specialists or theoreticians. We want our students to be armed with a full working ability in teaching microcomputing and with the capacity to use that ability in other subjects once they leave our lab."

A survey of the offered courses reveals no stone left unturned. One course studies the elements that go into software evaluation, from knowing the correct software application for a particular use to the nuts and bolts of good documentation; a set of courses guides students through the everchanging mysteries of using micros in particular classroom settings, be they in mathematics, science, or business education; others teach the large and fine points of the four major teaching languages: Basic, Pilot, Fortran, and Pascal. Students desirous of applying CAI courseware, word processing systems, or data bases designed to organize the often-disorganized classroom environment can find the line of study to suit them.

To provide an intern course that puts the student, with the support of an instructor and professional, in an actual classroom situation is only natural for the Nova program, but only for the most intrepid of pupils.

New Star Continues Revolutionary Growth. With such successes and comprehensive coverage, one would assume that Burke would be satisfied with the program's position. He is not. "The daily changes and minor revolutions occurring in this industry demand that we keep up with whatever is going on. So we're continuing and strengthening what we've been doing all along—extending our reach into the industry and community."

Part of that reach is a certificate program for students who plan to train people in all types of industries to use the microcomputer.

A further extension of the reach may occur with the inclusion of courseware for the Apple developed by Evans Newton Company. Their CMI (Computer Managed Instruction) package is significantly different from the standard CAI courseware for students. CMI provides a management system for the teacher to aid in class organization and curriculum customization.

It is just the kind of package that pleases Burke and the Nova staff since it further realizes the highest ambition of the university's program: to produce good teachers literate in the tool that will surely be in every American classroom at the dawn of the next century.

Did You Ever Think of Minnesota as an Apple State? In Ortonville, Minnesota, they think they have found a better way to teach writing. An English teacher there decided that assigning essays as homework, collecting them days later, handing them back perhaps a week or so thereafter, and probably never getting further reaction or feedback from the student was not the ideal way to go. Instead, he brought in an Apple with an eighty-column board and a word-processing program and hooked it up to a large television that the whole class could look at together.

Now the kids not only learn about writing; they also work together and learn from each other. Most important, perhaps, they learn about editing and rewriting, so they get some notion of the actual process by which words get into print. This is all going on at the fifth-grade and sixth-grade levels.

The kids also learn a bit about computers, of course, and as these fifth and sixth graders acquire more and more computer savvy they are encouraged to pass it on to their younger peers, the first through fourth graders.

Computers get a lot of use in the Ortonville school system.

Adventurous Computer-Blazing. *Oregon* is a popular program. It's a simulation of a covered wagon party moving west along the Oregon Trail, encountering all manner of hostility along the way. Students use the program to learn a variety of different things; they keep diaries of their experiences (writing), make maps (geography), draw pictures (art), and absorb some of the fact and feeling of nineteenth-century American history.

Fifth graders in Ortonville are also eligible for the beginning class in computer programming. There is a lot of interest in this subject, from the elementary school level on up. Some high school students find they can make a little money writing educational programs for their teachers. The teachers provide the instructional content and the students implement the programs.

There are also adult education classes in computer pro-

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gramming. The microcomputer has sparked a lot of interest in this regard. Before Ortonville got involved in a big way with the micros, about two years ago, computer programming was taught to adults there on a large timeshare system. The classes drew an average of three signups per session. Since the micros arrived, the sessions have been booked to capacity, with some participants coming from as far as forty-five miles away.

Consorting with Micros. Ortonville is not particularly unusual within the context of the Minnesota state educational structure. The use of the computer in the schools, both public and private, is probably more widespread in Minnesota than anywhere else in the country, thanks to the efforts of an organization called the Minnesota Educational Computing Consortium (MECC).

MECC was established in 1973 for the purpose of coordinating and developing computer services for students, teachers, and school administrators throughout the state. During the first phase of its existence, its activities centered around the development of a large Control Data timeshare network. Maintaining and developing that system, which MECC describes as "the largest general purpose instructional timesharing network in existence," is still a large aspect of the organization's service.

About two years ago, however, MECC began to involve itself heavily with microcomputers. In keeping with its purpose of coordinating computer activities in the state's schools, MECC decided to support one microcomputer. After a thorough investigation of the various competing brands, Apple got the bid.

There are now an estimated twenty-five hundred microcomputers in Minnesota's public and private schools, community colleges, and public universities. About eighty percent of the state's public schools have at least one microcomputer, and most of these are Apples. Many of the schools use the Apple Communications Card to effect an interface with the statewide timeshare system.

All Hands-On MECC. MECC currently supports the educational use of the microcomputer in two substantial ways: by the development of software and through the training of teachers and other personnel. About a dozen people are employed in the latter activity, each covering a particular region of the state. Last year, they gave 277 hands-on workshops attended by some four thousand people.

In the software department, the consortium has developed an impressive catalog. There are now about six diskettes full of programs for the elementary level, and twenty for junior and senior high school. Subject areas include industrial arts, agriculture, math and science, spelling, music, drivers' education, and programming in Basic and Pascal.

There's more to come. The software people have opted not to get involved in reading or foreign language instruction until speech synthesis technology reaches a somewhat higher level of development. That time, one hopes, is not far off.

Meanwhile, MECC-developed courseware is much in evidence in places like Ortonville and throughout Minnesota. It is also available to educational users outside the state. Interested parties may contact MECC Publications, 2520 Broadway Drive, St. Paul, MN 55113. ◨

Reviews

Instructor Gradebook, by Robert Kincaid, Serendipity Systems. This program will do practically everything for the instructor except give lectures and compose examinations. Any instructor needing more capability than exists here is probably making the whole grading task too complicated.

The program will handle class sizes up to as many as six

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hundred students, although it takes creating more than one file.

The program will accept up to nine categories for grading purposes and will accept grades in either numeric or alphabetic form, or in mixture. Because the program will recognize both types of grading, it can do all manner of statistical reporting, such as averaging, calculating standard deviations, medians, and displaying high/low grades.

Among the nifty capabilities thus provided is scaling. If a teacher finds the performance on a given exam is uniformly high or low, the assigned grades can be scaled up or down by using a constant. Program also displays histograms of its statistical calculations.

The program is totally self-prompting, making it a breeze for computer novices to get onboard. 48K, Applesoft, disk, $169.00

Compu-Spell. Edu-Ware Services, Canoga Park, CA. Learning to spell in English is at least a twofold process, involving a certain amount of conceptualization and a lot of memorizing. Edu-Ware's program addresses itself to the latter end of the job exclusively by taking the student through numerous repetitive drills. Their approach also emphasizes positive reinforcement and the presentation of words in natural linguistic context.

The lesson unit is a fifteen-sentence drill, with each sentence containing one test word highlighted in inverse video. When the student hits the space bar, the first test word disappears from the screen, waiting to be reinput at the keyboard. At this point the system only displays correct entry; errant keystrokes are apparently ignored, on the assumption (as stated in the manual) that "learners are equally likely to remember any stimulus as opposed to any other."

Actually, while the system seems impervious to mistaken input, it does take note of the words that a student attempts to spell incorrectly. After the fifteenth sentence, the student is cycled back through those items he didn't get right immediately on the first pass, and this recycling process continues until all words have been typed successfully.

Another pedagogical assumption underlying this strategy is that spelling is best learned through the physical act of writing or typing words.

After this first stage of the drill, the student gets a post-test on the same words. This time the system will display anything the learner gives it, but words misspelled get flagged and come back to haunt one later.

If the student has managed to key in correctly at least 80 percent (or some other user-selectable percentage) of the test words, he or she is graduated from that drill and sent back to the main menu. First, however, the program brings back a list of the eleven words most recently misspelled on previous post-tests and takes the student through yet another go-round.

Compu-Spell comes with a program disk and separate data for grade levels four through eight. Each data disk contains seventy-five drills. There is also a secretarial data disk that covers the words most commonly misspelled by adults. Users can modify the data disks, if they desire, or create additional ones.

The program disk tracks the progress of each student using the system; up to sixty learners can be accommodated. Applesoft, 48K, disk (two drives are recommended). $39.95 for program and one data disk; $19.95 per additional data disk.

The Spelling Builder. By Dean Victor, Program Design Inc., Greenwich, CT. For another approach to spelling, look into Program Design's (PDI) seven-lesson set, *The Spelling Builder*. PDI teaches spelling with rules and paradigms. It turns out there is some semblance of order to the English language, after all, though the rules have their obligatory exceptions.

PDI's author, Dr. Dean Victor (with "translator" Caroline Perkins Hirst) clearly elucidates such conundra as when to double a final consonant before adding a suffix, whether to make a plural with -ies or -ys, and so on.

The student is asked to demonstrate his understanding of each rule as it is presented, by correctly typing several words that illustrate the point. If a mistake is made, the program gently reiterates the applicable rule.

The material is broken down into short, digestible segments, and the student can get a second or third look at portions of a lesson by entering single-stroke commands at the keyboard.

Where there are important exceptions to a rule, Dr. Victor mentions them. And in areas that seem completely unamenable to rulemaking, he lists all the common words of a given category and asks the student to learn them. The student is back to rote memorizing at this point, but at least he or she gets to see, for example, the most common words ending in -ance and -ence all lined up in one place.

The lessons are topped off by a 500-word spelling test, offered in 10 word segments, and presented clearly by voice on cassette, geared to and monitored by the computer program.

This series would be ideal for adults who want to clean up their spelling a bit. For a child of, perhaps, fourth-grade age or more, it would probably be an excellent way to consolidate whatever the schools are offering these days. If everyone were exposed to this spelling program in the educational process, there'd be a long line at the unemployment window for misspelled words. 32K, DOS 3.2. $26.50.

Basic Arithmetic Skills with Arithmetic-Tac-Toe. Edutek Corp. Here's an arithmetic program for the tiny tots, just past the stage of counting fingers and going through elementary multiplication and division.

The concept converts the electronic equivalent of finger counting to the screen. When the student misses a question, colorful lo-res dots are placed on the screen and the student is asked to assess them. Both position and color of the blocks changes to help the student understand the concept, be it addition, subtraction, multiplication, or division.

The student is rewarded at the end of the drill with the

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chance to play tic-tac-toe, with correct answers to arithmetic problems earning both the student and the computer opponent—named Jody—the chance to place their markers. Jody misses a problem once in a while to give the student a chance.

Program is controlled as to subject matter and degree of difficulty by the teacher. A complete report generator that will hold ten student records is included on disk. 32K, Integer Basic, disk, $89.50.

Algebra I. By Sherwin Steffin, Steve Pederson, and David Mullich; Edu-Ware Services (Canoga Park, CA). *Algebra I* sets out to provide CAI courseware to complement the math curriculum of a large number of school districts. Its execution is faithful to the mission in a thoughtful manner that encourages the student not only to think about the subject matter, but also to think about how he wants to learn the subject matter.

The title may be somewhat misleading, in that some schools may present this material as eighth grade math or in a course entitled pre-algebra.

The farthest this program gets into what purists would call algebra is simple linear equations. Quadratic equations, factoring, and other of the algebraic skills await Algebra II.

What the program does well is parallel the courses it is intended to complement in laying a good strong mathematical base for tackling algebra. The program disk is divided into five areas of study—definitions, number line operations, sets, evaluating expressions, and rules for equation reduction—and a final test.

Each of the five general areas is further divided into subcourses to zero in on the fundamentals.

