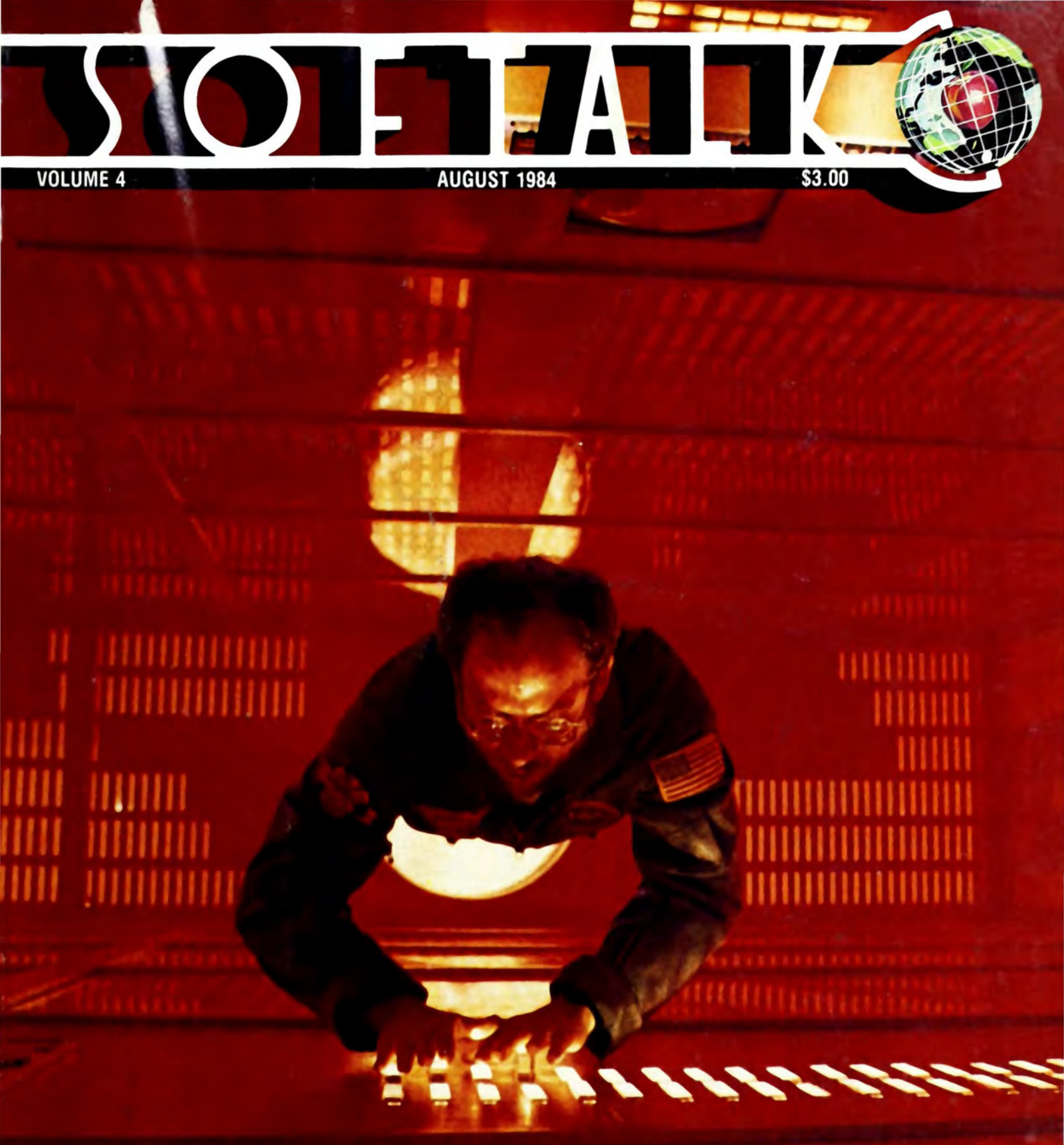
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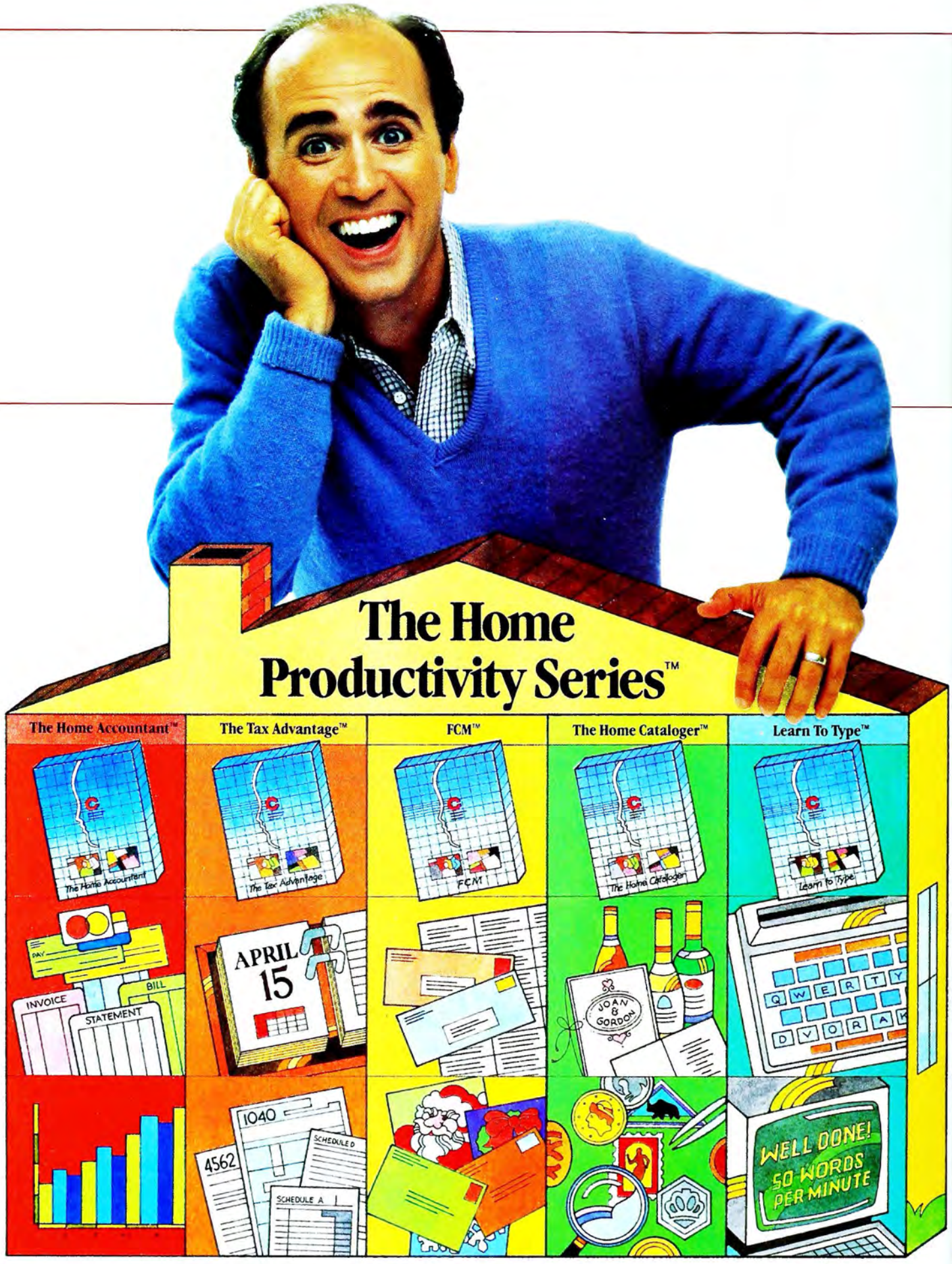
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SOFTALK

AUGUST 1984



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On Our Cover: Bob Balaban risks another chorus of "Daisy" inside the brain of the Hal 9000 computer in MGM/UA's *2010*. A somewhat more personal computer also figures in the film. Photo courtesy MGM/UA.

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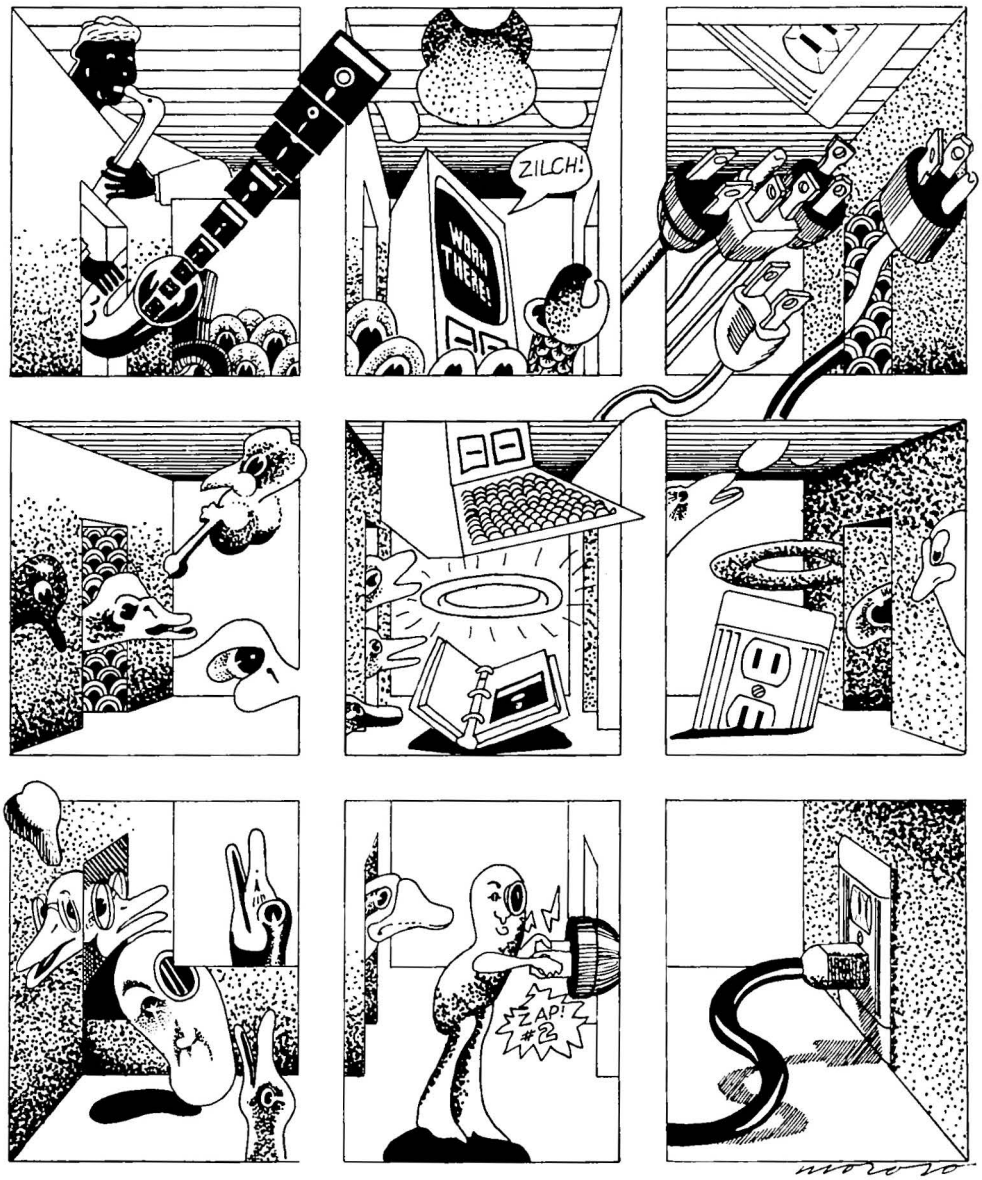
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CONTEST: Computeytoons



Computers and the computer industry are exciting, expansive, explosive (figuratively, usually), competitive, and ingenious. Sometimes computers and the computer industry can be funny.

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Send us your three best attempts at computeytoons, drawn in black ink on three separate pieces of plain white paper. Computer-drawn entries are okay if they're printed in black. You have until September 15, 1984, to submit your work. Specify the dream software (from *Softalk*'s advertisers) that you covet, and send the whole hysterical package to Softalk Computeytoons, Box 7039, North Hollywood, CA 91605. ■

TAC T.M.

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"**T.A.C.** is a carefully researched and designed game of impressive sophistication, yet it's surprisingly easy to play and even a little addicting." —Softalk

"Game of the Month" —Byte: February, 1984

"I've developed this aversion for computer games—until **T.A.C.** I can play this game and like it—lots!" Gameplay Magazine

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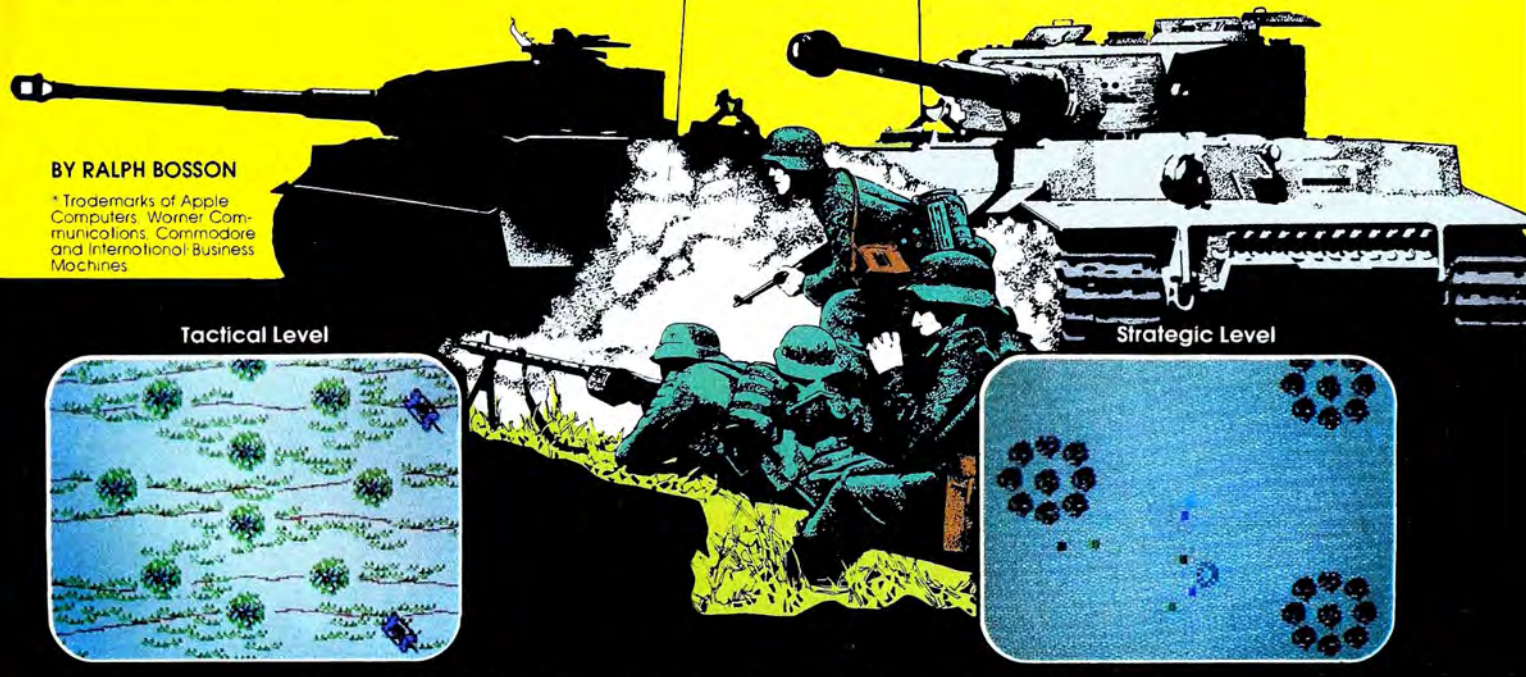
Here are just some of the exciting features:

- **T.A.C.** can be played solitaire against the computer or as a two player (or two team) game with the computer as mediator.
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T.A.C. on diskette retails for $40.00 and can be played on the following computers: Apple® II's 48K (Mockingboard™ Sound Enhanced!) Atari's® with 48K and the Commodore 64®. IBM® PC version coming this fall.

BY RALPH BOSSON

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CONTEST WINNERS

An International Incident: May's Contest Winner

Okay, we made a few mistakes. First of all, we left off the entry deadline for the contest. As one entrant caustically pointed out, this was simple stupidity. The deadline for *Softalk* contests is usually the fifteenth of the month following publication; we somewhat arbitrarily made the deadline the fifteenth of June, and so far no one has submitted an answer after that date, so we're safe. If you submitted an answer, you're in. If you didn't, you're too late.

However, we're only owning up to genuine mistakes. Michael Frediani (Tracy, CA) points out that in our illustration we have sixteen places but only fourteen wine glasses. Since whether or not any of the guests drink was not a clue and had no effect on the outcome, this was simply nitpicking. If you can't do the contest there must be errors—is that it?

As much as we'd like to, we don't know each of you personally, so we don't know whether you're male or female. Which means that we had to make it possible for either a male or a female to be the ambassador. And because two men cannot sit next to each other, the people sitting on either side of the ambassador have to be—you guessed it—female. And one of the premises states that, for security reasons (which, for security reasons, we can't go into here) you have to sit between the professors from Czechoslovakia and Finland; the professors from Czechoslovakia and Finland must be women. All those whose solutions listed either of the professors of Czechoslovakia and Finland as being men were disqualified, and better luck next time.

But wait: We don't know you, but *you* know you. Well, although we didn't stipulate that you had to solve the puzzle keeping in mind that we didn't know what the gender of the ambassador would be, obviously the contest was open to everyone, male or female. The solution is predicated on the fact that the people on either side of the ambassador had to be women. (Incidentally, people with masculine first names who wrote in and listed themselves as female ambassadors, and vice versa, were not immediately disqualified, but we did have to wonder, Michael, John, Sharie and Marilyn.)

All but four of the entrants, in fact, were disqualified for overlooking one rule or another. The four who advanced to the random number agitator were John Jourdan (Stillwater, MN), Sharie Fry (Lindenhurst, IL), Marilyn Brown (Saint Louis, MO), and the winner, Kathy Rolfe of Kansas City, MO, and ambassador to Albania.

The Spouse of Life. A lot of ambassadors wrote in to tell us that we can't count; they're the ones who had trouble with the word *spouse*. Consider this: If you are married, and you and your spouse go to a party together, and you are the only married couple there, how many spouses are in attendance? One? Don't be so egotistical. Two is the correct answer.

Okay, are we all together so far? Honorable mention goes to ambassadors who just missed out by a single rule. Like the rule indicating that the professor of microcomputing was female, which is where E.E. Rehmus (San Francisco, CA) and Steve Robertson (Kent, WA), with otherwise good solutions, missed their chances to proceed to the terrible random number generator by making the microcomputing professor male.

We said that the spouse of the professor from France is jealous and must sit next to the professor. Jerry Dubuke (South Farmingdale, NY) managed to circumvent this problem by leaving the professor from France unmarried. Not the solution we were looking for, but an interesting approach. Likewise, one of the premises was that the spouse of the professor from Brazil and the spouse of the professor from Albania are best friends and prefer to sit across from each other; Danita Perkins (Aurora, CO) submitted an answer that did not carry out this suggestion. While the word *prefer* can be construed as a suggestion rather than as a rule, any solution that did fulfill it would be a better response—promote more harmony at the party—than one that didn't, so it's as good as a rule; thus Danita didn't make it either. Also of Aurora, and also disqualified, was Thomas Turnbull, who simply threw out years of higher education and changed the discipline of the one Spanish-speaking professor, the one from Mexi-

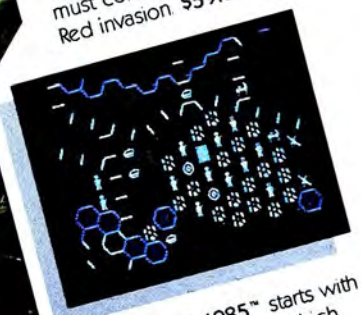


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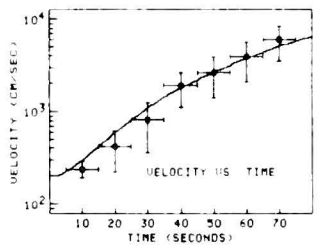
AMPERGRAPH is a powerful, easy-to-use relocatable graphics utility for the Apple II +/e/c. AMPERGRAPH adds twenty-two Applesoft commands that allow effortless generation of professional-looking plots of scientific or financial data. All of the necessary scaling and screen formatting is accomplished with just a few, simple Applesoft lines.

Unlike most other plotting systems for the Apple II which are stand-alone systems, the AMPERGRAPH utility provides extended BASIC graphics language macros that you can use directly in your own Applesoft programs. The additional commands are &SCALE, &LIMIT, &AXES, &GRID, &FRAME, &LOG X, &LOG Y, &LABEL AXES, &LABEL, &VLABEL, &CENTER LABEL, &CENTER VLABEL, &DRAW, &PENUP, &CROSS, &OPEN SQUARE, &CLOSED SQUARE, &OPEN CIRCLE, &CLOSED CIRCLE, &ERROR BARS, &DUMP (to dump the graph on a Silentype printer) and &*DUMP (to link with AMERDUMP, see below).

$45.00

SAMPLE AMPERGRAPH PROGRAM LISTING:

```
10 &SCALE, 0, 80, 80, 13000
15 LX$ = "TIME (SECONDS)":LY$ = "VELOCITY
   (CM/SEC)"
20 &LOG Y: &LABEL AXES, 10, 10
25 LABEL$ = "VELOCITY VS. TIME":&LABEL, 30,
   200
30 FOR T = 0 TO 80:&DRAW, T, 150 + T*2:NEXT T
35 FOR T = 10 TO 70 STEP 10
40 &CLOSED SQUARE, T,
   (150 + T*2)*(.8 + .4*RND(3))
45 &ERROR BARS, 5, T*2/2
50 NEXT T:&DUMP
```



AMPERDUMP

AMPERDUMP is a high-resolution graphics dump utility which can be used either in menu-driven mode, or directly from your Applesoft program, with, or without AMPERGRAPH. The following printers will work with AMPERDUMP: Apple Dot Matrix, Imagewriter; Epson; Gemini; NEC PC-8023A-C; C. Itoh 1550, 8510A/B, 8600; Toshiba 1340, 1350. AMPERDUMP offers many features which are not available in other graphics dump routines:

- Horizontal magnifications: 3 to 12, depending on printer.
- Vertical magnifications: 2 to 9, depending on printer.
- Horizontal and vertical magnifications can be specified independently.
- Normal / Inverse dumps
- Fast
- Adjustable horizontal tab
- Easy to use
- Compatible with AMPERGRAPH
- Relocatable

$40.00

The AMPERGRAPH and AMPERDUMP graphics utilities require an Apple II +/e/c. The AMPERDUMP utility requires one of the following interface cards: Epson, Apple, Grappler, Interactive Structures, Mountain Computer, Epson Type2, Tymac, or Microbuffer II, Tackler, Microtek, Printerlink, Super Serial.

AMPERGRAPH and AMPERDUMP are available from your dealer or order direct. Include $2.00 for shipping and handling; Wisconsin residents add 5% sales tax.

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co, from assembly language to microcomputers.

The only plausible answer that did not wind up in the RNG was that of Karl Middlebrooks (Monahans, TX), whose solution is, "Forget about a formal dinner. Have a swimming party. It won't matter where anyone sits, since they'll all be in the pool." Sounds like a lot more fun Karl's way. However. . . .

Below is a diagram of the contest solution as we designed it (ha ha), and Kathy's solution. Except for a slight seating misarrangement, all of Kathy's answers are acceptable. And, because there was no written clue to contradict her solution, she wins.

There was an unwritten clue to support our solution rather than Kathy's. At the top of the picture of the table are two chairs with flags drawn on the seats—one is the flag of Brazil, the other the flag of Albania. These are not the seats of the professors from these countries, but of their spouses, who are best friends. Kathy put the spouse of the professor from Brazil and the spouse of the professor from Albania across from one another, but not in those seats. However, since it was not written it was not really a rule, just a clue, and we can't hold her to it.

Oh yes, she also included a language other than the one we assigned to them, Portuguese rather than English, but there is no rule disallowing that, either. So Kathy, congratulations. With a very fine job on a tough contest, you have, indeed, served your country, and your guests, well. Bon appétit. ■

Spouse, Brazil (f)	English	Spouse, Albania (f)
Prof. from Brazil (m)	Portuguese	Prof. from Portugal (m)
Pascal		*Artificial Intelligence*
Prof. from Mexico (f)	Albanian	Prof. from Finland (f)
Assembly Language		*Integer Basic*
Spouse, France (m)	English	Ambassador (m or f)
Prof. from France (f)	French	Prof. from Czechoslovakia (f)
Floating Point Basic		*Robotics*
Prof. from Egypt (m)	Albanian	Spouse, Mexico (m)
Cobol		
(spouse, Germany)		
Prof. from Germany (f)	Albanian	Prof. from Nepal (f)
Microcomputer		*Fortran*
(spouse, Egypt)		
Prof. from Albania (m)	Albanian	Spouse, Finland (m)

Softalk's solution

Prof. from Albania (m)	Albanian	Spouse, Finland (m)
Prof. from Germany (f)	Albanian	Prof. from Nepal (f)
(Spouse, Egypt)		
Prof. from Egypt (m)	Albanian	Spouse, Mexico
(Spouse, Germany)		
Spouse, Albania (f)	Portuguese	Spouse, Brazil (f)
Prof. from Brazil (m)	Portuguese	Prof. from Portugal (m)
Prof. from Mexico (f)	Albanian	Prof. from Finland (f)
Spouse, France (m)	English	Ambassador (m or f)
Prof. from France (f)	French	Prof. from Czechoslovakia (f)

Kathy Rolfe's solution (all disciplines same as above)



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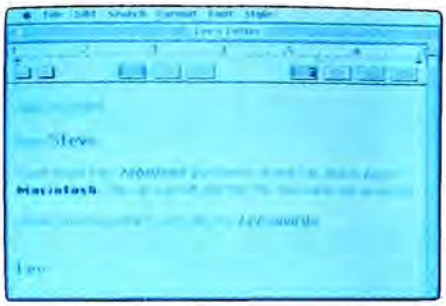


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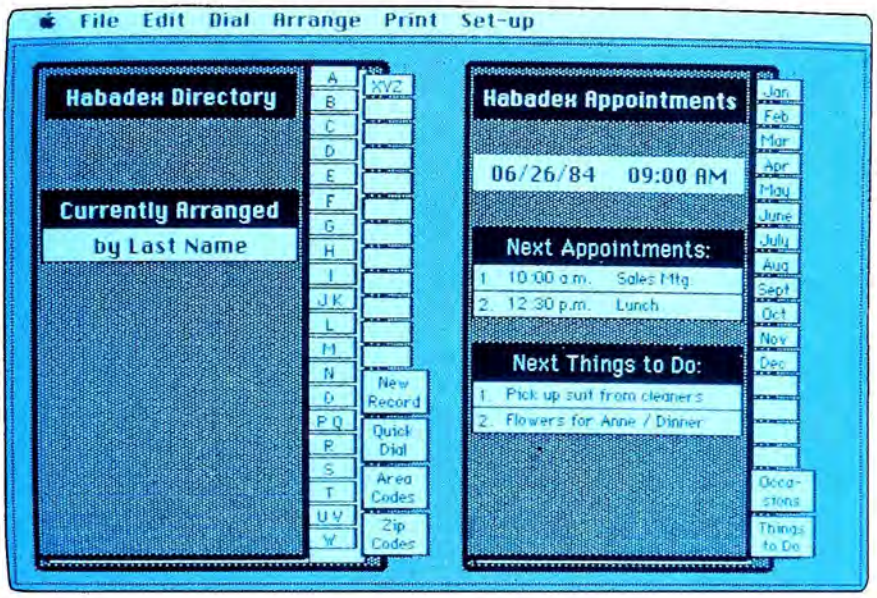
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Open Discussion gives you the chance to air your views and concerns, to seek answers to questions, to offer solutions or helpful suggestions, and to develop a rapport with other readers. It's what you make it, so share your thoughts, typed or printed, and double-spaced (please), in Softalk*'s Open Discussion, Box 7039, North Hollywood, CA 91605. To ensure the inclusion of as many contributions as possible, letters may be condensed and edited.*

Peeling "Apples in Tunisia"

Tremendous care needs to be taken in *Softalk*'s editorial policy, lest the magazine suffer a serious and possibly fatal degeneration—from an informative journal to just another medium that one must sort through to separate the truth from implicit political propaganda.

Andrew Christie's article in the May issue was informative in that it showed how the relatively new technologies of the Apple II and related software can aid decision-making processes in less developed nations (specifically, Tunisia). My problem is with certain hidden, spurious assumptions put forth in the article pertaining to Western culpability for Third World poverty.

Critics of capitalism often point to the tremendous wealth enjoyed by capitalist nations as an explanation, a cause, for Third World poverty: We are rich because they are poor. There are objections to this philosophy. Capitalism, both as a philosophy and as a system (a highly successful one at that), is only about two hundred years old. Poverty and starvation, as human conditions, go back much further. It seems strange to argue that the cause of a problem is much younger than the problem itself. And there is absolutely not a shred of empirical evidence causally linking the two conditions—Western wealth and Third World poverty. To the contrary, there is much evidence that the West provides massive infusions of capital and expertise to Third World nations to no avail. There is much hostility to capitalism in the Third World, and much predilection toward having planned economies. They are paying heavily for that hostility and those predilections in terms of the wealth they fail to generate.

It is with these arguments in mind that I note, unhappily, that Christie, perhaps unwittingly, pays quite a bit of homage to the spurious assumption I have described. He writes: "The African problem of chronic hunger is deeply rooted, going back to the policies of the nineteenth-century colonial governments and their emphasis on industry and urban development at the expense of agriculture and basic food production." My suggestion is that the problem's roots originate further back than a mere century ago. Surely Christie is not arguing that Tunisians had plenty to eat for centuries and then, all of a sudden, the wicked Western imperialists came and mucked everything up for them.

Is Christie saying that, as a rule, developing countries that attempt to develop industry rather than agriculture are in danger of starving themselves? Well, obviously, somebody has to grow the food we eat. However, Japan, Hong Kong, and Singapore have no significant potential for agricultural development. Yet they enjoy quickly developing economies, rapidly rising standards of living, and—the point of this illustration—they generate enough surplus revenue to buy food from countries that have the resources to produce it. Christie should not argue that Tunisia's hunger problem is due to an overemphasis on industrial development, but rather that its industrial development has been unsuccessful.

Poverty is the natural condition of man. We need no theories to explain the existence of it. Wealth such as we enjoy in this country would have seemed incredible only a century ago. Those who are concerned with helping the Third World break out of its poverty should first attempt to understand how it is that our wealth was created in the first place. A real effort needs to be made to put forth a theory of wealth to those Third World leaders who would really like to do something for their people. Words like "progress" and "development" must have tangible, real-world meanings. "Development" is not merely that which takes place during the time between point A and point B. The word becomes meaningless when used as Christie uses it, when he refers to Tunisia as a "developing nation," and yet cites the fact that its food production is actually decreasing. Not intending to insult Tunisia, wouldn't a better description of the country's economy be "undeveloping"?

The tendency to oversimplify problems pertaining to the wealth of nations, or lack thereof, must be struggled with. Western economic success has involved whole ranges of political, moral, sociological, and economic factors. Among these factors is the premise that a free economy will outperform a centrally controlled, directorate economy every time.

Lee D. Dise, La Vista, New Brunswick

Around the World in Twenty Pages

As an avid reader of *Softalk* I looked forward to reading the May issue, only to see twenty editorial pages wasted on "Apples All Over the World." Frankly, who cares? I am a new Apple user and try to understand all the articles written. But articles on how Apples or any other computers are used in other countries will not help me use my Apple. Those twenty-six pages could have been devoted to more features for beginners like myself. I wonder how many readers did as I did and skipped over most of those pages? In the future please stay to the subject of computing and forget the travel section.

John De Benedictis, Croton-on-Hudson, NY

McWilliams Does the Books

In his article "McWilliams: He Costs Too Much" (April *Softalk*), Matt Yuen is guilty, I fear, of precisely what he accuses me of doing: ignoring facts in favor of feeling. Yuen's feeling about me is one of pure hatred (God knows why), and he doesn't let a single fact get in the way of expressing his utter contempt for me. It was a written extension of the artwork that accompanied the piece: my face with a moustache painted on.

To refute any of it would be as silly as getting out my bottle of CorrecType and painting over the painted-on moustache. If Yuen wishes to paint me as a villain with a moustache, so be it. I certainly don't want to answer him tit for tat. Considering the amount of tat he flung at me, I'm just not properly equipped to respond.

I would like to say, however, that I am not anti-Apple computer, or anti-Apple user—merely pro-consumer. In my desire that computer buyers get the most for their money, I have taken swipes at just about every manufacturer, and have upset the users of just about every computer. (If you think certain Apple users are not pleased with me, you should hear what Adam Osborne has to say. Talk about tat!)

I have always thought of myself as being on the side of Apple users and, especially, potential Apple users. Apples do so much. For a long time they had a near-monopoly on applications for education and for the disabled. I was frustrated when people had to spend several thousand dollars for a collection of hardware that was being sold elsewhere for roughly half as much. (Compare, say, the cost of a Kaypro II to a comparably equipped Apple II about a year ago.)

At $1,395 for just the basic unit—no drives, monitor, software, or anything else—the Apple IIe was overpriced. Now that it is more reasonably priced, the reviews in the revised editions of my books will reflect this. The free update we send out to readers of the books has this to say about the current price reduction (it also has appeared in my syndicated column):

Apple dropped the list price on the IIe. A two-drive system with a monitor, an 80-column card, upper and lowercase characters lists for $1,744 and generally sells for less. At last: a reasonable price. For a basic computer that has been around forever and has terrific support, the Apple IIe may be the one to consider, especially for home and educational use.

For years I fought for a less expensive Apple II, long before the IIe. Ironically, the rumor has gotten around that I'm down on Apple computers

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and down on Apple users. I'm not. I am down on Apple Computer for charging so much for so long. If they had lowered the price of the II a couple of years ago, do you think the Commodore 64 would have made the inroads it has made in the home and educational markets? And, with an Apple II landslide going on, perhaps IBM would not have gotten the foothold they now hold in the industry.

Although I'm sure I had nothing whatsoever to do with the new lower price, I think it's a healthy move for Apple, the computer industry, and—most important—Apple users everywhere. Even Matt Yuen.

Now if they would just shave a few hundred off the Macintosh. . . .

Peter A. McWilliams (expensive, but worth it), Los Angeles, CA

No Golf on Wednesdays

Michael Ferris's article, "Born to Compute: Apples Monitor Prenatal Babes" (April 1984) suggests that diagnosis is an art that computer science will not replace. While computers clearly have not replaced doctors as yet, computers are making significant inroads as consultants in certain aspects of diagnostic medicine, as well as many other areas previously left to human expertise.

Knowledge engineering is the process of extracting the required information from a human expert and then transforming it into a form usable by a computer system. The basic goal of these endeavors has been to develop computer systems having a degree of expertise that could, in certain specialized problem areas, rival that of human experts. A typical expert system would consist of many of the following subsystems: a component for making inferences, a component that contains the expert's facts, opinions, and heuristics, a component to manage the information, a component for acquiring new information, another for providing an explanation of the system's reasoning, and another that acts as the intelligent consultant by interacting with the user. In order to carry out certain of these functions, expert systems tend to use languages that are more adept at handling the expression of relationships rather than numerical quantities, such as Lisp and a newer language called Prolog.

These expert systems are not merely information retrieval devices—they actually make inferences and draw conclusions—nor are they just experimental tools or obscure scientific instruments. Expert systems are being used in many applied situations where their conclusions influence human decision making. Well-established expert systems have an accuracy rate that rivals and, in certain cases, surpasses that of human experts. They have even been able to solve some problems that have apparently stymied human experts. In medicine, for instance, a number of programs have been constructed to act as consultants in the diagnosis and treatment of a variety of medical problems. Expert systems are also operating in areas involving structural analysis, genetic cloning, symbolic analysis in mathematics, construction of computer configurations, identification of molecular structures, laboratory synthesis of substances, and evaluation of geological information for ore deposits—and the list goes on. With the knowledge gained from working on expert systems in specific areas, researchers have been able to construct general-purpose programs that make the development of new expert systems easier and faster. Thus, we will probably see more and more of these systems in the near future.

Although expert systems can be quite impressive, they clearly have their limitations. In a sense these systems have sacrificed breadth of knowledge for depth of knowledge and thus, while they are expert in one narrow area, they lack the broad range of knowledge needed to show the type of general intelligence displayed by humans in their everyday lives. In spite of this important limitation, though, the successes achieved by expert systems should lead us to be very cautious about suggesting that computers cannot and will not ever be able to perform certain types of tasks. We have too many instances already in which such impressions have been wrong.

James J. Forest and Sherrie Lipson, Winnipeg, Manitoba

Progressive Headache

I own an Apple II Plus and I am becoming concerned about the continued viability of my system. I do not particularly need the speed and enhancements that some of the newer computers offer. Nevertheless, I wonder if I am going to be forced to make new hardware purchases in the near future.

When the Apple IIe was introduced, most software houses began offering their products for both the II Plus and the IIe. Recently, however, it appears that more and more new software is being offered for the IIe only. Noticeable among these are the new PFS products, *VisiCalc Advanced Version*, and others. Are these situations simply isolated instances of companies taking advantage of the particular capabilities of the IIe, or do they represent an abandonment of the II Plus?

A related problem is that of competing operating systems. Will the movement toward MS-DOS and sixteen- or thirty-two-bit computers cause software authors to abandon DOS 3.3? Apple Computer itself has not helped matters with its use of different operating systems on every product, making them generally incompatible with one another. Will purchasing ProDOS enhance our chances of being able to run future software? Are there products available that will permit us II Plus owners to run IIe and IBM software? Assuming that I am willing and able to purchase new hardware and essentially abandon my investment in my II Plus, the software problem remains. Will there be ways for us to use software designed for other machines without sacrificing our investments in perfectly good, albeit older, computers?

Robert A. Nuernberg, Mequon, WI

Board Bumping Borders on Lunacy

My problems started when I decided to upgrade my Apple II Plus system to a IIe system. My II Plus was already bursting at the seams with nine peripheral cards installed (a Legend Industries slot 8 board held two cards). A special interest to me in purchasing the IIe was the availability of the Microsoft Premium Softcard IIe package. This three-in-one board (64K RAM, eighty-column capability, and CP/M) would eliminate my Videx board and Z-80 card, in effect freeing up one slot in the IIe (maybe for an AppleMouse II card?). (You're probably wondering at this point why I need nine cards in the first place. Well, my alphaSyntauri synthesizer system utilizes three boards, and these coupled with the add-ons happen to equal nine.)

I purchased the IIe and the Microsoft Premium card and this started a crazy chain of events. Only a few days prior to buying my IIe, I bought a Rana Systems Elite 3 drive (160-track, 652K double-sided storage) and was using it on the II Plus under CP/M 2.3. Rana provides a patching utility for



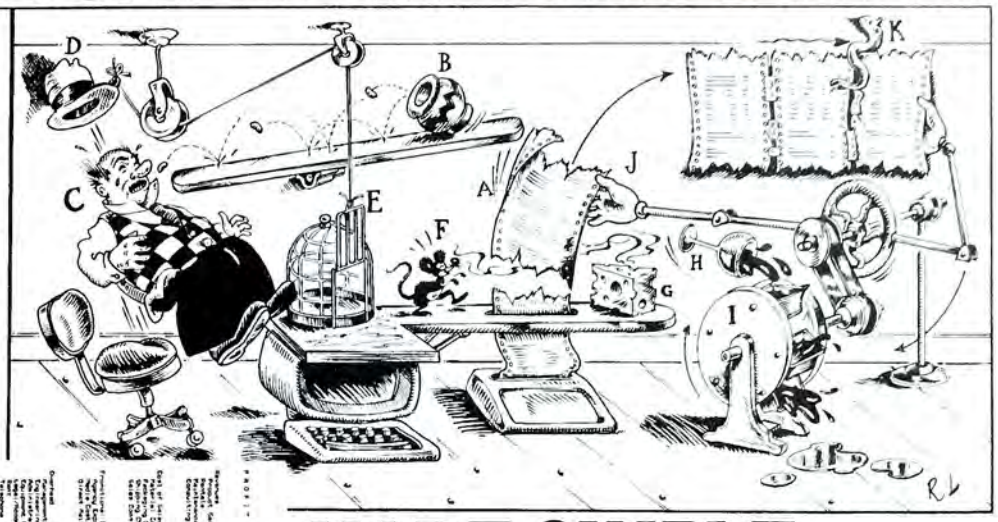
SIMPLIFIED SPREADSHEET ASSEMBLY

RISING SPREADSHEET (A) KNOCKS MEXICAN JUMPING BEANS (B) INTO MOUTH OF NEUROTIC MAN (C) WHO IS SO DISCOMBOBULATED THAT HIS HAIR STANDS ON END, DISLODGING HAT (D) WHICH OPENS CAGE (E) AND RELEASES EPICUREAN MOUSE (F).

MOUSE, INSPIRED BY SCENT OF PERFECTLY AGED CAMEMBERT CHEESE, GNAWS THROUGH SPREADSHEET, ONLY TO DISCOVER HE HAS BEEN FOOLED BY AROMA OF OVER-RIPE GORGONZOLA (G).

IN A FIT OF PIQUE HE SPILLS VINTAGE WINE (H) INTO WATER-WHEEL (I) WHICH TURNS PULLEY THAT CAUSES GLOVE (J) TO GRASP SPREADSHEET AND MOVE IT TO TAPING AREA.

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CP/M 2.2 and 2.3 only. You can imagine my horror when I booted the Microsoft systems disk from the Premium Softcard package and saw the sign-on message: CP/M 2.26! A call to Rana Systems confirmed my worst fears: Rana did not support CP/M 2.26 and had no plans to support it in the future. A frantic call to Microsoft was fruitless; they were sympathetic but unable to change Rana's lack of drivers. So, out came the Premium card and back in went the Videx and Z-80 cards, for who wants to give up 652K of storage for whatever enhancements CP/M 2.26 offers?

There's more. The extra free slot was now indeed filled by the AppleMouse II board. Everything was working fine until I later tried to boot a CP/M disk and the system just hung. By pulling out all of my cards and reinserting them one by one, I identified the problem as the AppleMouse board. The interrupts it generates cause the CP/M system to hang. And so out came the mouse board. Granted, I had no intention of using the mouse under CP/M. Still, who wants to insert and reinsert cards for each particular computer use?

And still more. With the purchase of the Rana Elite 3 drive, I also bought the Rana controller card, which features four-drive capability—another nice slot saver. Having reached the point where I was nearly convinced that I was the butt of some cosmic Polish joke, I booted the Syntauri system with some trepidation, and I was duly rewarded: the oscillators sounded like canned laughter. Again, I started pulling cards out of the computer—at this juncture I had already hired an assistant to aid in the uplifting task of board yanking—and soon found the reason for this latest problem. Apparently, the Rana disk controller interfered with the two Mountain Computer music boards. Replacing the Rana controller with the standard Disk II controller card solved the problem.

I'm left with a Rana drive that is incompatible with the Microsoft Premium card, a Rana controller card that is incompatible with Mountain Computer hardware, and an AppleMouse card that hangs up CP/M. The amazing versatility with which peripheral manufacturers have endowed the Apple is nothing short of incredible. But in some instances the frustration of discovering such incompatibilities is nothing short of overwhelming. I mean, I'm not trying to install a toaster in slot 2! I just want to put the top on my Apple and keep it on.
Robert Hakalski, Philadelphia, PA

All Anteed Up

I'd like to pass on a word of caution to anyone contemplating the purchase of the new Era 2 modem by Microcom. It is, along with its included program, a versatile piece of equipment. Unfortunately, what is not made clear, either in the advertisements or on the outside of its box, is the fact that many of its enhancements are not accessible on the Apple II Plus.

The product is advertised to run in the emulation modes of the DEC VT100, DEC VT52, and IBM 3101. It is not until one is well into the manual that the following notation is printed in a box: "Note: The terminal emulation modes require an Apple IIe, Apple 80-column card, and an 80-column display. The emulation features cannot be selected if Era 2 is configured for a 40-column display."

If any of you folks are thinking that you do have an eighty-column card, such as the Videx Videoterm, forget it. The modem doesn't support any but the Apple card on the IIe. With a II Plus and Videx you are locked into capital letters and forty columns.

Upon calling Microcom I was informed that in designing the modem it was decided only to support the equipment mentioned, but that possibly at some future date changes would be made to the software to support other configurations. I certainly hope so because in all other respects this is a powerful hardware and software combination. I am most pleased with its operation in all other respects, but I do wish that its limitations had been made clear before I had to ante up to see the hole card.
William Robbins, Los Angeles, CA

"If I Had a Hammer. . . . "

An announcement for the *Graphics Tool Kit* by Demco Electronics appeared in the May Marketalk News. The notice may have left readers with some questions. The product is more than just another graphics board and program.

The *Graphics Tool Kit* is unique because of its screen resolution of 640 dots by 768 dots, corresponding to most dot-matrix printers printing on 8 1/2-inch by 11-inch paper. The program is completely menu-driven, so I do not have to spend time programming and can spend my time on design. Of course, if one wishes to use other programs, the *Graphics Tool Kit* is fully compatible with Applesoft hi-res commands. My daughter is using the kit to make original needlepoint designs and to create advertising fliers. My grandchildren use it for school report title pages and for letters to their friends.
Preston C. Neff, Long Beach, CA

Unsensible

I was introduced to *Dollars and Sense* through an acquaintance. Though this acquaintance stated that the program was good, he indicated that it had taken him three months to conquer the documentation. I went out and got the program and was eager to learn how to put it to good use. That was at least six weeks ago. I have tried a dozen times to sit down and learn to use the program. I have progressed magnificently—I have reached page A-21. Not bad for a college graduate. After trying once again to sit down quietly and not become frustrated I was prompted to write this letter. I have to say that the *Dollars and Sense* manual is absolutely the worst piece of documentation I have ever seen. I've removed it from my software library and secluded it in a metal file drawer, for fear that it might contaminate the others.
Robert Raimist, Los Angeles, CA

Schoonmaker's Pirouettes

In the June Open Discussion I outlined the problems I've been having executing printer commands on my Gemini 10 from *Apple Writer IIe*. Two days after I received that issue of *Softalk*, I got a call from Jim Pirisino of MinuteWare. Pirisino had read my letter and claimed to have the solution to my problems. In fact, he was so sure that his Glossary Disk for *Apple Writer II* and *IIe* would effect a cure that he offered to send me the package free of charge. If it worked, I was to send him the retail price of $14.95.

I mailed the check this afternoon. *Glossary Disk* works! In the manual that accompanies the disk, Pirisino offers a simple set of steps to modify *Apple Writer* so that it can generate the null code. In five minutes I was able to call up superscript—something I've been unable to do for the last twelve months.

I also got a copy of MinuteWare's *Minute Man-*

A professional nutritional evaluation system for $290.00

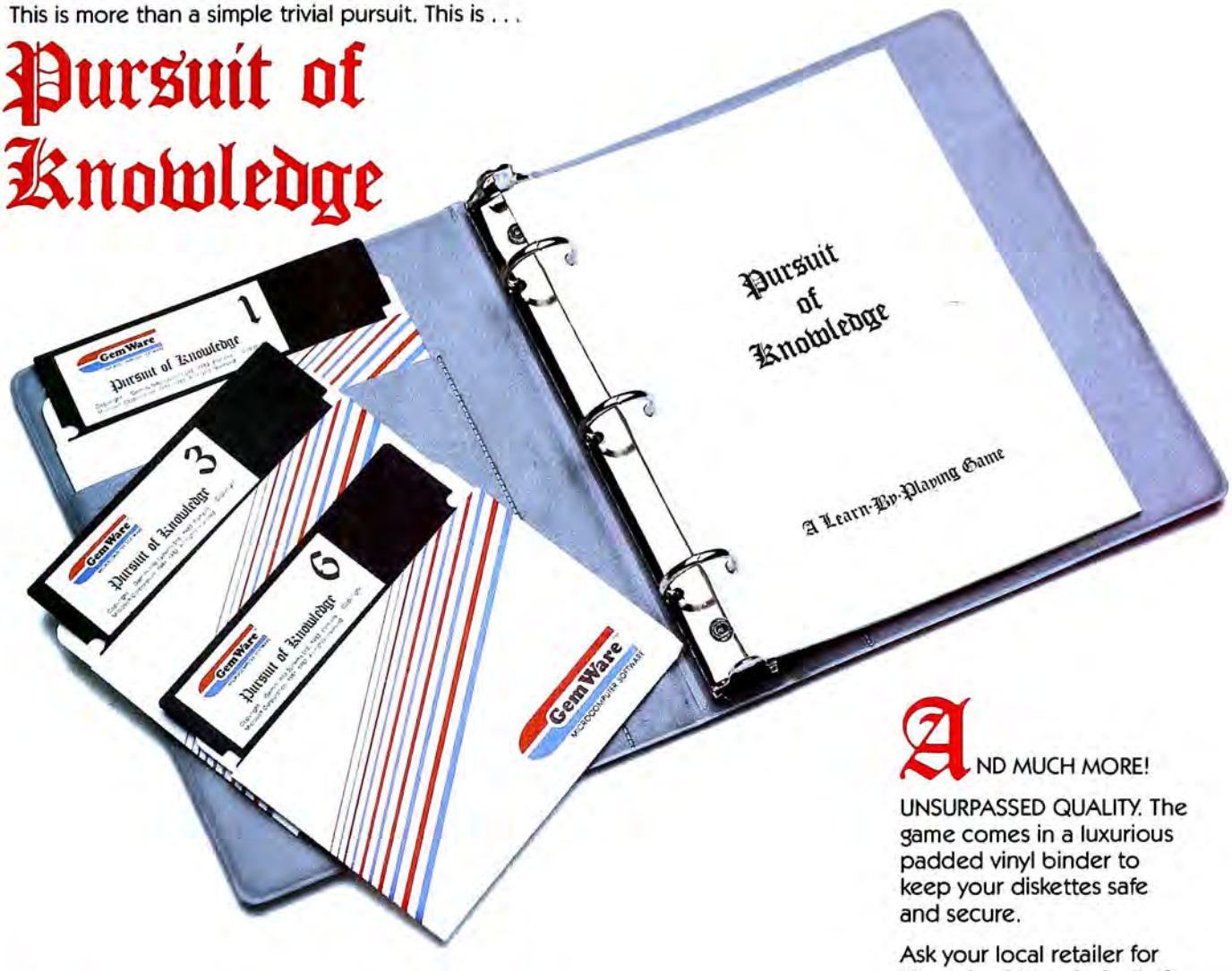
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It can be played by one player, or up to 6 players, or teams.

Numerous playing options are available as parameters vary from game to game. Some of these parameters are:

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Pursuit of Knowledge has numerous special features built into the program! The game will be enjoyable for many years. A few of these features are:

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Enjoy the **Pursuit of Knowledge!** It really is fun!

ual for Apple Writer IIe. If I'd had a copy of this book in the first place, I'm convinced that my learning period with *Apple Writer* would have been reduced from a week to about a day. *Minute Manual* is better organized and much easier to follow than the manual Apple provides with *Apple Writer* (which wasn't all that bad), and it contains procedures that either aren't in the official manual or are too deeply buried for me to unearth.

Anyone who's having printer command problems with *Apple Writer* and Gemini, Epson FX or MX, Okidata 92, Apple Dot Matrix, ProWriter, or NEC 8023A printers ought to look into MinuteWare. Jim Pirisino has earned the business.
David Schoonmaker, Arden, NC

David Schoonmaker's angry letter of warning (June Open Discussion) sounds familiar to those of us who chose to mix-and-match non-Apple printers and interface cards. I also bought a Gemini printer and was assured by the vendor that the Microtek interface would perform as well if not better than the Apple Parallel Card. My motives for going non-Apple were mostly financial: Why pay $300 more for a printer that provides fewer print styles and less graphics flexibility (this according to the vendor)?

I am happy with my Gemini printer, however, despite the apparent impossibility of printing subscripts and superscripts and the necessity of turning off the printer every time I want to escape the enlarged print mode. You must endure these things when you try to save a few bucks. To their credit, the Star Micronics people have been very friendly and informative when I have had occasion to call them with some of my ridiculous questions. I believe their 10X is a fine machine for the money.

If we can share the blame for our troubles with anyone, it is with the vendors, many of whom seem more interested in demonstrating their expertise on the store machines than in selling you the right hardware and who are surprisingly ignorant of the practical problems that arise. For example, I received four different, certain answers from local vendors to this question: How can I keep my second disk drive running more than eight seconds so that I can use a cleaning disk? None of the answers worked, and none of the vendors believed me when I told them their solutions didn't solve the problem. I finally called Apple Technical Support and was told that my own solution—turn off the computer, switch the cables on the drive card, cold start the second drive as if it were the first—was the only way it could be done. Is it too much to ask that vendors know about the products they sell?

Finally, a note to those with non-Apple printer interface cards: If you print anything with *AppleWorks*, you'll get some odd margin code (even if you use an Apple DMP). Be sure your vendor gives or lends you an *AppleWorks Non-Apple Interface Configuration* disk (free) to modify your program disk. Live and learn, eh?
Jim Joska, Sacramento, CA

Dynamic Duo

This is in reply to Jack Woychowski's letter in the May issue of *Softalk*. The people in my department have been using *Sensible Speller* with *Super-Text* for the last year without any problems. The newest version of *Sensible Speller* works very nicely with the files created by *Super-Text*, allowing you to go right to the word marked as misspelled and edit it as necessary.

For those who don't know, you can go from *Super-Text* thirteen-sector to DOS 3.3 by using *Muffin* (or a similar program) on an unlocked initialized data disk. Note that you can create text files instead of binary files with *Super-Text* by typing an asterisk before saving the file.

I have a question of my own for *Super-Text* users. Does anyone know how to put a DOS 3.3 text or binary file onto a *Super-Text* thirteen-sector disk? This would enable one to use *Super-Text* to edit a file created by some other program.
Jason Chao, Cleveland, OH

CADtalk

Kenneth Wood was searching the three dimensions in the June Open Discussion for a good computer-aided design (CAD) program. At the University of Redlands we have been using the *Cadapple* system by T & W Systems, available from Thomas Payton & Associates (Flintridge, CA). The system we have been using is two-dimensional, but a three-dimensional version is available. To date we have been very satisfied with this system as a means of instructing freshman engineers in computer-aided design. A good source of information on CAD systems is the journal *Computers in Mechanical Engineering*, published by the American Society of Mechanical Engineers.
Lawrence R. Harvill, Redlands, CA

Jersey Aid

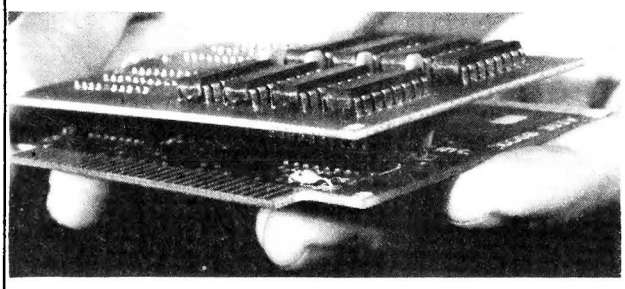
The New Jersey Library for the Blind and Handicapped has recently received funding from two corporations to develop a "Talking Apple" project that will first explore and then demonstrate in schools and libraries throughout the state the usefulness of computers with blind children. In this project we will be working with an Apple IIe and an Echo II voice synthesizer. Right now we are looking for help in identifying software—commercial or public domain, educational or recreational—that is compatible with the above hardware and could be used by a totally blind child or teen. We will be expanding the scope of the project to include software usable by both adults and people with limited sight, but for now we have elected to bite the bullet and to begin with the most difficult group to help, totally blind children and young adults. Any help readers can provide in identifying usable software will be appreciated.
Marya Hunsicker, Director, New Jersey Library for the Blind and Handicapped, Trenton, NJ

This letter was prompted by the letter by David A. Mathewes in the March Open Discussion. I hope this information is helpful to him and others going through the same frustrations of finding information for handicapped computer users.

I have been helping a friend, who is severely handicapped due to cerebral palsy, to set up a computer system for about three years now. After much frustration and letter-writing, I have compiled a small list of sources for those who are also trying to help the handicapped. I have found only one company that distributes a number of aids for the handicapped. TASH (Technical Aids and Systems for the Handicapped), located in Markham, Ontario, has a nice thirty-seven-page catalog with many physical and computer peripheral aids. They also have many switches and switch stands that are designed for use by the handicapped.

Trace Research and Development Center for the Severely Communicatively Handicapped (Trace Research Center, University of Wisconsin at Madison) has been very helpful with information. They have an excellent reprint service on many papers and articles on handicapped aids.

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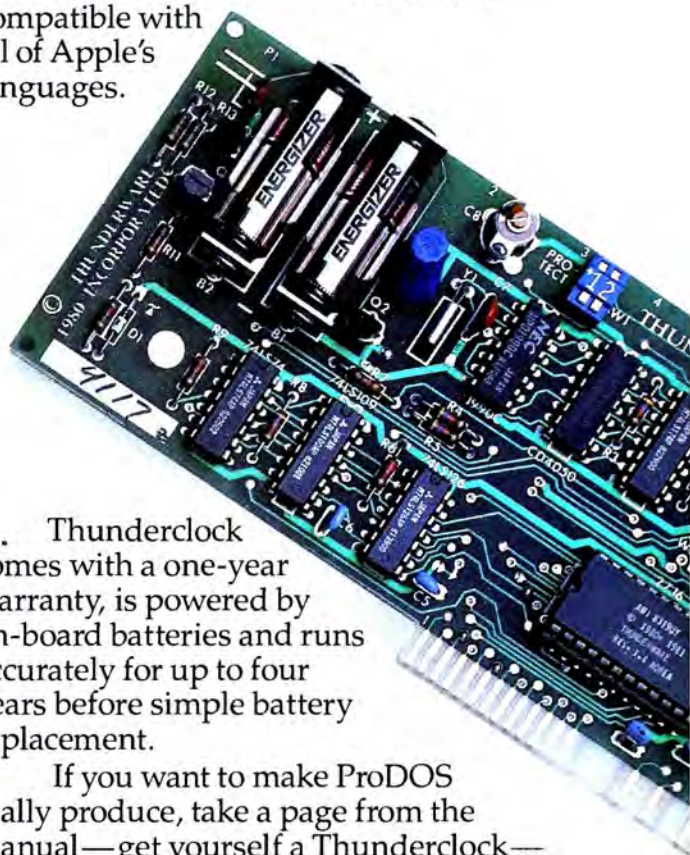
Apple could have chosen any clock for ProDOS to recognize, but they chose only one.

Thunderclock.

It's the only clock mentioned in the ProDOS manuals.

That's a nice stroke for us, but it's even better for you. Because, in addition to organizing your disk files, Thunderclock will add a new dimension to all the new ProDOS-based software. For instance, with business or communications software you can access a data base or send electronic mail automatically, when the rates are lowest. Even when you're not around. And that's just a start. The better you can use your Apple, the better you can use a Thunderclock.

Thunderclock gives you access to the year, month, date, day-of-week, hour, minute and second. It lets you time intervals down to milliseconds and is compatible with all of Apple's languages.



Thunderclock comes with a one-year warranty, is powered by on-board batteries and runs accurately for up to four years before simple battery replacement.

If you want to make ProDOS really produce, take a page from the manual—get yourself a Thunderclock—the official ProDOS clock.

See your dealer or contact us.

Apple II ProDOS User's Manual

Re-enter BASIC by pressing
(CONTROL)-(C)
and then pressing (RETURN).

Using a Clock/Calendar Card

Each time you update a file, ProDOS performs a JSR (jump subroutine) to memory location 48902 ($BF06). This is the entry into the DATETIME routine. If there is no DATETIME routine installed, there is an RTS in this location.

ProDOS sees a Thunderclock in one of the slots, it sets ...ces a jump into the routine for you. If you want ...k/calendar card with ProDOS, you have ...e it in memory each time you ...and place

MODIFIED and CREATED (File Dates)

These columns contain the dates and times at which you created and last modified your files. The first half of the MODIFIED column is displayed by the CAT command; both columns are displayed by the CATALOG command. These dates and times are correct only if

- you have a Thunderclock™ or
- you have used the TIME program, described in Appendix D, or
- you have some other type of clock/calendar card, and have set it up as explained in Chapter 9.

If there is a Thunderclock interface card in one of the Apple II's slots, ProDOS recognizes the card and sets itself up to read the ...te and time from the card.

FILE (Maximum File Size)

...LE lists the number of bytes that each file will use if all the ...e allotted to that file is filled (sometimes it is not).

File Properties)

...te important properties of some types of ...ter precedes each number in this column. The ...hown in Table 3-2.

...ting

...Address. This is the memory address from ...binary file (BIN) was saved. The address is ...exadecimal.

...gth: This is the size (in bytes) of each ...text file (TXT) or user defined file ...gth is in decimal.

...ly placed in the same part of ...or a binary file the property in ...A (for Load Address) followed ...binary file was last placed. ...apter 4, "BASIC Programs

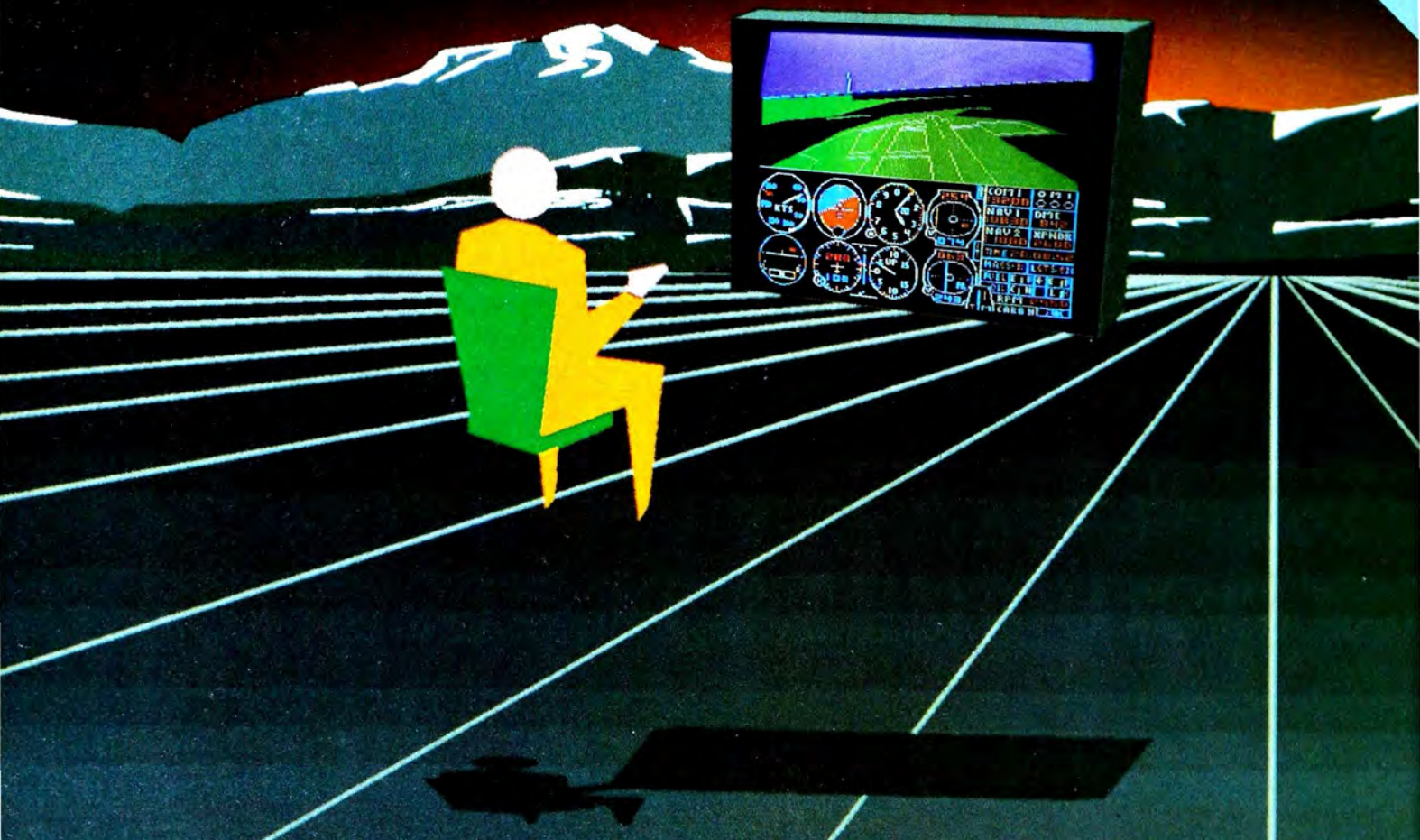
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Many of these are geared toward the Apple II. Please contact Christine Thompson, special projects coordinator and assistant to the director.

Paul Schwejda and Judy McDonald of Adaptive Peripherals (Seattle, WA) have also been generous with their help. They manufacture a board for the Apple II called the Adaptive Firmware Card. The Adaptive Firmware Card allows the use of virtually all off-the-shelf software and provides for controlling the Apple with a single switch closure. There are many operating modes available with this card, including a separate keyboard input that allows a pressure-sensitive or any special keyboard to be used. It is a well-designed card, and I have designed my friend's system around it. The documentation is superb. It is written for the user and not for a technician.

The International Council for Computers in Education at the University of Oregon (Eugene, OR) publishes *Computer Technology for the Handicapped in Special Education and Rehabilitation: A Resource Guide*. It has 191 abstracts of articles and papers covering more than seventy subject headings and forty-nine publications (including *Softalk*).

I hope that this information is as helpful to others as it has been for me.
D. Stearns, San Luis Obispo, CA

Mac the Greek?
I want to be able to insert Greek words into English text. Do any readers know how can I do this? Does anyone have a product that will allow this on a IIe? Can modifications produce this? Someone has reported that I could develop my own Greek alphabet with the Macintosh. Is this true?
Noel McRae, Kelso, WA

Two Drives for Brother Nelson
This is in answer to Wayne Nelson's question in the June Open Discussion. First, your controller card should be in slot 6. To load a program with the first drive you just have to type *load (name of the program)*. If you want to load a different program from the second drive you would type *load (name), D2*. The D2 specifies drive 2. If you want to change the disk drive back to drive 1 just type *load (name), D1*. I hope this solves your problem.
Michael Lee, Whitestone, NY

To Wayne Nelson (June Open Discussion): You can't boot from any but drive 1. Further, the Monitor ROM checks slots starting from 7 and moving to 0, looking for a disk interface card. The first one that it finds becomes the boot device. Therefore, one will tend to boot from slot 6, drive 1. This is very hard, if not impossible, to defeat.

To J. Schenkman (also in June): *Huffin* and *Puffin* may be found in the *Call -A.P.P.L.E.* publication *All About Pascal*, available from *Call -A.P.P.L.E.* These programs only transfer text files between DOS 3.2 and Apple Pascal format. They do not convert software from Applesoft to Pascal or vice versa. Although such a conversion is hypothetically possible, one is better off fully rewriting the program.
Steven F. Lott, Syracuse, NY

On the Defensive
I have been a salesperson in a retail electronics store for more than four years, during which time the personal computer industry has changed from an esoteric, expensive, hobbyist type of market to one in which it seems everyone is interested. The store in which I work does not deal strictly with computers, but also handles stereos, telephones, video recorders, and related items. However, in the past two years the bulk of our sales have come from Apple computers. As a result, I consider myself to be a computer salesman working in a computer store.

There are stores that are genuinely interested in making sure that a customer (or potential customer) gets the information he needs to make an intelligent choice of hardware or software. I freely admit that we do not stock hundreds of software titles, or dozens of peripheral devices that fit every possible need. A basic premise of business is that you must trim your inventory in order to keep an acceptable cash flow. Most retail stores simply cannot afford to cater to the hobbyist market for this reason alone. The market has moved from the hobbyist to the user. It sounds pretty gloomy for the hacker, but we do have sources for information on things we don't stock, and most suppliers are willing to send literature and pricing information to us.

And it's not surprising that buyers are more knowledgeable than most salespeople—they probably have more time to learn about Apple hardware and software than a typical salesperson. We tend to work forty to fifty hours a week, typically spread out over six days. When you work with something as a means of making a living you tend to lose enthusiasm for it in your off hours. As an example, I've been trying to find the time to learn Pascal on my Apple for the last six months. I've managed to learn how to load it, write a simple program, and format a disk. But the little spare time I have is so fragmented that learning new things about my computer is tough. It is simply impossible to keep up with every development in hardware and software. There isn't enough time in the day!

I would like to make one more point. One of the phrases least likely to endear a customer to a retail salesperson is, "I can get that for a third less at ABC Mailorder Discount." It is simply poor manners to pump a seller for whatever he or she knows about a product and then order it through the mail. We tend to be pretty cool toward a "customer" like that, since it's about the same thing as picking our pockets. Mail order houses can offer better prices because they don't have the overhead of a showroom, salespeople, repair services, or any of the things one would expect to find in a store. When dealing with a discount mail order firm, if you have problems, you can usually count on a long wait for your problem to be solved. On the other hand, with a retail store you should expect help with questions as well as general support long after you buy the product. I agree that this isn't the case with a lot of stores. But there are good ones out there, and a good one is worth patronizing.
Phil Jurgenson, Mankato, MN

A Spruce by Any Other Name
As I was giving my May issue of *Softalk* a quick overview the other day, my attention was grabbed by the caption on the photo at the top of page 125. Being a long-time resident of Michigan's beautiful upper peninsula, not very far from Canada where the photo was taken, I thought how very strange it was that the Canadian birch trees looked so much different from their neighbors here in my woods! Perhaps the editors are more used to looking at apple orchards than birch groves. In any case, if those trees were outside my window, I'd swear that they were spruce, not birch. A minor error in a fine magazine.
Stuart W. Bradford, Skandia, MI

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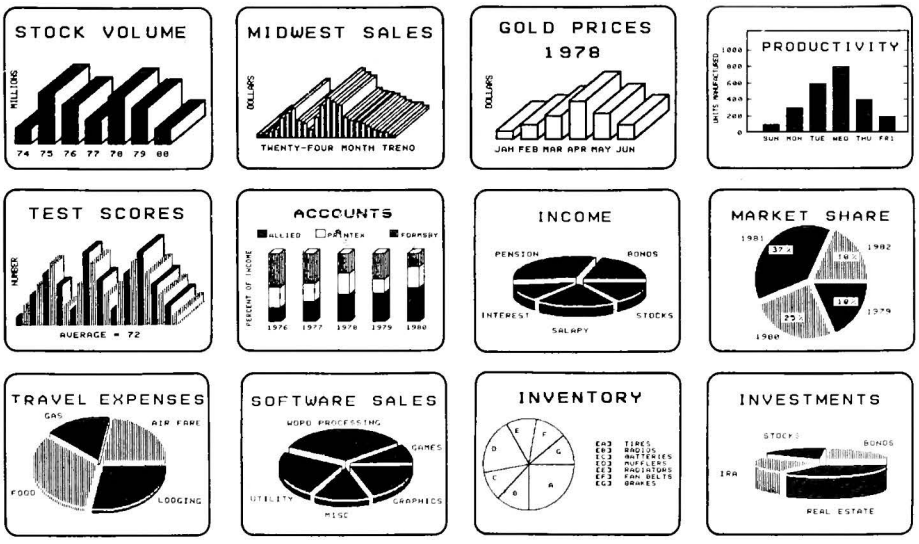
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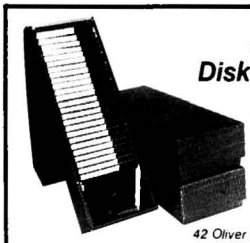
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Software

Now for Something Completely Unoriginal: A Plea for Originality in Software

Licensing is the rage among software publishers today—but who cares about Mickey Mouse if the program is, too?

Beware software publishers bearing "name" gifts.

The business of publishing software programs for microcomputers is beginning to resemble, in an unhealthy way, the business of making films. Over the past two years, the innovative, inspired founders of the software industry have been collectively battered by a number of trends that threaten to narrow the field down to a few dozen players. These microtrends include competitive pricing, blitz marketing, cutthroat talent acquisition techniques, buy-outs, buy-ins, and good old fashioned intimidation.

As software publishing has become a big business, some of the truly creative people in the industry have fallen on hard times. Like Buster Keaton, Erich von Stroheim, and Fritz Lang, the early software innovators have been faced with the choice of trying to please the crowd and remain in business or further explore the aesthetics of the media and risk going out of business. Perhaps the trends are unstoppable. Perhaps they are unavoidable. And then again, perhaps they are not.

One thing is known for sure. The quality of future software is in jeopardy. By quality, we mean to say the overall worth of a product.

There is much to be said on this subject, but the current licensing rage among software publishers is one phenomenon, or trend, that seems to send a clear signal to the world: Software has to be more than good and innovative; it must be recognizable by name alone.

The danger here is the same as it is in the film business. A bad movie about one of the most popular cartoon characters in history, say, *Popeye*, is still a bad movie and probably won't make any money. A bad computer game about one of the most popular movies of modern times, such as *E.T.*, is still a bad computer game. In the latter case, the game was such a disappointment that Atari had to bury thousands of unsold units of the game (along with many other titles) and cover them up with dirt (did they really think anyone would bother to steal them?).

So it is with a nervous smile that we note that companies like Sierra, Epyx, and Random House are producing software around such names as Mickey Mouse, Donald Duck, the Wizard of Id, the Muppets, Barbie, GI Joe, Hot Wheels, and Charles Schulz's Peanuts characters. It is with forced smiles that we note that Steven Spielberg is preparing a remake of *Peter Pan* for release in 1986, and that other producers are readying such titles as *Alice in Wonderland*, *Santa Claus*, *The Bride* (a remake of *The Bride of Frankenstein*), *A Chorus Line*, *The Clan of the Cave Bear*, and *Oz*.

The first big question is, Why?

Ken Williams of Sierra was quoted in a recent *Los Angeles Times* article as saying, "When a parent goes to a K-Mart to look for software, he's not going to recognize our name, but he'll know Donald Duck. And he may look on the Disney name as a guarantee that this isn't some kind of shoddy product."

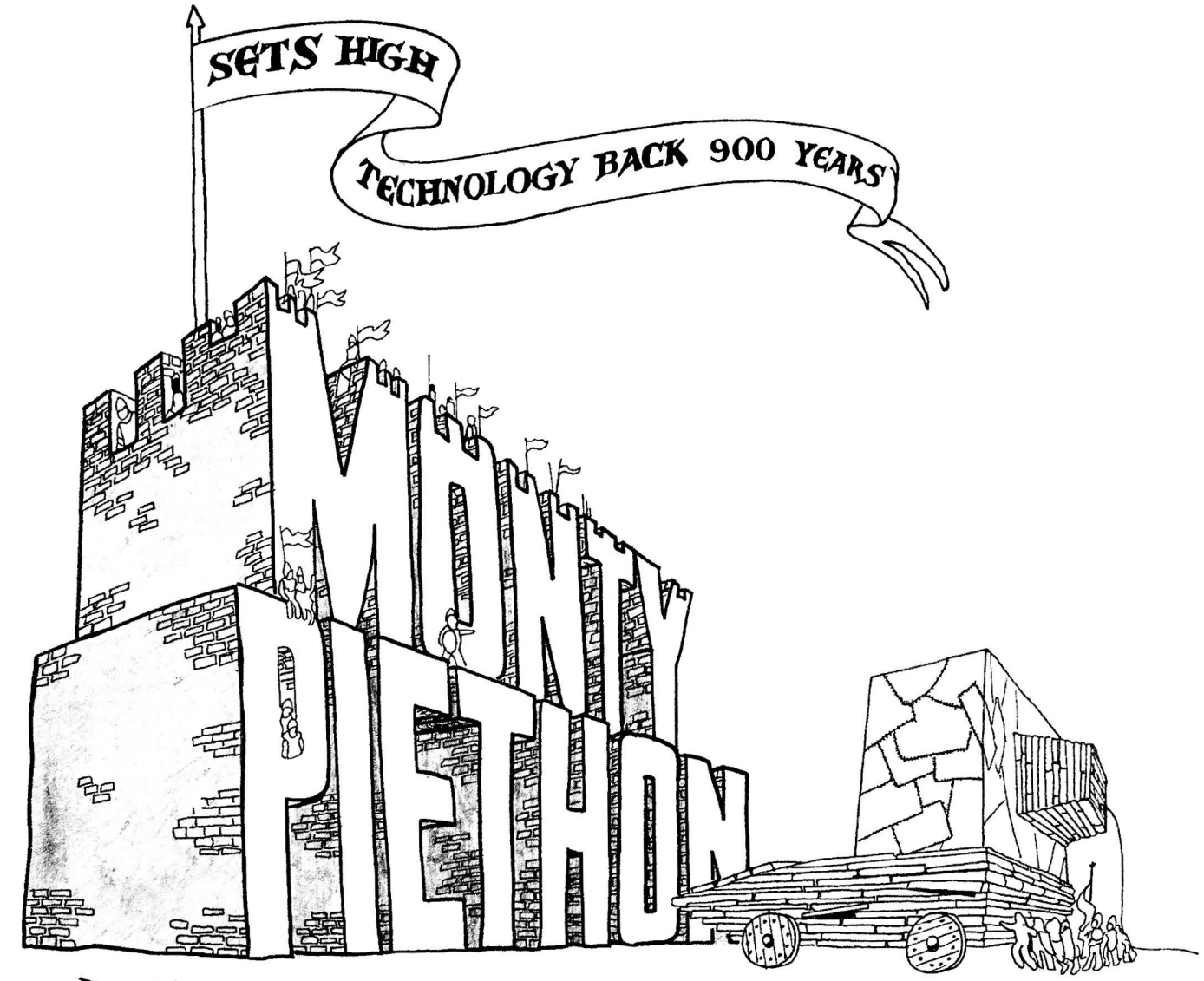
Okay. The second big question is, How?

It would be a journalistic gaffe of the lowest order to say that all games or programs created around a licensed story, character, or idea will be bad. On the contrary, some might even improve upon the technology. But will we ever see an Indiana Jones or Gremlins game that sets the consumers and creators abuzz like *Choplifter* did?

The movie *Superman* rejuvenated that venerable American hero born in comic books for at least a few more years, as well as making the character palatable to adults who would like to forget that they ever read comic books. But the reason *Superman* was such a success, able to cross age and maturity levels, is that a widescreen, color, stereo sound film with real actors and real dialogue is a dazzling enhancement of the Superman comics—which are dressed-up good-and-evil morality plays aimed at fourteen-year-olds just starting to watch *Hill Street Blues* and to see films like *Terms of Endearment*.

Will Donald Duck computer games really improve on the original cartoons and comic books? Can Apples, or any other brand of microcomputer, improve on the medium of celluloid for graphic entertainment? Will Spinnaker Software's programs using characters and situations licensed from such writers as Ray Bradbury, Arthur C. Clarke, and Michael Crichton be half as satisfying as the real thing?

When one examines the most successful games and programs originally produced for computers—Zork, Wizardry, Ultima, *Choplifter*, *Lode Runner*, *One-on-One*, *The Wizard and the Princess*, *Castle Wolfenstein*, *Olympic Decathlon*—the creativity in these products shines like the marquees on Hollywood Boulevard and Forty-Second Street. And there have been many more creative, original products that were not so successful commerically—*Crossfire*, *Bolo*, *Ceiling Zero*, *Rendezvous*, *Way-Out*, and *Spy's Demise*, to name but a few.



AND THE COMPUTER GEEKS

It's a shame that software publishers blame a product's poor sales on lack of immediate recognition by consumers. How about blaming the marketing and advertising departments?

Does anyone remember the film *Fat City*? Released in 1972 for a week, this John Huston-directed film, starring Stacy Keach as a down-and-out boxer who makes an attempt to come back, is a legendary example of botched marketing and advertising. The film never did well at the box office because it wasn't given the chance. Then and now, 1972 is a year remembered for films such as *The Godfather*, *Sleuth*, *Cabaret*, *The Ruling Class*, and *Sounder*—all based on works from other media.

Without a doubt, successful software publishing is tough. The current trend of licensing names, characters, settings, and stories should come as no surprise. After all, Shakespeare wrote about Antony, Caesar, Cleopatra, and Henry the Fifth; Alexander Dumas wrote about Louis the XIII and Cardinal Richelieu. On the other hand, Shakespeare wrote *The Tempest* and Dumas wrote *The Count of Monte Cristo*. Sometimes the old stories are great. Sometimes the new stories are even greater.

How many *Fat City*s is the software industry going to send to an early grave before it realizes that programs about movies and cartoon characters are just as risky? It takes guts and perhaps a little luck, but for my money, creativity and originality will always stand out in the end.

—David Hunter

Programming

Journey into the Unknown: A Happy Ending

Using ProDOS seems scary to casual computerists raised on DOS. But it's really very logical—and it makes other tasks a whole lot easier.

ProDOS isn't hard. It has, perhaps, an intimidating reputation. It's been called a simpler version of SOS, the Apple III operating system. Indeed, it has some of SOS's nice features, and also lacks some of them. Apple III enthusiasts who examine ProDOS are disappointed to find that the Apple II family is still without formally defined device drivers. Personally, that's okay with me. The Apple II is still a hacker's machine, although the hackers have done a darn good job of making it safe for the casual user in the last few years.