As thorough as the program seems to be in laying a base for the tougher road ahead, the more intriguing facet of the package is the choice given the student on how to learn the material. As each course is called up, a menu gives the student the choice of learning by definition, by rule, by example, or by working sample problems. The student can stick to that learning method that suits him best, skipping those that are less helpful.

The finale of each course is a test, results of which are displayed by subcourse so that a student can see if there's one area that needs more work. Tests vary with each iteration, so a student taking the same course a second time won't get the same questions.

A map of the instruction field accompanies the main menu and displays in inverse those courses that the student has successfully negotiated during that sitting.

A final test, covering all material in the program, measures the overall progress of the student. 48K, Applesoft, DOS 3.3. $39.95.

Mathware. By Bob Essertier, Math City. *Mathware* is a nifty compilation of five programs that run the gamut of math skills that should be learned by students in the third through eighth grades.

Each disk specializes in particular math functions: addition and subtraction, multiplication and division, fractions concepts and operations, decimal concepts and operations, and ratios and percents. On each disk are in excess of thirty separate modules of instruction—the number varying with the disk—and the teacher can choose which of the modules are to be taught a given student on a given day. Likewise the teacher can control the beginning difficulty level of the lesson for the day—varying in five increments from easy to difficult.

An interesting facet of this set of programs is that the difficulty factor is varied within the lesson once the teacher has set it. Students who show proficiency in a certain type of problem and weakness in another type may find themselves working on level five in one area and level one in another area of the same lesson, even though the teacher originally set the level for the lesson at three.

A fun thing about the programs is that they have personali-

GOTO 60

BY BILL BASHAM

NEW FOR THE APPLE

A NEW CHALLENGE

DOGFIGHT will capture your imagination. You are the pilot of a jet going into combat. You may fly alone on this mission, or you may have another pilot flying with you to defeat the enemy. First you fly against one enemy jet. You are in complete control: fly faster or slower, turn left or right — but most importantly, FIRE. If you are shot down, and you act quickly, you can bail out. You and your parachute float gently downward, hoping an enemy plane does not shoot you. If you survive, you will quickly return to the fierce dogfight. The enemy can also bail out!! You must shoot him down before he has a chance to return.

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Each time you defeat all enemy jets or helicopters, you advance to the next level where you fly against faster and/or more enemy planes. There are sixteen levels of difficulty to fight through. Bill Basham, the talented author of this high resolution program, has made it through only 8 levels before his planes were destroyed.

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HARTLEY SOFTWARE
A Family Affair

Tim Hartley photo

BY ROBERT KOEHLER

True partners cannot do without each other. They have joined forces because each knows that where one's weaknesses begin so do the other's strengths. It's a delicate balance, and those who maintain it are special.

When they're mother and son, they're unique.

But Tim and Jane Hartley aren't relying on their fame as the only known mother/son team in the software field to see them through. They happen to create some of the best educational packages for Apples anywhere for the early elementary grades.

"What Tim and I have," Jane says straightforwardly, "is a combination of a good programmer and a good teacher."

It All Starts In Class. Tim is the programmer; Jane has been keeping him busy with program ideas she hits upon in the toughest testing ground possible for any educational software—the classroom.

The notion behind computer-aided instruction—to engender in the student a willingness to learn, as independently as possible, concepts that formerly seemed insurmountable—is an acutely useful one for Jane. She teaches sixteen remedial classes for slow students at Boyce School in the small town of Ionia in central Michigan. Two contributing elements have kept the program not only alive but growing. One is a Title I Federal grant, augmented by a state-sponsored Article III grant. The other is the different but complementary talents of Tim and Jane that have put CAI to good use on the Apple.

Jane felt that her kindergarten through sixth grade students, being a year or more behind their grade level, needed that extra push and inspiration that the standard curriculum, as occasionally successful as it was, didn't provide. She reckoned that the Apple's ease of use and attention-grabbing graphics potential might be that inspirer.

Apple Brought Life to Dull Drills. Tim felt that freelance programming, especially for business, was his true love and forte, and that home—the Grand Rapids area—was the place to do it. That decision had fairly lucrative results, especially the time that he received a call from his mother in late 1979 to cook up a simple math drill for her class. It piqued the kids' interest, which normally drops to its lowest ebb when the subject of addition and subtraction comes up. But no student below the fourth grade could read the computer letters in the instruction text; this impelled Tim to make a shape table that would create large point letters and the Hartleys as a team to turn the then-dormant field of educational software for lower grades into a vibrant phenomenon.

Even though Tim's previous programming experience consisted of custom business applications, he rose to the task of constructing drill programs, assisted by Jane's critical eye for what was and was not necessary.

"Too many packages that were supposedly designed for young students were bogged down in reams of documentation and indecipherable graphics," Jane says. "Since most of my students are just beginning to read and comprehend what they read, they would have been left in the lurch by this software."

Speller-Box Has Apple Running Tape. The mother and son partnership set out to provide keys, not obstacles, to kids who were in serious need of drilling. Jane based her word attack drills on Harcourt, Brace, Jovanovich's Bookmark Reading Program. Synonyms, antonyms, homonyms, and all fundamentals of vocabulary were structured into a package of twenty drills per skill level, augmented by hardware devised by Tim and his friend and associate Steve Barnard. The hardware allowed the Apple to control a tape recorder and thus introduced an audio component into the spelling section of the drills. The audio device and the spelling package became *Speller-Box*, the first significant product from Hartley Software.

Jane and Tim gained the confidence that their educational programs would be accepted by others not because their timing was fortuitous—the educational market in early 1980 was just starting to develop from a fissure into an explosion—but because Jane witnessed the payoff in higher scores and grades with her pupils.

"It's important for the instructor to encourage the student to drill him or herself," Jane explains. "The Apple doesn't chide a failing driller, and with the program both encouraging the student to go at an individual pace and prompting to make sure that a pace is maintained, self-confidence is gained and, with it, better grades."

Better Grades and Convention Kudos. One of the measures of a successful educational program is the demand and interest it ignites at the education-oriented conventions that meet every month of the year in every corner of the country. The Hartleys are now familiar faces at these affairs, lecturing and demonstrating the technical and instructional philosophy behind their product to very receptive audiences.

Tim sees his job as refining a good learning tool into a better one that make those audiences, who naturally thrive on innovation, come back. "The only way that I get my work done, though," he explains, "is staying at my home in Kentwood. It's not that my mother is a distraction—at programming time, she's crucial for the content and lesson structure aspects, and we're usually telephoning each other several times a day during that period. It's the Australian terriers she breeds. Let's say that they're not exactly a boundless source of peace and quiet. Still, I go there often—for her consulting and her good home cooking."

Encouragement from Apple Inc. A recent innovation for the Hartleys is largely the result of yet another grant—this time from the Apple foundation. With a new Apple, drive, printer, cassette recorder, color monitor, and a graphics tablet, Jane is developing tutorial packages with hi-res graphics that, in their finished form, should be a truly enriching, educative medium, reaching beyond rote drilling to the teaching of concepts and ideas.

Yet, with all the refinements and advances, one thing will never change for the Hartleys.

The work of mother and son will sink or swim depending on its performance in that classroom in Ionia and on whether the students keep trying not simply because they have to but because, in Jane's words, "they want to learn." ■

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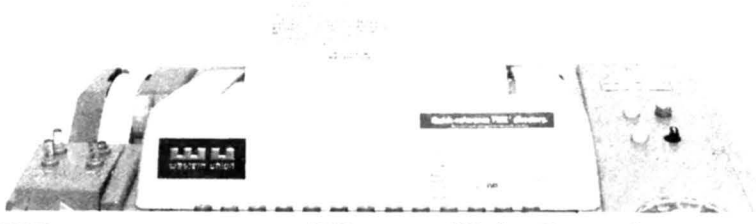

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THE PASCAL PATH

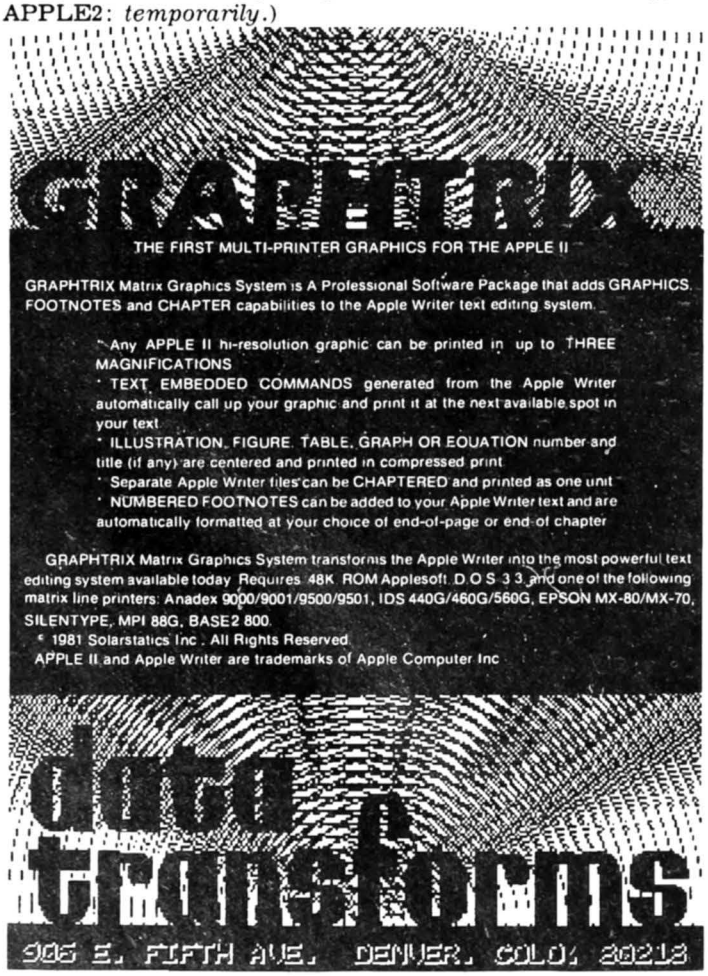
By Jim Merritt

Pascal Survival Guide: the Rest

This month, we finally arrive at the subjects of program compilation and execution. Accompanying the article is a chart summarizing the prompt lines we have seen thus far. Please write telling me whether this chart is a help to you. If there are enough positive response, I will continue to use the format in summarizing our keyboard interaction with Apple Pascal. Let me know also if you would be interested in an all-inclusive wall-chart, along the lines of Apple's poster-sized Pascal Syntax Diagram.

Compiling the First Program. Congratulations if, after entering SomeExpressions last month, you accepted my challenge and were successful in compiling it on your own. For those who went the extra mile, this column may serve as review. If you are still waiting for that first compile, or if you tried it but failed, fire up your Apple, and let's have at it!

The diskette named APPLE2: contains the SYSTEM.COMPILER. For now, our rule is that, whenever you wish to compile a program, APPLE2: must be mounted in your system's second drive (*not* the one which lights first when you turn on the power). In keeping with previous advice, the APPLE2: diskette you use would be a *copy* of the master that was supplied with your system. (If you are low on diskettes, however, it is not very dangerous to use the master copy of APPLE2: *temporarily*.)



To compile SomeExpressions, you must be able to see the system's main prompt line on your video screen. Press the C key to inform the operating system that you wish to use the compiler. As soon as you press that single key, you should see this response:

Compiling . . .

The system will be able to honor your request if SYSTEM.COMPILER is available on either of your two drives—as it certainly will be, if APPLE2: is in the second one. If the compiler cannot be found, you will be given the system main prompt line again, after receiving this message:

No file :SYSTEM.COMPILER

The first thing the compiler does is ask you this question:

Compile what text?