One feature of ProDOS that often confuses but has the potential to enlighten is the concept of subdirectories. If volumes, path names, and prefixes still get you down, don't let them. You can learn some minimal stuff, ignore subdirectories altogether, and still get by just fine as long as you're using floppy disks. The main di-

rectory of a ProDOS disk behaves enough like the DOS catalog that you can learn the differences in one sitting and that will be enough. If you intend to use a hard disk, that will not be enough. Subdirectories are made for mass-storage devices like hard disks. In fact, if you want to keep a lot of files on a floppy disk, you can benefit from the same features of ProDOS that make it a practical hard disk operating system.

A DOS catalog has space for 105 file names. On occasion, you will have so many small files that you will use up all these spaces and get *disk full* messages even when you have dozens of free sectors left. Consider a list of 105 file names and how best to display it on a twenty-four-line screen. Think about how many times you have typed *catalog* and then accidentally scrolled by the name you're looking for. There are some application programs that let you scroll the listing both ways until you find the file you want, but it really isn't practical to do that at the lowest level: the DOS command level.

How does ProDOS solve this problem? By allowing you only fifty-one files in the disk's main directory. That's a solution? Yes, because, unlike DOS, ProDOS allows you to make some of those files additional directories. You can put as many files in as many additional directories as you have a mind to. To get to the files in those directories, you have to tell ProDOS first the directory name and then the file name, creating a pathway (you may have to tell it the disk name also—we'll get to that).

Let's start from the beginning with a blank disk. Using the Filer or the IIc System Utilities, you would format the disk and name it something suitably general. Name it? Yes. Unlike DOS, which impersonally calls disks by slot and drive numbers, ProDOS gets familiar; it calls disks by name. Think of the switch from DOS to ProDOS as being like leaving the Army and joining a country club. The new customs may be difficult to get used to (every time someone yells, "Fore," you have the uncontrollable urge to yell, "Hup two"), but you may find them to be nicer when you do.

There are limitations on what you can call the disk, but not unreasonable ones. If you're a fan of George Carlin, you may be tempted to name the disk *A place for my stuff*, but that breaks two of the ProDOS file, directory, and volume naming rules. First of all, you can't use spaces in a file name (or a directory or volume name—they all follow the same rules), and second, you can't make the name longer than fifteen characters. Other rules are pretty much like the DOS file name rules, but the most important rule is the rule of thumb: If the computer tells you *syntax error*, it may just be referring to an illegal file name.

So let's call the disk *My.stuff* instead; you'll find that brevity pays in the long run. Copy the files *ProDOS* and *Basic.System* onto the disk so you'll be able to give the system commands in its own language. Then boot the disk. (You don't really have to do all these things; this isn't a programming class. Sit back in your favorite chair and read on. Maybe try the commands out later. I won't mind.)

At this point, with the brand-new ProDOS disk booted, things look like they would had you just booted a DOS disk. You can type *cat*, and it will catalog the disk in drive 1. You can type *cat,d2* and it will catalog a disk in drive 2. If you tell it to save a file at this point, it will save it on the disk you last catalogued, just like DOS would. However, there are ways you can introduce ProDOS to a particular disk so that the computer will always want that disk, no matter what drive it's in, unless you tell it otherwise. There's a word for this, and the word is *prefix*.

Prefix can be a question or a command. If you just type *prefix*, the computer will tell you what disk it would like to use for loading and saving files if you were to give it the choice. Right now, that would be the disk you just catalogued. If you just catalogued My.stuff, the computer would respond */My.stuff/*. If you just catalogued some junk disk in drive 2, the computer would tell you */Some.junk/*. The slashes are there because that is how ProDOS separates disk names, subdirectory names, and file names. Now, if you want to deal mostly with My.stuff, and only occasionally have commerce with Some.junk, you can use prefix to tell the computer. Type either *prefix /My.stuff* or *prefix, d1* (if My.stuff is still in drive 1).

Now when you catalog the disk or do anything else, the computer will assume you mean you want to do it to My.stuff, unless you specify otherwise. ProDOS is more tenacious than DOS in this way. It will look for My.stuff in any and all disk drives it can find. If it doesn't find My.stuff, it will sulk.

If you want ProDOS to read the catalog of Some.junk, however, you can tell it so in one of three ways. First, type *cat/Some.junk*. That tells it to look in all of the drives until it finds Some.junk. Second, type *cat,d2*. With that command, it will catalog the disk in drive 2 regardless of its name, just as DOS would. Using either of these methods, the next time you type just *cat*, you will get the catalog of My.stuff again. The third way is to change the prefix to Some.junk and then enter a simple *cat* command.

So far, we've had to deal with only one name at a time—the volume or root directory name—or with none at all. But what if we wanted to load a program named Records. To load it from My.stuff, assuming that My.stuff is the prefixed disk, just type *load Records*, exactly as you would with DOS. To get Records off the other disk, however, you again have three options. Tell it the volume name before the file name, tell it the file name and the drive number, or change the prefix and tell it the file name. For example:

```
LOAD /SOME.JUNK/RECORDS

LOAD RECORDS,D2

PREFIX /SOME.JUNK
LOAD RECORDS
```

Again, only the third of the three possibilities actually changes the prefix.

Now, note the difference between loading a file from the prefixed disk and loading one from any other disk:

```
LOAD RECORDS
LOAD /SOME.JUNK/RECORDS
```

The first command loads the file Records from the prefixed disk, which may still be My.stuff or may be something else if you've tried some of these suggestions. If you're ever unsure, remember that you can ask what the prefix is by typing *prefix*. The second command loads Records from the disk *Some.junk*.

Suppose you had occasion to put two kinds of files into My.stuff: files about your personal inventory and files about your chief hobby, which is tracking interesting items in the *Guinness Book of World Records*. In some situations, you might be tempted to keep such disparate items on separate disks, but if you didn't have any blanks on hand, or, more important, if you happened to have five or ten megabytes of hard disk storage kicking around, you would have good reason to put all your data in one volume.

So, what to do? Well, you could put all the files in the main directory and get away with it, as long as you had fewer than fifty-one files. But then you'd have to go through a fairly long catalog before you found the relevant file. Suppose you could find some way to list only those files that are relevant to a particular task?

In ProDOS, this is done through subdirectories. You can easily create two different directories on My.stuff and then store the *Guinness* files in one and the inventory files in the other. Make sure the prefix is My.stuff, and type

```
CREATE GUINNESS, TDIR
CREATE INVENTORY, TDIR
```

Now when you catalog My.stuff, you find two more files on it, Guinness and Inventory, each with the file type *dir*. Each of these is a unique directory, and each will essentially behave like a separate disk (although with less free

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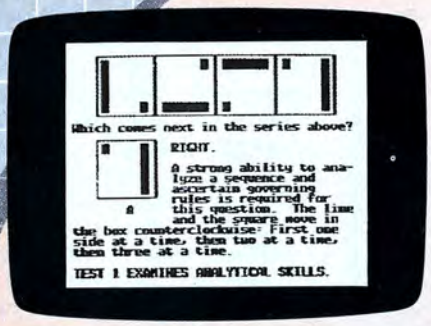
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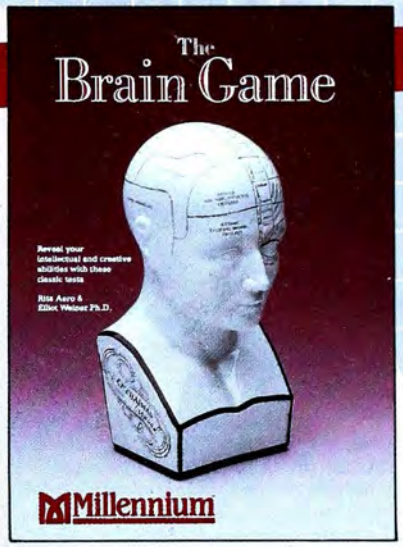
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space). Let's save one file in each of these and then play with it. The first file, which will go in the Inventory directory, will be a database of your phonograph collection, called Records. The second file, destined for the Guinness directory, will also be called Records. For obvious reasons.

Since these will just be dummy files, we'll just use empty Basic programs. Type:

```
NEW
10 REM  NO REAL PROGRAM HERE . . .
SAVE GUINNESS/RECORDS
SAVE INVENTORY/RECORDS
```

We now have two files on the same disk with the same name. That's what it means to say that two directories behave much like two different disks. Now, assume that we're starting from scratch, that no prefix has been set, and that ProDOS doesn't know My.stuff from Adam. You want to work with the Inventory file Records. How would you go about it?

```
LOAD /MY.STUFF/INVENTORY/RECORDS
work . . . work . . . work . . .
SAVE /MY.STUFF/INVENTORY/RECORDS
```

and so on. . . .

Seems like file names are getting out of hand, doesn't it? That long string of names is what is known as a *path name*, so called because it tells the computer what path to follow to get to a particular file. Since you're likely to save a given file many times in the course of working on it, it's a good thing we have prefixes. Prefixes can be used, as we've seen, to specify which disk to use:

```
PREFIX /MY STUFF
LOAD INVENTORY/RECORDS
SAVE INVENTORY/RECORDS
```

They can also be used to specify which subdirectory on a particular disk to use:

```
PREFIX /MY.STUFF/INVENTORY
LOAD RECORDS
SAVE RECORDS
```

It looks a little more reasonable now. The more you load and save the file, the more benefit you get from having set the prefix. The only question you may have remaining (who am I to say? You may have hundreds of questions remaining. I, however, will only answer one of them) is how do you know when to begin the path name with a slash and when not to. You may have noticed that in the first load and save example, which used full path names, the name began with a slash, but it didn't in the other examples. Basically, here's why: The slash at the start of a path name means, *here's a full path name, beginning with the volume name. Ignore any prefix you may be thinking of and use this name here*. If you type a name that doesn't begin with a slash, that means *here's a partial path name. Add the prefix you've got in memory to the beginning of the name in order to get the full name of the file I'm looking for*. That's a mouthful for just a humble slash to say, but it's a very important slash.

ProDOS path names are like personal names in some highly traditional patrilineal (or matrilineal) society. A person's formal name might be Fred, son of Jacob, son of Mack, son of James, son of Chung, son of Pierre, son of Fernando (we're actually talking about several traditional societies). You might address him that way if you're going to announce his birth or marriage or challenge him to ritual combat, but most of the time all that stuff is just assumed; in normal conversation, you call him Fred. That isn't too hard, is it? ***—David Durkee***

Humor

Fear and Loathing in Los Angeles: How Not To Write Documentation

A fearless exposé of the complex, thought-intensive, and high-minded profession of creating software documentation for the masses (us).

"Documentation . . . with a capital 'D' and that rhymes with 'T' and that stands for trouble. . . ."

It was about three months ago that I received Holy Orders and was inducted into the High Priesthood of Documentatia. What started this entire misadventure was a newspaper clipping that someone sent me, listing the top ten personal computer software companies. I thought it would be a good idea to send my résumé to all ten companies. Two days later I was hired.

I was dumped right in the middle of a horrendous documentation project. The company was developing an interesting-looking business application package for which the documentation was only half done. Stressors were up. I was plunked down in a tiny office with two other writers, who were also new. There were two IBM PCs on my desk: one to run the software package under development and the other to write the documentation. There wasn't an Apple in the entire building! My predecessor had been fired, but no one would say exactly why.

We all wrote as fast as we could, but it wasn't fast enough.

It was time for the Hotel.

It was my boss's idea. The plan was to lock the entire documentation team up in a suite for a week, where we would write until we dropped. Anything that would distract us from our Mission was taken care of. Food was brought up to us by Manuel of room service. The beds dropped out of the wall. Exercise was provided by watching *Twenty-Minute Workout*. Glucose IVs were used to restore consciousness. A whip drove us back to *WordStar*.

Gary was the first to crack. At first, no one could tell. He would just get up from his computer and walk across the room. But he never went anywhere. He just stopped in the middle of the room, then slowly lifted a leg and put it back down again a few times. He'd go back to his computer and the cycle would begin again a few hours later. After a few of these trips, I began to notice that he was mumbling something, rhythmically.

"And one . . . " he said, lifting a leg. "And two . . . " he added, putting it down. "And

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take it *to the left*. . . . " Here he thrust his hips suddenly to the left and began the leg-lifting on the other side of his body.

Gary was starting to get a little carried away. His gyrations caught the attention of our boss, who said, "Oh, Gary, I think I've got a loose cable underneath this desk. Would you mind checking it for me?"

"And one," he said, mindlessly making his way to the desk. "And two . . . ." He was now beneath the desk, his voice taking on an odd echoing effect.

"And *get back on your feet*!" the boss roared, sending Gary scrambling. There was a loud thump as Gary's head hit the top of the desk, then silence. The evening's entertainment done, the rest of us returned to work.

By the fourth day, the men had stopped shaving and the women had stopped using makeup. A protective layer of aluminum can pop tops, room service receipts, potato chip shards, and discarded paper coated the carpet. There was a constant shuffling noise as people walked across the room. Some of us were beginning to display little eccentricities. I developed an eye tick similar to that of Inspector Clouseau's boss. Linda began to stare off into space and absent-mindedly pick the fillings out of her teeth. Gary sat with an ice bag tied to his head, the ends sticking up, making him look like a misshapen mouse. The ice had long since evaporated, but Gary said he "liked the way it looked."

Then there was Bryan. From the first day, we all had the distinct feeling that he wasn't totally committed to the program. He sat with his back to a corner, the PC in front of him and a dense maze of chairs, wastepaper baskets, and ominous-looking electrical cables surrounding him. If you spoke to him, he just answered with strange, monosyllabic grunts. The odd green glow in his eyes told us that Strunk and White's *The Elements of Style* was not at the forefront of his mind. Sometimes we heard strange growling noises coming from his side of the room, and once we sent him careening to the window when we told him that there were "bats" flying around outside.

Bryan never finished the project. He managed to bolt from the room on the fourth day when Manuel brought up the evening meal of Cheez Whiz and crackers.

On the fifth and "final" day, the assistant boss brought us the good news, rewarding us for our long, hard hours: There were miles to go before we were to sleep. The room had been extended for another week. The job was yet to be finished.

That night there was a hanging. Two PCs were now up for grabs.

In an attempt to keep us all from going irretrievably over the edge, I began to devise a series of games that Manuel came to dread. The first was "Run the Gauntlet." In this game, we called for room service; when Manuel opened the door, he was greeted by a long line of people dressed in white sheets. We stood facing each other, giving him a tunnel to push his little food cart along. Each of us held a lit candle that dramatically shadowed our faces. Saying nothing, we stared straight ahead. Gary the Mouse waited for Manuel at the end of the tunnel, beckoning to him like some disembodied spirit.

"Come heeeeeeere," he said softly, waving a ghostlike finger.

"Que?" Manuel said, bringing the slightly squeaking cart to a halt.

"Assume the positionnnnnn," the Mouse intoned with a wicked-looking grin.

Manuel began to back up, but it was too late. We all had our towels rolled up into tight little skin-splitting rolls. When he turned around and saw the new use we intended for the hotel linen, he began to scream and run for the door.

Snap! The first towel cracked, making a stinging, direct hit on the back of his heavily embroidered room service pants. Manuel leaped in the air and made another dash for freedom. *Snap*! *Sssnap*! Two more kamikaze towels flashed in the air and made good hits. Manuel took several more snaps before he finally made it to the safety of the door and beyond.

On our ninth and final day, all hell broke loose. By this time there was a permanent green square in everyone's pupils from staring at the monitor. While I sat and typed, some movement out the windows to my right caught my eye.

Window washers.

In an instant, my fatigued mind put together the fact that they were a good ten stories above the ground, and yet they were free; they were outside! I knew what had to be done. They had to die.

I tapped on the inch-thick glass and calmly said "Jump." They looked at me, laughed, and good-naturedly gave me an okay sign with their fingers. I wasn't getting my point across. I really wanted to see them dive right off their platform. I wrote the word "JUMP" on one side of a piece of paper and the word "WIMPS!" on the other. I stood up and began to chant "Jump . . . jump . . . jump" over and over again. The other writers heard it and began to join in. (Actual writing had stopped some time ago, no one was sure exactly which day.) I held the paper in front of me and turned it over, displaying the "WIMPS!" message. We slowly staggered over to the window, arms outstretched, looking like the ghouls in the Michael Jackson *Thriller* video. The smiles faded from the window washers' faces along with the color from their cheeks. I closed my eyes and heard, as if from a distance, the comforting cry of a loon. When I opened my eyes, the window washers were gone, ropes and all.

I don't remember too much of what happened next, except for a blur of activity around the room. I recall hands unscrewing every light bulb in sight, towels being stuffed in suitcases, tutorials being hastily scrawled on the toilet lid seats explaining high-speed flushing procedures, the shattering of glass, and fire hoses being turned on, dragged along hallways, dropped, and left running.

They say the documentation had to be picked up off the street where it had apparently been thrown from the tenth floor in what the Mouse cryptically termed "a noble experiment to determine which was heavier, documentation or paper."

We finally got our reward: a week off to mend our paper cuts, detoxify from Epson printer ink, and reduce the intensity of the green glow in our eyes. ***—Bill Parker***

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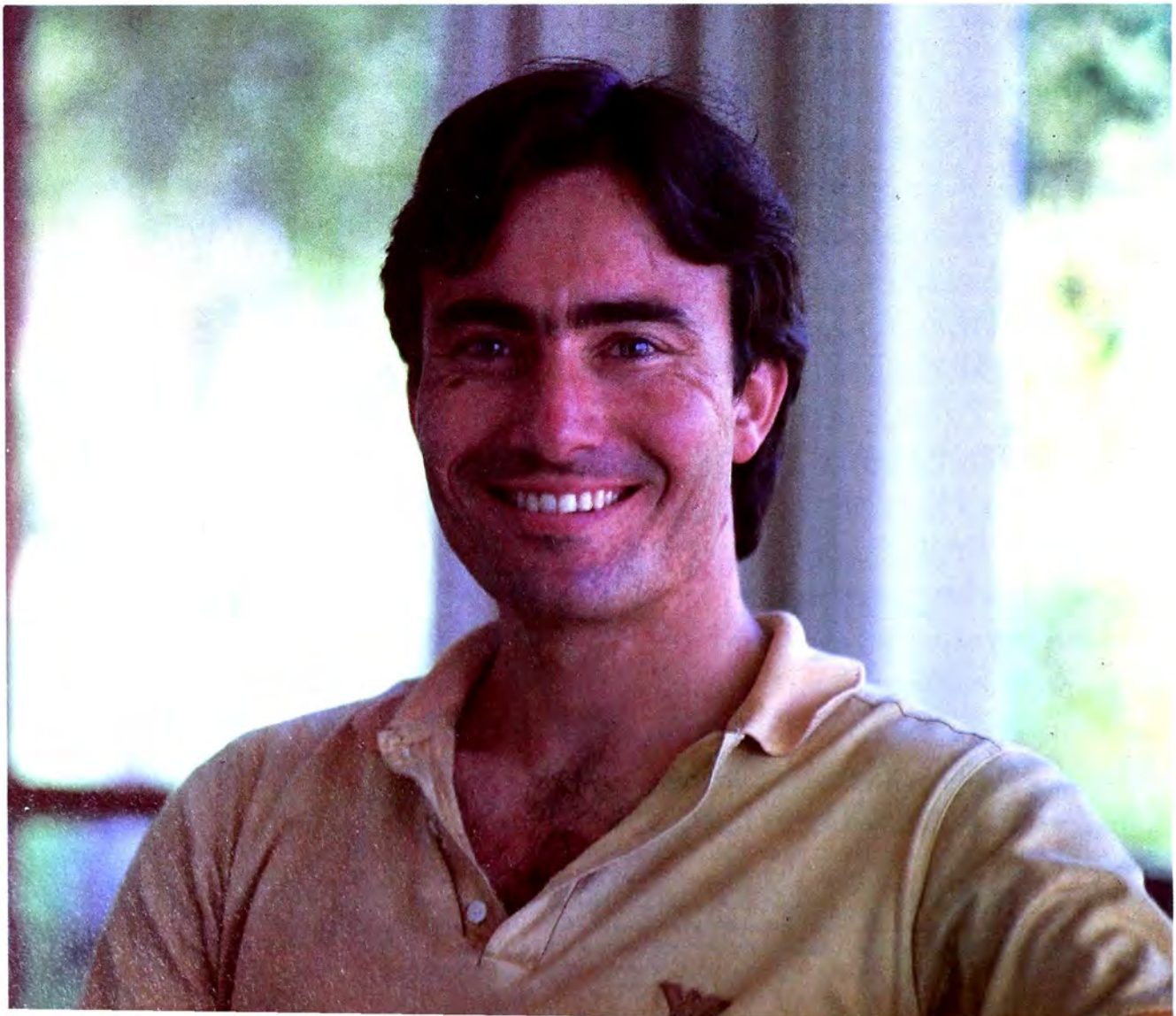


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EEC

ELECTRONIC ARTS

Software Construction Company



BY MATT YULN

Hundreds of kids crowd around a school yard basketball court in Springfield, Massachusetts, where an advertising agency is setting up lights and cameras. The photographers want to capture an atmosphere of amateurism; they make sure the lights hit the graffiti on the walls near the court just right. Not knowing what's going on, the kids watch with curious eyes.

A car pulls up, and out of it step Julius "Dr. J." Erving and Larry Bird, two of professional basketball's finest players. Those curious eyes grow to the size of tomatoes. As Erving and Bird play a pickup game of one-on-one, motor-driven camera shutters click furiously and bystanders watch in awe. The game taking place here may never take place again. Anywhere.

Actually, the "game" is a photo session for the promotion and packaging of *Julius Erving and Larry Bird Go One-on-One*, an Electronic Arts game that is currently a bestseller.

There's no doubt about it. The computer games industry is growing up. It takes more than airbrush art and plastic-bag packaging to capture consumer interest. The games themselves are becoming more sophisticated, and so are the software companies that make them.

The Maltese Hawk. In the early days of personal computing, software companies were things that sprang out of people's homes. Someone had an Apple and decided to make some money with it. That person wrote a program and marketed it, wrote another program and marketed it, and things grew from there—real rags-to-riches, American-dream-come-true stuff.

If that's what a typical software company used to be like, then Electronic Arts is the antithesis of the old way. The company didn't come out of a garage; it sprang full-grown from Trip Hawkins's head.

Hawkins is one of those guys who a lot of people love and resent at the same time for the same reason—almost everything he does, he does very well. He developed and marketed his first strategy board game at the age of eighteen. He attended Harvard as an undergraduate before earning his Master of Business Administration at Stanford.

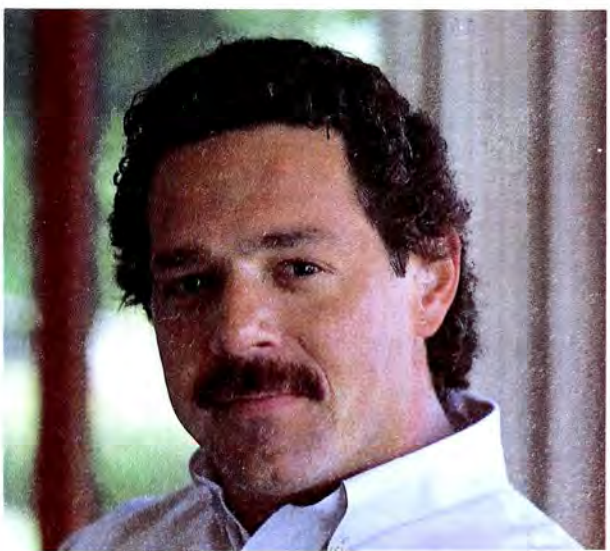
Steve Jobs hired him after reading an analysis Hawkins had written that predicted that the TRS-80 would be the market leader in 1978. The prediction came true. While at Apple, Hawkins ini-

Grown-up Boys Who Play with Toys. Opposite page: Electronic Arts president Trip "Don't Call Me William" Hawkins. Below, clockwise from top left: director of talent Dave Evans, producer Joe Ybarra, producer Stewart Bonn; and vice president of research and development Tim Mott.









tiated the company's push into the business market with the Apple II. He contracted programmers to develop Apple's first business software products. Hawkins was also the director of marketing for Apple's Lisa division (well, maybe not everything he touches turns to gold right away). On top of all that, he's been a member of Big Brothers of America for the past four years.

Hawkins first saw a computer in 1972, and his initial reaction was that he wanted to play games on it. Not necessarily video games, but games that are interactive—games that use the computer as a communications medium. While computer technology developed in the seventies, he thought and dreamed about the time when it would be feasible to start a business in the personal computer industry. In 1975, he figured the right time would be 1982.

Sure enough, when that year rolled around, Hawkins left Apple Computer and started Electronic Arts (originally called Amazing Software, a name that caused many to roll their eyes and reach for a bicarbonate of soda). The first thing he should have done, following the traditional "rules" of setting up a software company, was write a great program and sell it in great quantities. But Hawkins isn't a man who follows tradition.

Tradition Takes a Hike. Hawkins started from the top down. He hired Tim Mott, who spent five years at the Xerox Palo Alto Research Center and founded the division of Versatec that developed and marketed computer-aided design graphics products for the Xerox Star. He also hired Richard Melmon, who was director of marketing at VisiCorp in the days when *VisiCalc* was riding high, and Eric Walter, former executive vice president of operations at U.S.I. International. For good measure, he recruited Joe Ybarra, a bona fide game freak who was Apple's project director for *Quick File*, *Apple Business Graphics*, *Access III*, and the *Children's Television Workshop* series. The list goes on. There's even a guy named Steve Wozniak who is a member of Electronic Arts's board of directors.

Hawkins's idea was simple: If you're not the best in everything, find the best and get them to work for you. But to create a big and successful company, other things are necessary besides talent—such as money. Lots of it.

Out-of-the-garage software companies usually raise about as much money as their founders have stuffed away in sugar bowls and mattresses. To fulfill the goals Hawkins had in mind, he needed a lot more than a few thousand dollars; he needed more like $2 million. Luckily, that was a year when the software industry was really getting hot, so Hawkins had little trouble persuading Don Valentine—the same venture capitalist who gave Jobs and Wozniak their first bankroll—to invest in Electronic Arts.

With management and capital secured, Electronic Arts still lacked one constituent: programmers. (To this day, the company still has no programmers. It prefers the term "software artist.")

Again, Hawkins went with the philosophy of if you don't have the talent, hire people who do. Among the first software artists Electronic Arts lured to the company were Jon Freeman and Anne Westfall, Dan Bunten, and Bill Budge. Freeman and Westfall were top game designers with Automated Simulations; Bunten's games were marketed by Strategic Simulations and made computer quarterbacks, cartel cutthroats, and cytron masters out of thousands of Apple owners; and Bill Budge, well, he's Bill Budge.

That was a little over a year ago. Since then, Electronic Arts's programs have appeared regularly on bestseller lists from *Softalk*'s to *Billboard*'s and have received awards from more than a dozen publications, including *Rolling Stone*, *Omni*, *Computers and Electronics*, and *British Microcomputing 1984*.

Can a Computer Make You Bawl Your Head Off? From the beginning, Hawkins expected Electronic Arts to do well, but he never envisioned the success it has so far enjoyed. "Bill [Budge] used to say there really ought to be a 'great' software company," says Hawkins. While he doesn't think Electronic Arts has become great yet, Hawkins does feel it has taken some steps toward that goal.

The first step was to promote a unique company image—an artistic image. Electronic Arts flew all its artists (eight at the time) to San Francisco and hired a photographer from the Los Angeles rock music scene to photograph them for a two-page magazine ad.

Accompanied by the question, "Can a computer make you cry?" the ad drew a lot of attention. Some were impressed, others confused. The ad asked, "Why do we love?" and "What are the touchstones of our emotions?" It likened the computer to a "universal language of ideas and emotions." It was heady stuff from a company whose few products had only recently appeared on the market.

Looking at the ad now, Hawkins admits that it went a little too far, but he does believe a computer can draw emotional responses and even make a person cry. "*Seven Cities of Gold* pushes in the direction of where we want to go," says Hawkins. "It puts players in a moral dilemma of how to deal with new people [Aztecs and Incas]. How do you feel when you're an intruder taking away their gold? How do you feel when you take their gold by

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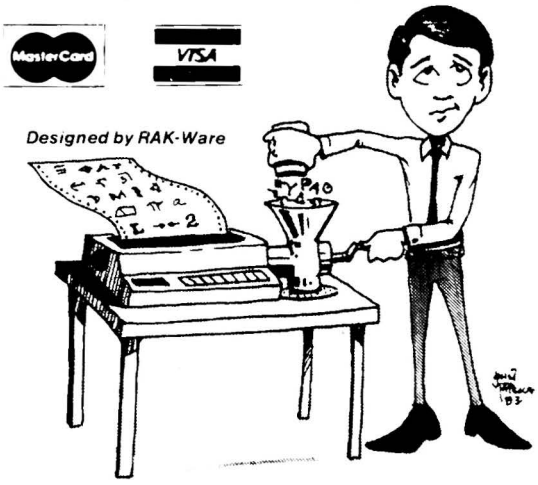
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clobbering them? We don't have a program that's intent on making someone cry, but it's theoretically possible. Getting an emotional response is a function of the way people interact with software.

"You can watch *E.T.* and the early silent films, and both make you cry. *On Golden Pond* is entertainment, but it's also more than that. People don't think of software like this . . . yet. It takes an effort to get out of the box most people are in."

No Modem Needed. Electronic Arts believes the computer is a greater leap in communications than television was over radio and radio was over print. Not only do people communicate with themselves and with the machine, but they're also given a new kind of experience—interaction.

Unfortunately for Apple owners, some of Electronic Arts's best products—such as *M.U.L.E.* and *Archon*—are made for the Atari computer because of its ability to accommodate multiple players. (Apple fans can take solace in the fact that Electronic Arts's artists much prefer to develop products on the Apple and then translate them for other machines.) Multiple-player games are the best, Hawkins feels, because they allow the computer to be a medium that fosters interaction between human players—and that's the machine's true strength.

One of Electronic Arts's prime goals is to make the computer an educational tool. Hawkins, a fan of philosopher and educator John Dewey, believes that "the act of using your mind is more important than the topic you're studying." That is, learning should be based on experience. To that end, Electronic Arts's programs (especially games) try to include a secondary educational value that's all but invisible to the person using the program.

Simple, hot, and deep. Those are the words and concepts around which Electronic Arts strives to build its software. A program has to be simple enough for people to get started; it has to be hot, so they'll stick with it; and it has to be deep, or there's nowhere to go. The idea is that people learn best when their first exposure to an experience is easily absorbed, when the material is in a medium that requires participation, and the player is led to investigate and learn voluntarily.

Despite Electronic Arts's aspirations of turning the computer into an educational aide, the company's goal isn't simply to satisfy one's curiosity about a subject; rather, the goal is to stimulate curiosity itself. *Music Construction Set* doesn't teach music; it piques the curiosity of players so that they'll want to find out more on their own and possibly decide to learn a musical instrument. Likewise, Ybarra hopes that by playing *One-on-One*, people will be motivated to practice jump shots and lay-ups—not on the computer screen but in the driveway or school yard.

Social interaction, according to Hawkins, is important to making the computer a success. And Electronic Arts doesn't limit that idea to computer games; it also practices the idea in the work environment.

The World According to Trip. Hawkins is a true believer in culture (versus bureaucracy and autocracy) as the most powerful form of organization. "All cultures have a collection of values that are passed from one generation to the next. What bonds the group is a set of beliefs, as well as the ritualizations and celebrations of those beliefs. The result is that everyone is allowed to act independently, but they do so according to the culture's values."

If this sounds like Hawkins is developing a culture of his own, well, maybe he is. Everyone from Electronic Arts's receptionist to the chief financial officer strongly believes in the company's goal to be a part of "fulfilling the promise of home computing"—the promise that the personal computer will be the most powerful tool yet devised for the amusement and advancement of mankind.

The people at Electronic Arts work hard, but they also play hard. On May 20, 1983, in order to deliver its first products in a timely fashion, Hawkins took the entire thirty-person company to its South San Francisco warehouse, where the group spent a good part of the day packing and shipping boxes and playing Nerf baseball while waiting for the United Parcel Service trucks to arrive. Later, to celebrate the occasion of getting its products out the door, Hawkins rented an entire theater for a private screening of *Return of the Jedi*, with friends and vendors also in attendance.

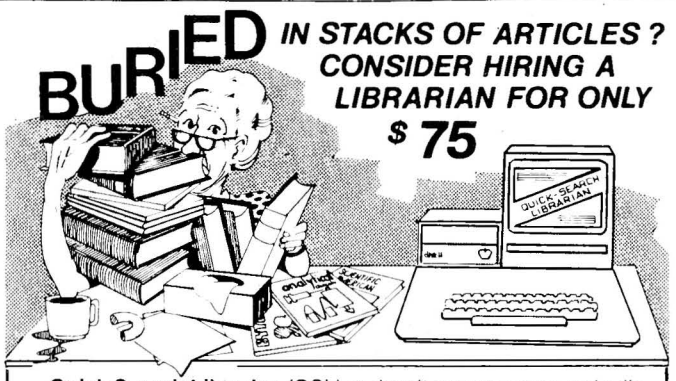
A few months ago, Hawkins flew Electronic Arts software artists to San Francisco for the company's first Artist Symposium and required that all personnel be on hand to greet the artists as they arrived. Then, when everyone was present, he packed them onto buses with champagne and a catered lunch, and the whole group went to see the opening of *Indiana Jones and the Temple of Doom*.

This is a top software company? Yes, but it's also a group of people who take their work very seriously without taking themselves too seriously. Walking through Electronic Arts's office, it's hard not to notice the Nerf balls that lie casually in the conference room and on desk tops. These aren't toys. They were given to employees as part of a stress-reduction program. Today, when tensions rise, the Nerf balls fly.

Backcourt Pressure. Pressure situations can sometimes bring their own rewards. The best example is the nightmares and rewards that came with developing *Julius Erving and Larry Bird Go One-on-One*.

Hawkins remembers how Eric Hammond quickly fell behind in the project by spending too many days at the beach in southern California; Joe Ybarra, producer of the project, remembers arguing with Hammond about whether certain improvements could be made, while trying desperately to get the program finished before the holiday season; Hammond remembers dinners and breakfasts at the local Denny's restaurant while he was literally living at Electronic Arts's office; and all of them remember the thrill of meeting two of basketball's greatest forwards.

Erving's philosophies impressed Hawkins so much that he



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adapted them to his management style. Such wisdom includes: "When you've made five or six baskets in a row, you have the right to miss [from] anywhere on the court," and "As long as you're open to the feeling that there is no limit, then there *is* no limit. Even after playing for twelve years, I can go out and learn something from one of the new guys coming in. That's what it's all about, growing past your limits because you believe you can, believe it enough to try, to practice, to work for what you want."

On Hammond's list of lifetime thrills was talking with Erving and Bird for three hours about how to design the game, a thrill that came a close second to playing some real-life one-on-one with Erving at a school playground. "I couldn't do a thing to him, even though he wasn't trying," Hammond grunts.

No Reaching In. A strong point of Electronic Arts is the company's knack for exciting people enough to join the team. At the same time, though, the company has gotten—in the eyes of some competitors—the image of a firm that raids other companies and steals programmers. Hawkins says the image is unwarranted.

In late 1982, Electronic Arts producers began contacting programmers they knew who were talented and didn't have ties with other companies. *Hard Hat Mack* coauthor Mike Abbot had left Cavalier Computer; Freeman and Westfall had left Automated Simulations and started Free Fall Associates; Bunten was becoming dissatisfied with publishing his games through Strategic Simulations; Budge was floating around wondering whether his company BudgeCo was worth the effort he was putting into it.

The hardest part, according to producer Dave Evans, was convincing prospective artists that Electronic Arts would succeed, even though the company didn't yet exist. "There were quite a few who were skeptical about us and turned us down. Now that they've seen what we can do, they're coming back."

Evans says that when trying to find artists, Electronic Arts takes care not to step on the toes of other companies. "If someone has a contract or agreement with another company, we don't want to pursue the matter. If he's willing to break agreements in order to come work with us, that's not the kind of person we want."

To the criticism that Electronic Arts hasn't any programmers of its own, Ybarra replies that it's accurate and inaccurate. On one hand, the talent that creates Electronic Arts's products for the consumer market all comes from outside. Innovative ideas, the company believes, are more likely to come from people who don't work in a software "factory" or company bureaucracy. On the other hand, Electronic Arts does have a research and development department that devotes its time to working on graphics tools, sound routines, game kernels, user-interface designs, and other resources for artists to use.

Uncovering the Unknowns. Electronic Arts is also interested in discovering unknown artists, a process as time-consuming as it is fruitful. Producers sift through mountains of unsolicited material, make presentations at user groups, receive referrals from other programmers, and keep in touch with a network of friends in the software business. As in the music industry, the discovery of new talent often happens by chance.

Producer Stewart Bonn remembers how he almost lost *Music Construction Set* artist Will Harvey when the boy wonder was literally right in front of him. Bill Budge had looked at some programs Harvey had written and recommended that Harvey take them to Electronic Arts. Bonn looked at a few of them but told Harvey that none of them were quite what Electronic Arts had in mind at the moment. If it seemed like he was giving Harvey a polite rejection, it was only because Bonn had just seen "this incredible music demonstration program for the Mockingboard" at the Boston Applefest and was trying desperately to find the person who wrote the program. When the search began looking hopeless, he asked Harvey what else he had, and Harvey replied, "Well, I have this music thing. . . ." The rest is software history.

According to Ybarra, even the most talented people have a distance to go before pushing the personal computer to its limits. "What the software industry needs is the equivalent to what *Star Wars* was to the film industry. There have been some shots at it, but the industry is so primitive that even the classic programs are feeble compared to what can be done on big computers."

Encouraging software artists who learned programming on the Apple is fine, but Electronic Arts also wants to persuade computer scientists (those sages who were raised on mainframe and minicomputers) to bring their knowledge to the micro industry and provide it with a software shot in the arm.

"The only way to do that is to be a professional organization," says Ybarra. "Considering the high salaries and supportive environments that professionals demand, it's apparent that the [micro] marketplace isn't ready to support it, but it's coming very fast."

See Farther, Not Far-Sighted. When you look at the visions and goals that Electronic Arts has, you come to one of two conclusions: Either this is a company that has its head in the clouds, or it's a company that knows the direction in which the personal computer industry is headed.

Being different invites criticism. But no matter how much Electronic Arts can be criticized for being too idealistic, or for taking a moralistic approach to a hobbyist industry, it can't be accused of having the wrong ideas.

True, Electronic Arts perhaps represents the beginning of the end of the cottage industry. The company is a good example of professionals pushing their way into an area where inspired amateurs are heroes. Electronic Arts acknowledges the landmarks left by pioneers of the industry, but it also feels the time has come to take microcomputers out of the cottage and bring them to the world—a goal that is admirable, at the very least. ■

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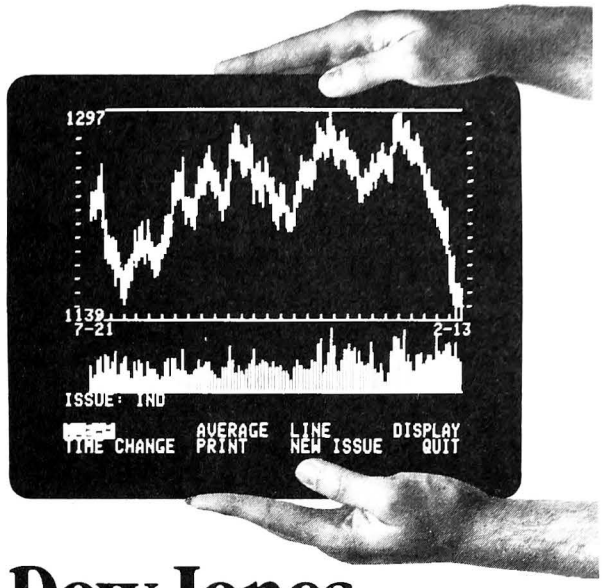
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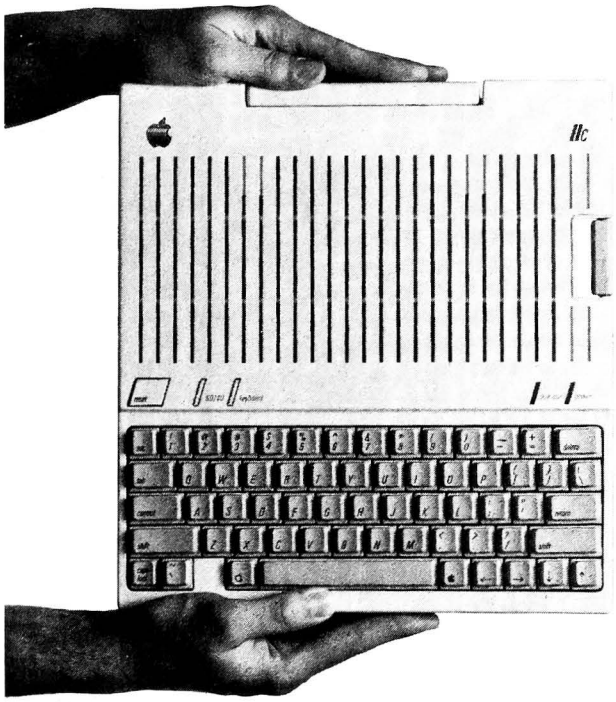
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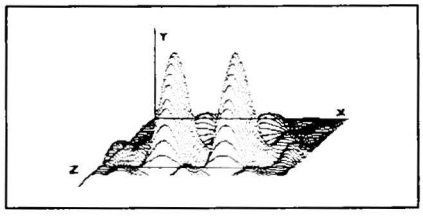
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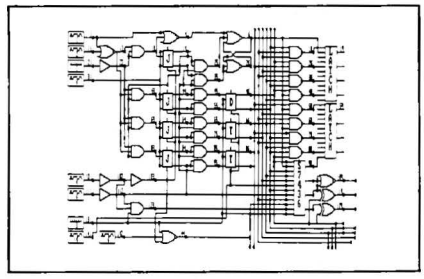
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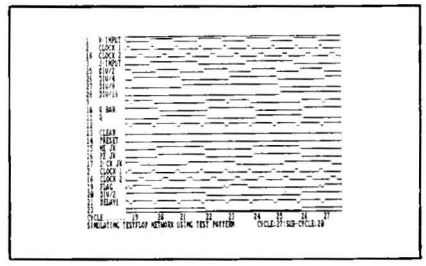
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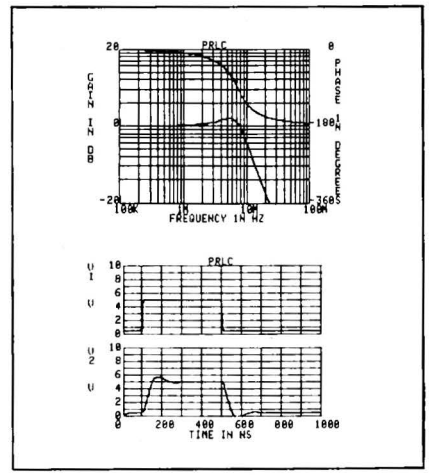
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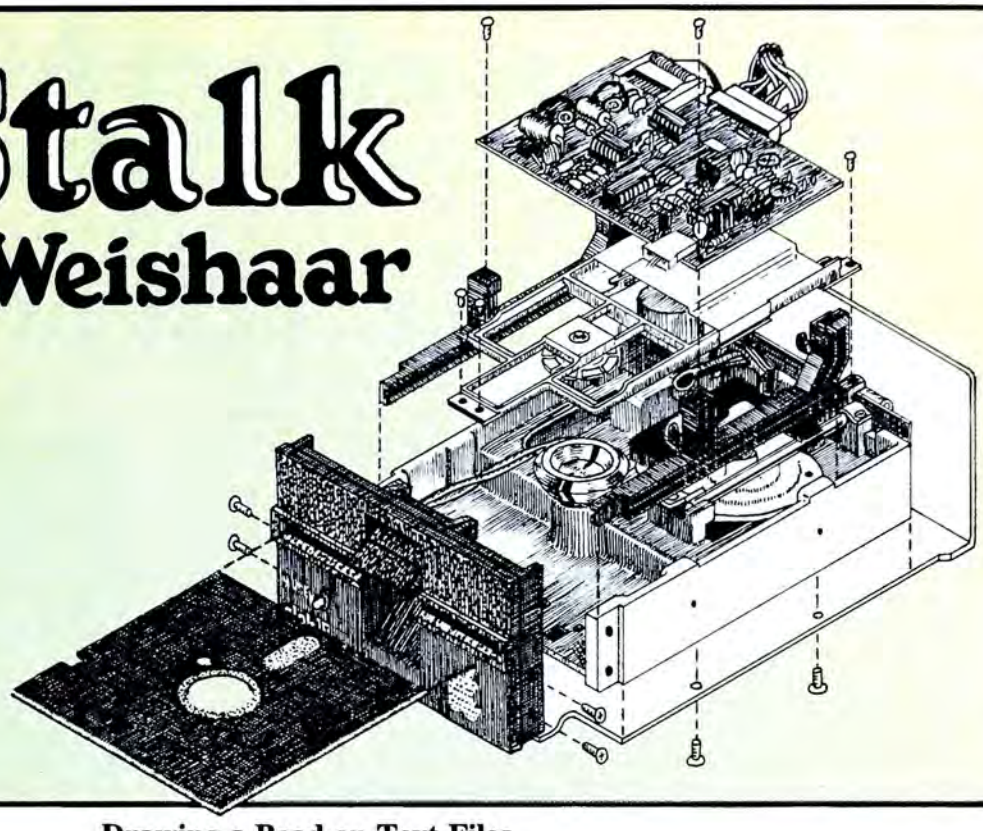
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DOStalk

by Tom Weishaar



Drawing a Bead on Text Files

Last month DOStalk explored some of the intricacies of DOS's text file commands. We closely examined old friends such as *open*, *read*, *write*, and *close*. This month we're going to continue this investigation, with emphasis on the *parameters* that can be used with these commands.

Imagine, for the moment, a bag of marbles. There are important differences between a file full of characters and a bag full of marbles, although they may not be immediately obvious.

If you shake up a bag of marbles ten times, and after each shake open the bag and examine the top marble, you'll probably find a different marble on top each time.

But if you do the same thing to a file, the first character out of the file will always be the same one.

In addition, the second character out of the file will always be the same, as will the third, and so on; but the second marble out of the bag one time might be the seventeeth one out the next time.

So let's take all our marbles, drill holes in them, string them together like beads, and put them back in the bag. Now we have something more like a file. A string of beads could be pulled out of the bag the same way every time, just like a file of characters.

Simple text files don't amount to much more than a string of beads in a bag. The beads come in 128 colors, one for each ASCII character. When you write a simple text file, you are simply stringing the beads together. When you read a simple text file, you take the beads out of the bag and translate them back into characters.

This kind of file is called a *sequential* file. Sequential files are good for computerized information that you store and retrieve all in one hunk. As this column was developed, for example, it was stored in a sequential text file. The entire file had to be loaded into a word processor before so much as one character could be changed. After a change, the entire file had to be resaved. This is a simple, effective technique for dealing with the development of DOStalks, since many changes are usually made to the file, in random places, each time it is loaded.

For other kinds of files, however, a simple sequential structure is often inadequate. Imagine Brother Bob's furniture inventory (substitute your favorite fast-talking advertiser if you like). Brother Bob has a list somewhere that goes something like this:

```
cheap red sofas          4
cheap yellow sofas       12
really cheap red sofas   6
really cheap blue sofas  1
and so on. . . .
```

The numbers represent how many of each item ol' Brother Bob has on hand. If he gets in a new shipment of five cheap red sofas, for example, that first 4 will have to be changed to a 9. In this situation, it would be nice if Brother Bob could go directly to the part of the file about cheap red sofas, change just that number, and leave the rest of the file untouched.

To do this easily, we need to invent a way to jump from one part of our bead string to another part. Pull that long string of beads out of that big bag over there, and let's look into this a little.

Extend the string out on a table. Now imagine that the beads at the beginning of the string have the numbers on Brother Bob's overstuffed mattresses and the beads at the end of the string hold a count of love seats. Somewhere in the middle are our sofas. Now just imagine that we happened to know that cheap red sofas were item number 77 in the string, and that each item had been allotted exactly thirty beads.

A little quick math (77 * 30) would tell us that cheap red sofas start at bead 2,310. Furthermore, if we knew that names took up the first twenty-five beads of each item's allotted thirty, and that the quantity on hand was stored in the last five beads, we could do a little more math (2,310 + 25) and know exactly where to find the number of cheap red sofas in Brother Bob's inventory.

This same kind of math works with files as well as beads. Both DOS 3.3 and ProDOS use a position-in-file pointer that designates the current bead position. When you read from or write to a file, this pointer automatically moves down the string. When working with simple sequential files, this is the only method used for moving the pointer.

As Brother Bob knows, however, there are other ways to move the pointer around. Opening a file always moves the pointer to the file's beginning. The append command moves it to the file's end. The read and write commands' R and B parameters, in conjunction with open's L parameter, allow you to move the pointer anywhere you like.

What the L (Is All About). It is helpful in this context to remember that the DOS read and write commands don't actually read or write anything. The read command tells DOS to supply data from the specified file to any subsequent input or get commands. If you use the R or B parameters with read, you are also telling DOS to move the file pointer before supplying data.

Similarly, the write command tells DOS to place anything subsequently printed in the specified file, at the position specified by the R and B parameters.

When you open a file, you can specify a length parameter for DOS to use with that file. The length parameter represents the number of beads, or bytes, allotted to each item, or record, in the file. Brother Bob specifies his record length like this:

```
520 PRINT "OPEN BEDBUGS, L30"
```

With either DOS 3.3 or ProDOS you can use any length value you like when you open a file. Just because a file was originally opened with one value doesn't mean you can't reopen it later with another value. Doing so may cause you all kinds of confusion, but Uncle DOS insists it's your confusion—he knows what *he's* doing. (There really are reasons you might do this that we'll get to in a moment.)

DOS 3.3, in fact, doesn't even keep track of what record length you use when you originally open a file. You have to remember that yourself. ProDOS, on the other hand, does keep track of it. You can determine the record length that a file was created with by using the ProDOS catalog command. The final entry on each line of the catalog, the entry in the column labeled *subtype*, is where you'll find this information. For some reason known only to the ProDOS development team, the L parameter used when the file was created appears there with the prefix *R=*.

If you neglect to specify an L value when you open a file, DOS 3.3 will automatically set it to one. ProDOS, on the other hand, will set it to whatever was specified when the file was created. If you open a *new* file with ProDOS without specifying an L value, the file will be assigned a length of zero (last month we said it would be one—we were wrong). Under ProDOS, files with a length of zero are considered sequential files; all others are considered random-access files. DOS 3.3, on the other hand, will not accept a length of zero—you'll get beeped with a range error if you try it.

At any rate, the length value you assign to a file is absolutely meaningless in and of itself. It has meaning only when you also specify a record parameter with a read or write command. The L and R parameters always work together—either one alone is useless.

R You Ready for This? When you use the R parameter with read or write, the pointer for the specified file is moved according to the following formula:

```
POINTER = (L * R)
```

If you open a file with L specified as *one*, you can use R to move the file's pointer to any byte in the file. The first byte in the file is always called byte zero. Specify R as zero and the pointer gets set to the (1 * 0) byte. Specify one and the pointer moves to (1 * 1). Specify 2310 and the pointer moves to (1 * 2310). Using this technique, you can move the pointer to any byte of the file within the range of the R parameter (32767 for DOS 3.3; 65535 for ProDOS). To reach beyond that, open the file with a slightly bigger L value and do the appropriate math.

Brother Bob doesn't use this technique because he hates math. He would much rather open the file with a length of 30 and then tell DOS he wants to access record 77. There are a few crazy people around, however, who think it's fun to have *Applesoft* multiply the record length by the record number and give the total to DOS. Gives them a feeling of control, they say. Either way, the results are the same. Multiplication, after all, is multiplication.

Two Bs or Not Two Bs? Folks who like to have lots of control over the file pointer can also move it around with the byte parameter. They rarely do, however, because the B parameter is treated like a problem child in Apple's DOS instructions.

In the original DOS 3.3 documentation, called *The DOS Manual*, there was a two-page section on the B parameter which began, "Note: the following section is *not* for beginners . . . ", and which consisted mostly of warnings about all the problems you could create by using the B parameter inappropriately.

In the later *DOS Programmer's Manual*, this two-page section is missing. What little information on B that is presented in this book is only partially correct.

In *Basic Programming with ProDOS*, the B parameter loses even its entry in the index. No examples of how to use the parameter are given.

Nonetheless, the B parameter is a reliable little critter that can be quite useful if you know how to use it.

As originally designed, the B parameter is supposed to allow you to bump the file pointer a specific number of bytes beyond the beginning of the file (sequential files) or the beginning of a record (random files). Brother Bob, for example, actually reads the cheap red sofa data with commands like these:

```
520 PRINT "OPEN BEDBUG, L30"
525 PRINT "READ BEDBUG, R77, B25"
```

As long as you take the proper precautions (to be explained momentarily), the B parameter always enters the pointer-positioning formula in a very precise way. The formula becomes:

```
POINTER = (L * R) + B
```

Something most people don't realize is that the B parameter can be used to move the pointer vast distances as well as to tap it slightly. For example, it is entirely possible to have a file that consists of four 2,500-byte sequential sections and 400 30-byte records. To access the various parts of the file you would use commands like these:

```
540 PRINT "OPEN CURIOSITY, L30"
550 PRINT "READ CURIOSITY, R0, B0"          1st sequential section
550 PRINT "READ CURIOSITY, R0, B2500"       2nd sequential section
550 PRINT "READ CURIOSITY, R0, B5000"       3rd sequential section
550 PRINT "READ CURIOSITY, R0, B7500"       4th sequential section
550 PRINT "READ CURIOSITY, R0, B10000"      record zero
550 PRINT "READ CURIOSITY, R100,            record 100
    B10000"
```

The final command may puzzle you. It appears we are trying to read 10,000 bytes beyond the beginning of record 100. In fact we are skipping over the 10,000 sequential bytes at the beginning of the file and then going to record 100. This works because (30 * 100) + 10000 (what we specify in the command) is mathematically the same as 10000 + (30 * 100) (the file position we actually want).

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    – Wonderama Resort Spa & Carwash
  + Travel Arrangements
    – Arrange air charter through travel agent
  | Agenda
    – Day 1
    – Day 2
  + Budget
    – Submit proposal by August 15
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    – Invitations
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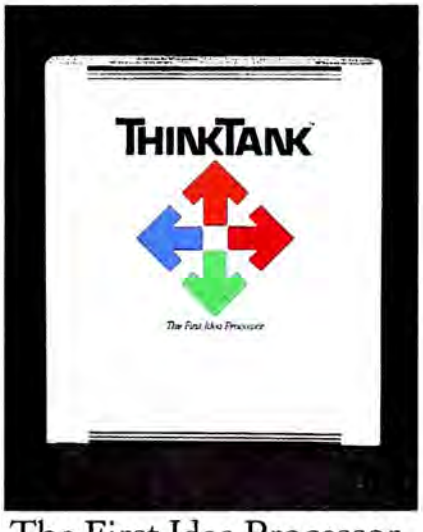
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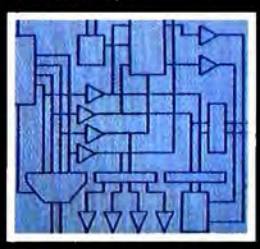
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Note carefully that each of the commands shown previously includes *both* the R and B parameters. This is the precaution you should take when using B—never use it alone. *Always specify R when you use B.* If you are dealing with a sequential file, where R is usually not used, specify R as zero.

If you are using DOS 3.3 and you neglect to specify R, you will run into trouble because R will sometimes default to unexpected, nonzero numbers. When these numbers enter the calculation, the pointer gets moved to unexpected, nonuseful places.

If you are using ProDOS and you neglect to specify R, the file pointer moves B bytes beyond the *current pointer position*. You can get your name in DOStalk if you send us a practical application for this feature—we can't think of any.

With DOS 3.3, the minimum B value is zero, the maximum is 32,767. With ProDOS the minimum B value is again zero but the maximum value varies. At any moment it is the difference between the current file position and the last byte in the file. (Thus, if the pointer is at the end of your file, the maximum allowable B value is zero.) With ProDOS you can't use B to move the pointer beyond the end of the file. If you try you'll get a range error, even when writing. DOS 3.3 doesn't have this disability. You can get around it in ProDOS. Simply open a file and use big L and R values with a write and a print to move the end of the file into hyperspace.

The accompanying figure summarizes the possible values you can use with the L, R, and B parameters for both DOS 3.3 and ProDOS. Note that under ProDOS the largest record number you can have is the smaller of 65,535 records or sixteen megabytes (16,777,216 bytes—the largest possible ProDOS file) divided by the record length. If, for example, your records were 1,000 bytes long, the maximum record number you could have would be 16,777.

Bad Field Position. Another way to move the position-in-file pointer is with the *position* command. You can use position to move the pointer forward (only—never backward) a specified number of *fields*. A field is a bunch of characters that end with a carriage return. DOS places no limit on the maximum number of characters in a field, although if you intend to read your file with Basic *input* statements you'd better not exceed input's 239-character limitation. A field can contain as few characters as none; this happens when you have two carriage returns in a row.

With DOS 3.3 you use the R parameter to specify how many fields *position* should skip over. If you specify zero, the pointer won't move at all. If you specify one, Uncle DOS will zip through the file's characters from the current position to the next return—the pointer will end up at the first character following the return. If you specify two, DOS will stop after two returns, and so on.

Position's R parameter stands for relative field position. There is absolutely no relationship between position's *relative fields* and read and write's *record numbers*, even though they share the R parameter. To minimize some of the confusion about all this, ProDOS has an F parameter that works just like position's relative fields.

With ProDOS, the F parameter can also be used with read and write commands. This makes the position command itself unnecessary—it was included in ProDOS only for DOS 3.3 compatibility.

Imagine you want to move the file pointer to record 93 of a file and then read the second field. Here's how you do it:

```
525 PRINT "READ SUNTAN, R93, F1"
```

You set F to 1 because you want to skip one field. This puts you at the beginning of the second field.

In actual practice, the position command and the F parameter usually create more confusion than they dissipate. Their existence makes it appear that a file organized as a series of variable-length fields can be usefully accessed one field at a time. DOStalk doubts this.

Say a file has a field with a ten-character name in it. If you replace that ten-character name with a five-character name, you'll create *two* fields—one with the new five-character name, one with the final characters of the old ten-character name.

Similarly, if you overwrite an existing field with a longer name, you'll destroy part of the following field. Consider these problems awhile and you'll probably come to the conclusion that files with fields that need to be accessed one at a time need fixed-length, not variable-length, fields. Fixed-length fields can be accessed more easily and quickly with the B parameter than with position or the F parameter.

If you decide to ignore our warnings about the uselessness of position, remember that it always starts counting from the *current* file position. If the pointer is in a record's tenth field and you specify R as two, you end up at the beginning of the twelfth field. You can't go backward. To get to a record's second field if you're starting at the tenth, you must first reset the pointer to the beginning of the record and then use position or the F parameter.

This gets very tricky, since a position command will turn off the read or write command you use to specify the record you want. The solution is to use a second read or write, after the position command. When you execute the second read or write you'll want to leave the file pointer right where it is, so don't use *any* parameters with it.

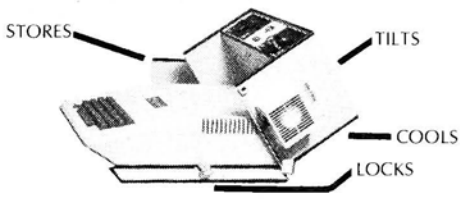
That's it for this month. Brother Bob says to tell you he'll pay you the difference *in cash* if you can find a cheaper parameter anywhere in the city. See you next time. ◨

	DEFAULT VALUE	MINIMUM VALUE	MAXIMUM VALUE
DOS 3.3			
LENGTH OF RECORDS	1	1	32767
RECORD NUMBER	UNPREDICTABLE	0	32767
BYTE OFFSET	0	0	32767
ProDOS			
LENGTH OF RECORDS	0	0	65535
RECORD NUMBER	---	0	SMALLER OF 65535 OR 16M / L
BYTE OFFSET	0	0	LENGTH OF FILE—CURRENT POSITION

Allowable L, R, and B parameter values.

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TRADETALK



☐ **ComputerLand** (Oakland, CA) and **Apple Computer** (Cupertino, CA) have jointly announced that, beginning this month, qualifying ComputerLand franchises in the U.S. and Canada will begin carrying the complete Apple line of computers—the Apple IIe, IIc, and III, the Macintosh, and the Lisa 2 series. "We believe our distribution strength and competitive position will be enhanced by our agreement with ComputerLand," says Apple president John Scully. The added franchises "will provide us with a market presence in geographic areas not presently represented by Apple." About one-half of ComputerLand's 540 stores in the U.S. are already authorized Apple dealers. ComputerLand currently has stores in twenty-five countries. Shipments of the Apple line to those franchises are expected to begin in the near future.

☐ **Apple Computer** (Cupertino, CA) is seeking Japanese software writers to design programs for the Lisa and Macintosh. Apple doesn't have any Japanese-language programs and hopes to promote sales of Apples in Japan. Twice as expensive as they are here, only thirty or forty thousand Apple IIs have been sold in Japan out of 1.5 million sold worldwide. In other news, Apple is scrapping its retailing middlemen. As of October 1, the contracts of some two dozen manufacturer's representatives will not be renewed. Apple will work directly with its eighteen hundred dealers throughout the U.S. and Canada. The change is expected to bring about a closer working relationship between the company and its customer base. And **Alan Kay**, the inventor of windows and the Dynabook concept at the Xerox Palo Alto Research Center, has become a member of Apple's prestigious Apple Fellows—a club that also includes Steve Wozniak, Bill Atkinson, Rod Holt (who designed the power supply for the II), and Richard Page (who first touted the 68000 chip and spearheaded the Lisa software development team). The Apple Fellows are the technical equivalent of vice presidents in Apple's management team. They are given renewable sabbaticals of one year to do research and also get hefty bonuses, options, and other goodies. Kay's last job was as chief scientist at Atari.

☐ According to testimony by the U.S. Army's general staff before Congress, the **Pentagon** (Washington, DC) used Apples in its recent war games with NATO forces in Europe. The reason given by officers for opting for a bunch of Apples, which handled the nuclear targeting chores just fine, was that "the procurement cycle for military-specification machines took too long." The Apples were an "interim" solution for the military until its "ruggedized, nuclear radiation-proof, customized machines . . . at ten times the cost" arrived in Washington.

☐ **VisiCorp** (San Jose, CA) has announced that its president and chief operating officer, **Terry Opdendyk**, has resigned to "pursue another business opportunity." Chairman and chief executive officer **Daniel H. Fylstra** will assume Opdendyk's responsibilities. A spokesperson said Opdendyk's departure is unrelated to the trouble the company has had recently. Earlier this year, VisiCorp laid off about forty workers. Opdendyk's resignation "wasn't really a surprise," the spokesperson said. His departure won't have a significant effect on the company's operation. Fylstra and Opdendyk have worked together closely since 1980, "so there won't be a rocky transition."

☐ **Franklin Computer** (Pennsauken, NJ) has filed for Chapter 11 bankruptcy as legal protection from an estimated several hundred creditors. "There were three reasons for the bankruptcy filing," said **Joel Shusterman**, company president. "There was a softening of the marketplace. There was a financial squeeze because of the Apple Computer settlement. And a rebound in sales that we expected did not materialize." Last January, Apple Computer won a $2.5-million suit alleging Franklin's Ace 1000 and Ace 1200 infringed on Apple copyrights. More recently, Franklin was forced to lay off 160 of its 275 employees. Shusterman also said a new Franklin computer called the CX will be released soon, although the computer's introduction has been delayed several months due to a shortage of parts.

☐ Two games in the Wizware series from **Scholastic** (New York, NY) are part of the **Association of Science-Technology Center's Chips and Changes** traveling exhibition about microelectronics and their importance in daily life. The three-thousand-square-foot exhibit, currently on a two-year tour of American science museums, combines interactive computer displays, robotics, historical objects, audio-visual presentations, pictures, and text. The games are featured in the Bright Games section, an introduction to computerized education.

☐ **BPI Systems** (Austin, TX) has announced it will assume the marketing responsibility from **Apple Computer** (Cupertino, CA) for some of its packages for the IIe. Under an agreement signed by the two companies, BPI will distribute all of its IIe software except the ProDOS versions. Both companies will continue to distribute all BPI software for the Apple III.

☐ **Richard H. Sutliff** has joined **Stoneware** (San Rafael, CA) as eastern regional sales man-

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Celebrating the first five years of interactive fiction from Infocom (Cambridge, MA), more than 350 guests showed up at a New-England-style clambake held at company headquarters recently. From the left, Joel Berez, president; Marc Blank, vice president for product development, and Albert Vezza, chairman and chief executive officer, each lend a hand in cutting the cake.

ager. Sutliff will be responsible for all sales operations in the eastern region of the U.S., including sales training. Formerly in retail and regional sales at Monroe Business Systems, Sutliff will also manage Stoneware's network of eastern manufacturers' reps.

☐ The tenth **New Jersey Microcomputer Show** will be held at the Meadowlands Hilton Hotel in Secaucus, New Jersey, September 15 and 16. The show features more than 250 exhibitors of new and used computer equipment for the home hobbyist, professional user, and small-business owner. The second annual **South Jersey/Philadelphia Microcomputer Show** will be held at the Halloran Plaza Convention Center in Pennsauken, New Jersey, September 22 and 23. The show will feature more than 125 exhibitors. The second annual **Boston Area Microcomputer Show** will be held at the Northeast Trade Center in Woburn, Massachusetts, ten minutes from Boston, September 29 and 30. The show will include more than 200 exhibitors.

☐ Presentations featuring experts on authoring systems, robotics, and interactive video will highlight the **Computer Technology for the Handicapped** conference to be held at the Radisson South Hotel in Minneapolis, Minne-



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sota, September 13 through 16. A commercial exhibition floor and more than eighty one-hour computer application presentations will complement the trio of three-hour topical presentations.

☐ **Discovery 84: Technology for Disabled Persons** is a national conference on computers and other technological products and services for people with disabilities. The three-day affair will be held at the McCormick Inn in Chicago, Illinois, October 1 through 3. A preconference computer literacy course will be offered and the conference itself will feature workshops and exhibits.

☐ **Info 84: The Information Management Exposition and Conference** will take place in the New York Coliseum in New York October 1 through 4. All aspects of information systems will be covered in about sixty sessions grouped into five sections—information system opportunities, technology, administration, office administration, and personal business computers.

☐ Top computer students from Chicago's public schools attended a one-month programming seminar at **Micro Lab** (Highland Park, IL) through an arrangement between the company and the **Chicago Public Schools Bureau of Computer Education**. The pilot program put fifteen computer education students in the care of Micro Lab programmer **Curt Rostenbach**, who served as seminar instructor. The company decided to open its doors to the students with the most programming potential as "an opportunity for us to give back to the community what we have earned," says company president **Stanley Goldberg**.

☐ **Terrapin**, publisher of a popular version of Logo, has relocated to new, larger offices and warehouse facilities at 222 Third Street, Cambridge, MA 02142.

☐ Publishers of the Early Games series for children, **Counterpoint Software** has changed the name of the company to **Springboard Software** as part of a program to enlarge operations. A move to new digs—7807 Creekridge Circle, Minneapolis, MN 55435—and key staff additions are part of the expansion. **R. Rand Ross** has been named general manager. **John W. Paulson**, principal founder of the company, has been named vice president of product development. **Don J. Giacchetti** has been named vice president of finance and administration. **Duane Halter** has been named vice president of sales. **Karen A. Lansing** has been named director of marketing and creative development.

☐ All the computer book titles and interests of **Camelot Publishing** (Ormond Beach, FL) have been acquired by **Sterling Swift Publishing** (Austin, TX). "The student and teacher materials fit perfectly into our product and marketing mix for the educational market," said a spokesperson for Sterling Swift.

☐ **Thorn EMI Computer Software** (Costa Mesa, CA) has acquired exclusive worldwide marketing and distribution rights for all the products of **Perfect Software** (Berkeley, CA), one of the ten largest publishers of business applications software in the United States. Generic versions of Perfect Software programs in MS-DOS and CP/M will be sold through Thorn EMI's established international retail network. First stop is England, then on to Germany and the Scandinavian countries. In addition, Thorn EMI has also entered into an agreement with **Perfect's Product Science Center** (Eugene, OR) to develop further products for the distributor on an exclusive basis.

☐ Two pioneers in entertainment software, **Activision** (Mountain View, CA) and **Gamestar** (Santa Barbara, CA), have joined forces in an agreement under which Activision will distribute and support Gamestar's line of sports-oriented software in the U.S. and Activision International will manufacture, distribute, and market the games worldwide.

☐ The Russians still have a chance to compete in this summer's Olympic Games thanks to **Epyx Computer Software** (Sunnyvale, CA). The company sent complimentary copies of their new *Summer Games* to top Russian ambassadors Anatoliy Dobrynin in Washington, D.C., and Oleg Troyanovsky in New York, New York.

☐ **Arrays/The Book Division** (Los Angeles, CA) has promoted **Stephanie Loysen** to director of sales. As head of the newly created division, Loysen will oversee sales of the firm's thirty-five-volume catalog of books. Loysen recently created a team of sales reps for the job.

☐ A former executive vice president of coin-operated games at Atari has joined **The Learning Company** (Menlo Park, CA) as vice president of finance and chief financial officer. **Fred M. Gerson** will assume overall financial responsibilities and oversee all company operations. ■



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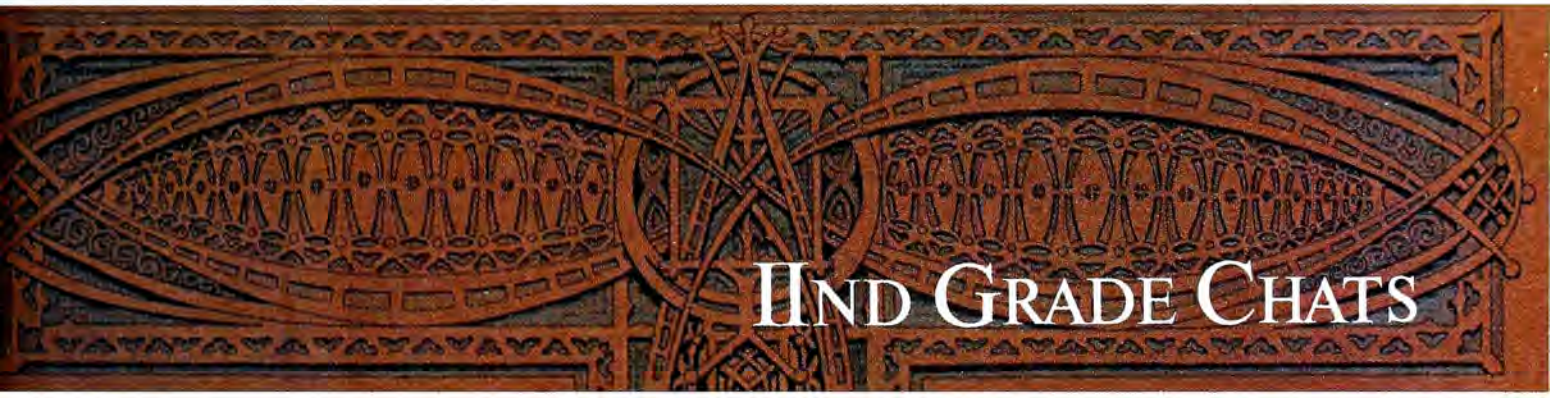


Flash! We interrupt this catalog . . .

. . . to bring you all the information it has in it. Not just on the screen where you can see it, mind you. There's no news in that. At last, all that good data can be put where Applesoft programmers can utilize it.

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But First, a Word from Our Author. . . . Before this goes any further, we wish to disavow any appreciable expertise in assembly language programming. This program is short for its apparent power because it taps seven DOS, six Applesoft, and three Monitor routines to do all of its work—that's where all the real "programming" was done. It is ripe for all sorts of additions by those who really do know what they are doing as well as those who are just learning—so have at it!



A Catalog of Values!

by John A. Oakey

DOSlink is the result of frustration (1 percent), tempered by the certainty that visible forms are the result of operative functions, and a lot of research coupled with trial-and-error experimentation (99 percent). It is a synthesis of information found in *Beneath Apple DOS* by Don Worth and Pieter Lechner; the Assembly Lines column by Roger Wagner in the February 1982 *Softalk*; "Applesoft Internal Entry Points" by John Crossley in *All About Applesoft*; *Apple II Monitors Peeled*; *The DOS Manual*; and *Applesoft Basic Programmer's Reference Manual*. The references are listed in order of their importance to the creation of the program.

And Now—On with the Show! Before doing something to DOS, let's arrange a way to undo it if we need to later. Prepare to experience the easiest of all program creations. After booting normal, unpatched-in-any-way DOS 3.3 from a newly initialized disk in a 48K (at least) Apple (have all the bases been covered?), type *bsave Catalog Restore, A$ADB3, L$AA*. That's it.

What you have just done is save a pristine copy of the section of DOS that is largely responsible for producing that show of shows, the catalog. *DOSlink* will "hook" into or otherwise modify seven areas inside that region in the process of setting itself up. All the damage can be repaired with the command *bload Catalog Restore*. Caveat: *bload*, not *brun*. The only thing not repaired is the init command—better safe than sorry.

For those who prefer to type the code in directly instead of creating an assembly source, remember that the ORG (the starting point) of the code is $9B6C. Since that will overwrite the DOS file buffers, the code cannot be entered initially at the location where it is designed to run. It would be a good idea to enter the code at $1B6C so that the last three hex digits could be used to confirm the accuracy of program entry when proofreading and debugging. If you use this method, you should type *bsave DOSlink at $1B6C,A$1B6C,L404* when your entry is complete. To brun the program with this code, it will be necessary to use the command *brun DOSlink at $1B6C,A$9B6C*. This should be substituted for the command *brun DOSlink* used later in this article and in the *DOSlink Demo* program.

DOSlink was written using the *Big Mac* assembler. The *DOSlink* listing contains fairly complete comments on the operation of the program. This program is so simple in operation that the vast majority of the op-codes are standard 6502 mnemonics. Two notes of explanation may be of help to users of other assemblers. First, the DS pseudo op-code stands for *data storage* and is just a means of reserving bytes to be used by program variables during operation. For assemblers without this function, *HEX 00 00* (or a similar command to specify a pair of labeled bytes) will serve just as well. Second, when *Big Mac*'s pseudo op-code command *ASC* delimits its operand string with a single quote, it places the string into memory in positive ASCII (high bits off). This is the way Applesoft expects to find its text information.

Look Out Boys—It's a Setup! Your program should brun *DOSlink* before defining any string variables. Subsequently, the arrays LK$, SE, FT$, and FI$ should be dimensioned before you issue the catalog command. Otherwise, those arrays will be automatically dimensioned by the Applesoft PTRGET routine to hold only ten entries of file information. This will lead to poor reviews from the Applesoft command interpreter when a disk with more than ten files (for technical reasons *DOSlink* doesn't use the zero array variable) is catalogued.

Getting *DOSlink* into operation can be a real one-liner. Here is a line that might work:

```
1 PRINT CHR$(4)"BRUN DOSLINK": DIM LK$(105), FI$(105), FT$(105),
  SE(105)
```

Note the use of CHR$(4). The D$ convention for executing DOS commands requires the defining of a string, which should *not be done* prior to bruning *DOSlink*.

After this short setup, any catalog command (as in *print CHR$(4)"catalog"*) will result in Applesoft variables holding all the

catalog information as shown in the accompanying table.

Filling these variable arrays is accomplished in the spaces of time between the output of each character of the catalog. With all this extra activity, you would think the catalog would be slow in delivering its lines to the screen. The first time you try it you may be a bit surprised that it actually looks just as fast as usual. This is an illusion (shades of Bill Budge!) caused by the removal of the expected pause in the catalog and perhaps somewhat lowered expectations. There is a delay, but its brevity is one of the big advantages to using machine language.

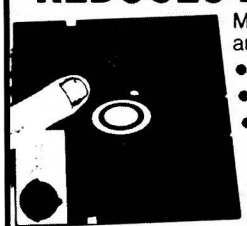
Get Yer Programs Here—Only $194! *DOSlink* initially loads into the $194 (decimal 404) bytes from $9B6C to $9CFF. At the end of its setup, however, it has DOS rebuild its buffers over the first $79 (121) bytes, which constitute the setup front end. This means that, in actual execution, *DOSlink* occupies only $11B (283) bytes—just over one disk sector or "page" of memory! Four zero-page bytes are also used: $FC, $FD, $FE, and $FF. $FE and $FF must be left undisturbed after the program is set up or *DOSlink* will not function properly. They hold a pointer to the value of FC%, which is needed before and during each catalog.

Putting the Cat in the Bag. Listing 1 contains the assembled source code of *DOSlink*. Parts one and two go into the section of DOS that performs the catalog. They prepare *DOSlink* to work much of its magic by a bit of redirection. Part one sets up hooks in six places so that *DOSlink* will be able to pick up the data being displayed and removes the catalog's pause. Part two rebuilds the DOS buffers just below part three, reclaiming the memory that held the setup routine. Along the way, the init command is disabled, the RAM location for the variable FC% is found, and its address is stored in $FE and $FF. While the *Catalog Restore* program we saved a while ago reverses most of this process, bloading it will not restore init.

Variable	Will Hold This Information
VN	The disk volume number.
FC%	The number of entries in the disk catalog.
LK$(X)	An asterisk or a space, depending on whether the Xth entry was locked or unlocked respectively.
FT$(X)	The letter designation of the file type, usually A, I, B, or T, of the Xth entry.
SE(X)	The number of sectors that DOS reports the Xth entry uses on the disk—note that DOS is sometimes inaccurate in this respect.
FI$(X)	The name of the Xth entry with no padded spaces at the end—note that FN$( ) was not used because FN is a reserved word.

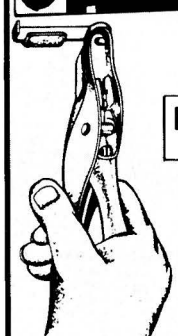
Variable arrays filled by *DOSlink* catalog.

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In line 141 at the beginning of part three, the first use is made of the SAVE routine in the Apple's Monitor. This routine places all the 6502's register values in zero page beginning at $45. Each time a piece of information is fetched to *DOSlink*, the first thing done is to call SAVE. Conversely, the last thing done before returning to continue the catalog routine is to utilize SAVE's alter ego, RESTORE, which reverses the process. Old "Uncle DOS" never knows we've been gone.

The reinitialization of *DOSlink* each time it is used is made relatively simple by the DOS catalog routine's printing of the disk volume number. This is an action performed only once per catalog, at the very beginning of the routine, which is exactly what is needed.

In lines 144 through 151, the Applesoft text pointer is saved and the pointer to FC%, which was found in part one, is used to reset FC% to zero. Note that only the least significant byte of FC% is ever used, since DOS will only allow 105 entries in a disk catalog and one byte can be incremented up to 255. The moral of this bit of trivia is that if you utilize FC% in some manner that assigns it a value greater than 255, and then issue a catalog command, the bluebird of happiness will not remain perched outside your window.

In line 153, the value of the disk volume is copied from $44 (A5L), where the catalog routine stored it, into the Y register and floated using one of the nifty Applesoft routines, called SNGFLT (single byte float?), documented by Crossley. In order to get SNGFLT to work properly it appears to be necessary for the accumulator to hold $00 before the subroutine is called.

When an integer is "floated," its floating point equivalent is placed in an area of the zero page known as FAC (floating point accumulator). There are routines available to move the value in the FAC anywhere in memory as needed. At the moment we would like to have it wherever Applesoft would look to find VN, the variable used to hold the volume number.

In part eight, lines 303 through 308, some "pseudo" (adjective—false; counterfeit; spurious, sham; pretended) Applesoft variables were created that look just as they would if they were in a program being executed somewhere in RAM. In lines 155 through 158 the TEXT POINTER ($B8,$B9) is aimed at the one that looks like VN, and then we "fire" the Applesoft routine called PTRGET (pointer get). When the dust clears, the address of the value of the variable VN will be found in Y and the accumulator. Line 159 transfers the value in the accumulator to the X register, which completes the required setup for using the routine MOVEMF (move to memory from FAC) to put the FAC in the RAM locations pointed to by VN.

All this merriment brings us to part four, lines 174 through 198, where the primary objective is to put an asterisk or a space in the LK$( ) array value indexed by the FC% variable. First, however, the locations $FC and $FD must be set to zero before they are needed in part seven to get the file name. This must be done for every entry; it must be done before part seven swings into action; and it is best done just once for each entry for efficiency's sake, so this is probably the best point at which to get it accomplished. The same logical process applies to lines 180 through 184, in which the FC% variable is incremented by one.

The remainder of part four and part five are virtually identical. A single character, which will be the entire string assigned to the LK$( ) (locked) or FT$( ) (file type) variable, is fetched into the accumulator and placed in the first byte of the input buffer. The X register is then loaded with a #$01 to denote the length of the string. The GDBUFS (good buffers?) routine is then called to clear the high bits of all the characters in the string (though it is only one in this case) and then place a #$00 at the end of it as an end-of-string marker. The text pointer is aimed at the pseudo variable to which we want this string assigned, and a *DOSlink* subroutine, MKSTR (make-it-a-string), which is discussed later, is called. Both of these parts end with a jump to COUT, which

picks up where the catalog left off.