For this example, you should respond by typing the name of the file in which SomeExpressions is stored. If you followed instructions last month,

SOMEEXPR

is the name you should type. As usual, a tap of the Return key concludes your input. If you make mistakes while typing you will be able to correct them using the left-arrow key or the Control-C couplet, as you have learned in the past. However, if you don't catch your mistake before pressing Return, the compiler will probably not be able to find the specified file and will complain. For example, if the name of your program file is SOMEEXPR and you omit an *e* when typing the file name for the compiler, you will get this message:

Can't find SOMEXPR.TEXT

Notice that the compiler, like the editor, supplies the .TEXT suffix if you don't.

Once it has the name of the file that contains your source program, the compiler asks for the name of the file into which it should put the object program:

To what codefile?

Like the editor, the compiler produces files whose names end with a special suffix. For the compiler, this suffix is .CODE. Since it is exactly as long as the .TEXT suffix, all the rules you learned for devising text file names also apply for code files. Similarly, you need not add the .CODE suffix when replying to the compiler's question, since the compiler can append it automatically.

The fact that the system uses different suffixes for text and code file names means that you may (but need not) type the same name in response to both of the compiler's questions. If you answer twice with SOMEEXPR, for example, the first time it will be taken as SOMEEXPR.TEXT, and the second as SOMEEXPR.CODE. The system considers the file names to be different because of their different suffixes.

Usually, you will want the code file produced by the compiler to have the same root name as the corresponding source text file. Of course, you could get in the habit of typing the same name twice for every compilation (and some people do), but in doing so, you leave open the possibility of erring while entering one or both names. If you fail to catch such an error, it's likely that the root name of your source file will not be the same as that of the object file. Imagine the confusion you would experience by believing a file has *one* name, after you have mistakenly given it *another*. Sooner or later, this situation shall happen to you—I guarantee it. Interestingly, it is more likely to occur after you are comfortable with the system and have lost the conscientiousness that impels most beginners to check every keystroke two or three times. Fortu-

nately, about the time you'll start making more mistakes, you should know enough to deal routinely with the consequences.

The Apple Pascal compiler permits you to use a special abbreviation when responding to the prompt for a code file name. If you give only a dollar sign ($) as the file name, the compiler will use the same root name for the code file as was given for the source. In other words, answering the first question with SOMEEXPR and the second with a dollar sign will give the same results as typing SOMEEXPR in response to both questions. By using the dollar sign abbreviation, you save time and keystrokes, and guarantee that the object file name will correspond exactly to the source file name.

Warning! For purposes of this example, please be sure *not* to answer the prompt for a code file name by tapping the Return key only. Such a response indicates that you are willing to let the compiler give a default name, SYSTEM.WRK.CODE, to the object code file it produces. The existence of a text or code file whose root name is SYSTEM.WRK causes the operating system, editor, and compiler to behave in ways that won't be covered for some time (if ever). So be careful, because, if you make *this* mistake, you're on your own—though Apple's Pascal manuals deal quite thoroughly with the topic.

Compilation Summary Display. Given names for source and object files, the compiler begins its automatic operation. Certain information relating to the compilation is displayed on the screen for your convenience. The last screenful of this information remains visible when the compiler finishes and the system main prompt line reappears.

In the case of SomeExpressions, all of the information displayed by the compiler fits conveniently on one screen, and may be examined, in its entirety, after the compilation is over.

The numbers in angle-brackets indicate how many lines of text have been translated to that point. Each dot displayed corresponds to a single program line. The compiler displays the name of the program after encountering the keyword BEGIN that marks the start of the program's statement part. The number in square brackets that follows the program name tells how much free memory is still available for the compiler to use. In future columns, we'll discuss this number and its significance in greater detail.

Finally, after the compiler processes the program's terminating END., it displays a very brief summary, showing the total number of text lines compiled, as well as the smallest amount of free memory ever available during the compilation.

What About Errors? At this point, your program is ready to execute. Or is it? If, despite the careful pains we took last time, there are any typographical errors in your program, you will receive one or more *syntax error* messages when you try to compile it. A syntax error condition exists when the compiler discovers a part of your program that violates one or more of the rules for writing Pascal programs. You'll get a syntax error message, for example, when you spell a keyword incorrectly, or when you omit a mandatory semicolon. The term *syntax error*, then, is similar in meaning to *typo*. In most circumstances, the terms may be considered synonymous.

Syntax error messages display both the erroneous program line and the one that precedes it, since an error is often committed on one line, but cannot be recognized by the compiler until the next, as we'll see. Also given is the number of the offending line (so you can find it in a printed listing, which, for convenience, includes line numbers as points of reference).

By far the most important information contained in an error message is the appropriate *error code*. This is a number that corresponds to an error condition listed in the *Apple Pascal Language Reference Manual*'s Appendix B, Table 6: "Compiler Error Messages." When the compiler sends you an error message, look up the indicated error number in the table. The explanation corresponding to that code is supposed to give you insight as to the cause, and thus the solution, of your problem.

Although Pascal compilers tend to offer more complete and informative error messages than processors for other lan-

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DITHERTIZER II, $300; B/W SANYO VIDEO CAMERA, $410; PACKAGE OF DITHERTIZER II AND CAMERA, $650.

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GRAPHICWRITER: Hard copy of character sets found in DOS Tool Kit for use with Applewriter or print statements in your own programs. Requires DOS 3.3, DOS Tool Kit, one of graphic printers below:

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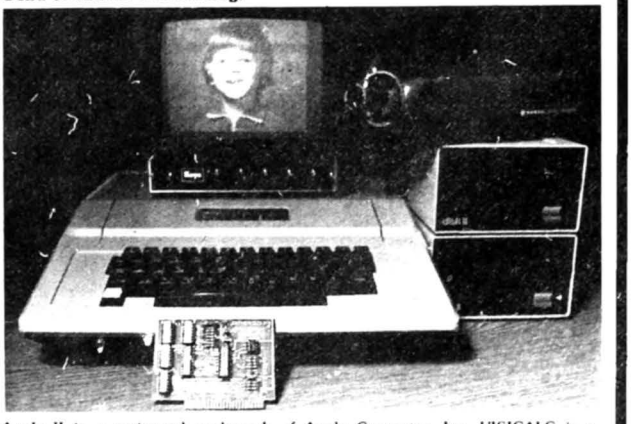

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Apple Pascal Prompt Lines, Group 1

Prompt lines are shown as they appear on the Apple's forty-column screen. All are too long to fit in a forty-column line. The break indicates the end of the portion you would normally see; following the break are the ends of the lines, which you can see by typing Control-A.

System main prompt line:
COMMAND: E(DIT, R(UN, F(ILE, C(OMP, L(IN K, X(ECUTE, A(SSEM, D(EBUG,?

Editor prompt line:
>EDIT: A(DJST C(PY D(LETE F(IND I(NSRT J (MP, R(PLACE, Q(UIT, X(CHNG, Z(AP [E.6F]

Editor insert prompt line:
>INSERT: TI T [<BS> A CHAR,<DEL>A LINE] [<ETX>ACCEPTS, <ESC> ESCAPES]

Editor delete prompt line:
>DELETE: <> <MOVING COMMANDS> [<ETX> TO DELETE, <ESC> TO ABORT]

Editor exchange prompt line:
>EXCHANGE: TEXT [<BS> A CHAR] [<ESC> ESC APES; <ETX>ACCEPTS]

guages, it seems that a programmer must acquire at least an embryonic instinct for the Pascal language itself before most of the error messages make enough sense to be truly useful in correcting programming mistakes. When I struggled to develop my first Pascal programs, the error messages, which seem so obvious and clear to me now, might as well have been written in a long-forgotten ancient language for all the sense they made then. However, I soon learned to recognize the situations that led to certain error messages, even if I didn't understand the theoretical bases for the messages themselves. All the pieces began to fit together as I gained greater mastery of the system. The same thing is bound to happen to you, if you stick with it.

Syntax Error Example: The Missing Semi. Let's look at an error message that you might (maybe *did*) get when compiling SomeExpressions. Suppose that the semicolon required after "WriteLn(2—2)" is missing from your source text file. This omission will cause the compiler to detect and report an error condition. On screen, the arrows, <<<, point at the part of the text line currently being scanned, where the compiler has decided something is wrong. That point is reached when the compiler recognizes the "WriteLn" that *follows* the omission.

To understand the causes of an error condition, put yourself in the computer's place. To diagnose syntax errors, you must be able to answer the question "What would I do with this program if I were the compiler?" In general, the compiler

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reads your program the same way you would, recognizing your instructions by scanning along, word for word. The Pascal language was designed so that a compiler can, at any point in a program, make definite assumptions about what should come next. In this case, after it finishes scanning the "WriteLn(2—2)" statement, the compiler expects to find one of a small number of constructions. The semicolon is one of these, but the identifier "WriteLn" (in fact, *any* identifier) is not. The few constructions that may be used at this point fall within the general class of *symbols*, about which we'll speak in the near future. Identifiers are also symbols, but since they may not be used here, the compiler deems the identifier "WriteLn" as an illegal symbol and issues error message #6, which states as much.

It's a pleasure to second-guess the compiler in trying to understand the reasons for various syntax error conditions. But, while this is a rewarding method of dealing with problems, it involves much more thought and effort than one usually needs to fix a program. A beginning programmer can get more mileage out of remembering that syntax error #6 usually occurs because a semicolon has been omitted. This is not the only situation that causes this error, but it is by far the most common one.

Notice that the compiler waits for you to reply to any error message. At this pause, you must press a single key, indicating what you want to do about the error. The compiler can continue to analyze your program, looking for other errors. If you want the scan to continue, press the space bar. To abort the compilation and regain the system's main prompt line, press the Escape key. Your third alternative is to go directly into the editor, in order to correct the program source text. To do this, press the E key.

When you invoke the editor from the compiler, there's a slight change in routine from that which we established while entering the program in the first part of the Survival Guide. To edit your file, of course, you must first give the editor the proper file name, as you have already learned to do. After fetching the file's contents, however, the editor positions the cursor at the point where the compiler detected the syntax error. It then redisplays the appropriate error message for you at the top of the screen, and waits for you to press the space bar. When you do, the error message is replaced with the regular editor prompt line, and you are free to use the editor in the normal fashion.

As a final note concerning syntax errors, it makes no sense for the compiler to generate an object program for an erroneous source. Consequently, should you receive any error messages during a compilation, there will be no object file available for execution afterward. Whenever you recompile a program, any previous object code file with the same name is replaced with a new one, containing the new version. If the compilation is unsuccessful, however, the previous version will not be disturbed.

Execution! When you have been successful in your efforts to compile SomeExpressions, press the X key (for *execute*). The system will ask for a file name, to which you need *not* add the .CODE suffix. Type the name—in this case it should be SOMEEXPR—and enjoy the resulting screen display, which should be the following:

```
4

0

4
```

Felicitations Are in Order! It seems to me that compilation of your first program is cause for no small amount of celebration, so enjoy yourself between now and the next column. You deserve it! Starting next time, we'll speed our progress along the Pascal Path by taking the train, as we get back to studying the Pascal language itself, with a look at the first of Pascal's many railroad diagrams. ❑■

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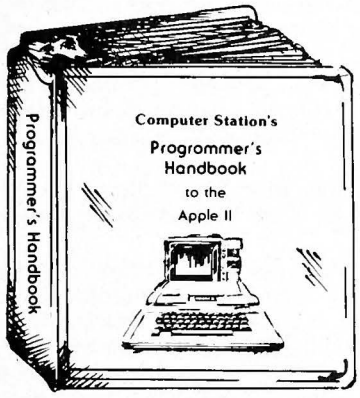

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from page 53

ty. Great enthusiasm shows through in the responses the computer gives to correct answers and great patience is shown when an incorrect answer is given.