Part six, the process of getting the number of sectors used by each entry into the array variable SE( ), was originally patterned after Wagner's "variable sender" routine, which he reported (and Crossley seemed to confirm) should work for all six types of variables. What prevents it from working, it turns out, is the eventuality of an array variable, like SE( ), being indexed with another variable, like FC%, resulting in the destruction of the FAC if the SNGFLT routine is used first. Fortunately, Crossley noted that PTRGET also stores its results in VARPNT,VARPNT+1 ($83,$84), so the solution is to call PTRGET to find SEC(FC%), then float the sector integer using SNGFLT, then pick the now destroyed-in-the-registers pointers back up and use MOVEMF as before.

The only really original programming in *DOSlink* is in part seven, where FI$ collects the file name. This routine is executed thirty times for each entry as it builds a file name and so is a little longer and more complex than the other sections.

Each time catalog puts out a letter of the file name being displayed, the hook at $AE1C makes it detour to GETFNM at line 249. Here, the character being output is placed in the accumulator and the position of the letter in the file name, minus one, is placed in the X register. For example, if the program name being output was Hello, at the point when the "e" was being printed, the accumulator would hold an "e" and the X register would be set to 1. The first thing done is to compare and see if what is in the accumulator is a space. If it is not, then the byte at $FC, called NONSPC, is updated by storing the current value of X in it. When the file name is completely processed, NONSPC holds the position of the last nonspace character, minus one.

In either case, the next job is to put the character in the next consecutive input buffer location. In this way the entry's name string is built one letter at a time in the input buffer. When the name is finished, the character counting byte, CHRCNT, is incremented and the same test that DOS does to see if catalog is through printing the file name is performed. Most of the time the program will then continue with the catalog routine by exiting through NMLRTN (normal return).

If the comparison of the Y register in lines 262 through 264 finds that the character just output is the last one that DOS will print, then X is loaded with the value of the last nonspace character, NONSPC incremented by one, and GDBUFS is used as it was before. We then point the text pointer at our pseudo FI$(FC%) variable and go to MKSTR before exiting through COUT.

The pseudo-Applesoft variables in lines 303 through 308 of part eight have already been discussed. Part eight also contains *DOSlink*'s only "in-house" subroutine, MKSTR. Each routine that uses a string variable to hold its information sets the Applesoft text pointer and then calls on MKSTR. PTRGET is used to find the location in RAM of the string to be used. After careful setup, MAKS is called to move the information gathered from the input buffer to the next available free space in the top of memory. SAVD then matches the descriptors found by PTRGET to the new location of the string just relocated.

The end is now in sight. Part nine is simple housekeeping to reinstate the proper Applesoft text pointer and then allow DOS to continue on with its exit.

Presenting . . . *DOSlink Demo*. Listing 2, *DOSlink Demo*, which appears on page 58, is a unique (if trivial) revolving catalog that shows how to set up, use, and remove *DOSlink*. Lines 50 and 60 contain all that needs to be done to get *DOSlink* installed and ready to use.The arrays are dimensioned to 105 because that is the maximum number of catalog entries DOS will allow. Variables VN and FC% are set to zero only to document their use for the reader's future reference.

The *DOSlink* version of the catalog command still prints the catalog while it copies the information into the arrays. In a lot of applications—custom catalogs, for instance—you won't want the normal catalog displayed before the custom one. Line 80 of the demo shows how to disable video output without changing the screen display or preventing DOS from seeing its printed commands. It just pokes the address of an RTS command in ROM into the COUT vector in zero page, then tells DOS with a *call 1002* to install that location as the effective address of COUT. It sounds complicated, but it is accomplished in three short commands. DOS does all the work. The DOS pr#0 command in line 90 reestablishes normal video output. The credit for this technique goes to *Softalk*'s assembly language columnist, Jock Root.

By the way, line 60 turns off any eighty-column card that may be present. Because of all the vectors that the routine intercepts, *DOSlink* should only be used in forty-column mode.

After the DOS catalog command is issued in the normal manner in line 90, the Applesoft variables will hold the data displayed, as previously detailed. The variables will be changed each time a catalog is issued but will not be cleared. If a disk that has only five files is catalogued after cataloguing one that had ten files, FC% will be set to five but the variables FI$(6) through FI$(10) will still hold the data from the previous disk's catalog. You should see to it that your program doesn't misleadingly display these old file names.

Lines 350 through 390 show how to remove *DOSlink* so that the only remaining trace of the program is the disabled init function. The actual removal of the routine is done in line 390. The pokes and call cause DOS to once again rebuild its buffers so that a new program being run will find a standard DOS and a normal himem.

```
1   *-------------------------------*
2   *          DOSLINK              *
3   *       by John A. Oakey        *
4   *                               *
5   * 3/12/84            Ver.S1     *
6   *                               *
7   * DOSlink is an interface       *
8   * between DOS and Applesoft     *
9   * that will return all          *
10  * the information from a        *
11  * CATALOG command in known      *
12  * Applesoft variables.          *
13  * FI$(X) = file name            *
14  * FT$(X) = file type            *
15  * SE(X)  = sector count         *
16  * LK$(X) = locked symbol        *
17  * FC%    = # of files           *
18  * VN     = volume number        *
19  * Setup required from           *
20  * Basic is to BRUN DOSLINK      *
21  * before defining any vari-     *
22  * ables and then dimension      *
23  * FI$(105), FT$(105),           *
24  * SE$(105), LK$(105).           *
25  *-------------------------------*
26  *
27  A5L     =   $44
28  A5H     =   $45
29  YREG    =   $47
```

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```
                                30  VARPNT   =  $83
                                31  FORPNT   =  $85
                                32  TXTPTR   =  $B8
                                33  NONSPC   =  $FC
                                34  CHRCNT   =  $FD
                                35  FCLO     =  $FE
                                36  FCHI     =  $FF
                                37  BUFFER   =  $200
                                38  BUFPTR   =  $9D00
                                39  INIT     =  $A5AF
                                40  INTDOS   =  $A7D4
                                41  VOLPRT   =  $ADC1
                                42  LOKPRT   =  $ADE6
                                43  FTYPRT   =  $ADFA
                                44  SECPRT   =  $AE0C
                                45  FNMPRT   =  $AE1C
                                46  EXIT     =  $AE2D
                                47  PAUSE    =  $AE34
                                48  TDNPRT   =  $AE42
                                49  GDBUFS   =  $D539
                                50  SAVD     =  $DA9A
                                51  PTRGET   =  $DFE3
                                52  SNGFLT   =  $E301
                                53  MAKS     =  $E3E9
                                54  MOVEMF   =  $EB2B
                                55  COUT     =  $FDED
                                56  RESTORE  =  $FF3F
                                57  SAVE     =  $FF4A
                                58  *
                                59  *1111111111111111111111111111111111111111111111*
                                60  * PART ONE — Set hooks in the DOS catalog routine *
                                61  *            to retrieve all information displayed *
                                62  *1111111111111111111111111111111111111111111111*
                                63  *
                                64  *
                                65          ORG $9B6C
                                66  *
                                67  *
9B6C: A9 E5     68          LDA #<VOLGET    ;Hook the
9B6E: 8D C1 AD  69          STA VOLPRT      ;volume
9B71: A9 9B     70          LDA #>VOLGET    ;number
9B73: 8D C2 AD  71          STA VOLPRT+1
                72  *
9B76: A9 12     73          LDA #<LOKGET    ;Hook the
9B78: 8D E6 AD  74          STA LOKPRT      ;locked (*) or
9B7B: A9 9C     75          LDA #>LOKGET    ;unlocked ( )
9B7D: 8D E7 AD  76          STA LOKPRT+1    ;symbol
                77  *
9B80: A9 3C     78          LDA #<GETFTYP   ;Hook the
9B82: 8D FA AD  79          STA FTYPRT      ;file
9B85: A9 9C     80          LDA #>GETFTYP   ;type
9B87: 8D FB AD  81          STA FTYPRT+1    ;(I,A,B, or T)
                82  *
9B8A: A9 57     83          LDA #<GETSEC    ;Hook the
9B8C: 8D 0C AE  84          STA SECPRT      ;number of
9B8F: A9 9C     85          LDA #>GETSEC    ;sectors
9B91: 8D 0D AE  86          STA SECPRT+1
                87  *
9B94: A9 79     88          LDA #<GETFNM    ;Hook the
9B96: 8D 1C AE  89          STA FNMPRT      ;name of
9B99: A9 9C     90          LDA #>GETFNM    ;the file or
9B9B: 8D 1D AE  91          STA FNMPRT+1    ;program
                92  *
9B9E: A9 EB     93          LDA #<PART9     ;Intercept exit
9BA0: 8D 2D AE  94          STA EXIT        ;from CATALOG
9BA3: A9 9C     95          LDA #>PART9     ;to do some
9BA5: 8D 2E AE  96          STA EXIT+1      ;housekeeping
                97  *
9BA8: A9 60     98          LDA #$60        ;Disable the
9BAA: 8D AF A5  99          STA INIT        ;INIT command
                100 *
9BAD: A9 60     101         LDA #$60        ;Eliminate
9BAF: 8D 34 AE  102         STA PAUSE       ;CATALOG pause
                103 *
9BB2: A5 B8     104         LDA TXTPTR      ;Save the
9BB4: 8D FE 9C  105         STA TPRHLD      ;TEXT
9BB7: A5 B9     106         LDA TXTPTR+1    ;POINTER
9BB9: 8D FF 9C  107         STA TPRHLD+1
                108 *
9BBC: A9 CA     109         LDA #<FCCTR     ;Set up and find
9BBE: 85 B8     110         STA TXTPTR      ;the location
9BC0: A9 9C     111         LDA #>FCCTR     ;of FC% (the file
9BC2: 85 B9     112         STA TXTPTR+1    ;count variable)
9BC4: 20 E3 DF  113         JSR PTRGET      ;and store it as
9BC7: 85 FE     114         STA FCLO        ;a low byte/high
9BC9: 84 FF     115         STY FCHI        ;byte pointer at
9BCB: E6 FE     116         INC FCLO        ;FCLO/FCHI
                117 *
9BCD: AD FE 9C  118         LDA TPRHLD      ;Retrieve
9BD0: 85 B8     119         STA TXTPTR      ;the
9BD2: AD FF 9C  120         LDA TPRHLD+1    ;TEXT
9BD5: 85 B9     121         STA TXTPTR+1    ;POINTER
                122 *
                123 *2222222222222222222222222222222222222222222222*
                124 *  PART TWO — Have DOS rebuild its buffers below  *
                125 *               the active part of this program   *
                126 *2222222222222222222222222222222222222222222222*
                127 *
                128 *
9BD7: A9 AC     129         LDA #<VOLGET-$39 ;Set up DOS
9BD9: 8D 00 9D  130         STA BUFPTR      ;to rebuild
9BDC: A9 9B     131         LDA #>VOLGET-$39 ;buffers
9BDE: 8D 01 9D  132         STA BUFPTR+1    ;below this
9BE1: 20 D4 A7  133         JSR INTDOS      ;part of the
9BE4: 60        134         RTS             ;program
                135 *
                136 *3333333333333333333333333333333333333333333333*
                137 *  PART THREE — Get the disk volume number in the  *
                138 *               variable VN                       *
                139 *3333333333333333333333333333333333333333333333*
                140 *
9BE5: 20 4A FF  141 VOLGET  JSR SAVE        ;Monitor routine to save the
                142 *                       ;6502 registers
                143 *
9BE8: A5 B8     144         LDA TXTPTR      ;Save the
9BEA: 8D FE 9C  145         STA TPRHLD      ;TEXT
9BED: A5 B9     146         LDA TXTPTR+1    ;POINTER
9BEF: 8D FF 9C  147         STA TPRHLD+1
                148 *
9BF2: A2 00     149         LDX #$00        ;Zero out the FC%
9BF4: A9 00     150         LDA #$00        ;variable found
9BF6: 81 FE     151         STA (FCLO,X)    ;in part one above
                152 *
9BF8: A4 44     153         LDY A5L         ;Float the Integer
9BFA: 20 01 E3  154         JSR SNGFLT      ;volume number (VN)
9BFD: A9 E8     155         LDA #<VOLASC    ;then aim the TEXT
9BFF: 85 B8     156         STA TXTPTR      ;POINTER at the
9C01: A9 9C     157         LDA #>VOLASC    ;"pseudo" Applesoft
9C03: 85 B9     158         STA TXTPTR+1    ;variable so PTRGET
9C05: 20 E3 DF  159         JSR PTRGET      ;will find it when called
                160 *
9C08: AA        161         TAX             ;Set up and call routine that
9C09: 20 2B EB  162         JSR MOVEMF      ;puts value in memory found
                163 *                       ;by PTRGET
                164 *
9C0C: 20 3F FF  165         JSR RESTORE     ;Fix 6502 registers SAVEd above
                166 *
9C0F: 4C 42 AE  167         JMP TDNPRT      ;Continue the DOS Catalog
                168 *
                169 *4444444444444444444444444444444444444444444444*
                170 *  PART FOUR — Get the file locked status in the  *
                171 *              array LK$()—get a "*" or a " "     *
                172 *4444444444444444444444444444444444444444444444*
                173 *
9C12: 20 4A FF  174 LOKGET  JSR SAVE
                175 *
9C15: A9 00     176         LDA #$00        ;Zero out locations that
9C17: 85 FD     177         STA CHRCNT      ;track a CATALOG name as
9C19: 85 FC     178         STA NONSPC      ;it is output
                179 *
9C1B: 18        180         CLC             ;Increment the FC%
9C1C: A2 00     181         LDX #$00        ;variable by one for each
9C1E: A9 01     182         LDA #$01        ;file — on exit FC% holds
9C20: 61 FE     183         ADC (FCLO,X)    ;the number of active
9C22: 81 FE     184         STA (FCLO,X)    ;files displayed by CATALOG
                185 *
9C24: A5 45     186         LDA A5H         ;Put the locked/unlocked
9C26: 8D 00 02  187         STA BUFFER      ;character in the input
9C29: A2 01     188         LDX #$01        ;buffer and have GDBUFS
9C2B: 20 39 D5  189         JSR GDBUFS      ;clear high bit and mark end
                190 *
9C2E: A9 DF     191         LDA #<LOKASC    ;Set the TEXT POINTER to
9C30: 85 B8     192         STA TXTPTR      ;point to "LK$(FC%):"
9C32: A9 9C     193         LDA #>LOKASC
9C34: 85 B9     194         STA TXTPTR+1
                195 *
9C36: 20 AA 9C  196         JSR MKSTR       ;Make the buffer contents
                197 *                       ;into an Applesoft string
9C39: 4C ED FD  198         JMP COUT        ;then let CATALOG continue
                199 *
                200 *5555555555555555555555555555555555555555555555*
                201 *  PART FIVE — Get the file type (I,A,B,T) in the  *
                202 *              array variable FT$()                *
                203 *5555555555555555555555555555555555555555555555*
                204 *
9C3C: 20 4A FF  205 GETFTYP JSR SAVE
                206 *
9C3F: A5 45     207         LDA A5H         ;Get the file type stored by
9C41: 8D 00 02  208         STA BUFFER      ;DOS in the zero page, put it
9C44: A2 01     209         LDX #$01        ;in the input buffer, and have
9C46: 20 39 D5  210         JSR GDBUFS      ;high bits cleared and end marked
                211 *
9C49: A9 C1     212         LDA #<FTASC     ;Set the TEXT POINTER at the
9C4B: 85 B8     213         STA TXTPTR      ;"pseudo" variable "FT$(FC%):"
9C4D: A9 9C     214         LDA #>FTASC     ;so that PTRGET will find it
9C4F: 85 B9     215         STA TXTPTR+1    ;when called in MKSTR
                216 *
9C51: 20 AA 9C  217         JSR MKSTR       ;Make a string out of it
                218 *
9C54: 4C ED FD  219         JMP COUT        ;Continue with CATALOG
                220 *
                221 *6666666666666666666666666666666666666666666666*
                222 *  PART SIX — Get the number of sectors used in the  *
                223 *              array variable SEC()                  *
                224 *6666666666666666666666666666666666666666666666*
                225 *
9C57: 20 4A FF  226 GETSEC  JSR SAVE
                227 *
9C5A: A9 D7     228         LDA #<SECASC    ;Set up the TEXT POINTER to
9C5C: 85 B8     229         STA TXTPTR      ;point at the SEC(FC%) array
9C5E: A9 9C     230         LDA #>SECASC    ;variable, which will hold the
9C60: 85 B9     231         STA TXTPTR+1    ;number of sectors printed out
9C62: 20 E3 DF  232         JSR PTRGET      ;and find it in memory
                233 *
9C65: A4 44     234         LDY A5L         ;Get the sector integer stored
9C67: A9 00     235         LDA #$00        ;by DOS and float it in
9C69: 20 01 E3  236         JSR SNGFLT      ;FAC—Acc must hold zero
                237 *
9C6C: A4 84     238         LDY VARPNT+1    ;Pick up the pointers to SEC
9C6E: A6 83     239         LDX VARPNT      ;stored by PTRGET and call
9C70: 20 2B EB  240         JSR MOVEMF      ;move to memory from FAC
                241 *
9C73: 20 3F FF  242         JSR RESTORE
                243 *
9C76: 4C 42 AE  244         JMP TDNPRT      ;Continue with DOS
                245 *
                246 *7777777777777777777777777777777777777777777777*
                247 *  PART SEVEN — Get the file names in the array  *
                248 *               variable FI$()                   *
                249 *7777777777777777777777777777777777777777777777*
                250 *
9C79: 20 4A FF  251 GETFNM  JSR SAVE
                252 *
9C7C: A6 FD     253         LDX CHRCNT      ;For each char in file name 1
9C7E: A5 45     254         LDA A5H         ;holds char # - 1 and ACC holds
9C80: C9 A0     255         CMP #$A0        ;the character — Is it a space?
```

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```
9C82: F0 02     256             BEQ PUTBUF      ;if so skip nonspace update step
9C84: 86 FC     257             STX NONSPC      ;update nonspace tracking byte
9C86: 9D 00 02  258 PUTBUF      STA BUFFER,X    ;put the character in the buffer
                259 *
9C89: E6 FD     260             INC CHRCNT      ;increase char. count for next use
                261 *
9C8B: A4 47     262             LDY YREG        ;Check Y register DOS uses, see if
9C8D: 88        263             DEY             ;file name print is over, if not
9C8E: 10 14     264             BPL NMLRTN      ;do a "normal" return (29 of 30)
                265 *
9C90: A6 FC     266             LDX NONSPC      ;If the file name output by DOS is
9C92: E8        267             INX             ;through, set it up in the input
9C93: 20 39 D5  268             JSR GDBUFS      ;buffer like LK$ and FT$ above
                269 *
9C96: A9 CE     270             LDA #<FIASC     ;Set the TEXT POINTER at
9C98: 85 B8     271             STA TXTPTR      ;"FI$(FC%):"
9C9A: A9 9C     272             LDA #>FIASC
9C9C: 85 B9     273             STA TXTPTR+1
                274 *
9C9E: 20 AA 9C  275             JSR MKSTR       ;Go make a string of the name
                276 *
9CA1: 4C ED FD  277             JMP COUT        ;Continue with DOS
                278 *
9CA4: 20 3F FF  279 NMLRTN      JSR RESTORE
                280 *
9CA7: 4C ED FD  281             JMP COUT
                282 *
                283 *8888888888888888888888888888888888888888888888888*
                284 * PART EIGHT — Subroutine and pseudovariables      *
                285 *8888888888888888888888888888888888888888888888888*
                286 *
9CAA: 20 E3 DF  287 MKSTR       JSR PTRGET      ;Get the pointers into memory
9CAD: 85 85     288             STA FORPNT      ;for the string at TEXT POINTER
9CAF: 84 86     289             STY FORPNT+1    ;and store them at $85/$86
                290 *
9CB1: A9 00     291             LDA #<BUFFER    ;Set up and call a routine
9CB3: A0 02     292             LDY #>BUFFER    ;that will move the string
9CB5: A2 00     293             LDX #$00        ;put in the input buffer to
9CB7: 20 E9 E3  294             JSR MAKS        ;the top of available memory
                295 *
9CBA: 20 9A DA  296             JSR SAVD        ;Match the descriptors found
                297 *                           ;by PTRGET to it
                298 *
9CBD: 20 3F FF  299             JSR RESTORE
                300 *
9CC0: 60        301             RTS             ;Return to calling routine
                302 *
9CC1: 46 54 24
9CC4: 28 46 43
9CC7: 25 29 3A  303 FTASC       ASC 'FT$(FC%):' ;These are the "pseudo"
9CCA: 46 43 25
9CCD: 3A        304 FCCTR:      ASC 'FC%:'      ;Applesoft variables that
9CCE: 46 49 24
9CD1: 28 46 43
9CD4: 25 29 3A  305 FIASC       ASC 'FI$(FC%):' ;we point TEXT POINTER at
9CD7: 53 45 28
9CDA: 46 43 25
```

```
9CDD: 29 3A     306 SECASC      ASC 'SE(FC%):'  ;in order to make the Basic
9CDF: 4C 4B 24
9CE2: 28 46 43
9CE5: 25 29 3A  307 LOKASC      ASC 'LK$(FC%):' ;subroutines do their stuff
9CE8: 56 4E 3A  308 VOLASC      ASC 'VN:'
                309 *
                310 *99999999999999999999999999999999999999999999999*
                311 *  PART NINE — Housekeeping upon exit from the DOS  *
                312 *              CATALOG routine                      *
                313 *99999999999999999999999999999999999999999999999*
                314 *
                315 *
9CEB: 20 4A FF  316 PART9       JSR SAVE
                317 *
9CEE: AD FE 9C  318             LDA TPRHLD      ;Recover the real Applesoft
9CF1: 85 B8     319             STA TXTPTR      ;TEXT POINTER, since we will
9CF3: AD FF 9C  320             LDA TPRHLD+1    ;not be disturbing it again
9CF6: 85 B9     321             STA TXTPTR+1
                322 *
9CF8: 20 3F FF  323             JSR RESTORE
                324 *
9CFB: 4C 7F B3  325             JMP $B37F       ;Continue with DOS exit
                326 *
                327 TPRHLD      DS  2           ;Storage for TEXT POINTER
```

Listing 1.

Why Blank "Cheat" Sheets? Because They're Better Blank



You've got the best computer in the world, and lots of software to run on it. One problem. Unless you work with these programs everyday, it's hard to keep all those commands straight. "F5" in one program means one thing, and "F5" in another program means something else. A few companies offer a die cut sheet that attaches to your keyboard with **all** the commands of one program printed on it. Great idea, unless you only need a few easy-to-find "hints," or you need them for 10 or 20 programs. Our solution? Simple. A pack of 12 lined cards, die cut to fit your keyboard and just waiting to be filled with those problem commands **you** forget most often. Simple? Yes, but effective. Now you can have **all** your program commands right at your finger tips on YOUR VERY OWN, custom designed "cheat" sheets. Great for offices and schools. Order a couple packs today!

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```
10 REM DOSLINK DEMO
20 REM
30 HOME : PRINT "DOSLINK DEMO": PRINT : PRINT "ONE MOMENT PLEASE"
40 REM Line 60 sets up DOSLINK and documents the variables it returns
50 PRINT CHR$ (4);"BRUN DOSLINK": DIM FI$(105),FT$(105),LK$(105),SE(105):
   VN = 0:FC% = 0
60 PRINT CHR$ (21): PRINT CHR$ (4);"PR#0": HOME : REM Make sure 80 column
   cards are off
70 PRINT "PLACE A DISK YOU WISH TO HAVE CATALOGUED IN DRIVE ONE,
   THEN PRESS RETURN: ";: INPUT " ";AN$; INVERSE : VTAB 11: PRINT "^
   NOW LOADING CATALOG INFORMATION ^": NORMAL
80 POKE 54,255: POKE 55,253: CALL 1002: REM Turn off video output
90 PRINT CHR$ (4)"CATALOG": PRINT CHR$ (4);"PR#0": REM Reconnect output
100 HOME : INVERSE : PRINT "VOL #:"; SPC( 5), "SECTORS USED:";
    SPC( 4);"ENTRIES:"; SPC( 4);: FOR I = 1 TO 40: PRINT CHR$ (32);: NEXT :
    PRINT
110 VTAB 23: PRINT "R = RUN/BRUN/EXEC : L = LOAD/BLOAD : ESC = QUIT :
    SPACE = START/STOP : C = CATALOG ";: POKE 2039,32: POKE 34,2:
    POKE 35,22: HOME :SP$ = "  ": REM 3 SPACES
120 VTAB 1: HTAB 7: PRINT SP$;: VTAB 1: HTAB 7: POKE 68,VN: CALL 44610:
    REM 44610 takes a digit in $44 (68), converts it to a three-digit string and
    prints it
130 SEC(0) = 0: VTAB 1: HTAB 25: PRINT SP$;: FOR I = 1 TO FC%:SEC(0) =
    SEC(0) + SEC(I): NEXT I: VTAB 1: HTAB 25: PRINT SEC(0): VTAB 1: HTAB 38:
    PRINT SP$;: POKE 68,FC%: VTAB 1: HTAB 38: CALL 44610: NORMAL :
    HOME :I = 0
140 I = I + 1: IF I > FC% THEN I = 1
150 IF I = 1 THEN INVERSE
160 POKE 68,I: CALL 44610: PRINT SPC( 3);FI$(I): NORMAL : IF PEEK ( - 16384)
    < 128 THEN POKE - 16368,0: GOTO 140
170 X = PEEK ( - 16384) - 128: POKE - 16368,0: IF X = 32 GOTO 230
180 IF X = 82 THEN GOSUB 340: GOTO 260
190 IF X = 76 THEN GOSUB 340: GOTO 300
200 IF X = 67 THEN TEXT : HOME : GOTO 70
210 IF X = 27 THEN GOSUB 370: TEXT : HOME : END
220 GOTO 140
230 X = PEEK ( - 16384): POKE - 16368,0: IF X < 128 GOTO 230
240 X = X - 128: IF X = 82 OR X = 76 OR X = 67 OR X = 27 GOTO 180
250 GOTO 140
260 IF FT$(PN) = "A" OR FT$(PN) = "I" THEN X$ = "RUN"
270 IF FT$(PN) = "B" THEN X$ = "BRUN"
280 IF FT$(PN) = "T" THEN X$ = "EXEC"
290 TEXT : HOME: PRINT "DOS COMMAND: "X$; SPC( 1);FI$(PN): GOSUB 370:
    PRINT : PRINT CHR$ (4);X$;FI$(PN): END
300 IF FT$(N) = "A" OR FT$(PN) = "B" THEN X$ = "LOAD"
310 IF FT$(PN) = "B" THEN X$ = "BLOAD"
320 IF FT$(PN) = "T" THEN TEXT: HOME : PRINT "TEXT FILE — PRESS ANY KEY
    TO CONTINUE ";: GET A$: PRINT A$: GOTO 100
330 GOTO 290
340 INPUT "PROGRAM NUMBER: ";PN$: PN = VAL (PN$): IF PN < 1 OR PN >
    FC% GOTO 340
350 RETURN
360 REM This is the way to remove DOSLINK completely from memory
370 PRINT "PLEASE PLACE THE DISK THAT HAS THE": PRINT "CATALOG
    RESTORE PROGRAM ON IT IN DRIVE 1 THEN PRESS RETURN.";: INPUT " ";
    AN$:HOLD$ = FI$(PN): PRINT CHR$ (4)"CATALOG": FOR I = 1 TO FC%
380 IF FI$(I) = "CATALOG RESTORE" GOTO 400
390 NEXT I: TEXT : HOME : PRINT "CATALOG RESTORE IS NOT ON THAT
    DISK!": PRINT : GOTO 370
400 PRINT CHR$ (4)"BLOAD CATALOG RESTORE": POKE 40192,211: POKE
    40193,156: CALL 42964: IF X = 27 THEN RETURN
410 FI$(PN) = HOLD$: PRINT : PRINT "PLACE THE DISK WITH:": PRINT FI$(PN):
    PRINT "IN DRIVE 1 AND PRESS RETURN.": INPUT " ";AN$: RETURN
```

Listing 2.

JUKI 6100.
HARDWARE WITH NO SOFT SPOTS.

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18 cps min. speed		●			●		●	●	●			●
Buffer memory	●	●			●			●	●	●		●
Proportional spacing	●	●		●	●		●	●	●			●
Prints graphics	●	●	●	●	●	●	●	●	●		●	●
11" min. print line	●	●		●	●		●	●	●		●	●
100-character wheel												●
Orig. +3 copies or more	●	●	●	●	●	●	●	●	●	●	●	●
62 dbA noise level or less								●	●			●
Linear stepper carr. motor						●	●			●		●
Buffer expandable to 8K	●				●						●	●
Weighs under 35 lbs.	●	●	●	●	●	●	●		●	●	●	●

Note: Above chart is an art treatment and was not printed by the JUKI 6100.

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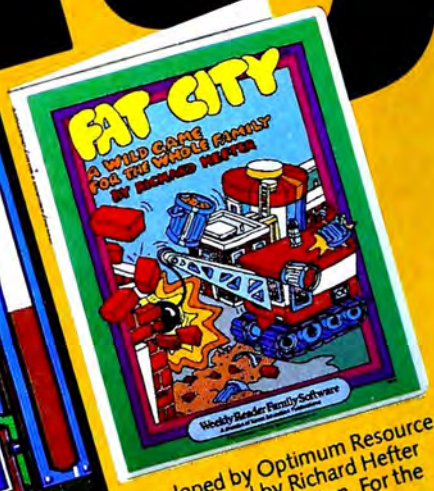
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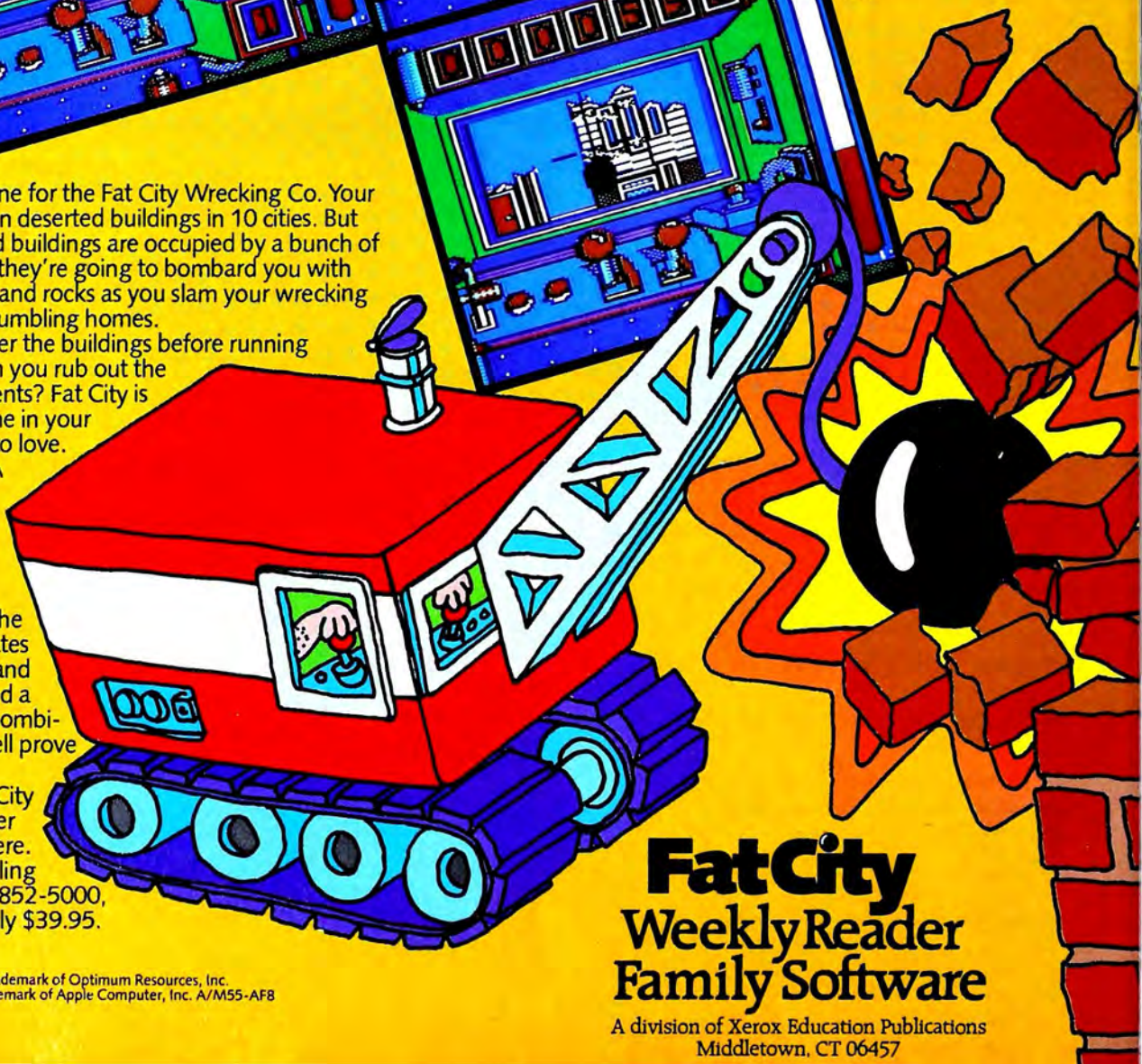
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BEGINNERS' CORNER

BY TODD ZILBERT

Return to Apple, Embrace Change

Obsolescence is an ugly word, especially when applied to personal computers. How sad to think that the systems we spend so much time, frustration, and joy learning to use may soon be obsolete, outshined by a brighter star computer, saddened by a sexier sister machine, or marooned by a dearth of software.

And then many people worry about the changes in operating systems. Apple has made quite a few, from thirteen-sector DOS 3.1, 3.2, and 3.2.1, to sixteen-sector (and incompatible, although there's a way to *Muffin* around that) DOS 3.3, to the newest Apple II operating system, ProDOS (for Professional Disk Operating System). But allay your fears; ProDOS will not make DOS 3.3 obsolete, and ProDOS does not exclude II Plus owners. If you have a 48K II Plus, that 16K memory card (called a Language Card by Apple and a RAM card by most other manufacturers) is the only addition you will have to make to your machine. Upgraded to 64K, the II Plus will run much of the ProDOS software that does not require the 128K memory or the special keys of the IIe and IIc.

Embrace Change. DOS 3.3 is a great operating system, and the DOS 3.3-based software is mountainous. One drawback of DOS is that it was not designed to be used with a hard disk. A hard disk is an information storage system similar to floppy disks, except there is just one very large disk, and thousands of files are put on that one disk. Hard disks are quicker than floppies and, if you juggle large amounts of information, far more efficient.

Most home users will find that floppies provide all the storage they need, which is nice, since hard disks cost a lot more. Lots of businesses, however, require hard disks. Unfortunately, only specially modified versions of DOS work with hard disks, and the modifications are incompatible with a lot of commercial software. So it's time for a change. ProDOS is helping the Apple II become a better serious computer. Embrace change. Computer owners have been big beneficiaries of change.

For a change, the IIc does not come with a DOS System Master. The IIc does not come with DOS at all. If you have a DOS System Master lying around, you can use DOS with your IIc and do exactly what was described last month—you can use the init command to format a DOS 3.3 disk, make a DOS 3.3 startup disk, and save the program we wrote last time as the hello program. But instead of the System Master, you received a disk called System Utilities. System Utilities is to ProDOS what the System Master is to DOS 3.3. Both provide tools (utilities is the five-dollar way of saying tools) that make it easier for you to manage disks—to format them, for instance, or to copy them or parts of them.

Last month we discussed DOS 3.3; if you had only the System Utilities, you were probably a bit bored. This time we'll get back at the DOS 3.3 people by concentrating on ProDOS and by having ice cream.

DOS 3.3 people don't have to be left out, however; you can run down to the nearest computer store and purchase the *ProDOS User's Kit*, and you'll have immediate membership in this month's column. Note that the command names and menus for the IIe *ProDOS User's Kit* vary significantly from those of the IIc System Utilities. Apple figured that new IIc owners would probably have less technical sophistication than the old hands with IIes and Pluses, so they made the IIc ProDOS utilities very friendly. While *ProDOS User's Kit* owners can follow this article and do everything the IIc people can, the methods will be different. (Even if you don't have ProDOS and have no intention of getting ProDOS, you might skim down to this month's Basic program, just to keep your hand in.) We'll begin by making a backup copy of the System Utilities disk.

Insert the System Utilities disk into the drive and close the latch. Turn on the monitor, and then turn on the computer. The System Utilities disk will automatically boot. What is happening during this time is that both ProDOS and a program called Basic.System are being loaded into memory. It's just like when you boot the DOS System Master, the first thing that happens is that DOS is loaded into memory. (The major difference is that ProDOS and Basic.System are files on the Utilities disk, while DOS is hidden on disks initialized by DOS, and does not appear in a catalog of the disk.) The next thing that happens after DOS is loaded is that the hello program is run. When you start the computer with ProDOS, the first thing that happens after the ProDOS and Basic.System programs are loaded is that the computer looks for and runs a program called Startup.

On the Utilities disk, the Startup program presents a menu. When you boot System Utilities, the first thing you'll see (after the ProDOS and Apple IIc copyright screens) is the Main Menu: It says so in the upper right corner. In the upper left it says "System Utilities version 1.0," so you know what disk you're using. Most of the screen is taken up by a numbered list. This list is called a menu; like a restaurant menu, it informs you of your choices. This menu is divided into three parts, two of which have headings. The first part is titled "Work on Individual Files" and contains menu items one through four. The second part is titled "Work on Entire Disks" and contains menu items five through eight. The third part has no head and

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contains only one menu item, number nine, "Exit System Utilities." Look down the menu to item number one, "Copy Files." Unlike the other items, this one is enclosed by parentheses and appears in upper-case letters. Type the number two and the second item is enclosed in parentheses and changes to upper case, while item one changes to lower case and loses its parentheses. When you press return, the emphasized item is selected from System Utilities.

In order to make a backup copy of System Utilities we need to select item five, "Duplicate a Disk," from the menu. Use the down arrow to choose item five, and then press return.

The screen will now present you with the multiple-choice question: *Where is your source disk?* The answer choices are given in another, shorter, menu, one made of only two items: the built-in drive, which is enclosed in parentheses and appears in upper case; and the external drive. The source disk is the disk you plan to copy. The destination disk is the disk you plan to copy it onto. Because in this case the source disk is the System Utilities disk, and it is already located in the built-in drive (also known as drive 1), and because the built-in drive has been preselected, all you have to do is press return.

The next screen asks, *Where is the destination disk?* Actually, the destination disk is in your lap; what the question means is, where will the destination disk be when you are copying the source disk? If you only have one disk drive you will choose the built-in drive item to answer this question, but if you have a second drive, use the down arrow to select the other option. Press return when ready.

You will be instructed to put the source disk in the built-in drive. If you were going to copy something other than System Utilities, you would now put it into the drive; but since you are copying System Utilities, which is already in the drive, just press return. After a short wait you will be told to put the destination disk in the drive. Do so and press return.

You will have to name your new disk; this is a departure from DOS 3.3. In ProDOS, all disks have volume names (each disk is a volume); you cannot call this disk System Utilities because you are not allowed that many characters and because a space is not an acceptable character. ProDOS disk names must start with a slash; the default name, the one already in place, is /Utilities. This name is fine, since we're making a utilities disk, so just press return. The disk will be formatted to ProDOS, which means that the information stored on it will be accessible under the ProDOS operating system, but not under DOS 3.3. Once it is formatted, the words "Formatting . . . Done!" will appear on the screen.

The computer will tell you to put the source disk back into the drive; do so and press return. You will have to swap the disks several times; the System Utilities disk contains many files, and copying the whole disk takes a while, so be patient. People with two disk drives don't have to swap disks, which makes the whole process faster and less tedious.

When the destination disk contains all of the information on the System Utilities disk the screen will say "Duplicating . . . Done!" and will ask if you want to make another copy. You don't, so answer no and press return. Put a label on the destination disk so that you know it is now your /Utilities disk and put the original System Utilities away in a safe place. From now on you should use the copy as your Utilities disk and save the original in case a cup of coffee accidentally tips over.

Insert the new /Utilities disk in the drive. Look down the menu and find the choice that says "Identify and Catalog a Disk"; select it from the menu and press return. The computer will ask what drive the disk is in and then whether you want the catalog to be displayed or to be printed. Select display and you will get a catalog on the screen.

The catalog arrangement of ProDOS is different from that of DOS. The disk name is given, as well as the format, which is ProDOS. The asterisks in the left-hand column show whether or not a file is locked—an asterisk is present if it is. File names are listed in the next column, then the type of file, and then the size. There are quite a lot of files on the /Utilities disk, and many of the file names won't make sense. There are two files that we're particularly interested in right now. They are the ProDOS and Basic.System files—the heart and soul of /Utilities. They are the files that contain the ProDOS operating system and that let Basic programmers use ProDOS commands, such as catalog, in their programs.

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To make a ProDOS startup disk with one of our own programs as the Startup program, we must first put the ProDOS and the Basic.System files on the disk. And to do this we must first have a formatted disk.

Return to the main menu (by pressing escape) and select option six, "Format a Disk." Press return. Again, you have to name the disk. It's up to you, but pick a name that identifies the disk—/ProDOS.boot, for instance. The trusty IIc will warn you to get your /Utilities disk out of the drive. If you initialize your /Utilities disk, you will replace everything on it with a hello program. You'll have a nice, useful blank disk, but no utilities. Insert a new disk and then press return. The disk drive will undergo a lot of commotion, casting spells on the new disk and such, and will finally tell you that the formatting is . . . done! Remove the new disk and replace it with /Utilities.

Menu item one, "Copy a File," is our next choice. Select this option. You'll be greeted by the familiar questions about where your disk is and so forth. You know what to do. When the computer prompts you for the name of the file, answer ProDOS. The file will be read from the /Utilities disk and then you will have to swap it with the destination disk—the newly formatted one. Continue swapping them until the copy is finished.

Follow the same procedure to copy Basic.System on the destination disk. When you are finished, leave the destination disk in the drive and return to the main menu.

Oh, Captain! Another Wine List, Please. If you've been following along with a IIe or II Plus, you've decided that you're in the wrong restaurant—none of the menus look like anything we've discussed. But you can still place your order. The utilities on the ProDOS User's Disk are split into two groups, Filer and Convert. Convert is the tool to use when converting DOS files into ProDOS files or vice versa. We'll concentrate on Filer for now. From the main menu, select item F. You'll see a new menu, and at the top of the list is a question mark. This is the Filer tutor. It helps explain Filer. Read through the tutor and return here when you're done.

To format a new disk you have to select menu item V, "Volume Commands." When you do, you'll be presented with another menu. Choose item F, "Format a Volume," and remove the User's Disk from the drive—you won't be reminded to do so. Put a new disk in the drive and press return. Like the System Utilities, the User's Disk requires you to name the disk, but instead of /Utilities the default will be /Blank00. Call it what you like—August is catchy.

When the disk is formatted, press escape until you are back to the Filer main menu; we want to put both Basic.System and ProDOS on the /August disk. Select item F for "File Commands" and then C for "Copy a File." You will be presented with a default source disk volume name, /ProDOS. The volume name is the name of the disk and is followed by a slash and a file name. Change it to /ProDOS/ProDOS. The destination will be /August/ProDOS. Type return, and soon you'll be rewarded with the message "Copy Done."

Readers with a IIc should now exit /Utilities by selecting menu item nine. The computer will ask if you really want to do this; typing *n* or *no* will stop the action; pressing return will complete it. IIe and II Plus ProDOS users can just press escape to get the main Filer menu and select item Q for quit. Everybody should be outside, in Applesoft. And happy to be here. Let's write a program.

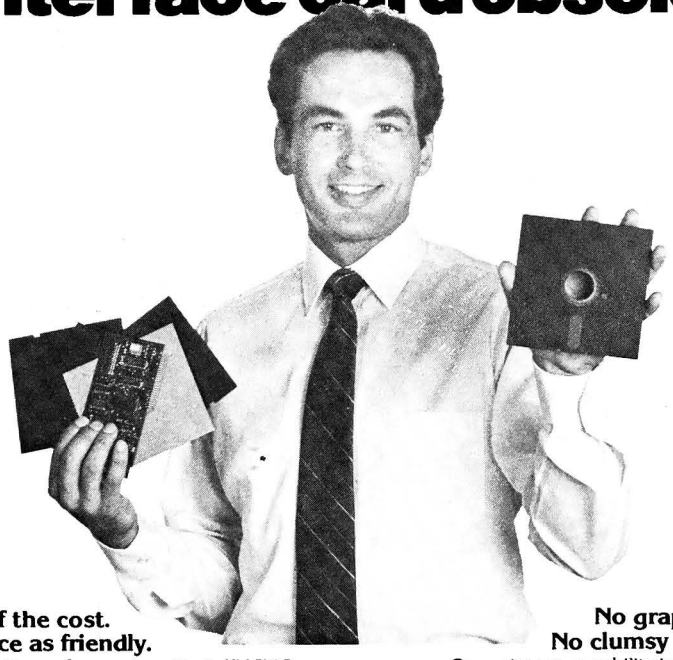
Last time we saved a useless addition program as a Startup program. Embracing change, this time we'll save the following useless program (II Plus and IIe users should type and run it, too, and perhaps save it to disk as *greetings*):