The program goes into almost painful detail to get the student properly onboard and using the Apple. Each key to be used is explained and the student must properly depress it before going on. The correct formats for answers are also thoroughly detailed. The program, however, is very forgiving. If the student answers in a format not expected, the program responds that it does not understand and patiently awaits an answer in a correct format.

Some unusual approaches to math problems are effective and the everchanging nature of the problems keeps students on their toes.

One word of warning: don't tell the program that you know how to figure square roots—unless you really do. If you deny knowledge, it will explain with examples like four times four equals sixteen and therefore four is the square root of sixteen. If you profess knowledge, it will ask you some preposterous square like 4,489 and leave you dangling in misery unless you really are expert. 48K, Apple II, disk, $59 per disk.

Aristotle's Apple. By Scot Kamins, Stoneware Microcomputer Products (San Rafael, CA). This roll-your-own-quiz program would be a handy tool not only for teachers but also for individuals who want to reinforce some area of self-study. It provides the setup for three different kinds of tests in two different modes each. The user selects multiple choice, fill-in, or column match, plugs in his questions and answers, and Aristotle takes it from there.

The quizee gets two options: a tutorial mode or an exam mode. In the former, Aristotle is chatty, with a whole repertoire of snappy retorts to answers both correct and incorrect. Some frequent users might eventually tire of his commentary, but if that happens they can modify the appropriate statements in the program list.

The student gets two chances to answer each question in tutorial mode. If he or she answers incorrectly twice, Aristotle displays the reply he was looking for and requires the respondent to type it out before going on. At the end of the lesson, he takes the student back through any questions missed and then displays a score, broken down into percent right the first time, percent right on the second shot, and percent wrong.

In the exam mode, the philosopher turns off his witty repartee and merely tabulates correct and incorrect answers. After the test, he gives you a score and offers to show you what you missed.

The program requires no computer expertise. Self-explanatory menus are provided to help the user create tests. Aristotle uses dashes to let you know how many characters he'll allow for each question and answer, and he always gives you a chance to confirm your satisfaction before sending your work to the disk. On fill-in style exams, the program will allow the testmaker to designate a second, alternate answer in addition to the primary one. Aristotle will accept either reply from the student, but will reinforce the primary.

The program comes with a thorough well-written manual. 48K, ROM Applesoft, disk drive. $34.95. ◨

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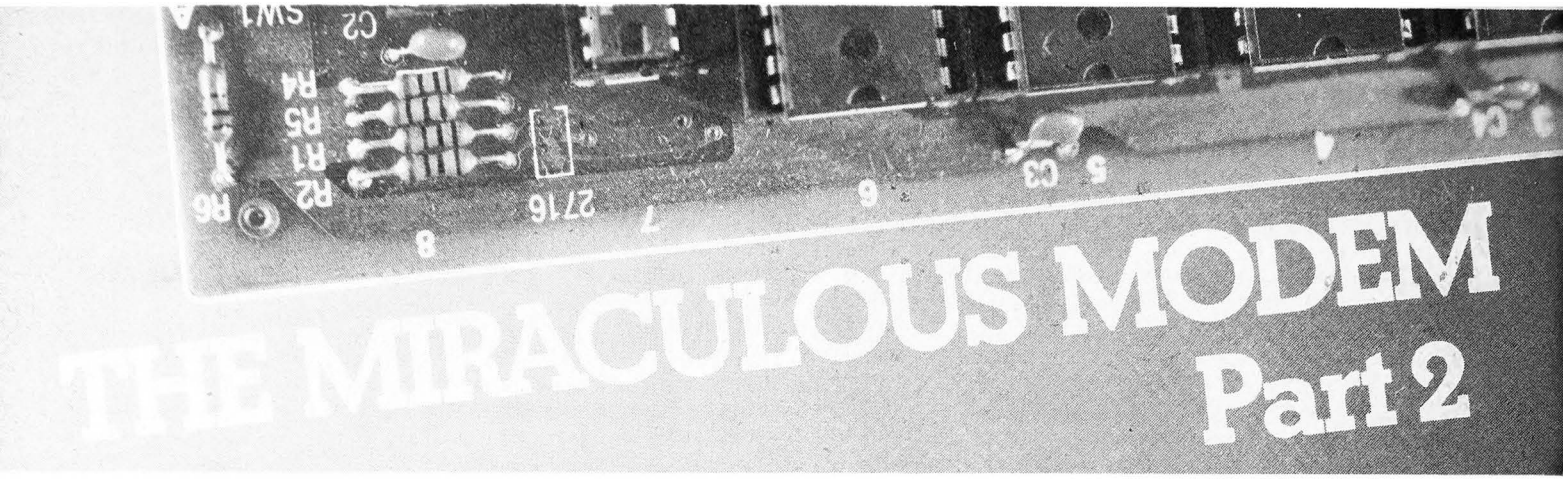

THE MIRACULOUS MODEM Part 2

BY JEFFREY MAZUR

Chances are, you'll buy a modem for a particular purpose—maintaining your investment portfolio, joining one of the nationwide time-share systems to use the facilities of a mainframe, or communicating with a friend. What you may not realize, as you hurry home with your new purchase, is that you've bought a two-way window on the world with the modem card: an icebreaker, a friend maker, a mind expander.

Much of this world arrives through a network of people who have opened their computers and phone lines to anyone who wishes to call. These free public access systems are called bulletin boards—from their common use as message keepers. Formally, they're monikered Computerized Bulletin Board Systems, which you'll more often see written as CBBS.

Your Apple and modem can communicate with CBBSs run on any computer, although you may require some special software to download programs and such on those run on systems other than Apples. However, an overwhelming majority of these are Apple-based; in a list of systems, these are signified as ABBSs—the name Apple substituting for the word computer. TRS-80-based systems are called Forum 80s.

What all these have in common is the ability to receive, store, and display short messages between users; they also run on the Bell 103 standard. Other features such as local news, want ads, and program transferring are also available in many cases.

It is not uncommon for CBBS terminals to have short operating life spans. In this regard, many of the terminals listed in the February issue of *Softalk* are no longer operating, while others have sprung up. The Novation company, Reseda, California, offers a service consisting of a listing of all current free computer information terminals and their telephone numbers. This list is updated on a monthly basis. The Novation modem number is (213) 881-6880 and the password to use the system is CAT, which is the name of one of their modems.

Guided Tour through an ABBS. On your first attempt to use a CBBS, you may feel like you did the first day you got your computer. Even experienced Apple users will be on unfamiliar territory, but the system is self-prompting and easy to learn. If you have a printer, making a hard copy of your session will speed up the learning process. Commands may differ slightly between systems, but the general operation is the same.

A typical call to an ABBS might proceed like this. You decide to call the XYZ ABBS and post a message about a new program you've written. With your modem in the originate mode and the Apple set to run as a full duplex terminal, you type the ABBS phone number on your Apple and the modem dials it. With the Micronet, you need not wait between digits. After one or two rings, the modem at the other end should answer the phone and send its carrier tone. At this point, if you are using an accoustically coupled modem, place the handset into the modem. Within a couple of seconds your modem should recognize the carrier tone and begin sending back its own tone. The answering modem will wait ten seconds for this before deciding that the call is a wrong number and hanging up.

Assuming that a connection is made, the ABBS will request that you send one or more carriage returns. This is done to verify that your modem is operating at the correct speed, data format, and so on. A greeting message follows and the ABBS asks for your name, location, and phone number. If you are shy, just use a handle, as you might on a CB. The ABBS computer will then log your call to its disk.

Next you'll receive further information about the system and possibly, bulletins to all users. If the text starts to scroll off the screen faster than you can read it, try typing Control-S. This should suspend output until you type Control-S again. After you're more familiar with operating the ABBS, you may also find the Control-K feature useful. This key will usually interrupt whatever the system is sending and return you to the current command mode.

Command Performances. Speaking of command modes, that's where we are now in our guided tour of the ABBS. At this point, your screen displays a line of alphabet characters, followed by a request for you to give a command. The system waits for you to enter one of the letters, instructing it to do something. A question mark, or sometimes the word help, brings you a detailed explanation of the available commands. If you aren't sure of something, try the C, or chat, command. This will page the system operator by causing the system computer to beep. Then you can converse with each other through the system. If no one is available to answer the page, you will be so informed and returned to the command mode.

Let's look at some of the messages on the system. The S, or scan, command gives a brief description of each message, including who it's from, who it's for, when it was written, and what it's about. The scan command usually asks for a starting message number, so you can choose to see all or only some of the messages. As each description is displayed, write down the numbers of those messages you'd like to read; some CBBSs have a flagging feature that makes this easier. If you want the descriptions to quit before they're finished, use Control-K to return to the command mode.

To read the desired messages, the R, or retrieve, command is used. This command asks for a message number; after you enter it, the system retrieves that message from the disk and displays it. Again, Control-K is useful if you decide not to view the entire message. After each message, you're prompted for another number; hitting return will take you back to the main command mode.

The Message Is the Medium. Finally, you're ready to enter your own message into the system. This is done with the E, or enter, command. When asked whom the message is intended for, you can give an individual's name or a general category, such as "all Apple owners." A subject description, or title, is also required. After this, you can begin entering the message

text. Most systems limit a message to sixteen lines; if your message exceeds this, you'll have to break it into separate messages. Several editing commands are available to review and correct your message entry. A help feature is usually provided to describe the message-entry commands. When you're finished entering the message, don't forget to S (save) it to disk before returning to the main command level.

At this point, you probably have tied up the system long enough, printed out more paper than you care to save, and, if it has been a toll call, run up a bill. The only way to sign off the system properly is with the G (good-bye) or its equivalent command. If you hang up the phone, hit reset, or turn off your computer, you may leave the system hanging for several minutes. During this time, it is unavailable to others.

Varieties of CBBSs. Although all CBBSs operate similarly, some have restricted their use. Since access to systems and their message files is controlled by the system operators, operators can set the standards and choose the types of forum they wish their systems to provide. The question of censorship also arises. Some opt for complete freedom of speech; others choose to remove messages that are in bad taste. Many systems ask that your messages be somewhat pertinent to computers. As disk space for message storage become precious, want ads for used cars and appeals from lonely computerists are usually first to get purged.

Some systems specialize in particular fields or subjects. There are CBBSs devoted to avionics, genealogy, commodities, engineering, ham radio, medicine, and more. There's a new ABBS in the Los Angeles area called the Funny Bone—a computerized Dial-a-Joke. In case this tickles your fancy, its number is 213-773-6591. If you have an interest that is not covered by a CBBS in your area, this might be a good time to consider starting one of your own.

Setting Up Your Own ABBS. All you need to start your own ABBS is an Apple, an auto-answer modem, and appropriate software. The original ABBS software was written by Craig Vaughn (now with the Source) and marketed by his former company, Peripherals Unlimited. Obtaining that software now is somewhat difficult. For some time, the only way to get software for a new ABBS was to coax a copy from a currently running system. Now a new package, called *Net-Works*, from Computer Station (Granite City, IL), performs all the necessary tasks and some more as well.

You'll also need at least one disk drive, preferably two; and a real-time clock is a good addition. If you plan on maintaining the ABBS for a while, consider having a separate phone line installed for it. Since you won't be making any outgoing calls on this line, you can order a service with the minimum monthly charge.

Why Have an ABBS? A typical ABBS may receive ten thousand calls per year. Roughly half come from local computerists—some call on a daily basis—but you can also expect to receive calls from all over the country. Use of the system may be slow at first until news of your number gets around, mostly via other CBBSs. Once your number is established, many people will phone in personal communications, open notices, want ads, questions, and more. Your system is also a forum for you to express your own views on a variety of subjects.

Probably the most rewarding benefit is meeting new people with similar interests. Some become real people if you live close enough to meet in person; most remain known to you only by the words they flash across the screen. An outsider, observing an ABBS operation, might be puzzled by the habits of ABBSers. A caller often requests the chat mode, and the caller and system operator spend the next fifteen or twenty minutes in conversation via their terminals, even though the call is a local one. The outsider wonders why they don't just pick up the phone and communicate vocally instead of using the slower and more cumbersome typing.

The same outsider might wonder at ham radio hobbyists using Morse code to communicate with people only a local phone call away. Yet many hams prefer using code or teletypewriters over voice communications—merely because it's fun to use their radios. So it is with the bulletin board commu-

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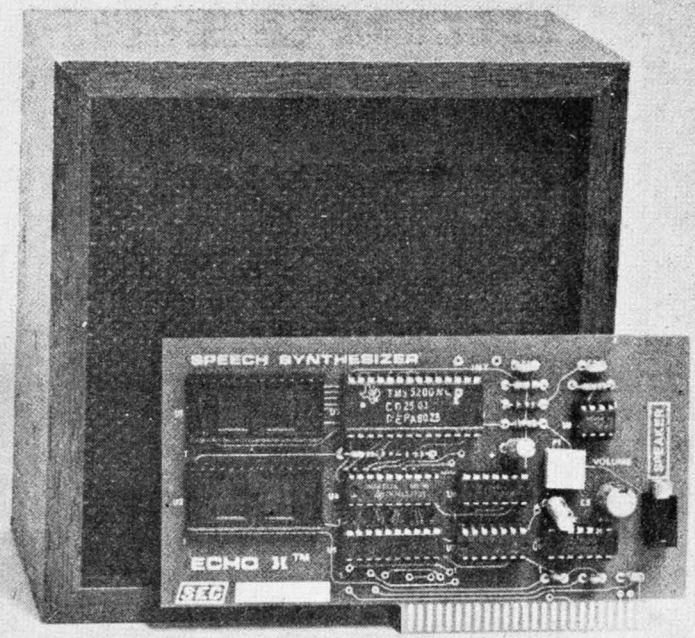

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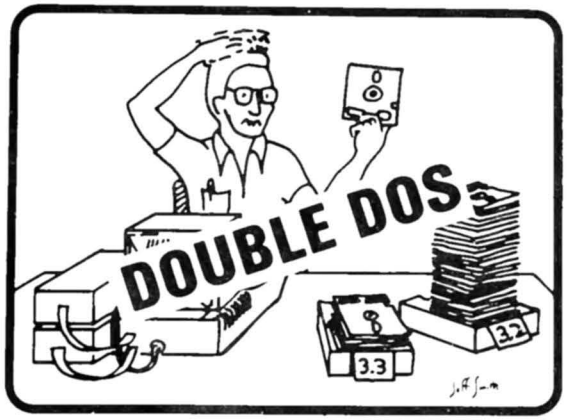
nicator; part of the pleasure of having an ABBS is derived simply from enjoyment of telecommunications.

Smart Terminal Programs. Anyone using a modem regularly should check out the terminal programs available for the Apple. These programs provide features such as forty-column screen formatting, extended keyboard characters, and input/output buffering. The latter is extremely helpful in cutting down actual time spent on the systems. For example, you can enter and edit a message in the buffer before calling a CBBS. Then, after signing on, you transfer the message from the terminal program's buffer into the system. With the message still in the buffer, you can call several other CBBSs and leave the same message.

A buffer is also useful in recording a complete session with a computer system. All information received from the system is stored in the buffer so you do not have to read everything being sent while you're connected. After signing off with the system, you can edit the information in the buffer and then print out or save on disk the important parts.

Some terminal programs also provide automatic dialing—assuming your modem is capable of it—and log-on for each system you use. Another useful feature is the ability to upload and download Basic programs and binary files. If you prefer to work in Pascal or CP/M (SoftCard) operating systems, there are terminal programs available for them. Any way you look at it, the Apple can perform like a smart terminal costing many times its price.

Where's All This Leading? Continuing with the analogy to amateur radio, microcomputer modem communications are now at the same pioneering stage that radio was in the early 1900s. Just a handful of hobbyists are paving the way for explosion of an industry that will affect every human being. It took more than fifty years for radio to develop into the broadcasting, television, and satellite communications we consider commonplace today.



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With technology continuing to grow at an exponential rate, the field of computer telecommunications will compress comparable progress into very few years. As exciting as they are, the Source and CompuServe, both of which will be described next month, are meager indications of what's to come. The computer in every home does not seem far away anymore.

Micromate's Micronet—It Plugs in the Game Port

When part 1 of this series was being written, the only well-known modem designed specifically for the Apple II was the Micromodem II from Hayes Microcomputing. In the last few months, six new modems have been announced, some at a lower cost and some with more features than the Micromodem. In preparing for this article, the *Micronet* from Micromate Electronics was used. For part 3, several of the other modems will be used.

The Micronet modem distinguishes itself from most Apple peripherals in that it does not plug into one of the eight expansion slots. Instead, the interface is made through the Apple game I/O connector. As a result, the price is considerably lower than modems that use cards; and you don't use up a peripheral slot. You may find it a disadvantage not to be able to leave your game paddles connected when using the modem; but with the price savings, you could easily purchase an extender for the game I/O port, allowing you to plug in both.

If you have an ancient Apple, as Apples go, your computer may not automatically initialize the I/O ports on startup. Then, Micronet will take the phone off the hook right away and keep it off! The problem is easily solved, however. Merely type in from monitor C05F as soon as you boot up your Apple.

Like the Micromodem II, the Micronet consists of two parts: the modem itself and a separate, direct-connect coupler unit for FCC-approved connection to the phone lines. The main unit has six status LEDs: line condition—on or off hook; mode—answer or originate; data functions—transmitting or receiving; and carrier detect. Because the game I/O connector cannot support PROM firmware, the operating software must be loaded in from disk.

The Micronet modem operating system takes up about 4K and locates itself just below DOS. Following the tradition of previous communication systems, all MOS commands are preceded with a Control-A. This invokes the response "MICRONET:" after which a variety of one or two keystroke commands can be entered to select baud rate, data format, transparency, and so on. Terminal and console modes are provided. The commands are not identical to those used with the Hayes modem; thus, programs written for the Micromodem II will probably not work with the Micronet without a lot of modification. It should be noted that the people at Micromate are busy writing these very modifications into all the software you could hope to use. Whether it gets to you depends on the okay of the companies who put out the original programs.

Downloading software is optional with the Micronet, but if you opt for it, what you'll get is a program that checks for the kind of peripheral your Micronet is dealing with and runs the appropriate specs to accept from the Micromodem or the Apple Communication Card as well as from another Micronet.

As other modems gain in popularity, system operators and software authors will be more inclined to provide compatibility with as many of them as possible. Evidence of this is that the Telephone Software Connection has already reworded its programs to recognize and deal with the Micronet; and the Source is currently acting to achieve the same compatibility.

Putting all this together, the Micronet is an extremely inexpensive way to open your Apple's door to the world, and the world is preparing for it.

Micromate actually makes three modems. To save even more money, you might consider the acoustical version; and, if you're willing to spend a little more, you can get the deluxe version that autodials and autoeverythings. ■

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ASCII EXPRESS II

by BILL BLUE

Described in INFOWORLD as "The finest program for Apple data communications...," ASCII EXPRESS II allows your Apple to communicate with virtually any computer with dial-up access.

Written in Applesoft and Machine language, Ascii Express II includes everything you'd expect in a complete communications package. It features a variety of powerful features including full support of upper/lower case, autodial and answer capabilities (when used with the Hayes Micromodem), and file oriented upload/download facilities.

A built-in line editor gives full editing functions, and programmable keyboard MACROS reduce complicated log-in procedures to a few simple keystrokes.

Downloaded files may be printed while being received, saved to disk, or printed later when offline. The copy mode allows everything shown on the screen to be saved in the large (20K) buffer.

Ascii Express II works with the Hayes Micromodem II, Apple communications card, the CCS Asynchronous Serial card, SSM-AIO Board, Lynx Telephone Linkage System, and many other communications devices.

Uses include:

- Send/receive letters/files from networks like the SOURCE, MICRONET, or other bulletin board type systems.
- Transferring program files between Apples, an Apple and a TRS-80, PET, etc.
- Use the Apple as a terminal to a mainframe at a remote location with the added advantage of being able to process data at the Apple before or after transfer.
- Minimize on-line costs by quickly transferring files and other data.

System requirements include a 48K Apple with Applesoft in ROM or the Language Card, a disk drive, and one of the above communications devices. A lower case display board is recommended, but not required.

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by BILL BLUE

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- Receives up to 41K of data at a time. Can send files of any size.
- Auto save mode send XOFF character when buffer is full, and resumes (with operator prompting) after save.
- Terminal emulation allows you to define what kind of terminal your Apple should appear as.
- Entirely in machine language for maximum speed and power.

Z-TERM fully supports the Hayes Micromodem, Apple Communications card, SSM-AIO board, CCS Asynchronous Serial Card, Lynx Communications system and others! Fully supports the local Apple 40 column screen, external terminals, and all 80 column boards interchangeably and with NO configuration necessary!

If you have a Z-80 card, you owe it to yourself to check this one out before you buy any communications software. If you don't have the Z-80 Softcard, you may want to get one just to run this package!

*Note: CP/M and Apple DOS files are not directly compatable.