```
10 HOME
20 FOR I = 1 to 20
30 PRINT TAB(I)
40 PRINT "Hi! Can I help you?"
50 NEXT I
60 END
```

Run it and you'll agree that it's a useless program. Let's see what it does, line by line. Line 10 sends the cursor to the top of the screen. Line 20 introduces us to a new programming tidbit—the for-next loop. This is not complicated. With the word *for* we issued a variable (in this case the letter I, although we could have selected any letter) and assigned it twenty different values—one to (and including) twenty. The other half of a for-next loop is the command *next*; in this program the next occurs in line 50.

In line 20 the variable I is assigned the number one. In line 30 we ask the computer to print the tab. This may sound a bit strange; tab in Ba-

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sic is like tab in a word processor or on a typewriter—it indents the text a specified amount. Although the tab doesn't appear the way a letter appears, the print command is still used to bring the tab into play. Because the amount of the tab is designated by the variable I, the first time tab is used it will tab over one space; the next time two spaces, and so on up to twenty. In line 40 we print a banal message.

Line 50 is the next in the for-next loop. When the program encounters a for it enters the loop, and it stays in the loop until it receives a next, at which time it will determine whether or not it must return to the for. In this program the next will return the program to line 20 twenty times. That is, the for line repeats until every assignment for the variable has been used.

Twenty Flavors, All of Them Vanilla. Confused? There's nothing like an illustration of for-next loops to really confuse people. Say that we all decided that, because it is August and because August is hot, we'll send one of our Cornermates, Augustus, out to get ice cream cones. There are twenty of us and, because Augustus is clumsy, he can only carry one cone at a time. The program for Augustus is