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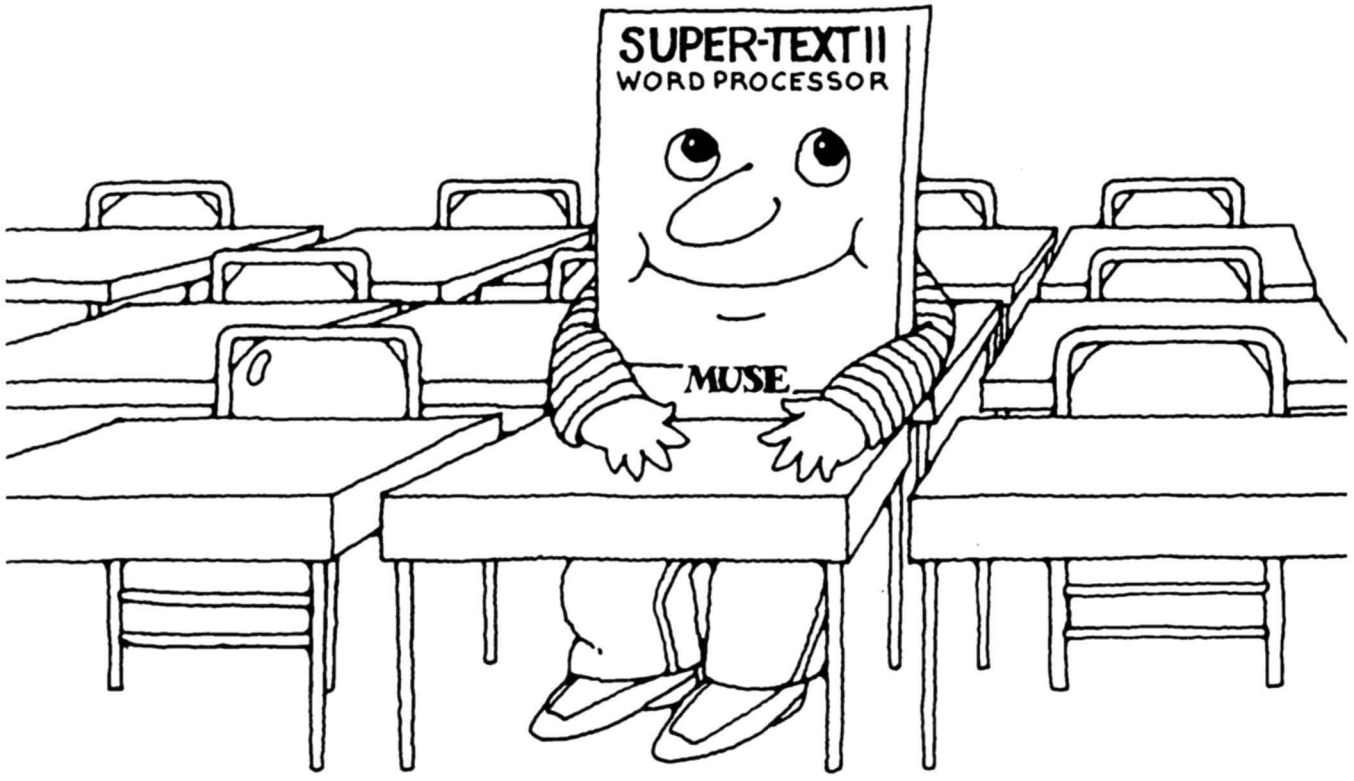

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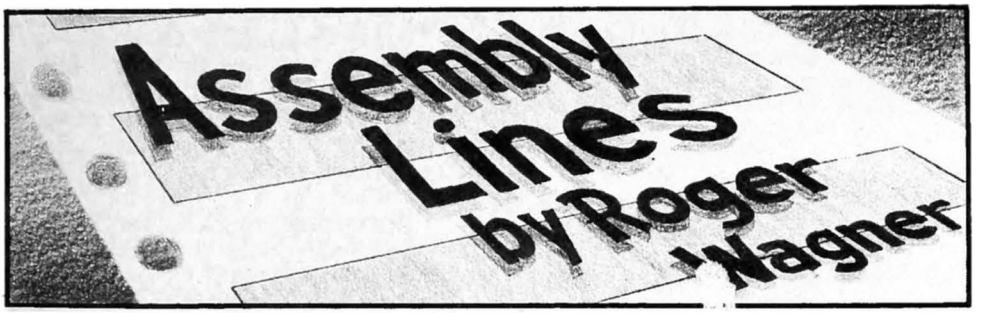

Everyone's Guide to Assembly Language, Part 8

Commands Covered So Far:

JMP	LDA	LDX	LDY	TAX
JSR	STA	STX	STY	TAY
RTS	INC	INX	INY	TXA
—	DEC	DEX	DEY	TYA
—	CMP	CPX	CPY	—
BEQ	BNE	BCC	BCS	—

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Originally, I planned to cover basic math operations and, as an added attraction, throw in a simple tone routine. Sound generation in machine language is such a large topic in itself, though, that an entire series could be done on that subject alone.

With that in mind, I decided to save the math operations for a future issue, and spend this issue looking at simple sound generation routines. This not only allows you to put the commands you've learned to further use but also is just plain fun.

The first element of a sound generating routine is the speaker itself. Recall that the speaker is part of the memory range from $C000 to $C0FF, which is devoted entirely to hardware items of the Apple II. In earlier programs, we looked at the keyboard by examining memory location $C000. The speaker can be similarly accessed by looking at location $C030. The exception here is that the value at $C000 (the keyboard) varied according to what key was pressed, whereas with $C030 (the speaker) there is no logical value returned.

Every time location $C030 is accessed, the speaker will click once. This is easy to demonstrate. Simply enter the monitor with a call —151. Enter C030 and press return. You'll have to listen carefully, and you may have to try it several times. Each time, the speaker will click once. You can imagine that, if we could repeatedly access the speaker at a fast enough rate, the series of clicks would become a steady tone. In Basic, this can be done, although poorly, by a simple loop such as this:

```
10   X = PEEK(—16336): GOTO 10
```

The pitch of the tone generated depends on the rate at which the speaker is accessed. Because Integer Basic is faster in its execution than Applesoft, the tone generated will be noticeably higher in pitch in the Integer version.

In machine language, the program would look like this:

```
0300-  AD 30 C0   LDA   $C030
0303-  4C A0 03   JMP   $03 0
```

In this case, I'm showing it as the Apple would directly disassemble it, as opposed to the usual assembly language source listing. The program is so short that the easiest way to enter it is by typing in the hex code directly. To do this, enter the monitor (ca —151) and type:

```
300:    AD 30 C0 4C 00 03 <RETURN>
```

Then run the program by typing 300G.

Disappointed? The program is working. The problem is that the routine is actually too fast for the speaker to respond. What's lacking here is some way of controlling the rate of execution of the loop. This is usually accomplished by putting a delay of some kind in the loop. We should also be able to specify the length of the delay, either before the program is run or, even better, during the execution of the program.

We can do this in any of three ways: 1) physically alter the length of the program to increase the execution time of each pass through the loop; 2) store the value somewhere in memory before running the program and then use that value in a delay loop; or 3) get the delay value on a continual basis from the outside world, such as from the keyboard or paddles.

For the first method, you can use a new and admittedly complex command. The mnemonic for this instruction is NOP and stands for *no operation*. Whenever the 6502 microprocessor encounters this, it just continues to the next instruction without doing anything. This code is used for just what we need here—a time delay.

It is more often used, though, as either a temporary filler when assembling a block of code (such as for later data tables) or to cancel out existing operations in a previously written section of code. Quite often, this code ($EA, or 234 in decimal) is seen being used in this manner to patch parts of the Apple DOS to cancel out various features that you no longer want to have active (such as the *not direct command* error that prevents you from doing a GOTO directly to a line that has a DOS command on it).

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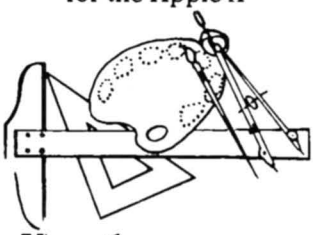

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In our sound routine, an NOP will take a certain amount of time even to pass over and will thus reduce the number of cycles per second of the tone frequency. The main problem in writing the new version will be the number of NOPs that will have to be inserted.

The easiest way to get a large block of memory cleared to a specific value is to use the move routine already present in the monitor. To clear the block, first load the first memory location in the range to be cleared with the desired value. Then type in the move command, moving everything from the beginning of the range to the end up one byte. For instance, to clear the range from $300 to $3A0 and fill it with $EAs, you would (from the monitor of course) type in:

```
300:     EA <RETURN>
301<300.3A0M <RETURN>
```

Note that we are clearing everything from $300 to $3A0 to contain the value $EA.

Now type in:

```
300:    AD 30 C0    <RETURN>
3A0:    4C 00 03    <RETURN>
```

Then type in 300L, followed with L for each additional list section, to view your new program.

```
300L

0300-  AD 30 C0    LDA   $C030
0303-  EA           NOP
0304-  EA           NOP
0305-  EA           NOP
0306-  EA           NOP
0307-  EA           NOP
0308-  EA           NOP
0309-  EA           NOP
  *     *            *
  *     *            *
  *     *            *
0395-  EA           NOP
0396-  EA           NOP
0397-  EA           NOP
0398-  EA           NOP
0399-  EA           NOP
039A-  EA           NOP
039B-  EA           NOP
039C-  EA           NOP
039D-  EA           NOP
039E-  EA           NOP
039F-  EA           NOP
03A0-  4C 00 03     JMP   $0300
```

Now run this with the usual 300G.

The tone produced should be a very nice, pure tone. The pitch of the tone can be controlled by moving the JMP $300 to points of varying distance from the LDA $C030. Granted, this is a very clumsy way of controlling the pitch and is rather permanent once created, but it does illustrate the basic principle.

For a different tone, hit reset to stop the program, then type in: $350: 4C 00 03

When this is run (300G), the tone will be noticeably higher. The delay time is about half of what it was, and thus the frequency is twice the original value. Try typing in the three bytes in separate runs at $320 and $310. At $310, you may or may not be able to hear the tone, because the pitch is now essentially in the ultrasonic range.

I think you'll also notice that all these tones are of a very pure nature and, in general, much nicer than those generated by a Basic program.

Usually the way tone programs work is to pass a pitch value from Basic by putting the value in a memory location. This program is an example of that technique.

```
 1 ************************
 2 *  SOUND ROUTINE #2  *
 3 ************************
 4 *
 5 *
 6    OBJ $300
 7    ORG $300
 8 *
 9 PITCH EQU $06
10 SPKR EQU $C030
11 *
12 ENTRY LDY PITCH
13    LDA SPKR
14 LOOP DEY
15    BNE LOOP
16    JMP ENTRY
17 * INF. LOOP
```

When assembled, it should look like this:

```
*300L

0300-  A4 06        LDY   $06
0302-  AD 30 C0     LDA   $C030
0305-  88           DEY
0306-  D0 FD        BNE   $0305
0308-  4C 00 03     JMP   $0300
```

In this program, we get a value of $00 to $FF from location $06 (labeled *pitch*) and put it in the Y register. The speaker is then clicked. At that point, we enter a delay loop that cycles *n* times where *n* is the number value for pitch held in location $06.

To run this program, first load location $06 with values of your choice (0 to 255 decimal, $00 to $FF hex) and then run with the 300G. This is more compact and controllable than the first example, but it still suffers from being an infinite loop. What we need to do is specify a duration for the tone as well. Again you have the option of either making the value part of the program or passing it in the same way as we're currently doing the value for pitch. Here's a listing for the new program:

```
 1 ************************
 2 * SOUND ROUTINE #3  *
 3 ************************
 4 *
 5 *
 6    OBJ $300
 7    ORG $300
 8 *
 9 PITCH EQU $06
10 DURATION EQU $07
11 SPKR EQU $C030
12 *
13 ENTRY LDX DURATION
14 LOOP LDY PITCH
15    LDA SPKR
16 DELAY DEY
17    BNE DELAY
18 DRTN DEX
19    BNE LOOP
20 EXIT RTS
```


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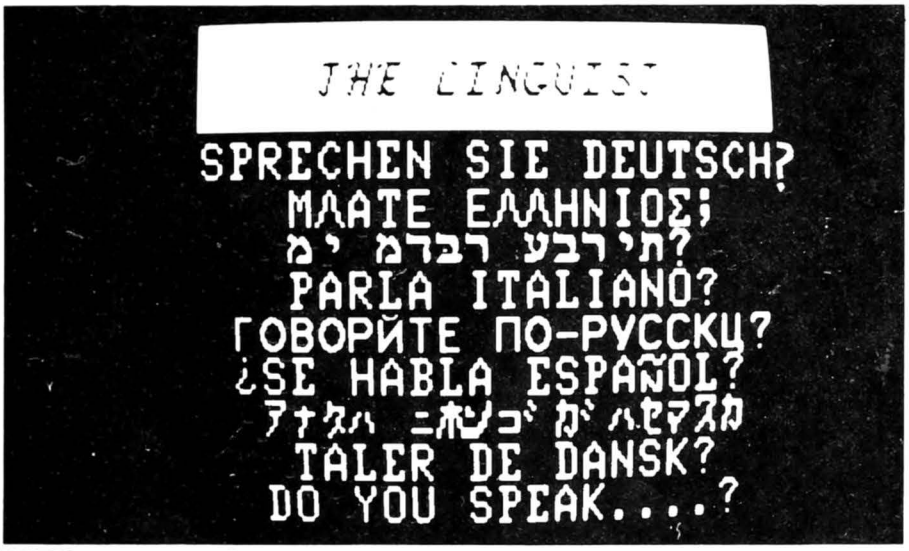

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Assembly Lines

Disassembled, it will appear like this:

```
*300L

0300-  A6 07      LDX  $07
0302-  A4 06      LDY  $06
0304-  AD 30 C0   LDA  $C030
0307-  88         DEY
0308-  D0 FD      BNE  $0307
030A-  CA         DEX
030B-  D0 F5      BNE  $0302
030D-  60         RTS
```

This routine is used by loading $06 with a value for the pitch you desire, $07 with a value for how long you want the tone to last, and then running the routine with the 300G.