```
10 leave home
20 for a group that = 20 people
30 go to store and get ice cream cone
40 bring ice cream home
50 next cone
60 siddown and eat your ice cream
```

Augustus leaves home and makes a mental note that there are twenty people in Beginners' Corner. He gets to the store and buys an ice cream cone—everybody's getting vanilla, as Augustus can't handle flavor choices—and brings it back home and gives it to a person in the Corner. And then Augustus is told to go get the next cone. Which he does, until everybody has an ice cream. On the twentieth trip back, he encounters the command to go get the next cone, but he notices that everybody has a cone. The one in his hand must be his. And because he can't carry more than one cone at a time he has no choice but to siddown and eat his ice cream.

Our program works the same way. The tab is printed at stop one the first time through the loop and then prints the message, *Hi! Can I help you?*; the second time the tab is printed at stop two, and so on, until the message is printed at all twenty stops and there are no more, at which time the program sits down and eats ice cream.

Run the program again with these insights in mind. If you don't like the message in line 40 you can change it to something that you do like. Shorter messages look a little better on the screen. Remember, this message will print when this disk is booted, so think of something appropriate. Experiment with the other lines in the program. What happens when you rewrite line 20 to read *for I = 1 to 20 step 5*?

Okay, we're ready to put this program on the newly formatted disk as the Startup program. Pay strict attention! Last time, when we saved a hello program for a DOS disk, we said that you could name the program whatever you liked. This is not the case with ProDOS. The Startup program must be named Startup. List the program to make sure it's correct, and then type *save startup*. And that's it.

Catalog the disk by typing either *cat*, for a forty-column display or (if your monitor can handle it) *catalog*, for an eighty-column display. (Incidentally, on the IIc, you can toggle between a forty-column catalog display and an eighty-column catalog display simply by pressing escape 4 and escape 8. Try it.)

The catalog you get when you type *cat* or *catalog* from Basic is slightly different from the catalog you get when you select "Identify and Catalog a Disk" from /Utilities. Let's look at a forty-column display of the /Utilities catalog. If a file is locked, an asterisk appears in the left-most column, next to the file name. Notice there are no spaces in the file names; where a space is called for, a period is used. The next column indicates what type of file it is. This disk has two types of files, Basic and system, recognizably abbreviated. The next column tells how much space (in blocks) the file occupies on the disk, and the next tells when the file was modified last—if you don't have a clock in your computer, and at this point you probably don't, there won't be any information under the modified column, just <no date>. That's okay.

If ProDOS, Basic.System, and Startup are all present and accounted for, return to Basic and reboot the Startup disk by typing *pr#6*. After the copyright screen you should be greeted by your new startup program. Good work. See you next time. ■

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Mark Cotone
Hi-Res *Magazine*
May/June 1984



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The word is out on word processors. Format-II® ranked number one.

We've always thought of Format-II as the finest, easiest to use word processor for Apple® II+, IIe and Franklin® computers. We're pleased that Peelings II magazine agrees. They judged Format-II best out of 18 leading word processors. Here's why:

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The Peelings II reviewer said, *"Format-II is one of the few word processors that is so comfortable and predictable, I would consider it as an addition to my small library of personal software."*

Peelings II Magazine Rating

FORMAT-II	**1**
SCREEN WRITER II™	**2**
PIE WRITER™	**3**
WRITE AWAY™	**4**
LETTER PERFECT 5™	**5**
WORDSTAR™	**6**
MEGAWRITER™	**7**
APPLE WRITER II™	**8**
PERFECT WRITER™	**9**
CORRESPONDENT™	**10**
SPELLBINDER™	**11**
MAGIC WINDOW II™	**12**
ZARDAX™	**13**
SUPERTEXT 40/80™	**14**
GUTENBERG™	**15**
WORD HANDLER™	**16**
SELECT™	**17**
SANDY™	**18**

Reviewed by John Martellaro, September 1983, based on Peelings II rating system for performance and performance to price ratio.

In the words of the Peelings II reviewer: *"This is the best program I have seen for people who do a lot of work with mailing lists, form letters and short correspondence."*

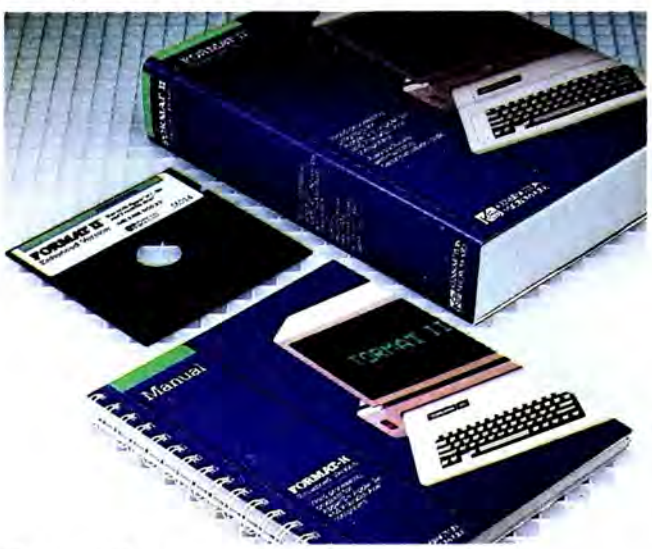
An easy to follow manual.
Essential to any good program is a manual that's clear and understandable. The Peelings II reviewer describes the Format II manual. *"All in all, it is one of the best word processor manuals I have seen. The latest documentation is a model of clarity and organization."*

Put it all together. Then add features such as support of hard disk drives and a standard DOS text file format compatible with spellers and communications programs, and it's not hard to see why Format-II has earned the number one rating.

The words of the Peelings II reviewer sum it up: *"I cannot think of another word processor that would be better overall for business use."*

Thanks Peelings II. We couldn't have said it better ourselves.

For a reprint of the full review, or to order Format-II, fill out coupon and send it to: Kensington Microware, Ltd. 251 Park Avenue South, NYC, NY 10010 or call us at (212) 475-5200. Tlx: 467383 KML NY. Or visit your local Apple dealer.



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Format-II requires 64K and an 80 column card.



☐ Correction: We got the facts wrong in the June Marketalk announcement of IIc software from **Quark** (2525 West Evans, Suite 220, Denver, CO 80219; 303-934-2211). Only *Word Juggler IIc* comes with replacement key caps that label the principal editing and formatting functions. *Terminus IIc* and *Catalyst IIc* do not. And only *Word Juggler* includes the *Lexicheck* spelling checker. Sorry, folks!

☐ The *Dow Jones Investor's Workshop* is an integrated communications, charting, and portfolio management system from **Dow Jones Information Services** (Box 300, Princeton, NJ 08540; 609-452-2000). The software monitors stock and bond portfolios, generates gain and loss reports, and does technical stock market analysis. It also updates the portfolio automatically with quotes from Dow Jones News/Retrieval. A password and one free hour of News/Retrieval time is included. Requires modem. $149.

☐ Churches, private clubs, retail florists, and veterinarians can use the general accounting and bookkeeping software available from **ADS Software** (707 Fifth Street N.E., Roanoke, VA 24016; 703-344-6818). The *ADS Business Software* packages include payroll, accounts receivable with invoicing, accounts payable, general ledger, inventory, and residential/commercial services. Requires CP/M. $485 to $895 each.

☐ **Teach Yourself by Computer Software** (2128 West Jefferson Road, Pittsford, NY 14534; 716-424-5453) has announced its newest release, *Dinosaur Days*. For children at the elementary school level, the program is a color tutorial on dinosaur types, fossils, and history, with graphics and animation. A manual and worksheet are included along with a short test. $39.95.

☐ *Multigraph* is a graphics package that produces line, print, or bar graphs from data entered manually or from a file. Line and print graphs can utilize as many as six groups of data, bar graphs as many as four. Available from **Micro Lab** (2699 Skokie Valley Road, Highland Park, IL 60035; 312-433-7550), the software accepts files from *Data Factory*. Requires 64K and two disk drives. $150.

☐ An integrated spreadsheet for both home and business use that includes built-in word processor and database functions, *PractiCalc* is available from **Practicorp** (The Silk Mill, 44 Oak Street, Newton Upper Falls, MA 02164; 617-965-9870). $69.95.

☐ The functions of *Utility Paks #1* and *#2* (except *Transaction File Merge*) have been combined with *DB Master* Version Four to create *DB Master 4 Plus*, the newest version of the information management system from **Stoneware** (50 Belvedere Street, San Rafael, CA 94901; 415-454-6500). The package includes a file converter that converts *VisiCalc* and PFS files into *DB Master* files. A step-by-step tutorial is included. $350.

☐ **Peachtree Software** (3445 Peachtree Road N.E., Eighth Floor, Atlanta, GA 30326; 800-247-3224) has introduced two more packages that run on the IIc. *Learning to Read: Letters, Words, and Sentences* is an educational series for grade-schoolers. Using animation and graphics along with the Echo II speech synthesizer, the software gives auditory clues to help children match letter combinations to sounds. Four-volume series, requires speech synthesizer. $39.95 each. *Writing Skills* is a five-volume language arts series designed to sharpen self-editing skills and master the written word. $39.95 each.

☐ Two audiocassettes take up where the Apple training disks leave off in *How To Operate the Apple IIe Using ProDOS*, from **FlipTrack Learning Systems** (999 Main Street, Suite 200, Glen Ellyn, IL 60173; 312-790-1117). Managing disk storage, file management techniques, and a guide to Basic are features included in the tutorial. $39.95.

☐ Software is available that allows the Apple III to access Nexis, Lexis, NAARS, and other Mead Data Central information retrieval services. The full texts of more than 100 newspapers, magazines, professional journals, and wire services are available on Nexis. Lexis is a computer-aided legal research service. A keyboard template is included in the package from **Mead Data Central** (9393 Springboro Pike, Box 933, Dayton, OH 45401; 800-227-4908). $225.

☐ Compatible with the IIc, the Starfighter joystick features two controls not found on other joysticks—a high-low sensitivity switch and a throw selector. The throw selector allows the choice of either a short or long movement and the sensitivity switch permits further fine-tuning of play. Available from **Suncom** (260 Holbrook Drive, Wheeling, IL 60090; 312-459-8000), the joystick also features a left-handed fire button that allows lefties to fire with the right hand. $49.95.

☐ *Get Rich: Strategies*, *Get Rich: Real Estate Planning*, *Get Rich: Insurance*, and *Get Rich: Retirement and Estate Planning* are productivity packages designed to teach basic money management skills while offering a range of financial solutions tailored to specific situations. The programs are published by **Arrays/Continental Software** (11223 South Hindry Avenue, Los Angeles, CA 90045; 213-410-3977). $49.95 each.

☐ New educational software has been released by **Scholastic** (730 Broadway, New York, NY 10003; 800-325-6149). *Operation Frog*, which simulates a frog dissection, is an entertaining introduction to biology. *Logic Builders* is a three-part, nonviolent problem-solving and strategy game for ages seven and up. *Quations* is a Scrabble-type game for practicing basic math skills. *Math Man* is a game with twelve levels of difficulty for developing and enhancing arithmetic skills. *Microzine V* is the fifth edition in the Learning Library series; there are four programs on one disk, including the adventure Pirates of the Soft Seas. For children ages nine to thirteen. *Microzine VI* includes the Fossils Alive game and Olympic News, a historical facts and sports data feature. $39.95 each.

☐ **Transend** (2190 Paragon Drive, San Jose, CA 95131; 408-946-7400) has announced *Easy Com Easy Go*, a new version of the Transend series of terminal communications software. The icon-driven software is totally compatible with all the features of the IIc. A text editor with a buffer is included to save time on-line while sending information. Two built-in features are auto log-on and twenty-two keyboard macros. $129.95.

☐ *States and Capitals* is a drill program in basic U.S. geography skills from **Gameco Industries** (Box 1911, Big Spring, TX 79721; 800-351-1404). Students may choose from eight lessons; the questions are randomly generated. Questions can be added by a teacher, and a student management system is included. $39.95. With backup disk: $54.95.

☐ A computerized educational and counseling program for weight control, *Fit and Trim* features general information and separate weight, eating, and exercise reviews. The program is available from **Andent** (1000 North Avenue, Waukegan, IL 60085; 312-223-5077). Detailed analyses can be logged and kept in five-week summaries. Files for eighty individual dieters can be kept on each disk. Copyable and modifiable. $39.

☐ **Sierra** (Sierra On-Line Building, Coarsegold, CA 93614; 209-683-6858) has released *Fuzzywomp*, four prereader games in one package. The basic skills focused on in the package include pattern matching, counting, number sequencing, and creative play. Menu-driven, no adult supervision required. $29.95. *Oil's Well* is an arcade game in which a player snakes piping around a terrain while digging for oil. Hazards to watch out for are traps set by greedy neighbors and the destructive Oozies. Three speeds of play. $29.95.

☐ A child can grasp the concepts of multiplication and division with *Divex*, an arcade-style games package from **Intelligent Quest Software**, a division of **Avalon Hill** (4517 Harford Road, Baltimore, MD 21214; 301-254-5300). Each game includes three levels of both multiplication and division for children aged eight to twelve. Requires 32K. $21. *Computer Facts in Five* is a game for all ages in which players choose their own subjects and categories in a test of the comprehension of humankind's knowledge. Requires 48K. $26. *Computer Stocks and Bonds* is a strategy game allowing players to invest in securities and challenging

them to show a profit in their dealings. For ages twelve and up. Requires 48K. $25. The **Avalon Hill Microcomputer Games** division has released several strategy war games. *T.A.C.* is a simulation of armored combat during World War II. The player controls tanks, antitank guns, and infantry squads. For one or two players, the game features hi-res graphics. Requires 48K. $40. *Close Assault* is an advanced war game of tactical infantry combat, a World War II simulation that blends computer and board gaming. For one or two players. $35. *V.C.* is a Vietnam War simulation. The player commands the chopper-based 1/509th Air Cavalry and 9/15th Field Artillery support unit. $25.

☐ A corporate financial decision system for business planning, raising venture capital, increasing lines of credit, and obtaining an SBA loan has been created by **Strategic Systems Software** (1300 Dove Street, Suite 200, Newport Beach, CA 92660; 714-476-2842). *Bottomline-V* begins with a twelve-month budget and cash flow analysis and produces financial ratio analysis and more. $295.

☐ The *HGR6 Double-Res Graphics* package from **ALF Products** (1315-F Nelson Street, Denver, CO 80215; 303-234-0871) now includes both a DOS 3.3 disk and a ProDOS disk. Improvements to the software include new statements such as HGR3 through HGR6 that work like the familiar HGR and HGR2 statements, but with sixteen hi-res colors and 560-by-192-dot resolution. Also, double hi-res files can be saved to either the DOS or ProDOS disk. Replacement is free. $49.95.

☐ **Simon and Schuster Electronic Publishing Group** (1230 Avenue of the Americas, New York, NY 10020; 212-245-6400) has released several new packages featuring recognized authorities in their fields. *J.K. Lasser's Your Personal Money Manager* is a home accounting tool and companion to *J.K. Lasser's Your Income Tax*, a software version of the book of the same title. *Money Manager*, $89.95. *Income Tax*, $79.95. *Lovejoy's SAT and College Preparation Guide* contains tutorials and timed tests as well as an abridged version of the book *Lovejoy's College Guide*. $79.95. *Webster's New World Spelling Checker* comes with a built-in vocabulary of 40,000 words and is compatible with *Apple Writer*. $59.95. *Kermit's Electronic Story Maker* features the animated Muppets gang acting out sentences constructed by a child. For ages five to eight. $39.95. *The Great Gonzo in Word Rider* helps children combine adjectives and nouns in order to create vehicles that help the animated character rescue his beloved Camilla the Chicken. For ages six to nine. $39.95. *Typing Tutor III* is an advanced touch-typing instruction program that uses the time-response monitoring technique that records a student's response time on each key and uses the information to modify subsequent lessons. Includes Letter Invaders, a speed and accuracy arcade game. $49.95.

☐ Scientists and engineers can solve science, engineering, and business equations with *VariCalc*, a program that can simulate complex physical, chemical, or mathematical processes, as well as accepting real-time input directly into a predefined model. Available from **Interactive Microware** (Box 139, State College, PA 16804; 814-238-8294), the software can be used with either paddles, joystick, arrow keys, or an automated data loop to change variables interactively. Stores up to 255 equations on disk for quick recall. $100.

☐ When hooked up to an Apple, the LimeLight computer projector projects a four- to ten-foot diagonal computer screen image onto a wall or screen. Manufactured by **Vivid Systems** (2440 Embarcadero Way, Palo Alto, CA 94303; 415-424-1600), the unit allows real-time changes made on the computer to be instantly reflected in the projected image. The monochromatic green image given off by the projector features a resolution of more than 700 lines. A multilens structure allows for variable focusing of either the center or the corners of the image. The unit weighs twenty-two pounds. $3,950.

☐ *Bank Street Music Writer* allows the user to explore musical concepts and compose music. Part of the Bank Street Creativity series from **Mindscape** (3444 Dundee Road, Northbrook, IL 60062; 312-480-7667), the software allows notes to be arranged on two musical staffs and played back in four voices—soprano, alto, bass, and tenor. The package also features eight editing modes and can store up to seventy-five staffs or eight thousand notes at a time. $49.95. *Bank Street Storybook* helps children aged six to twelve to draw pictures on the screen with a joystick, and edit and color them through the keyboard. After the text is written, the result is an original animated children's story that can be printed out and bound as a storybook. $39.95.

☐ The Spud 3.5 disk drive plugs into the existing Apple controller card and allows Shugart SA300 minifloppies to run on the II series. Manufactured by **Shamrock Computer** (89 Telson Road, Markham, Ontario, Canada L3R 1E4; 416-474-0113), the drives offer 328K storage on eighty tracks. A utility that is supplied with the drives allows existing 5 1/4-inch software to be copied onto the 3 1/2-inch plastic-encased disks. $456.

☐ Continuous-form Rolodex cards can be created with a menu-driven program called *Compucard* from **Rolodex** (245 Secaucus Road, Secaucus, NJ 07094; 201-348-3939). The software features a full-screen editor, the ability to create a master card file with the use of a template, and a flexible selector code allowing a user to control the method for filing information. A supply of continuous-form cards is included. $68.50. Five hundred extra cards: $7.75.

☐ A series of fifty reading-comprehension programs designed for beginners and remedial reading students has been created by **Villa Press** (69-10 164th Street, Fresh Meadows, NY 11365; 212-591-0894). The programs run the full range of difficulty and include stories, interactive dialog, and graduated exercises and activities. Drills are in the format of games in which students earn points, either under the guidance of a teacher or with a partner. Basic skills, fourth-grade level, are included with each disk. $29.95 each.

☐ Declare your allegiance to your computer with accessories and private-label clothing from the **Apple Collection** (Box 306, Half Moon Bay, CA 94019; 800-632-7979). Clothing includes T-shirts, sweat shirts, shorts, and caps, all featuring design variations of the Apple logo and rainbow, including several pieces sporting Apple's latest—a lipstick-like red swash. Accessories include a polyurethane sailboard with sail emblazoned with the rainbow apple, a gold plate Tiffany key ring, a numberless black clock with a red apple, a crystal beer mug with the Apple logo etched on the bottom, and a selection of high-tech office supplies. Catalog is free.

☐ **dilithium Press** (Box 606, Beaverton, OR 97075; 503-646-2713) has announced eighty-six new book titles for release this fall, including several for the Apple. *AppleWorks and III E-Z Pieces: The Tutorial*, by Kenneth Green and Rika van Dam, is a comprehensive guide to the two programs. $14.95. *Software by Design*, by Rip Collins, explains how to design, develop, and polish your own programs in any language. $19.95. *Turtle Soup: Logo for Children*, by Stuart and Donna Paltrowitz, teaches children eight to fourteen how to program in Logo. $6.95. *60 Forms for Your Household* is a book and software-forms-generator package. $29.95. *Golden Flutes and Great Escapes*, by Delton T. Horn, is a book and software combination of adventure games written in Basic. $29.95. *Conquering Adventure Games*, by Carl Townsend, teaches strategies needed to succeed in a host of popular adventures, such as the Zork series, *Dungeon Master*, and *Deadline*. $14.95.

☐ **Roger Wagner Publishing** (10761 Woodside Avenue, Suite E, Box 582, Santee, CA 92071; 619-562-3670) has released *Merlin Pro*, a ProDOS macro assembler with the power of more than forty commands, such as add, delete, copy, move, and global search and replace. All the familiar Merlin features are included in the package, along with many new pseudo op-codes, local labels, and more. Functions under DOS 3.3 as well. Utilities included. $69.95.

☐ A switch box called the Pi-Switch allows a computer user to share up to eight peripherals at any baud rate, eliminating unnecessary cable swapping. Manufactured by **Sab-Link** (7301 N.W. Forty-First Street, Miami, FL 33166; 305-592-6092), the unit features a rotary movement switch and standard RS-232 connectors. The DCB-25 pin connectors can be ordered in either plug or socket versions. $59.95.

☐ **Design Enterprises of S.F.** (Box 14695, San Francisco, CA 94114; 415-282-8813) has bundled the book *Write, Edit, and Print: Word Processing with Personal Computers*, by Donald H. McCunn, with *The Word Worker: Four Essential Word Processing Programs on Disk* software in one package. The software is fully modifiable. $49.95.

☐ A minidatabase system for the sky beyond Pluto, called *Astrobase*, comes with the three hundred most important astronomical objects beyond our solar system. The program is designed by **Zephyr Services** (306 South Homewood Avenue, Pittsburgh, PA 15208; 412-247-5915). Hundreds of objects like galaxies, nebula, and quasars and their relevant data and descriptions can be added to the databank. Searches can be made by constellation, area of sky, size, brightness, and type of object. $29.95.

☐ The Sure Stroke detachable keyboard gives an Apple features like

those found on an IBM Selectric typewriter. Manufactured by **Titan Data Systems** (230 Fifth Avenue, Suite 808, New York, NY 10001; 212-889-5959), the keyboard, attached to a six-foot cord, includes a row of programmable function keys, a numeric keypad, control diamond keys, and a three-key rollover. Adjustable to two positions. $198.

☐ **Amdek** (2201 Lively Boulevard, Elk Grove Village, IL 60007; 312-595-6890) has introduced the hi-res RGB Color 600 monitor that provides the full sixteen Apple colors. The sculpturally designed unit with an optional swivel base provides a 640-by-240-line resolution for high-contrast text and graphics. A switch changes text color from white to green for easier reading. Also features a built-in speaker. $650.

☐ Relax is a computer-controlled biofeedback system for reducing stress and tension, available from **Synapse Software** (5221 Central Avenue, Suite 200, Richmond, CA 94804; 415-922-2141). The package allows the subject to observe and measure his or her stress levels on a monitor and provides a method for reducing those levels. Three electromyograph (EMG) sensors on a headband take measurements, which are converted by the program to visual patterns. An audiotape, included with the package, provides relaxation exercises. $139.95.

☐ A catalog of software from educational and scientific institutions has been announced by **Research Corporation/Research Software** (6840 East Broadway Boulevard, Tucson, AZ 85710; 602-296-6400). Quarterly updates of applications in mathematics, engineering, business, and many areas of science are sent to subscribers. Foreign-language word processors available in nonroman alphabets such as Cyrillic, Greek, and Hebrew can be licensed from the company. Catalog, $20.

☐ The Wire Cube protects personal computers from voltage spikes and from radio-frequency interference. The unit plugs into any standard electrical wall outlet, and the circuitry is designed to provide protection within nanoseconds. The Wire Cube is made by **Networx** (203 Harrison Place, Brooklyn, NY 11237; 212-821-7555). $34.95.

☐ Two new graphics packages are available from **Baudville** (1001 Medical Park Drive S.E., Grand Rapids, MI 49506; 616-957-3036). *Take 1* helps the user write, produce, and direct computer movies. This computer animation program includes a library of shapes. Requires 64K. $59.95. *Blazing Paddles* is a drawing program with which a variety of input devices may be used. Features include color mixing to create more than 200 textured hues, airbrushing, and dot-by-dot editing. $49.95.

☐ Find out whether a disk drive meets requirements for disk interchangeability between like drives for read/write operations with a new product from **Dymek Corporation** (1851 Zanker Road, San Jose, CA 95112; 408-957-8700). The *Recording Interchange Diagnostic (RID) Disk* tests disk speed, noise tolerance, write/read functions, track alignment, positioner backlash, disk clamping, and erase crosstalk. $34.95.

☐ Two educational games have been announced by **S.A. Softwares** and **The CHILD Center** (10611 Tenbrook Drive, Silver Spring, MD 20901; 301-593-8822). In *Color Learning*, recommended for very young or handicapped children, the player matches colors. $29.95. In *States and Capitals*, the student learns state capitals. The spelling-tolerant program accepts answers that are written incorrectly but recognizably. $19.95.

☐ *Net Worth* is a new home financial management program from **Scarborough Systems** (25 North Broadway, Tarrytown, NY 10591; 914-332-4545). The program performs conventional recording functions regarding income and expenses; it also includes a loan and interest analyzer. *Net Worth* handles ten checking accounts, as many as 350 budget categories, and credit card accounts. An excerpt from Sylvia Porter's *New Money Book for the '80s* is included with the package. $99.95.

☐ With the *AgDisk Machinery Record Keeping Package*, farmers can keep complete cost and performance records for all their machinery. They can also schedule routine maintenance with this software, from **Harris Technical Systems** (624 Peach Street, Lincoln, NE 68501; 402-476-2811). Data collection is simplified with the printed worksheets provided to keep track of initial inventory, routine machine use, maintenance, and repair information. $600.

☐ Teachers can computerize their administrative work with *Classmate*, from **Davidson and Associates** (6069 Groveoak Place, Suite 12, Rancho Palos Verdes, CA 90274; 213-383-9473). The program stores grades, attendance records, and teacher comments; computes weighted averages; graphs grade distribution, class rankings, and final grades; and prints out all records including missing assignments and parent reports. $49.95.

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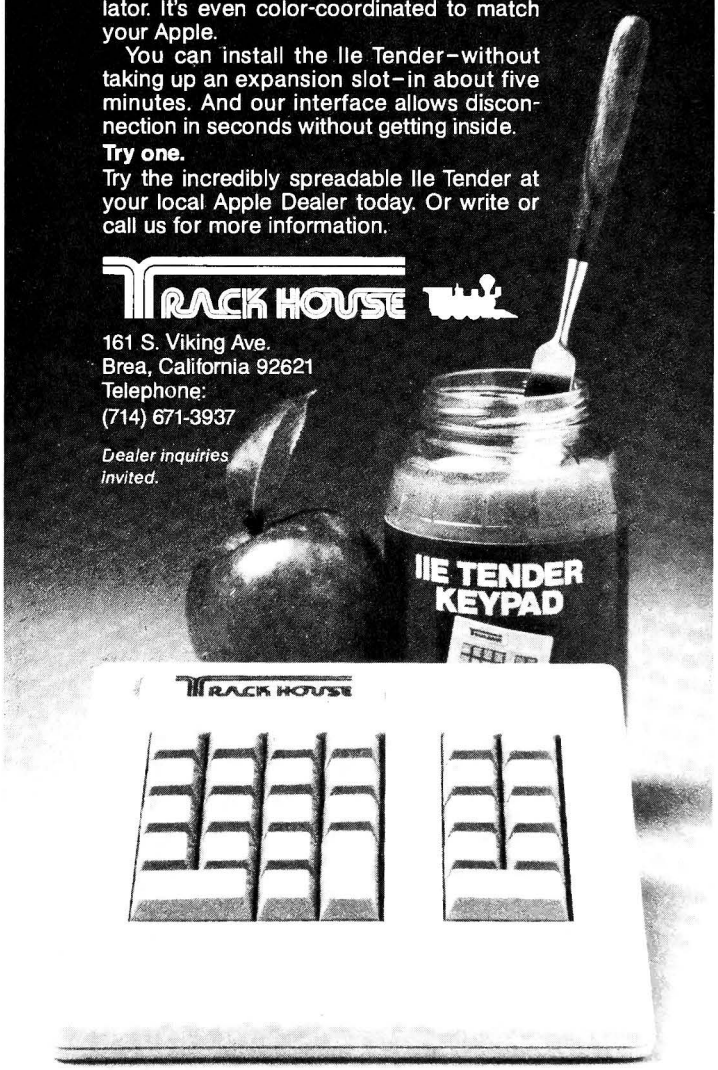
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Simplified Computer Systems (Box 3603, Nashua, NH 03061; 603-889-4068). Solid pewter charms come in the form of portable computers, floppy disks, and printers. $5. Tie tacks or lapel pins, $6. Pendants, $7.

☐ **Hayden Software** (600 Suffolk Street, Lowell, MA 01853; 617-937-0200) has released *Word Challenge*, a computer adaptation of the board game Boggle. The object is to find words embedded in a matrix of randomly generated letters on-screen. The player competes against the computer or against another player. IIe only. $39.95.

☐ Version 5.30 of the *Spellbinder* word processing and office management system has been introduced by **Lexisoft** (Box 1378, Davis, CA 95617; 916-758-3630). Features include a spelling and grammar checker, automatic hyphenation, footnoting, forms handling, and a comprehensive manual. Runs on Apple IIs and IIIs; CP/M required. $495.

☐ Two World War II simulation games have been released by **Strategic Simulations** (883 Stierlin Road, Building A-200, Mountain View, CA 94043; 415-964-1353). In *50 Mission Crush*, the player flies a B-17 bomber in harrowing aerial battles over France and Germany. $39.95. In *Objective Kursk*, the scenario is a tank encounter between German and Russian forces. $39.95.

☐ **At Home with Basics** (Thirtieth Street and Remington Avenue, Baltimore, MD 21211; 301-235-4009) has announced twenty-five new educational programs. Each focuses on an aspect of reading and language skills and contains a workbook with answers along with the program disk. $19.95 each.

☐ Architects, building designers, and construction engineers may be interested in the *TK!SolverPack for Building Design and Construction* from **Software Arts** (27 Mica Lane, Wellesley, MA 02181; 617-237-4000). This software, formulated for use with the *TK!Solver* program, contains fifteen models with equations, values, and tables needed to solve common problems in the planning and estimating of residential construction. $100.

☐ *Ambulance 10-33*, a review/self-test for emergency medical technicians, presents realistic situations of the type an EMT would encounter "on the street." The simulation has a mechanism that interjects complications such as equipment malfunction and deterioration in patient condition. From the **University of Osteopathic Medicine and Health Sciences** (3200 Grand Avenue, Des Moines, IA 50312; 515-271-1478). $35.

☐ Four new games and several books have been published by **Datamost** (20660 Nordhoff Street, Chatsworth, CA 91311; 818-709-1202). *Ankh* is an arcade action puzzle that takes place in sixty-four rooms of the MetaReal world. *Earthly Delights* is a text adventure in which the player travels through Europe in search of a stolen painting. *Mabel's Mansion* is a graphic adventure that takes place in a haunted house. $29.95 each. *Mychess II* is a chess simulation with nine levels that can be played by one or two. $34.95. The *Apple Home Companion* is a book that covers practical applications like word processing, telecommunications, graphics, and music. $19.95. *Applesoft Encyclopedia* is a source for language commands, functions, and tricks. $39.95. The *Apple Writer Yellow Pages* is a tutorial for the word processor. $24.95. *Sound and Graphics* teaches Basic with the programs arranged step by step. $9.95.

☐ A computer is the enemy in the futuristic arcade-style game of *Flak* by **Funsoft** (28611 Canwood Street, Agoura Hills, CA 91301; 818-991-6540). The player commands an advanced hypersonic aircraft on a mission to destroy the foe of freedom. For one or two players. $34.95.

☐ The Sunspot Broadcast System is a comprehensive package for radio station management. It is produced by **Sunspot** (8100 Mountain Road Place N.E., Suite 203, Albuquerque, NM 87110; 505-255-6500). Requires Apple III and hard disk. Software plus hardware, including Apple III, ProFile, monitor, and Imagewriter, $9,860; software only for one station, $6,980; software for second station, $2,350.

☐ Personnel managers and computer professionals are the target market of the *Computer Job Bank* from the **Direct Connection** (Box 3497, Honolulu, HI 96811; 808-595-2365). The on-line database, carried on CompuServe, contains descriptions of nationally advertised jobs in electronic data processing. Access is free to CompuServe subscribers.

☐ The **Alien Group** (27 West Twenty-Third Street, New York, NY 10010; 212-741-1770) has announced three voice synthesizers. Voice Box 3M plugs into any slot in the Apple and works with programs written in Basic or assembly language. $129. Voice Box 3I is configured as an intelligent peripheral that appears to programs the way a printer does. $219. Voice Box 3S connects to any computer and can share a single port with another device. $269.

☐ Aimed at students planning to take the College Entrance Examination Board's tests in Spanish and French, the *Spanish Achievement* and *French Achievement* packages can randomly generate up to 1,800 multiple-choice questions on grammar. From **Microcomputer Workshops Courseware** (225 Westchester Avenue, Port Chester, NY 10573; 914-937-5440). $49.95 each.

☐ Six business software packages are now available for the Apple IIc from **BPI Systems** (3423 Guadalupe, Austin, TX 78705; 512-454-2801). *General Accounting*, *Accounts Receivable*, *Accounts Payable*, *Payroll*, and *Inventory Control*, $425 each. *Budget and Analysis*, $195.

☐ The Sabre Temperature Monitoring and Management System has been released by **Temptron Systems** (1595 West Amador, Suite F, Las Cruces, NM 88005; 505-524-9531). The hardware-software combination includes eight temperature sensors and nine relays, as well as software and an assembled component board. Requires 64K, RS-232 serial port, and eighty columns. $495.

☐ The Interface-32 is a sixteen-digital-input, sixteen-digital-output interface board providing bit-mode control lines. Available from **MicroDimensions** (30492 Euclid Avenue, Wickliffe, OH 44092; 216-944-4200). $59.95.

☐ A twelve-button response pad, containing the ten digits and the words yes and no, has been added for use with the Group Response System from **Reactive Systems** (40 North Van Brunt Street, Englewood, NJ 07631; 201-568-0481). The system is a hardware/software package that links as many as sixty participants to an Apple. System with fifteen pads, $1,400. Pad only, $65 each.

☐ The Caretaker is an automatic peripheral switch that allows a printer or modem to be shared by more than one computer. Manufactured by **Rose Electronics** (Box 742571, Houston, TX 77274; 713-240-7673), the unit connects via standard cables and requires no software for operation. Supports both RS-232 and Centronics formats. $200 for the first two ports. $50 for each additional two ports up to a maximum of eight. The Hardswitch is a low-cost method of sharing devices such as a printer and a computer. Both RS-232 and Centronics compatible with two- and four-channel models available. RS-232 model: $59 to $79. Centronics model: $99 to $179.

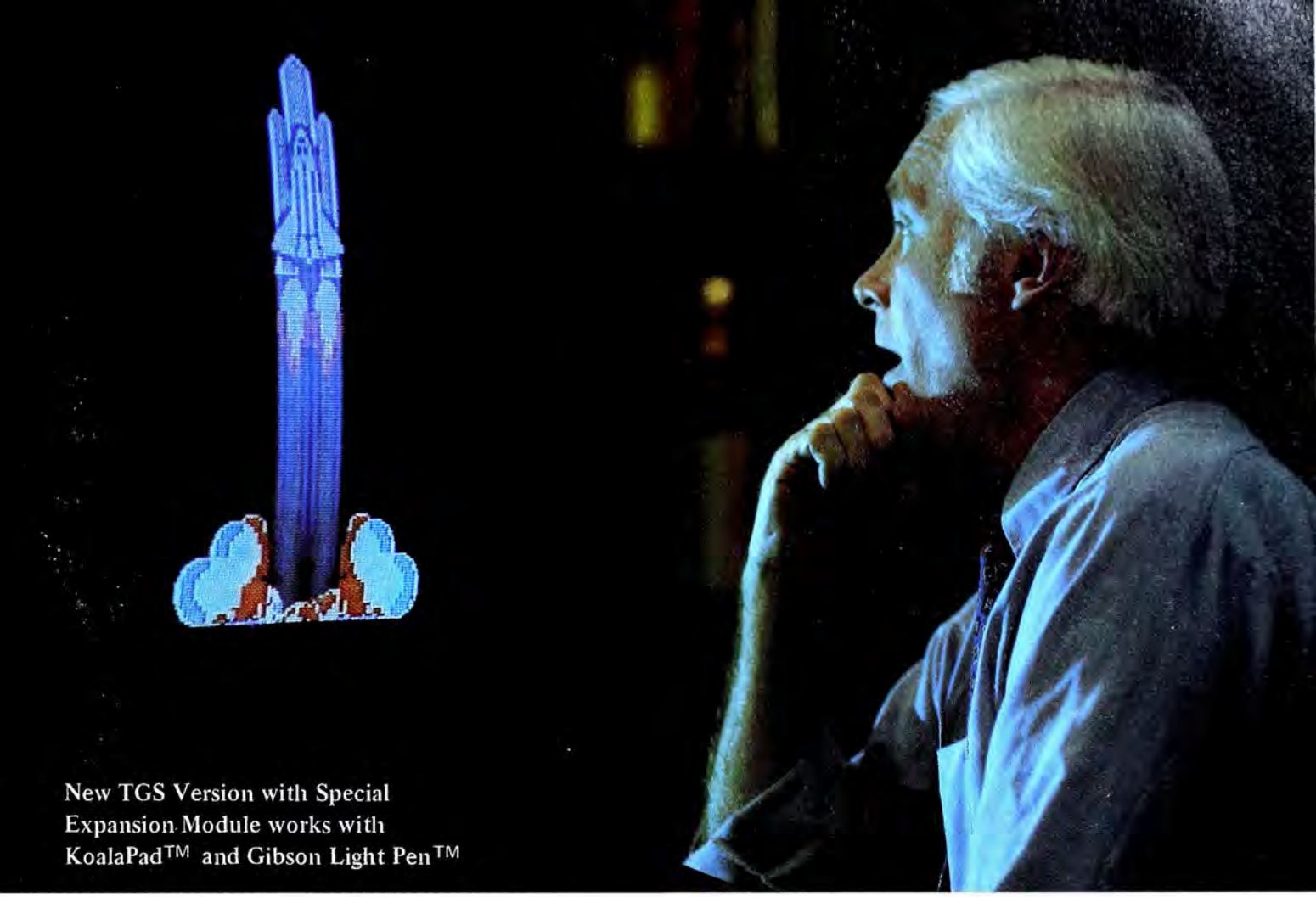
☐ **Vision Software** (Box 11131, Costa Mesa, CA 92627; 714-642-3255) offers a new way to study the Bible. *Cross Word* is a crossword puzzle package that presents questions on Scripture or asks a user to complete various Bible verses. Correct answers are used to complete the crossword puzzles. Questions and hints can be changed and modified and custom puzzles can be created. Thirty-six puzzles come with the disk. $39.95.

☐ Books on programming, games, and graphics for the Apple are listed in the computer book catalog from **Sinequanon** (Box 235, Cedarhurst, NY 11516; agency: 212-661-7741). Titles include *Apple Machine Language*, *Golden Delicious Games for the Apple Computer*, *Basic Apple Basic*, *Executive VisiCalc for the Apple Computer*, and *Database Management for the Apple*. Also included in the catalog is a reference to 4,600 hardware and software products and 700 suppliers of Apple software. Free.

☐ Fifteen thousand current reviews and descriptions covering more than 6,000 micro peripherals and accessories are available on Microsearch, a new searchable database available on The Source—an on-line service provided by **Source Telecomputing** (1616 Anderson Road, McLean, VA 22102; 703-734-7500). Taken from leading computer industry publications, the service offers information on compatibility and availability of products, current prices, and expert reviews and evaluations. Requires The Source. $100.

☐ Three modeling and forecasting programs are available from **Stratix** (Box 1014, Woodinville, WA 98072; 206-821-1896). *MicrobJ* is a univariate system based on the Box-Jenkins philosophy of statistics. Requires 64K. $295. *Nuametrics* is an econometrics package providing tools such as multiple regression. $195. *Xtrapolator* is a comprehensive forecasting system using twelve extrapolative methods. $195.

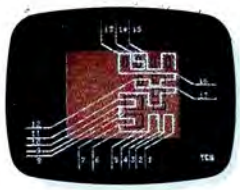
☐ Eight Unix-like support programs for C programmers are included with source code in *C Helper*, from **Solution Systems** (45 Accord Park Drive, Norwell, MA 02061; 617-871-5435). The package contains utility features such as debugging. $135. ■



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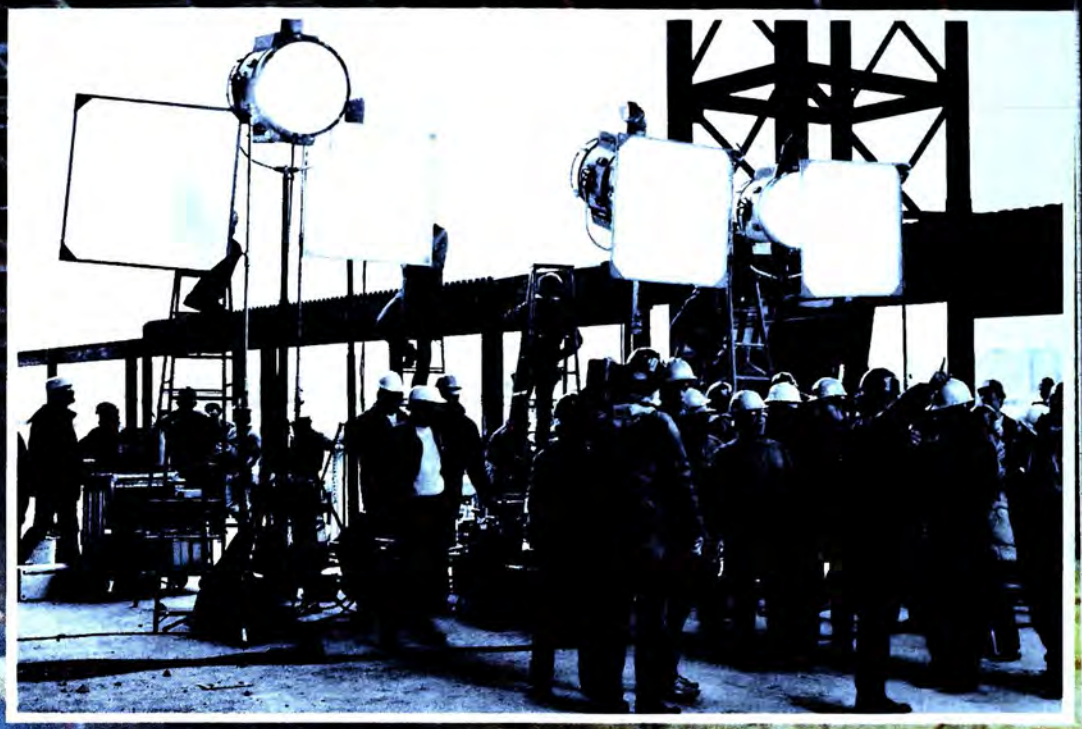
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Apples Roar



Hollywood Pros

...with service from the Ritz-Carlton.
—Wilson Mizner

Most movies these days are made outside the fabled "Hollywood, USA." Advances in film technology have turned the earth into a global sound stage. While the major movie companies are still based in Hollywood, the movies they make and sell can be shot almost anywhere. Back in the sixties, a "runaway production" was a film that was shot in the Hollywood-like sound stages of Spain or Rome. These days, with several scenic states competing for Hollywood's production dollars, a movie has only to locate for ten weeks of shooting in Rome, Georgia, to be called a runaway.

In the golden studio days of Hollywood, grips, gaffers, best boys, and the like could spend the day in a sound stage re-creation of Waterloo and still make it home in time for dinner. Today, a Holiday Inn is often called home and all day is spent rearranging reality to suit the demands of a shooting schedule. While Hollywood is making more movies than it has in years, making them has also become more logistically complex.

Two years ago in the production offices of Hollywood, people said, "A computer? What can that do?" But not anymore. Not since Hollywood's production people have found that Apples and other microcomputers can do a lot of the nuts-and-bolts stuff—script breakdowns, budgets, word processing, accounting, production scheduling, talent booking, and television schedule rundowns—everything except run for coffee.

Apples played a part in the making of several movies you might have already seen, including *Reckless*, *Breakin'*, and *The Pope of Greenwich Village*. An Apple even trekked down to Mexico to work on *Romancing the Stone*. An Apple traveled to London and another is now in New York for *Dream Lovers*, a film currently in production. Another Apple is scheduled to go to Spain to work on *For Whom the Bell Tolls*. And then there are the many Apples that never leave the production office; they're in-house workhorses for indies and majors alike.

Several independent software developers are responsible for the personal computerization of Hollywood. Two of those entrepreneurs are Emil Safir of Quantum Software and Jack Smith of DotZero. Both entered the "glam-tech" Hollywood market with a handful of specialty production packages that run on Apples,





Produce with Micros



For the studio that once boasted of "more stars than there are in the heavens," the world is MGM/UA's sound stage these days. Wherever the lights, camera crews, actors, directors, and film editors can go, Apples can go—and they do.

IBM PCs, and CP/M systems. Smith's budget, script breakdown, and accounting software have been available for the Apple since mid-1982, and DotZero has many installations worldwide. Safir's script breakdown package for the Apple is just out of the beta test phase.

Oddly enough, both Smith and Safir cracked Hollywood with strictly scientific credentials. Safir was a nuclear physicist before he produced a bank robbery film called *Getting Even* in 1977 and then studied at the American Film Institute in Los Angeles. Smith is a former aeronautical engineer who had done laser research before he wound up doing production work on *Raging Bull* and *The Howling*.

The two companies market similar budget, accounting, and breakdown packages to the same group of people, yet have managed to stay friendly rivals in a competitive—and sometimes nasty—vertical software market of maybe six thousand clients, total. "*WordStar* has a potential client base of millions," says Smith. The Hollywood software market can be measured in hundreds. That's why Smith and Safir both emphasize support after sales. Smith has even rigged up his software with "disaster recovery" utilities so he can walk somebody through a program crash by phone if necessary, be the call from London or Manila.

Hollywood impresses me as being ten million dollars' worth of intricate and highly ingenious machinery functioning elaborately to put skin on baloney.

—George Jean Nathan

When the subject is Hollywood, most people like to hear about the problems that plagued a movie production or about temperamental stars. "Most people want to hear about how things started at twenty million and went up to sixty and how they shot for three years and fired three people every day," says Jonathon Zimbert, associate producer of MGM/UA's *2010*. This is the good stuff—the gossip, the dirt, the Rona Report.

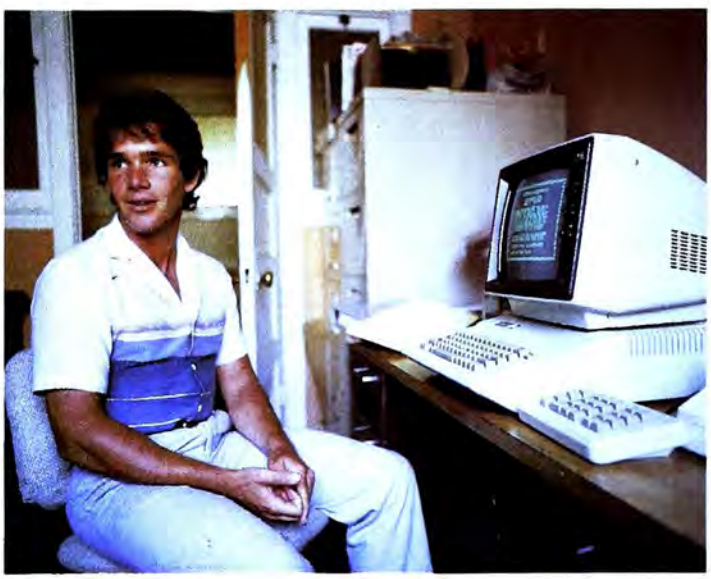
No news is good news in the case of *2010*. "We started when we were supposed to, finished when we were supposed to, spent what we were supposed to, and the movie's going to be out on





Exterior footage shot on location is easily matched to interior footage later by ordering the right door. Jack Smith of DotZero (below left) worked his way up from coffee gopher to Hollywood software developer. DotZero software now makes Ken Weikel's job of production accountant easier—a three-hour job by hand like issuing checks only takes an hour by computer.





time. Everyone's on schedule," says Zimbert.

"If anything, *2010* shows that these types of movies—science fiction with a lot of hardware, a long production schedule, and high-priced people—can be done at a price where you can make money," he says.

"It may be boring," he adds, "but from our standpoint it's terrific." On the lot of MGM/UA in Culver City, that kind of terrificness is often achieved with the help of Apples.

As a result of Apple Computer's promotional involvement with *2010*, MGM/UA's advertising department latched onto a couple of IIcs for processing releases and Zimbert was able to use a Macintosh to help him check weekly cost runs from the *2010* offices in the Metro Building. Zimbert's Mac came in handy planning logistics for three days of location shooting, one in the nation's capital and two in New Mexico. Except for those brief trips, the sequel to *2001: A Space Odyssey* was shot on sound stages for obvious reasons, says Zimbert. "It's expensive to go out in space."

In the MGM/UA production building where accountants and estimators are housed, Apples abound, running DotZero's accounting package and helping keep production costs in line.

There aren't a lot of professions where accounting is as high-profile as it is in Hollywood, the city of big deals. As Ken Weikel, an MGM/UA production accountant, says of his job, "It's more exciting paying money to people who are stars." When a film goes on location, the accountants and their Apples go right along, with mandatory disk and battery backup, of course.

Weikel recently returned from a three-month shoot in Columbus, Ohio, for a film called *Teachers*—starring Nick Nolte, JoBeth Williams, Judd Hirsch, and Ralph Nacchio—which is an irreverent look at the chaotic state of public education in a typical urban high school. *Teachers* was shot in and around—what else?—a typical urban high school in Columbus that recently closed.

As one of the thirty production people brought in from Los Angeles and put up at a local Hyatt hotel, Weikel and his Apple worked out of a room on the third floor of the school. About thirty-five people on the film were hired locally.

The shooting schedule continually changed for *Teachers*, an

unusual situation by Hollywood standards. Since the cast and crew had an entire school to themselves, they reasoned they could shoot when and where it was convenient. The decision resulted in added negotiations with a few agents. The fact that the company wasn't tied to a strict schedule allowed the unit to shoot a snow scene on a day it actually snowed.

Some of Weikel's bookkeeping chores on the film included issuing purchase orders for supplies, logging invoices for catering services and such, and paying the cast and crew their daily room-and-board allowances. A five-hundred-page sheaf of printouts (which Weikel calls his "*Teachers* bible") holds the records of his vendors from A to Z and other transactions.

While in Columbus, says Weikel, "Once a week I'd print out a weekly report so the studio would know the cost of everything."

Teachers was "a ten-megabyte movie," says Weikel, referring to the hard disk that holds all the files. Around thirty-five floppies were used to back up the information before the company wrapped in Columbus. "You can ship a hard disk back in a box," he says, "but I carry the floppies with me on the plane." Back in Hollywood with the Apple, bills trickle into his office in the production building on the MGM/UA lot as *Teachers* wraps up in postproduction.

Another film in postproduction also saw the use of an Apple. *Garbo Talks*, starring Anne Bancroft, Ron Silver, Catherine Hicks, and Carrie Fisher, is a comedy about a young New Yorker who is determined to fulfill his mother's impossible dream—to meet Greta Garbo. The studio is mum on who plays Garbo.

Currently Weikel is in New York City working the books on an Apple for *Dream Lovers*, starring Kristy McNichols, which recently finished shooting some scenes in London.

While working on *Dream Lovers* out of the studio's midtown production offices, Weikel will stay a few days in the MGM penthouse on the East Side, one of the occasional perks that being a movie accountant can bring. Maybe it'll make up for that seventeen-below weather he had to put up with in Columbus, Ohio.

Hollywood . . . the land of yes-men and acqui-yes girls. If all those sweet young things were laid end to end, I wouldn't be at all surprised.

—Dorothy Parker

Despite its allure to passers-by, a location shoot is no picnic. Things can happen during the course of a movie shooting on location that would be called accidents anywhere else. To the production people in charge of sorting out a mess, it's more like, "What truck in what ditch?" The unexpected becomes routine.

"It's not normal," says Donna Smith, production boss on Arnold Schwarzenegger's first bad-guy picture, *Terminator*. "All those beards, ball caps, and grubby sneakers make it look fun, but it's really tough." Smith and company recently spent two months on a night shoot for the futuristic feature, working twelve-hour evenings in downtown Los Angeles and screwing up their biological clocks.

A locationwise production auditor agrees with Smith. "It's no game and no party," he says. "It's mad and it's crazy and you're likely to come back twenty pounds heavier, ready for a nervous breakdown."

Down the street in Culver City, Michael Murphy, a production executive at Republic Entertainment International, has a similar opinion on a grueling job that "all comes down to getting it in the camera."

"It's like summer camp," says Murphy. "The work is intense, and when it's all over there's a letdown. Everybody goes on to another job."

Without a studio behind them, most production people freelance, hired on a per-film basis. They could be called celluloid gypsies. "You hit on a film and plug into the next," explains Murphy. "You're jazzed and ready to go. It becomes a driving need. Sort of a fix."

It's definitely "not a gray job," as Smith puts it. Which is why, she says, there are "eighty to ninety people in line for every job on every shoot."

On the set, the role of production manager requires tremendous logistical skills and a measure of personal diplomacy when dealing with often-tired, overworked people. In breaking down a script, more subtle gifts like insight, a feel for what the director wants, and the Hollywood equivalent of street smarts come into play. A scene may give only a brief clue as to the props, people, costumes, and effects needed. It's up to the production manager to pull them out. "Car swerves near cliff," for example, provokes the question, "Do we need a stunt driver?"

Reducing a script to its logistical requirements is the backbone of the production business. Usually done by, or under the supervision of, the production manager, it's the equivalent of planning a paper assault in a war campaign. Script breakdown packages from DotZero and Quantum help computerize the chore.

The shooting schedule of a movie is kept on something called a production board, which is actually a byzantine volume of seven to fourteen hard-back pages in an accordionlike binding. Each page of the "book" has color-coded paper strips attached to it for easy rearranging. Each strip contains vital information for each scene to be shot, such as when and what stars, props, and extras are needed; where the shoot takes place; whether it's day or night, and so on.

Much of the preliminary paperwork that leads up to the finished production board can now be done with the script breakdown software. Lists of props, extras, effects, costumes, and so on required for each scene can be sorted in order of shooting se-

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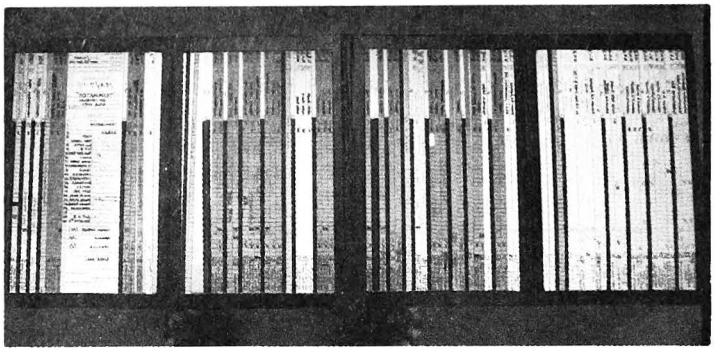
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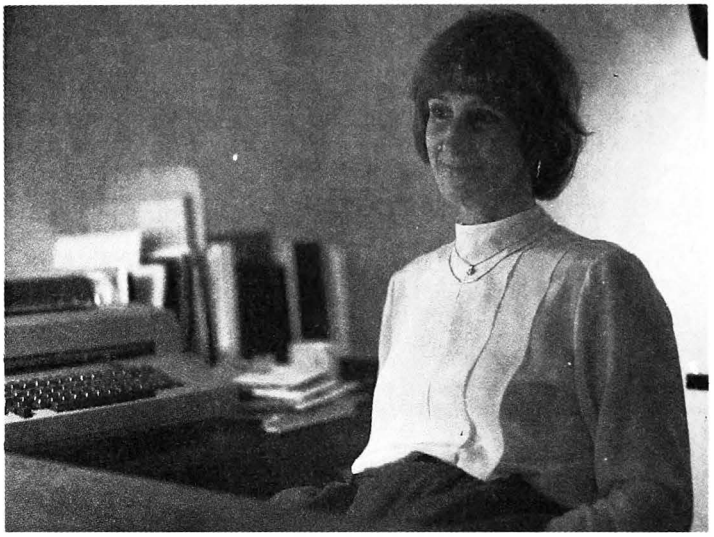
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Most people would find it hard to believe the actual filming of a movie is coordinated with tiny strips of colored paper. Computerizing the production board is still fantasy, although Donna Smith promotes using an Apple on a shoot whenever she can.



quence, interior or exterior scenes, and so on, ready to go to their respective departments for further delineation. These sorted lists, in turn, can be automatically massaged into a master document called a day-out-of-days, which charts the information posted on the production board. Copies of it go to cast and crew.

As production supervisor on *Reckless*, Donna Smith took over twenty rooms in a Holiday Inn in the steel-mining town of Weirton, West Virginia, last year. "We descended on the hotel and cleared the rooms, put in phones, and brought in equipment and a catering truck," she says. Hollywood had arrived. "By the second day, we had gotten more than 900 calls from locals looking for jobs on the film."

The first assistant director, Gary Daigler, did the *Reckless* breakdown from scratch in Weirton before actual shooting began. While the shoot was on, they used the Apple for memos and "who's flying in on what plane" pickup lists. The battery backup protected Smith's machine from having the juice going down and from blackouts, one of which occurred Christmas week. Smith and Daigler were thrilled to be able to keep working in the dark until power was restored.

Smith is a rarity in the film business, one of "four and a half women" holding down the traditional "man's job" of production manager. Her explanation? "I can kick ass and get a crew to work and be harmonious about it just like everybody else," she says. Coincidentally, there's also a female producer and a female first assistant director on *Terminator*.

With an Apple of her own for doing free-lance budget breakdowns, Smith knows what one can do on the job. She carries a report she calls "Donna's Computer Presentation" when negotiating a film as Persnickity Productions. A computer was nixed on *Terminator*, Smith explains, because the money went to enhance production values and will eventually show up on the screen. In this case, "probably a crash vehicle," she says, since *Terminator* is "a crash-and-burn, death-and-destruction kind of film."

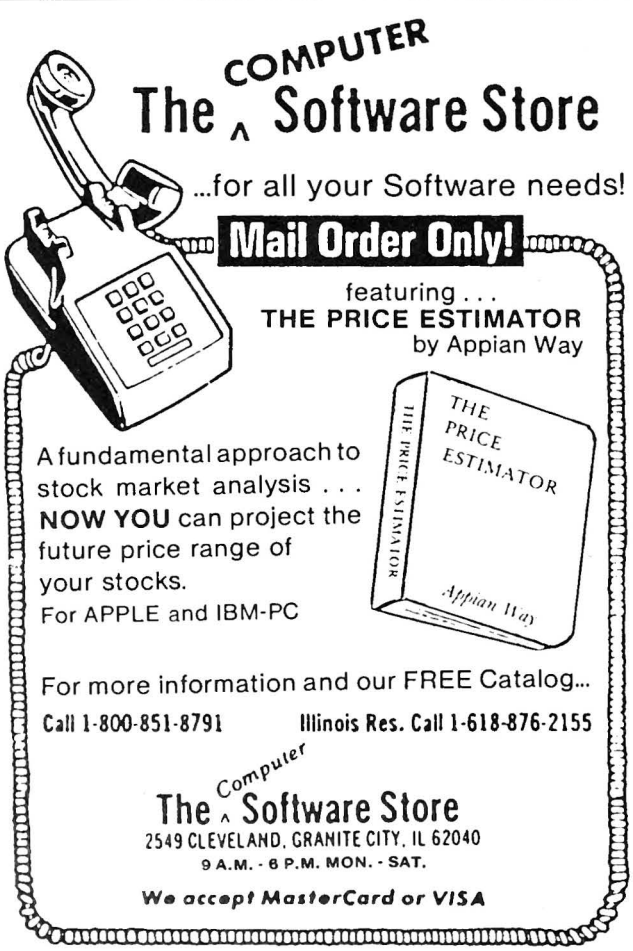
I found the greatest sleeping pill in the world: this script.
—William Holden

Script breakdown and budgeting is an art form of necessity at a low-budget production company like Republic Entertainment. Formerly Sandy Howard Productions, it's the home of *Meteor*, *A Man Called Horse*, and *The Island Of Dr. Moreau*. Republic is known for churning out mass-appeal genre films that work as well or better in foreign markets, due to the casting and cost-cutting savvy of Sandy Howard's staff. Not as flamboyant as "stormin' Roger Corman," Hollywood's best-known independent film-maker, the equally maverick Howard runs a tight ship, making as many films a year—six last year, twelve this year—as at many major studios, but without the overhead of one.

"Physically, we're a small operation doing lots of pictures," says Joel Soisson. At Republic, Soisson and Michael Murphy do most of the preproduction work on a film before a crew and a production person are even hired. "We do it ourselves here because we know the rates, we have equipment deals, lab deals, and so on." If there's a Sandy Howard way of making movies, that's it.

"When we saw more work ahead for this year," says Soisson, "we knew hiring more people wouldn't work as well as getting a computer." Enter the Apple.

Once a script comes down from the creative department on the second floor, a budget and breakdown are done, with help from the DotZero software. "This lets the powers that be determine if it's smart to go ahead on a picture," says Murphy. As they say in Hollywood, many are budgeted, few are made.



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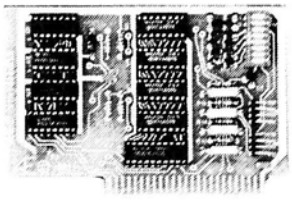
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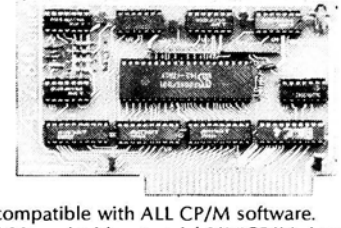




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OMNIVISION	MORE	NO	YES	NO	NO	NO	NO	YES	YES
VIEWMAX80	MORE	YES	YES	NO	NO	YES	NO	NO	YES
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So far the Apple has been used on the preproduction breakdown for three films: *Killer's Holiday*, a contemporary *Bonnie and Clyde* about two young men on a murder spree; *For Whom the Bell Tolls*, a lustier remake of the Hemingway classic to be shot in Spain or Malta; and *Hero Run*, a youth picture about a foreign prison escape that may go top budget if casting goes as planned. The Apple also saw some action on *KGB*, a Bondish political thriller with Sally Kellerman, which wrapped last June and is now in postproduction.

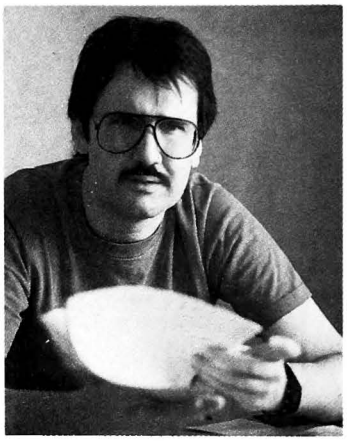
For Whom the Bell Tolls has the most thoroughly developed schedule, thanks to the Apple. Detailed lists of every major prop, stunts, vehicles, cast, bit players, extras, guns, animals, makeup, and special effects have been done, as has the day-out-of-days. "The more information you take off a script," says Soisson, "the more you get back from the computer."

"We're so together on this one that we could actually phone it in," jokes Murphy. "Before the computer, we wouldn't be able to have this kind of detail. Now, anything you can assign a number to can be entered. All we have to do is ask, 'What days does the cannon work?' and all the days the cannon is needed appears on the screen."

Last month, Sandy Howard was in Spain with printouts of the information, scouting locations for the Hemingway picture along with his production manager and negotiating to shoot *Hero Run*. Before he left, Howard got a small shock when he picked up the wrong *Hero* budget. Both the English and Spanish currency versions are identical except for the dollar amounts. "The package has a built-in multiplier for figuring costs in foreign currency—in this case pesetas," explains Soisson. "Sandy couldn't believe his eyes when he saw he was spending $2,250,000 on one item" (instead of $15,000).

"In the old days—one year ago," foreign budgets were "a nightmare," says Murphy. "It was all day on the calculator figuring out exchange rates." It's so much easier now that when shooting starts on *For Whom the Bell Tolls* he's considering taking a IIc and a modem with him to Spain to handle the budget revisions.





Joel Soisson (left) and Michael Murphy wrote the script for *Hambone & Hillie*, a family film that stars a recent Republic discovery—Lillian Gish.

Of course, the bottom line on any Republic picture is cost. "The computer makes a lot of what-iffing possible," says Soisson, "allowing us to go in and change factors like actors, weeks, overall schedule, and—God forbid—union rates." Naturally, a nonunion picture is cheaper to make and easier to figure manually than an I.A.T.S.E. (International Alliance of Theater and Stage Employees) one. On the Apple, a flexible library of standard union rates for all jobs and all situations is built into film budgeting software.

Ninety percent of the time, a picture can't be made with the first budget drawn up. "You know a picture can't be made if it costs too much," says Soisson. "A whole production is riding on what's printed out," which allows the Republic staff one electronic thrill. "Everybody's waiting when you hit that last button," says Soisson. "You're sweating, almost shaking." If the numbers aren't right, they have to go back in and try to find ways to cut. Without exception the first cuts are made in casting. Equipment is second.

The most important thing in acting is honesty; once you learn to fake that—you're in!

—Samuel Goldwyn

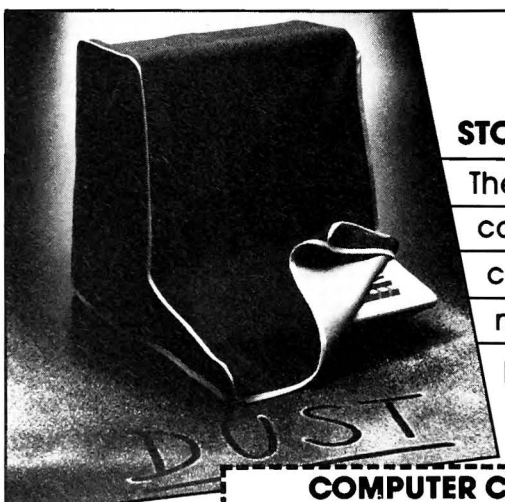
In the world of movie production, "a lot of people don't have an affinity for computers," says Jim Barr, a location-production accountant at MGM/UA. "You have to feel free to play with wires and jiggle cards." New to computing, most show people are wary of their Apples—a disk drive failure can terrify someone who's now dependent on them.

On the other hand, some show people who've been doing "dog work" manually for twenty years or more have developed certain relationships with their computers, something akin to "sharing an aura."

Nurturing that affinity—and the hand holding that goes with it—is the job of software developers such as Smith and Safir. They've both been in the production person's shoes and "know this crazy business intimately," says Smith.

Smith likens the introduction of the computer to Hollywood in the eighties to the introduction of the electric motor in the twenties. "Nobody had to turn the crank on a camera anymore," he says. "Cameramen were free to frame a shot and be more creative."

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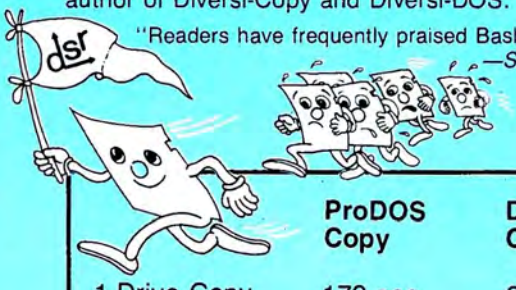
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2010 Apples

Tinseltown Visits Cupertino

BY ANDREW CHRISTIE

Remember Heywood Floyd?

He was the first human being you saw in the film *2001: A Space Odyssey* and the man responsible for sending those five guys to Jupiter with that loony computer. When the movie sequel *2010* picks up the story nine years later, Floyd has been forced out of his government post and winds up in Hawaii with a comfortable university position, his wife and kids, and a couple of playful dolphins that swim around in the living room.

It's a good life, until the day a fateful call comes from the government. Now it's time to go out and rescue the derelict *Discovery* from that disastrous Jupiter mission and reactivate Hal, the paranoid schizophrenic computer. Now it's time to figure out once and for all just what the heck those big black monoliths are all about. Floyd has to strap on his calculator one more time and go out on one more mission. He has to answer the call to duty. Especially since it comes in over an Apple, the most personal computer.

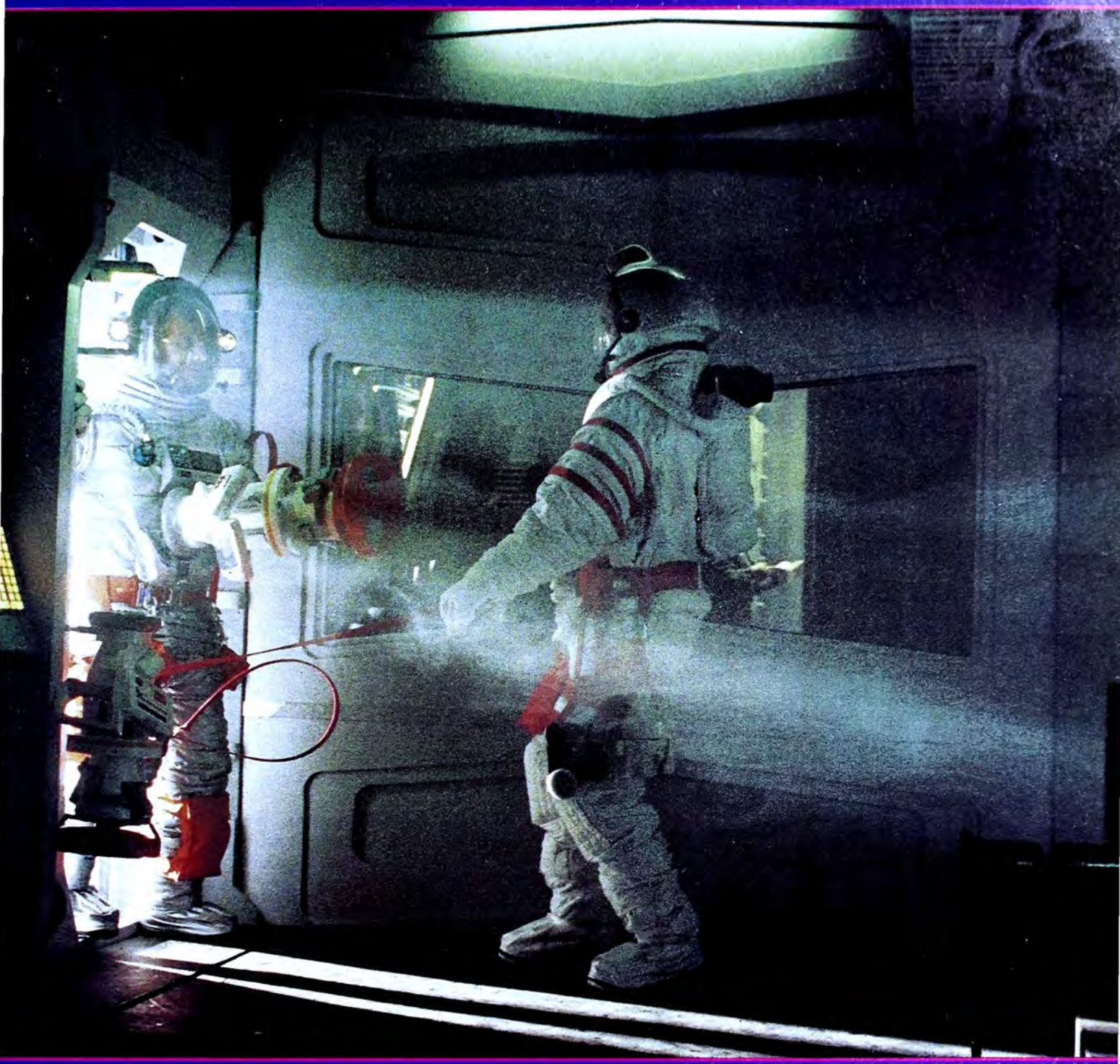
That's right. Theoretical physicist Heywood Floyd owns an Apple IIc and a Macintosh—both of them, presumably, having given him a quarter-century of faithful, trouble-free service.

Dawn of a Deal. *2010*, starring Roy Scheider and John Lithgow, is scheduled to hit the theaters this December, sixteen years after Arthur C. Clarke wrote the original novel in 1968. Back then, Apple was the record label of the Beatles. Today, Apples of the Cupertino kind will be on view in *2010*, thanks to a new cinematic science called "product placement."

The major use of recognizable company names and products was pioneered by *2001* (Pan Am, Howard Johnson's, AT&T, IBM) in its efforts to present a recognizable version of the near future. Since then, the practice has become a large and lucrative business.

According to Bill Minot, director of merchandising at MGM/UA, "product placement is essentially looking at a script and finding a place in the script where the creative process calls for a particular product, and then going to a company that might be interested in having its product in that place in the movie."

He points out that at MGM/UA, they don't throw just anything into a movie. A promotional tie-in with a product after a



Roy Scheider (upper left) with the biggest computer in MGM/UA's *2010*. Above, Elya Baskin and John Lithgow embark on an untethered spacewalk from the Russian ship *Leonov* to the abandoned American craft *Discovery*.

film is released helps them make the decision. The demographic profiles of Apple buyers and moviegoers matched up nicely in the case of *2010*, Minot reports.

"On *2010*, when you think about the future and futuristic items that might be used by someone, it was obvious that home computers would be an integral part of the scene—especially portable ones. That led [producer-director] Peter Hyams to say that he'd like to use one. It's not a major plot point, but it is the future. So I discussed the opportunities with several companies."

Floyd's IIc and Mac are seen only in the beginning of the film, before *2010* takes off into the infinite starry regions of special effects. As Debbie Kuhns, one of Apple's group marcom (marketing communications) managers says, "We'd already gotten an Apple on the real space shuttle, so we didn't need to get one on the *Discovery*."

For the movie, "we wanted to have everything you see look as futuristic as possible," says Jonathon Zimbert, associate producer of *2010*, "and we're also promotion-minded. Promotions are a way of advertising, if you will, getting hooked up with different companies. So we went down the list, and Apple is far and away one of the winners in this computer derby.

"Their Mac design is a neat design—although, granted, it's the 1980s. Chances are it's not going to be around in the year 2010, but it looks interesting. With the Apple IIc, they have a new thing coming out [the flat screen display] that they lent to us to use, and that also looks really neat.



Dr. Heywood Floyd (Roy Scheider), leader of the American crew, confers with his fellow scientists on board the *Leonov*.

"Apple is a big company," says Zimbert. "We knew they'd be around in a year; we knew they'd be around in 2010, so it was a nice company to get linked up with in that way."

Kaypros were the micros most directly involved in the film's production, forming a hookup between Hyams in Hollywood and Arthur C. Clarke in Sri Lanka for daily communication regarding script changes. The Kaypro, however, in Minot's opinion, is "not a highly mobile, personal, take-it-with-you computer." And "Apple seemed to be the one most interested in doing significant downstream promotion."

At Apple Computer, sales promotional specialist Donna Wegner handles requests for movie tie-ins. She goes by a few general guidelines: "If it's the correct vehicle, one that has the proper image for Apple, we most definitely like to get visibility. We'll go with a movie that shows computers in a good light, that's upscale, not violent or laced with a lot of sexuality and that sort of thing. If it's a quality film that would give Apple good exposure for its products, we're most happy to get involved in product placement."

The sequel to Stanley Kubrick's ultimate trip met Apple's requirements. Apple turned down product involvement in another MGM/UA film, *Electric Dreams*, the story of a computer that takes control of its owner's life. That micro is now being played by a Commodore.

"There are product placement firms that come to you and want you to sign up for lots of dollars," Wegner says. "We don't use them." According to Wegner, there is no formal contract between Apple and MGM/UA. "It's just been letters back and forth and a sort of verbal gentleman's agreement," she says.

"One of the things you have to be concerned with if you make an arrangement with a film company," says Wegner, "is what happens if the scene ends up on the cutting room floor? We went down to Culver City and visited the set and the whole megillah. They had the producer come up here to Cupertino and give us a synopsis of the plot. They said, 'Now, we'll have to fill you in . . . ' but both Debbie and I had read the book. They said it was the first time they'd met with a company where the people did their homework.

"We've established a nice rapport with MGM/UA. They're very easy to work with and we may do further films with them."

As far as the "downstream promotion" of the film goes, plans are still in development. "We'll be celebrating Apple's *2010* involvement in some significant fashion at the time of release," explains Minot. "The specifics have not been worked out, but obviously all those dealers who work with Apple will have the opportunity to participate in a major holiday-type promotion of some sort."

"We might have some kind of 'Win a Macintosh' contest," muses Zimbert. "Apple has a market and we have a market. We get people who go into movie theaters and they get people who go into Apple stores. Maybe we'll have some kind of *2010*-and-Macs display in every theater and Apple dealership: 'In the year 2010, we'll still be here'—that kind of thing."

While MGM/UA came to Apple with the idea of participating in the film, it's not uncommon for companies to approach studios with the same kind of idea. High-tech companies were aware that *2010* was happening and could be the hottest ticket in town come December. "It's feast or famine," sighs Minot. "We were approached by several people.

"Some companies were not set up to have the major consumer impact we needed. We felt that Apple was the perfect candidate to participate in this, based on the nature of its product line and the creativity of the company. There's certainly a meeting of the minds and an enthusiasm around the project."

And certainly a great chance for Leo the Lion to exchange a little product luster with a Snow White IIc.

"I think it's gonna be hot, to tell you the truth," confides Wegner. "I've seen some of the stills with the Macintosh and the IIc with the flat screen—it's our prototype; it's not even in production yet. But this is 2010, so . . . "

But finally, really, why did MGM/UA choose an Apple, over all the competition, to represent some of the breathtaking hardware of the twenty-first century?

"I don't know," muses Wegner. "Probably because it's the best."

Open the Pod Bay doors, Hal. ■

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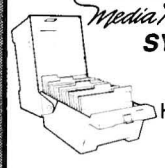
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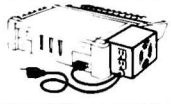
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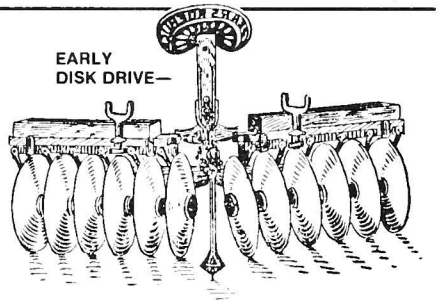
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IF X=2 THEN PRINT "YES": ELSE PRINT "NO"

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```
A$="DOGFOOD"  <-- VARIABLE-DISPLAY: prints
X=3.14159         all of a program's strings and vari-
Y=255             ables with their current values.
A$: 100 200 250  <-- CROSS-REFERENCE: Sorts
X: 10 20 3000        & displays line numbers where
Y: 10 40 55 60       each variable & string appears.
```

AUTO-LINE-NUMBER, instant Hex/Dec Converter, better Renumber/Append, Program Stats, Eliminate/Redefine Cursor, Free Space-On-Disk... All GPLE/Pronto compatible.

```
]LIST
10 HGR2
   : FOR Y=0 TO 191
   : POKE 228, C
   : C=C+1/9-256*(C=255)
20 REM "Double-Take optionally lists each Applesoft program statement on a new line, making program code much easier to read."
30 HPLOT 0,Y TO 279,Y
   : NEXT Y
   : POKE 2053,58
   : GOTO 10
```

2-WAY VIDEO SCROLLING



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15 EXTRA SECTORS per disk. Catalog Free-Space is displayed on the screen every time you Catalog a disk.