Examining this listing, you'll see that it is basically an extension of routine #2. In this revised version, instead of always jumping back to the LDY of the play cycle, we decrement a counter (the X register). This counts the number of times we're allowed to pass through the loop, and thus the final length of the play.

This can be used by Basic programs, as illustrated by this sample Applesoft listing:

```
10  PRINT CHR$(4);"BLOAD TONE ROUTINE, A$300"
20  INPUT"PITCH, DURATION? ";P,D
30  POKE6,P:POKE7,D
40  CALL 768
50  PRINT
60  GOTO 20
```

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This makes it very easy to experiment with different values for both pitch and duration. The main bug in this routine is that even for a fixed value for duration, the length of the note will vary depending on the pitch specified. This is because less time spent in the delay loop means less overall execution time for the routine as a whole.

The next variation is to get the pitch on a continual basis from an outside source. In this case, the source will be the keyboard. Type in and assemble this source listing:

```
 1 ************************
 2 * SOUND ROUTINE #4     *
 3 ************************
 4 *
 5 *
 6    OBJ $300
 7    ORG $300
 8 *
 9 KYBD EQU $C000
10 STROBE EQU $C010
11 SPKR EQU $C030
12 *
13 ENTRY LDA KYBD
14    STA STROBE
15    CMP #$80
16    BEQ EXIT
17    TAY
18 LOOP LDA SPKR
19 DELAY DEY
20    BNE DELAY
21    JMP ENTRY
22 EXIT RTS
```

In memory, it should look like this:

```
*300L

0300-  AD 00 C0   LDA  $C000
0303-  8D 10 C0   STA  $C010
0306-  C9 80      CMP  #$80
0308-  F0 0A      BEQ  $0314
030A-  A8         TAY
030B-  AD 30 C0   LDA  $C030
030E-  88         DEY
030F-  D0 FD      BNE  $030E
0311-  4C 00 03   JMP  $0300
0314-  60         RTS
```

Running this will give you a really easy way of passing tone values to the routine. Characters with low ASCII values will produce higher tones than ones with higher values. This means that the control characters will produce unusually high tones. To exit press Control-Shift-P (Control-@).

Let's review how the routine functions.

At the entry point, the very first thing done is to get a value from the keyboard. The strobe is then cleared, and an immediate check done for #$80. Remember that $80 is added to the ASCII value for each key pressed when read at $C000. A value less than $80 means no key has been pressed. Checking specifically for $80, the computer looks to see if a Control-@ has been pressed. This is just a nice touch to give us a way of exiting the program. After the check, we transfer the accumulator value (equivalent to pitch in the earlier programs) to the Y register, and finish with the same routine used in sound routine #2.

Of course, I have to give you at least one program using the paddles. This one gives us an opportunity to use the external routines in the monitor, too. Don't forget that using the routines already present in the monitor is the real secret to easy machine language programming. It saves you the trouble of having to write your own I/O and other sophisticated routines and lets you concentrate on those aspects unique to your program.

Now for the program:

```
 1 ************************
 2 * SOUND ROUTINE #5     *
 3 ************************
 4 *
 5 *
 6    OBJ $300
 7    ORG $300
 8 *
 9 PDL EQU $FB1E
10 SPKR EQU $C030
12 *
13 ENTRY LDX #$00
14    JSR PDL
15    LDA SPKR
16    LDX #$01
17    JSR PDL
18    LDA SPKR
19    JMP ENTRY
20 * INF. LOOP
```

The monitor will list this as:

```
*300L

0300-  A2 00      LDX  #$00
0302-  20 1E FB   JSR  $FB1E
0305-  AD 30 C0   LDA  $C030
0308-  A2 01      LDX  #$01
030A-  20 1E FB   JSR  $FB1E
030D-  4C 00 03   JMP  $0300
```

Running this should produce some really interesting results. The theory of this routine is elegantly simple. It turns out that just reading a paddle takes a certain amount of time, sufficient to create our needed delay. The greater the paddle reading, the longer the delay to read it.

What happens in this routine is that we actually have two distinct delays created, one by each paddle. Remember that, to read a paddle, you first have to load the X register with the number of the paddle you wish to read and then do the JSR to the paddle read routine. The value is usually returned in the accumulator, but in this case we don't need to know what the value was.

The combination of the two different periods of delay creates the effect of two tones at once and a number of other very unique sounds.

This has been only the most basic discussion of sound-generating in machine language, but I think you'll find that it illustrates what can be done with only a few commands, and that machine language offers many advantages in terms of memory use, and speed of execution.

Next month—the winner of the contest will be announced! ■

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Give Your Favorite Apple a Videotape Machine

BY DENNIS BRISKIN

Bill Thorpe wants to change the way you learn forever. If he has his way, and enough people accept his ideas, you may soon begin every day by asking yourself, "What do I feel like learning today?"

Consider the scenario: You are a degree candidate at your local college. You sit down to your custom modified Apple II Plus microcomputer and peripheral devices, including a random access video cassette tape player.

When you call up your current status report, the college records office (actually its computer) reminds you that you still have not met the Humanities and Civilization requirement. You call up a menu of acceptable mini-courses available through the Computer Interactive Videotape Center. Among the offerings are "Civilization" by Kenneth Clark, "A History of Animation" by Ralph Bakshi, and "The Ascent of Man" by Jacob Bronowski.

Taking History over the Waves. You decide to study Bronowski's landmark series on the history of science. The screen prompt reminds you it is available either on cassette through the mail or, for a slight premium price, sent through the airwaves onto your own blank cassette. You decide to take it over the airwaves, and soon you have loaded the cassette into your tape player and are ready.

The screen displays the name of the tape and other information and asks you to enter your name and hit "return." The unit then responds with a table of contents of the tape, ranging from sections on man's beginnings in Africa through Pythagoras, Darwin, and Newton, up to the latest developments in brain/computer interfacing. The tape also includes a readiness test enabling you to pass over material you have already learned. As usual, you may work with any section of the tape yc want, in any order, or you may choose to study it in the sequence Bronowski wrote.

You make your choice and study a section of the tape, including the full range of color visuals, music and narration. The tape stops, and the screen fills with a series of questions testing you on what you have just seen and heard. You enter your answers through either a keyboard, a light pen connected to the video screen, or your voice, depending on the interactive mode you have chosen.

If you "pass" the questions, the computer allows you to choose another section of the tape. If your answers show you have not mastered the material, the program automatically cycles you back through the tape segment. Too many wrong answers, or perhaps an inappropriate response strategy, calls forth a request that you consult with your supervising learning facilitator, a professional specialist in learning strategies, information management, and the human nervous system.

The Technology Is Here. When you have completed your study of the tape, at your own pace in the sequence you chose, you send your answer record, including essays written on your word processing unit, to the college's computer. It grades the objective portion and sends your professor a reminder that it's holding an essay from you. He reads the essay and grades it. The computer calculates your total grade, enters the credit onto your master file and sends you a bill based on the amount of service you actually required to complete the tape.

"All of that is technologically possible with what's sitting in this room," Thorpe says, gesturing to indicate his portable video production rack and two color video cameras. From top to bottom the rack contains: a battery-operated five-inch diagonal JVC color monitor, a Panasonic special effects generator with 3M bridging switcher, a Sony random access video cassette tape player, a JVC portable VCR, an Apple II 5¼-inch disk drive, and a 48K Apple II Plus microcomputer modified with a television interactive interface.

Thorpe is a professional video wizard who teaches advanced video production techniques at California State University at Sacramento. Although his computer interactive videotape system relies upon the Apple II Plus and a videotape player with random access capability, it all had more modest beginnings.

"One night in 1977 Gordon Van Camp and I had finagled to get a Radio Shack TRS-80 4K computer. They had just come out and were impossible to find, but we were able to get one right here in Placerville. The neat thing was it would automatically pause the audio cassette where you get the information from the computer. We were sitting here with a video cassette wondering, 'Will it start and stop the videotape?' "

Humble Beginning Fires the Interactive Imagination. "So Gordon wrote a quick little program and we loaded it onto one audio track of the computer. It stored it and stopped. We looked at each other and grinned. We rewound the thing and ran the program. It started, ran the tape and stopped. Then a question appeared on the screen. We knew it would work and that's how things got started."

Programmer and systems analyst Van Camp continues the story. "That was exciting. It meant computer interactive videotape was possible. With Bill's imagination it gave him impetus to ask, 'Now, what else can we do with this thing?' At that point all microprocessors were purely hobby level and new on the market. It was an innovation then to think of using one to control a tape machine to present information more completely. Bill's primary goal has always been to use the minimum technological level required to run a videotape machine."

Enter Apple. "We also started looking at other computers. The access to the TRS-80 was very limited. We wanted some easier way to get to the video tape. And we wanted to use color and a regular TV set from the VTR.

"The Apple was *my* decision. I was in Los Angeles in a computer store, just shopping around to see what was available. It was love at first sight. It was a well-packaged, well-presented system that had a lot going for it, especially compared to what else was around. The documentation was heads above the other companies, who were still putting out information for build-it-yourself people. It was a complete unit with a *lot* of thought behind it. And with high-resolution graphics and color on top of that, it had to be that machine."

Dennis Briskin photo

Since that beginning Thorpe, Van Camp and several others have formed the Teclar Corporation of Sacramento, a high-technology research and development group specializing in designing and producing computer interactive videotape systems for education and training. Teclar includes professionals in education, psychology, management and world problem solving.

Jane Van Camp is an educational consultant and video production specialist. She is a former Thorpe student who became the first person to produce educational tapes based completely on his ideas about small format video, message design, and the ability of one person to do it all.

"I'm probably the first person in his group," she says of her teacher, "who became familiar with every aspect of production from camera work to script writing to narration. Right from the beginning I've been developing into this comprehensive media person that he saw as

a possibility. I was able to take his ideas into the field and do them."

Psychologist Is High on Interactivity. Al Willey is an educational psychologist and adult training expert. Besides working on project management and public affairs for Teclar, he directs in-service and staff development programs for the El Dorado County Office of Education in Placerville.

"The strength of interactive videotape," he says, "is in teaching things that require activity and doing. The student watches the tape, responds to it, and gets instant feedback. Nothing can compare to that."

Along with the others, Al sees interactive videotape becoming widespread and influential.

"Almost anything you would want to learn, from Chinese cooking to home furniture repair, you could either buy or rent or check out from your library. Or perhaps you would be on a subscription service delivered through a phone modem. Whatever the delivery system, you will be able to have that information and be able to teach yourself very quickly."

The Impassive Apple. Besides low cost, a computer-directed system offers other advantages. Education may become more effective at all levels simply because of the interactive feature. You cannot be passive if you are responding to questions or making choices between alternatives. The computer is infinitely patient, does not get bored and responds to each student the same.

"The computer is a medium integrator," Thorpe says. "It can work with all kinds of material, tape, print, audio and interpersonal. One of the big problems in schools is we don't teach kids how to learn. We teach them to absorb facts and spew them back, but they have no decision-making skills. If a kid learns computer programming, it ties together grammar, semantics, spelling and math, and he has to learn to use them all together."

The interactive, self-paced feature may also bring a substantial change in teacher-student relationships. For large parts of the day students may work on their own, at what they choose to study, using the teacher only for special help with problems. And for human contact.

"I would never advocate just sitting a kid down with a computer and letting him do nothing but that," Thorpe says. "But I like the idea of a small-scale neighborhood center staffed by roving tutors or learning facilitators who are experts in learning."

Frenzel Objects. While the Teclar people speak with understandable pride and visionary enthusiasm, the possible application of their ideas has its doubters. "Even though the microcomputer/videotape disk system is obviously very powerful and an effective educational medium, it will never become widely used," writes Louis E. Frenzel in the April 1981 *Interface Age*. "The realities of education make this system totally impractical and unusable."

Frenzel cites such barriers as high cost, especially to already-struggling school districts, as well as lack of software and development sources.

Van Camp dismisses the criticism as uninformed. "We are already doing it," he says. "With the authoring program we have created, the hard work is over. All that's necessary is for people to piggyback onto what we have already developed."

The authoring program allows a nonprogrammer subject expert, such as a classroom teacher, to make an existing tape interactive or create a new one on his own. It's as simple as creating a multiple-choice test.

Thorpe bristles at the cost objection. "The problem is they can't see the cost benefit of the money. They look at it through the short-term. Over the life of the equipment it's inexpensive, reasonable and cost effective. The problem with education is it's the last public institution to become automated. People are already not paying attention to the schools as a source of learning. Kids are learning from television and teachers are buying computers personally and sticking them in the classrooms. If they don't wise up, the schools won't be able to compete with other learning sources. Parents with voucher systems are going to pay computer companies to put computer terminals in their homes so they can control their own kids' education."

Software Needs System Approach. What about software? Where will we get the programs?

"It's so easy to do," Thorpe says, "that the users can generate their own for their own needs. You have to take a system approach to the implementation. You're not talking about one computer and one videotape machine, but a learning resource center with ten computers and ten videotape machines and one production system addressing a variety of needs that cannot be met individually right now."

While making the case for schools adopting their systems and approach, the Teclar people are realists, too. They know that profit-making businesses are more likely to have the cash and the flexibility to purchase the latest technology. Computer interactive videotape for instruction may be in corporate training departments long before it hits the schools.

Even with its high cost to average consumers, the Teclar approach may quicken the trend to microcomputers in the home. While playing games and balancing the checkbook are not enough to convince many potential buyers, the prospect of high quality adult educational materials on practical subjects of immediate value might move a *lot* of people to buy. ■

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Softalk Presents The Bestsellers

The dog star ascended to the top of the Bestseller List for the month of March as *Space Eggs* vaulted over *VisiCalc* and *Alien Rain* to take over the number one position in its first month of distribution.

The success of *Space Eggs* firmly established Sirius Software's Nasir as the hottest programmer extant. Not only does he have the top-selling program, but his *Phantoms 5* remains in the top ten and *Cyber Strike* is in the top twenty.

Business in general picked up in the month of March after the late winter doldrums. Most of the activity centered around new entertainment programs. March saw an influx of new product for the first time this year.

Making their way into the Top Thirty for the first time were *Zork*, new from Personal Software; *Warp Factor*, new from Strategic Simulations; *Puckman (Snoggle)*, new from Broderbund Software; *Missile Defense*, new from On-Line Systems; *The Prisoner*, from Edu-Ware Services; *Planetoids*, from Adventure International; *Creature Venture*, from Highlands Computer Services; *Hi-Res Cribbage*, from On-Line Systems; *3-Pack* of older games, from Epyx; and *Asteroid Field*, from Cavalier Software.

After three months of trailing *Alien Rain* (formerly *Apple Galaxian*) in the poll, *VisiCalc* overtook that program, only to see *Space Eggs* nab the number one spot. *DB Master* essentially maintained its slot in the list against the onslaught of the game programs.

Showing the most dramatic improvement in the list was the always popular *Sargon II* from Hayden, which went from eighteenth last month to fifth.

Nevertheless, game entries continue to dominate the list. Nasir has, at least temporarily, wrested top programmer honors away from Ken Williams of On-Line Systems with the performances of *Space Eggs, Phantoms 5*, and *Cyber Strike*. Williams, who had four programs in the top fifteen last month, remained represented in the top ten with *Hi-Res Adventure #2: The Wizard and the Princess*.

In addition, two of the newcomers to the list were published by On-Line: *Hi-Res Cribbage* and *Missile Defense*.

In the Business Top Ten, the data base management race

Business 10

This Month	Last Month	
1.	1.	*VisiCalc,* Software Arts/Dan Bricklin and Robert Frankston, Personal Software
2.	3.	*DB Master,* Alpine Software/Stanley Crane and Barney Stone, Stoneware
3.	—	*Apple Writer,* Apple Computer Inc.
4.	2.	*Apple Plot,* Apple Computer Inc.
5.	5.	*Apple PIE,* Tom Crossley, Programma
6.	4.	*Data Factory,* Bill Passauer, Micro Lab
7.	7.	*Information Master,* James A. Cox and Stephen M. Williams, High Technology
8.	8.	*Personal Filing System,* John Page, Software Publishing Company
9.	—	*CCA Data Management System,* Creative Computer Applications/Ben Herman, Personal Software
10.	—	*Supertext II,* Ed Zaron, MUSE

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Home/Hobby 10

This Month	Last Month	
1.	1.	*Typing Tutor,* Image Producers, Microsoft
2.	2.	*DOS 3.3,* Apple Computer Inc.
3.	3.	*DOS Tool Kit,* Apple Computer Inc.
4.	—	*Home Money Minder,* Bob Schoenburg and Steve Pollack, Continental Software
5.	5.	*LISA Assembler,* Randy Hyde, Programma
6.	—	*Data Capture,* David Hughes and George McClelland, Southeastern Software
7.	10.	*Enhanced Paper Tiger Graphics,* David K. Hudson, Computer Station
8.	4.	*Bill Budge's 3-D Graphics Package,* Bill Budge, California Pacific
9.	—	*Tax Preparer,* Dr. James Howard, Howardsoft
10.	—	*Program Line Editor,* Neil Konzen, Synergistic Software

Apple-franchised retail stores representing approximately 6 percent of all sales of Apple and Apple-related products volunteered to participate in the poll.

Respondents were contacted early in April to ascertain their sales leaders for the month of March.

The only criterion for inclusion on the list was number of sales made—such other criteria as quality of product, profitability to the computer retailer, and personal preference of the individual respondents were not considered.

Respondents in April represented every geographical area of the continental United States as well as Hawaii.

Results of the responses were tabulated using a formula that resulted in the index number to the left of the program name in the Top Thirty listing. The index number is an arbitrary measure of relative strength of the programs listed. Index numbers are correlative only for the month in which they are printed; readers cannot assume that an index rating of 50 in one month represents equivalent sales to an index number of 50 in another month.

Probability of statistical error is plus-or-minus 7.2 percent, which translates roughly into the theoretical possibility of a change of five points, plus or minus, in any index number.

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heated up with the reemergence of *CCA Data Management System* as a contender. Fully one-half of the Business Top Ten programs are now data bases. At this point, *DB Master* appears to have pulled away from the rest of the field, however.

The Home/Hobby Top Ten underwent drastic changes as four different programs found their way into the list.

Home Money Minder from Continental Software vaulted into fourth position behind the standard top three of *Typing Tutor, DOS 3.3,* and *DOS Tool Kit.*

What may be a seasonal entry, Howardsoft's *Tax Preparer,* also made the list.

The other two new entries in the Home/Hobby Top Ten were *Data Capture,* a communications program from Southeastern Software, and *Program Line Editor,* one of the oldest programming aids available, from Synergistic Software. ◨

The Top Thirty

This Month	Last Month	Index	
1.	—	98.55	*Space Eggs,* Nasir, Sirius Software
2.	2.	79.36	*VisiCalc,* Software Arts/Dan Bricklin and Robert Frankston, Personal Software
3.	1.	63.31	*Alien Rain,* Tony Suzuki, Broderbund Software
4.	—	60.16	*Zork,* Marc S. Blank, Timothy Anderson, Bruce Daniels, P. D. Leblins, Scott Cutler, and Joel Berez/Infocom, Personal Software
5.	18.	44.12	*Sargon II,* Dan and Kathe Spracklen, Hayden
6.	6.	41.54	*Flight Simulator,* Bruce Artwick, SubLogic
7.	—	40.11	*Warp Factor,* Paul Murray and Bruce D. Clayton, Strategic Simulations
8.	6.	38.39	*Phantoms 5,* Nasir, Sirius Software
9.	—	38.10	*Puckman,* Jun Wada, Broderbund Software
10.	3.	36.67	*Hi-Res Adventure #2: The Wizard and the Princess,* Roberta and Ken Williams, On-Line Systems
11.	12.	34.66	*DB Master,* Alpine Software/Stanley Crane and Barney Stone, Stoneware
12.	9.	33.23	*Typing Tutor,* Image Producers, Microsoft
13.	11.	32.94	*DOS 3.3,* Apple Computer Inc.
14.	15.	30.94	*Adventure 10: Savage Island,* Scott Adams, Adventure International
15.	5.	28.07	*ABM,* Silas Warner, MUSE Software
16.	—	23.20	*Missile Defense,* Dave Clark, On-Line Systems
17.	19.	21.77	*Cyber Strike,* Nasir, Sirius Software
18.	—	20.05	*Apple Writer,* Apple Computer Inc.
19.	15.	19.48	*DOS Tool Kit,* Apple Computer Inc.
20.	17.	17.47	*Hellfire Warrior,* Automated Simulations
21.	4.	16.33	*Apple Plot,* Apple Computer Inc.
22.	—	15.75	*Apple PIE,* Tom Crossley, Programma
23.	—	15.47	*The Prisoner,* David Mullich, Edu-Ware Services
	—	15.47	*Planetoids,* Marc Goodman, Adventure International
25.	—	14.89	*Creature Venture,* Butch Greathouse and Garry Reinhardt, Highlands Computer Services
26.	21.	14.61	*Dogfight,* Bill Basham, Micro Lab
	—	14.61	*Hi-Res Cribbage,* Warren Schwader, On-Line Systems
28.	20.	14.03	*Adventure,* Software Associates, Gordon Letwin, Microsoft
29.	—	12.89	*3-Pack (Datestones of Ryn, Morloc's Tower,* and *Rescue at Rigel),* Epyx, Automated Simulations
30.	—	12.03	*Asteroid Field,* Jim Nipchals, Richard Moore, and Barry Printz, Cavalier Software

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