NEW TYPE-COMMAND ("TYPE filename") prints the contents of any Text File on-screen or to your printer.

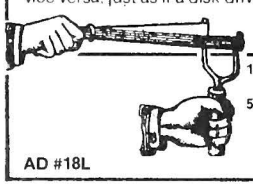
☐ DISKQUIK™ (Requires IIe with 128K)

DISK EMULATOR by HARRY BRUCE & GENE HITE
$29.50: Includes Peeks & Pokes Chart
Requires Apple IIc or IIe with EXTENDED 80-col. card)

ACTS LIKE A DISK DRIVE in Slot 3, but super-fast and silent! Enjoy many of the benefits of another drive at 1/10th the cost. Catalog with "CATALOG, S3" command. Access all kind of files in RAM with normal DOS commands.

SILENT AND FAST: Since no moving parts are involved, DiskQuik operates at super-high speeds. See to believe! Your Apple IIe's Extended 80-column Card (required) holds about half the amount of data as a 5¼" floppy!

MANY USES: For example, load often-used files like FID into RAM when you boot up, so they are always available when you need them. Copy files from RAM onto disk and vice versa, just as if a disk drive were connected to slot #3.



COMPATIBLE with all normal DOS procedures.

```
1234 TEXT: HOME: NORMAL:
     PRINT CHR$(21)
5678 R INT(RND(1)*10): N(R)=
     N(R)+1: VTAB R+9: HTAB
     40: PRINT CHR$ (124); SPC
     (N(R)); CHR$(R+65); :
     IF PEEK(36) THEN 5678
```

AD #18L

Multi-Utilities

☐ UTILITY CITY™

21 PROGRAMMING UTILITIES by BERT KERSEY
$29.50: Includes Peeks/Pokes Chart & Tip Book #3

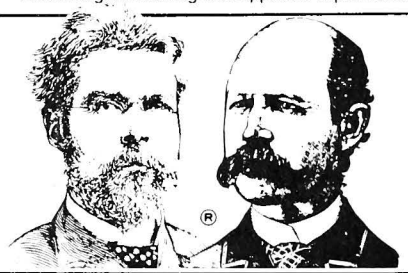
LIST FORMATTER prints each Applesoft program statement on a new line. For-Next Loops are indented with printer Page Breaks. A great Applesoft program de-bugger.

MULTI-COLUMN CATALOGS to your printer, with or without sector and file codes. Organize your disk library.

INVISIBLE AND TRICK catalog File Names. Put invisible functioning commands in Applesoft programs too.

21 UTILITIES TOTAL, including auto-post Run-number & Date in programs, alphabetize/store info on disk, convert dec to hex or Int to FP, protect and append programs, dump 40-column text to printer. And More.

LEARN PROGRAMMING TRICKS: LIST-able programs and informative documentation. Includes Tip Book #3— Hours of good reading and Applesoft experiments.

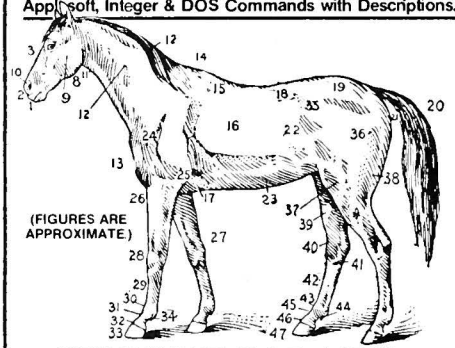


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FREE APPLE COMMAND CHART: Each SILICON SALAD and TIP DISK #1 comes with an 11x17 poster of all Applesoft, Integer & DOS Commands with Descriptions.



☐ SILICON SALAD™

WITH TIP DISK #2 by BERT KERSEY & MARK SIMONSEN
$24.95: With Peeks/Pokes Chart & Apple Command Chart

MANY MINI-UTILITIES: Program Splitter makes room for hi-res pix in large Applesoft programs, **Disk Scanner** finds bad disk sectors, **Key-Clicker** adds subtle sound as you type, **DOS-Killer** adds two tracks of space to your disks, **2-Track Cat** allows up to 210 DOS 3.3 file names per disk, **Text Imprinter** converts text-screen text into hi-res text, **Onerr Tell Me** prints the appropriate error message but continues program execution, **Text Screen Formatter** formats and converts text layouts into Print statements... plus much more Apple wizardry from the boys at Beagle Bros.

MORE TIPS ON DISK: Over 100 programs from Beagle Bros Tip Books 5, 6 and 7; *and* from Tip Chart #1.

TWO-LINERS TOO: From our customers around the world—and elsewhere. New tricks for your old Apple!

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100 LISTABLE PROGRAMS from Beagle Tip Books 1-4. Make your Apple do things it's never done! All 100 programs are LISTable and changeable for experimentation. Two-Liners too, plus a free *Apple Command Chart*.

Apple® Graphics Utilities

☐ BEAGLE GRAPHICS™

DOUBLE HI-RES GRAPHICS by MARK SIMONSEN
$59.95: Includes Peeks & Pokes Chart
Requires Apple IIc (or IIe with EXTENDED 80-col. card).

560-WIDE WITH 16 COLORS! Beagle Graphics gives your 128K-Apple (required) a full range of colors plus *double* high resolution—560 x 192 pixels. All Applesoft hi-res functions, including shape tables, are supported.
NEW COMMANDS let you draw fast circles, ellipses and rectangles from the keyboard or from your programs.
FAST COLOR FILL fills any outline with one of 16 solid colors or 256 color mixes (usable in your programs).
PROGRAM & PICTURE-CONVERTERS change your existing Applesoft programs *and pictures* to double hi-res. "Double-ize" *Apple Mechanic* shape table programs too!
DOUBLE-PLOT PROGRAM lets you draw and manipulate pictures in double hi-res. Add type to pix too. Move sections of images to either page. Save pictures to disk.
HI-RES TRICKS: Amazing stuff— any portion of a picture may be rotated, flopped, moved, inverted, superimposed, scrunched or even SAVED to disk. Saving image-portions conserves disk space.



☐ TRIPLE-DUMP™

SINGLE/DOUBLE HI-RES "PRINT-ANYTHING" UTILITY
$39.95: Includes Peeks & Pokes Chart

PRINT ANY SCREEN IMAGE on your dot-matrix (graphics-capable) printer— Hi-Res, Lo-Res, **Double Hi-Res,** Medium-Res, as well as 40 **and 80-Column Text**. All print functions may be used in your Applesoft programs and disks. Don't settle for a "locked up" printer-dump program.
SPECIAL EFFECTS: Crop, rotate, enlarge, distort, invert... Preview pictures on the screen before you print.
BANNER MAKER: Make impressive 8"-high signs and banners for your family, home or office. Type any message—no length limit—and let your printer do the work!

☐ ALPHA PLOT™

STANDARD HI-RES GRAPHICS UTILITY
by BERT KERSEY & JACK CASSIDY
$39.50: Includes Peeks/Pokes Chart & Tip Book #4
(Alpha Plot offers 6-color 280-pixel resolution and requires only 48K; see Beagle Graphics for 128K double hi-res.)

DRAW IN HI-RES on both pages using easy keyboard commands. Pre-view lines before plotting. Use solid or mixed colors and Reverse (background opposite). One-key-stroke circles, boxes and ellipses, filled or not. All pictures are Save-able to disk for access by your Applesoft programs.
COMPRESS HI-RES DATA to 1/3 disk-space, allowing 3-times the number of hi-res pictures per disk (avg. figures).
MANIPULATE IMAGES: Superimpose pictures or *relocate* sections of images anywhere on either hi-res page.
HI-RES TYPE: Add variable-size color & b/w text to your pictures. Type *anywhere* with no htab/vtab limits. Type sideways too, for Charts & Graphs. Includes Tip Book #4.

☐ FLEX TYPE™

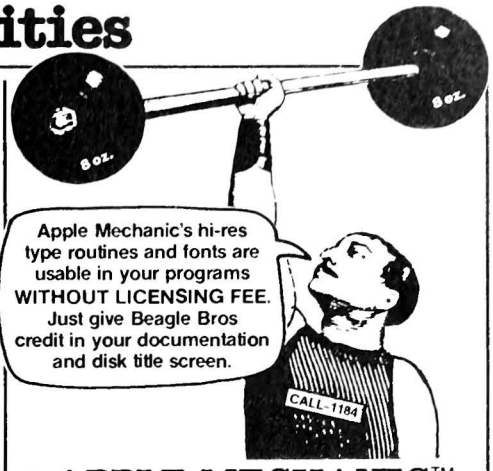
FLEXIBLE-TEXT UTILITY by MARK SIMONSEN
$29.50: Includes Peeks & Pokes Chart

PUT VARIABLE-WIDTH TEXT on both hi-res screens with normal Applesoft commands (including HTAB 1-70). Normal, expanded & compressed text with no extra hardware. (70-column text requires b/w monitor, not a tv).
COMBINE TEXT & GRAPHICS. Run existing Applesoft programs with Flex. GPLE/Double-Take compatible.
DOS TOOL KIT® font compatibility. Access up to 9 fonts in memory. Text editor lets you redesign text characters.

☐ FRAME-UP™

FAST APPLE DISPLAY UTILITY by TOM WEISHAAR
$29.50: Includes Peeks & Pokes Chart

PROFESSIONAL PRESENTATIONS: Turn existing Hi-Res, Lo-Res & Text pix into Apple "slide shows". *FAST* 2½-sec. hi-res loading! Paddle or Keyboard-advance frames.
UNATTENDED SHOWS optional— each picture arranged and pre-programmed to display 1 to 99 seconds. Text Screen Editor creates black & white text "slides"; lets you key-in type "live" during shows. Mail copies of presentations-on-disk to friends & associates (or home to Mom!).



☐ APPLE MECHANIC™

HI-RES SHAPE EDITOR & FONTS by BERT KERSEY
$29.50: Includes Peeks/Pokes Chart & Tip Book #5

SHAPE EDITOR: Keyboard-draw hi-res shapes for animation in your Applesoft programs. Easy "List & Learn" Applesoft demos teach how to do hi-res animation as well as professional-looking hi-res Charts and Graphs.
HI-RES FONTS: Access & create proportionally-spaced hi-res type; each character totally re-definable. Six complete fonts are included on the disk (4 large & 2 small).
MORE: Useful music, text and hi-res tricks for your Applesoft programs. Clear educational documentation and step-by-step instructions for writing graphics programs.

APPLE MECHANIC HI-RES ☐ TYPEFACES™

26 FONTS FOR APPLE MECHANIC by BERT KERSEY
$20.00: Includes Peeks & Pokes Chart

26 NEW FONTS for use with Apple Mechanic programs. Many different sizes and typestyles, both ordinary and *Artistic*. Every character—from A to Z to "★" to "□"—of every typeface—from "Ace" to "Zooloo"—is re-definable to suit your needs. All type is *proportionally spaced* for a more professional appearance. People *do* notice the difference!

Disk Librarian NEW!

☐ FATCAT™

PERSONAL DISK LIBRARY by ALAN BIRD
$34.95: Includes Peeks & Pokes Chart

MULTIPLE-DISK CATALOG: FATCAT reads all of your DOS 3.3 and ProDOS™ disks into one or more "Master Catalogs" that can be searched, sorted and printed. Update at any time by simply reading in new or altered disks.
ALPHABETIZE FILE NAMES: Sort your DOS 3.3 and ProDOS disk catalogs alphabetically, by file name, type, etc., to make files easier to find. Re-locate individual file names too. Find files *fast* every time you CATALOG. This feature alone is worth the price of FATCAT!
COMPARE FILES: Compare any program in memory with any other on disk. Each differing program line is called out so you can tell which is the latest version.




```
10 REM BEAGLE CARD FILE
20 HGR: HGR2: POKE 232, 120: POKE 233, 64: POKE
   16504, 7: SCALE=80: P=16: X=99: FOR R=0 TO 31:
   P=P*-1: POKE 230, 48+P
30 FOR Y=0 TO 1: ROT=ABS(64*Y-R): HCOLOR=3:
   FOR A=1 TO 25: DRAW 1 AT X+2*A, X: NEXT
40 HCOLOR=0: DRAW 1 AT X, X: ROT=32: DRAW 1:
   DRAW 1 AT X, X: NEXT Y, R
50 FOR A=0 TO 20: FOR B=0 TO 1: POKE 49237-B,0:
   X=PEEK(49200): FOR C=1 TO 6*A
60 NEXT C, B, A: GOTO 50
```

Beagle Bag!

☐ BEAGLE BAG™

12 APPLE GAMES ON DISK by BERT KERSEY
$29.50: Includes Peeks & Pokes Chart
Apple software customers recently voted BEAGLE BAG to Softalk's "Most Popular Software" list for 1983.

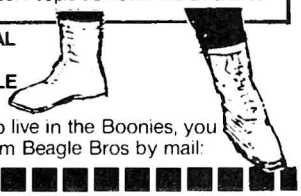
COMPARE BEAGLE BAG with any one-game locked-up disk on the market today. All 12 games are a blast, the price is right, the instructions are crystal clear, *and* the disk is COPYABLE. You can even *change* the programs or list them to learn programming tricks by seeing how they work.
TWELVE GAMES that *last*— TextTrain, Wowzo, Magic Pack, Buzzword, Slippery Digits, and many more...
EXCELLENT REVIEWS—Read Jan-83 *Softalk*, pg 148.



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☐ A.M.Typefaces	20.00	☐ Frame-Up	29.50
☐ Beagle Bag	29.50	☐ GPLE	49.95
☐ Beagle Basic	34.95	☐ ProntoDOS	29.50
☐ Beagle Graphics		☐ Silicon Salad	24.95
☐ DiskQuik	29.50	☐ Tip Disk #1	20.00
☐ DOS Boss	24.00	☐ Triple-Dump	39.95
☐ Double-Take	34.95	☐ Utility City	29.50

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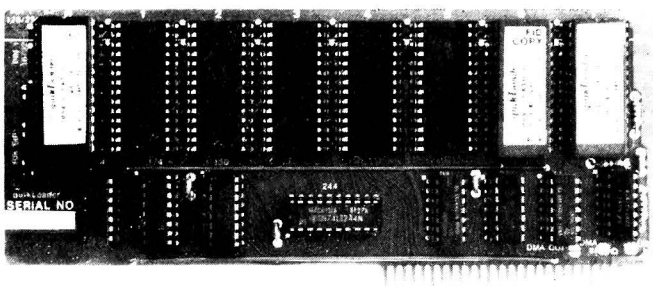
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SCRG PRODUCTS FOR THE APPLE COMPUTER

quikLoader™



SPEED

The quikLoader is the *fastest* way to load programs. **BAR NONE!** Applesoft, Integer, or machine language programs can be loaded in fractions of a second. More importantly, DOS is instantly loaded every time the computer is turned on. Integer is even loaded in the language card. This process takes less than a second, saving valuable time.

CONVENIENCE

How many times have you started to work with a frequently used program, only to find that you have misplaced the disk, or worse, had the disk damaged, or the dreaded "I/O ERROR" message flash on the screen. With the quikLoader, these nightmares can be a thing of the past. Frequently used programs are available *instantly* when you need them, without having to look for the disk, or hoping that the lengthy disk loading procedure goes smoothly.

PROGRAMMING EPROMS

Putting your own programs on the quikLoader is easily done, using a separate EPROM programmer, and the instructions that we supply. For APPLESOFT, INTEGER, or single machine language files, you simply take an "image" of the program, and put it into the working array of the programmer. Add a few bytes for the overhead and catalog, and instruct the programmer to "burn" the EPROM. Plug it into the quikLoader, and your program is now **instantly** available to be cataloged, loaded, or run. No programming knowledge or experience is necessary to do this. You **will** need experience if you want to save copy-protected or complex programs. The amount of experience necessary depends on the complexity of the program.

COMMERCIAL PROGRAMS

If you have a program that is valuable, it will become **more** valuable when it is instantly available to you. SOUTHERN CALIFORNIA RESEARCH GROUP is actively seeking licenses from software publishers to allow their popular programs to be made available for the quikLoader. Independent authors are encouraged to write programs suitable for the quikLoader. If the author wishes, we will market the program (with appropiate royalties), or the author can take care of all marketing. In either case, we will make known to our customers the availability of these programs.

We start your library of programs with the most popular utilities on the card, FID and COPYA. Now, if you have to copy a disk, you don't have to search for the master disk. You can start copying within 3 seconds after turning on the computer.

We are currently licensed to sell two very popular programs on PROM. **DOUBLE—TAKE** by BEAGLE BROS., and **COPY][PLUS** by CENTRAL POINT SOFTWARE. The introductory price for DOUBLE—TAKE is $45.00. This includes the program exactly the same as you would buy it at your dealer for $34.95 (including disk and documentation), and a programmed 27128 EPROM (worth about $25.00). COPY][PLUS cost $65.00. This includes the original program (worth $39.95) and **two** programmed 27128's. More commercial programs are now in the works.

MEMORY CAPACITY

The quikLoader has eight sockets for EPROMS. These sockets can accommodate the standard 27XX series of EPROMS. Types supported are the 2716, 2732, 2764, 27128, 27256, and 27512. These types can be freely intermixed. The memory capacity of the quikLoader depends on the EPROMS used. For example, the 2716 can hold 2K of programs, and the 27512 can hold 64K. (Frankly, the current costs of the 27512 is prohibitive,but should come down drastically in the next year.) At this writing, the least cost-per-bit is provided by the 2764, which can hold an 8K program. Using these "chips", the quikLoader bcomes a 64K ROM. Using larger capcity EPROMS allows it to become a 128K, 256K, or even a 512K card. If more memory capacity is needed, the quikLoader operating system supports multiple quikLoaders.

INCREASED DISK CAPACITY

Since DOS is loaded from the quikLoader every time the computer is turned on, it is not necessary to take up valuable disk space with DOS. This will give you more than 5% additional space for programs and data on your disks.

ADDITIONAL FEATURES

The quikLoader has some other handy features. The following keys, pressed in conjuction with "RESET" will perform these actions:

Z—"Cold boot"
H—Run "HELLO" program
D—Boot disk
X—Enter Mini-assembler
B—Boot only
C—Catalog disk
Q—Display catalog of programs on quikLoader
M—Drop into monitor.

To run a program from the quikLoader, bring up the quikLoader catalog (Q-reset), and the names of the programs will be displayed, along with an index letter. Pressing the index letter will instantly load and run the program. If you wish to load the program without running it, this option is available to you.

While the quikLoader catalog is being displayed, pressing the "Z" key will toggle the parameter display, showing PROM address, RAM destination address, and length.

Up to 23 programs on the quikLoader can be displayed on the screen at one time. If you have more programs, you may scroll through the catalog (either direction) for up to 256 programs.

The quikLoader is **ideal** for applications requiring a dedicated computer. Your program can be automatically loaded and run at "power-up".

ABOUT THE DESIGNER

The quikLoader was designed by Jim Sather, author of UNDERSTANDING THE APPLE][(forward by Steve Wozniak), published by QUALITY SOFTWARE (21601 Marilla Street, Chatsworth, CA 91311 (818) 709-1721).

REQUIREMENTS

The quikLoader plugs into any slot of the APPLE][+ or //e. If used in a][+, a slightly modified 16K memory card is required in slot 0. A disk drive is required to save data.

DOS, INTEGER BASIC, FID, and COPYA are copyrighted programs of APPLE COMPUTER, INC. licensed to Southern California Research Group to distribute for use only in combination with quikLoader.

$179.50

other products

SCRG also manufactures these other products for the APPLE computer:

PADDLE-ADAPPLE: Game I/O extender in three versions, which allows you to switch between any two I/O devices such as paddles, joysticks, KOALA(TM) graphics tablet, etc. $29.95.

EXTEND-A-SLOT: Brings a peripheral slot outside the computer for easy change of cards, or access to test points. $34.95.

SWITCH-A-SLOT: Mini-expansion chassis allows four cards to be in one slot. User selects active card with switch. 18" cable $179.50, 36" cable $189.50.

D Manual controller. Gives complete control over the $C000 through $C0FF range in hardware. Can be switched while program is running. $89.50.

MAGIC KEYBOARD (for][or][+ only). Re-encodes the keyboard to give alternate keyboards, such as DVORAK, ASK, 10-KEY, HEXIDECIMAL KEYPAD, etc. $49.50.

NEW

9-16 Adapter allows a 16 pin device (joystick, koala pad, etc.) to be plugged into the 9 pin connector in back of the *IIe* or *IIc*. — $14.95

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MARKETALK

Reviews



Unless otherwise noted, software can be assumed to run on any Apple II with 48K and one disk drive. Programs that meet these minimum requirements will usually run on the Apple III.

If the strange initials at the ends of reviews don't match any of the names of the Softalk *staff listed on page 4, then they refer to this month's guest reviewers: Cary Hara and Irwin Hom.*

FINANCIAL COOKBOOK. By Stan Trost. When it comes to computer-aided household finance, programs typically help in showing how money is spent. They provide a recap of the previous month's activities, saying, in essence, "Good work; you saved 15 percent on groceries," or, "You really didn't need to purchase that second solar-powered beer dispenser." You provide the numbers, and the program helps figure out where the money's going.

Financial Cookbook is quite the opposite of those programs. Instead of showing you what you've done right or wrong, it helps determine what financial actions to take that will result in maximum profits or minimal losses. And the program is surprisingly easy to use; the escape, arrow, and return keys (and number keys, of course) are the only ones used. Those who have an AppleMouse can use it instead of the arrow and return keys.

Included are thirty-two financial "recipes" that analyze savings accounts, individual retirement accounts (IRAs), mortgage schedules, car payments (buying, leasing, fixing), interest rates, treasury bills, and long-term investments. Each recipe asks for information such as the inflation rate, interest rate, amount of payment or deposit, number of years to analyze, and marginal tax rate.

Marginal tax rate, a term introduced by *Financial Cookbook*, refers to the percentage of income that goes to federal and state taxes. Since taxes significantly affect the results of investments, the program takes taxes into account when performing calculations. Most of the recipes ask for your marginal tax rate, and the first recipe figures it out for you. However, before it does so, you do need to provide the program with personal tax information, so it's a good idea to have the previous year's federal and state tax returns handy, as well as a tax rate table.

When you select a recipe, the program asks you to supply numerical information (dollar amounts, interest rates, compounding periods). After that, selecting the "compute" option from the menu starts the wheels

turning; results appear on the screen one line at a time. In the case of a multiyear analysis, results scroll off the top of the screen, but it's possible to review them when the calculating is done. Naturally, results can be printed for future reference, and you can save filled-in recipes onto a data disk.

Financial Cookbook assumes that most decisions you make will result in additional income, so sometimes it's more realistic if you provide tax rates that would apply if you were in a higher tax bracket.

Inflation is also taken into account, but since the long-range rates are unpredictable, this variable is most useful for short-range forecasts.

The program's strongest point is that it lets you change variables and see the results immediately. What will happen if you deposit $1,000 per year into an IRA? How about $1,500? It's like having the power of a spreadsheet, except you don't have to create the formulas for calculation—they're already built in.

For the curious, a technical appendix shows the formulas used in each recipe, and a glossary defines more than 150 terms used in the program and manual.

No computer program completely takes into account real-life variables, so *Financial Cookbook* should be used with caution. Each recipe assumes that the numbers you're inputting will remain constant for the length of time you want to analyze. Almost without a doubt, inflation and interest rates will fluctuate and yearly income will change. You may even receive an inheritance or win a sweepstakes. All these changes will have an impact on financial decisions.

The program is meant to provoke thought about money matters; it's not intended to be used as a financial advisor. At best, it will cause you to think about what to do with your money. MTV

Financial Cookbook, by Stan Trost, Electronic Arts (2755 Campus Drive, San Mateo, CA 94403; 415-571-7171). $50.

PAPER GRAPHICS. By Robert Rennard. There are many programs on the market that can print the images on the hi-res screen to a graphics-capable printer, but not many can compare to *Paper Graphics*. Sure, there are many printer interface cards that have this dumping capability, but none have as much versatility or as many options as this utility.

Virtually every printing option you would ever want or need is available here, and using the utilities requires little more than picking from a menu. Pictures can be printed in normal (white on the screen is black on paper) or inverse (the opposite) modes, centered on the paper, at left or right margins, or oriented manually by entering its offset from either margin in inches. Also, a single command prints hi-res screens one and two, with page one printed directly above page two.

Prior to being printed, the picture can be manipulated to produce some interesting results. The right and left or the top and bottom ends of the image can be swapped to produce the screen's mirror image, or the screen can be flipped upside down without the mirror imaging. The picture can also be transferred to the other hi-res screen, which may produce eye-opening "panoramic" effects. Trial and error is the only way to learn how to use this feature. Naturally, once the screen is altered, it can be dumped to the printer.

Images can be printed right side up or sideways, which is almost standard for many graphics dump programs. *Paper Graphics* also lets you select any portion of the screen and print only that portion. Care must be taken when using this option, because cropping the screen image affects both hi-res screens when they both are to be printed.

It's also possible to magnify pictures up to nine times the smallest size (one pixel is approximately equal to one printed dot). The image may be stretched vertically or horizontally by different magnification factors, enlarging a small portion of the image into a full-page picture. However, such a magnification can leave the picture looking as if it were drawn in lo-res graphics.

The most impressive feature of *Paper Graphics* is its varied print densities (how closely the dots are printed together). Setting the program to print in high density creates output that is extremely dark and crisp, eliminating the white shadows typical of many graphics dumps. Even when an image is printed with a heavily used ribbon, the result is surprisingly dark and clear. Printing density can be altered vertically and horizontally to achieve the desired printing darkness.

Also included in the package is Graphics Composer, a utility that allows you to frame a picture in any of the eight hi-res colors, add hi-res text to any portion of the screen, and crop off the edges of the screen. A picture packer is included; it compacts the hi-res screen to save disk space (à la *The Complete Graphics System*).

Because *Paper Graphics* is unprotected, its routines and features can be used from within other programs; the manual clearly explains how to do so. The package is compatible with virtually every printer, dot-matrix or letter quality, and brings graphics dumps to many printers that couldn't produce them before. (Penguin dares you to find a printer it doesn't support.) *Paper Graphics* has all the right features at a reasonable price. Penguin Software's concern for its customers really shines through in this package. CW

Paper Graphics, by Robert Rennard, Penguin Software (830 Fourth Avenue, Geneva, IL 60134; 312-232-1984). $49.95.

BARON. By Jim Zuber. Blue Chip Software might like us to think of *Baron* as a real estate speculator's training ground, and to some extent this is justified. But *Baron* is mostly an exploitation of our boundless fascination with incredible sums of money.

In *Baron*, you're given $35,000 and sixty months to turn it into $1 million by buying and selling real estate and making related investments. No home improvement; no putting hotels on Boardwalk. Beginning as a novice, your status and credit rating improve as your worth increases, until, as a millionaire, you reach baron status.

Baron begins by presenting a graph of the overall real estate market, showing whether prices in general are going up or down. Following this is a graph of the status of the real estate market in one of the five states (New York, Florida, Texas, Kansas, and California) in the game. Headlines from the fictitious but no doubt prestigious *Financial Journal* follow. Some are helpful to speculators, while others are simply cryptic bits of . . . humor?

Property owners then see graphs relating to their land. For instance, if you have property in Miami, you'll see the graph for Florida land. The final screen shows prices for all three types of real estate (land, residential, and business) in all five states.

Now it's time to play. Menu options include looking at available property, buying property or the option to buy it, prospecting alternative investments, and borrowing money.

At the end of the sixty months, if you haven't amassed $1 million, you don't win. But your account doesn't necessarily revert to $35,000, either; you can start a new game with whatever amount you finished the previous game. You can also save games at any time, allowing you to play one out and return to the saved game, making other decisions and seeing how one path compares to another.

Interpreting the *Financial Journal*'s headlines can be frustrating. Consider the following: "MCA Inc to Buy Land in Florida for Possible Theme Park." If MCA is planning to buy up land in Florida, it is probably too late to get in on the profits to be made from Florida land ownership. If you own land in Florida already you might hold off a month or two before selling what you have, but if you own a vacant lot in Palm Beach and the theme park is going up in Tampa, it's hard to see how you'll be affected.

However, in *Baron* land prices tend to go up in groups. If you have land in the northern and southern parts of the state, both parcels will increase at the same rate, which doesn't seem very realistic. If that theme park goes up, it may indeed affect your across-the-state holdings.

The program would benefit from a good proofreading. While typographical errors are acceptable in the blurbs that describe properties, they're inexcusable in messages from the program.

Quick execution is not *Baron*'s forte. With each turn come several graphs—three for each of the five states and one showing the mortgage rates. However, it takes so long to call up each graph that players may find themselves moving from month to month and ignoring a lot of the information.

As for realism, the one thing you can count on is that no one is making any more land. What is there is all there is; as the population and the demand for housing grow, land values must rise. Those with patience will likely turn a profit.

Baron's few departures from reality may annoy those who are used to the true real estate market. Its sluggishness and typographical errors aside, the game offers entertainment in the form of a simplistic overview of real estate speculation. TZ

Baron, by Jim Zuber, Blue Chip Software (6744 Eton Avenue, Canoga Park, CA 91303; 818-346-0730). $49.95.

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LEARNING WITH FUZZYWOMP. By Mike McKee and Martin Shen. This program for preschool children is reminiscent of and a follow-up to the company's successful *Learning with Leeper*. The player uses a joystick to maneuver Fuzzywomp, a cute, furry, caterpillarlike being, about the screen to choose and play four learning games intended to strengthen basic skills such as coordination and number concepts.

In Domino Match, a mainframe computer picks out a domino with a specific number of spots on it, and the child must find an identical domino among eight others shown. If the player chooses incorrectly, Fuzzywomp will point out the correct one.

In Juggling Clown, a clown figure displays a numeral from one to ten; the task is to release the equivalent number of gumballs from a gumball machine and onto a ramp. Releasing the correct number causes the clown to juggle the gumballs. Let out an incorrect number, and the gumballs drop off the ramp one by one and are counted as they drop, demonstrating the disparity in digits.

In Bubble Up, Fuzzy, armed with a blow dryer, faces a cauldron from which numbered bubbles (again, one to ten) escape. You use a joystick button to shoot them in their proper numerical sequence; the numeral needed at any given time is displayed on the side of the screen. Incorrect choices get popped; correct ones join their fellows and Fuzzy in a short jig. The pacifist sentiment evident in the choice of a hair dryer rather than a piece of state-of-the-art weaponry is admirable.

In Make-a-Monster, the fourth and most gamelike of the options, children assemble a creepy critter from an inventory of heads, feet, and torsos. The monster then comes alive and acquires a blow dryer, which is turned toward Fuzzy, who doesn't blow away but instead merely transforms himself—from fish to sun to ball to elongated worm—in reaction to each of four air blasts.

In the last option, the program returns automatically to the menu after one play. In the other three, pressing escape takes the child to a higher level, and pressing it again leads back to the menu. This was omitted from the instructions.

All in all, this is an enjoyable but unremarkable piece of software. IP

Learning with Fuzzywomp, by Mike McKee and Martin Shen, Sierra (Sierra On-Line Building, Coarsegold, CA 93614; 209-683-6858). $29.95. Requires joystick.

POPCOM X-100. In the modem market, one of the most prominent names is Hayes Microcomputer Products. Hayes was one of the first companies to bring telecommunications to the home computer and has enjoyed huge success there, as well as in the business market. Because of this, virtually all communications programs are written to work with Hayes modems, if no others. So it seems reasonable that if you want people to buy your modem, you'd better make it work like a Hayes modem. The X-100 works like a Hayes, and it does so with fewer hassles, but also with fewer conveniences.

There are two ways to set up the X-100: the convenient, expensive way and the awkward, inexpensive way. The X-100 plugs directly into a wall socket, eliminating the need for the transformer that usually runs from wall socket to modem. You can hang the X-100 on the wall, plugged into the power socket, but that means you'll have to get an extra-long RS-232-C cable to connect it to a serial card in the Apple (neither the serial card nor the RS-232-C cable is included), and those cables can be quite expensive.

Prentice, the manufacturer of the X-100, says that the ability to plug the modem directly into the wall is a feature, but in such a setup there's still an RS-232-C cable running from the modem to the computer. Also, some wall sockets are next to the floor, making it impossible to plug in the modem. The inexpensive option is to have the modem next to the computer, which requires running an extension cord from the modem to the wall socket.

Having the modem near the computer is more convenient, defeating the purpose of the modem's plug-in feature. The only problem is that it doesn't have any rubber "feet" with which to grip a desk top, and the case is made of a plastic that allows the modem to slide around unless there's a heavy object on top of it.

After everything is plugged in correctly, the modem is all set to run. Prentice compares this ready-set feature to the steps necessary to put a Hayes 1200 modem into operation, which require you to open the case of the modem and set eight internal switches—a procedure that might take a few minutes at most. However, there are other modems (for example, the Apple 1200 and Microcom Era 2) that also don't require any internal switches to be set. And if you're using the X-100 with the Apple Super Serial Card, there are still fourteen switches on the card to take care of.

In operation, the X-100 functions and accepts commands almost identically to the Hayes 1200 (or Apple, or Microcom) modem. One significant difference is that the X-100 lets you plug a telephone into it, eliminating the need for a Y adapter if you have a modem and phone plugged into the same line. However, when plugged into an extension line (in an office setting, for example), the modem doesn't detect incoming calls, nor does the telephone ring. In such a setting, the modem must be disconnected from the phone line in order to receive calls.

The X-100 can detect when a phone on the same line has been lifted off the hook. At this point, the X-100 shuts off its carrier signal, letting you use the phone in a voice mode. The flip side to this feature is that if someone else inadvertently picks up the phone extension in another room, you also lose the carrier (a "Do not disturb" card is included, but who's really going to place the card on another phone every time they use the modem?).

Another safety measure is that the X-100 turns on its internal speaker and holds the line for seven seconds when the data connection is lost from the other end. This way, you can hear whether someone on the other end is trying to talk to you. However, it also means that there's a seven-second delay between the time *you* end the connection and the time you can issue any commands to the modem, such as dialing another number.

A feature the X-100 does have over its competitors is a knob that controls the volume of its speaker. Of course, the modem does accept commands to turn the speaker off completely; but if you want it on and don't want to disturb the rest of the household, the volume-control knob is a godsend that lets you keep the noise at a tolerable level.

Notable is the X-100's manual, which is incredibly easy to understand. Diagrams show where things plug in, leaving little room for error; commands, responses, and error messages are explained thoroughly.

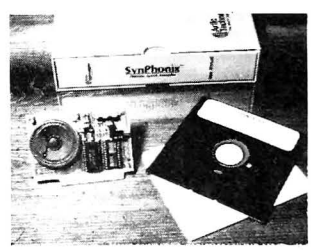
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The advantages of having the X-100 instead of the Hayes 1200 are apparent during the first few minutes of installation and even before, when you're paying the cashier (the X-100 is much less expensive). After that, the main difference between the X-100 and other modems is in desk-top logistics (the Hayes and Apple modems fit under a telephone; Microcom's fits completely inside the computer), where the X-100 falls a bit short. MTY

Popcom X-100, Prentice (266 Caspian Drive, Box 3544, Sunnyvale, CA 94088; 408-734-9855). $475.

DISK ARRANGER. By William Swanson. As the disk is booted, the familiar *William Tell* Overture, which conjures up nostalgic images of the Lone Ranger, trumpets from the Apple's speaker. Who was that masked penguin? Those graphics wizards must be at it again. But this program has nothing to do with graphics. The title is self-explanatory; *Disk arRanger* is a tool to help you arrange disk files into any desired order on the catalog.

Disk arRanger is a collection of utilities that allow you to generate customized disk directories by rearranging the order of file names. It will do just about everything short of creating the files themselves, and the commands are easy to remember and use (S sorts, D deletes, L locks).

When the catalog of a disk is read into memory, it's displayed on the screen. Files marked with the letter D are files that have been deleted, and H reveals the greeting, or hello, program. Locked files are designated by asterisks.

Moving a file name is as easy as cutting and pasting. Cutting is done by placing a horizontal bar cursor over the file name; to paste, just use the arrow keys to decide where to place the file name and press the return key. Simplicity at its best. To sort the directory, you can alphabetize it by file name or by file type (Applesoft, binary, Integer, or text).

The delete, undelete, and rename commands do just what they sound like. An option is also available to delete files permanently from the disk. Also, the greeting program can be changed to any other file of any file type.

Disk arRanger includes several other niceties. You can lock or unlock several or all files with one command. Comment files (text files that occupy directory space but contain no information, serving the sole purpose of giving catalogs a snazzy appearance) can be added, with their names consisting of normal, inverse, flashing, or control characters. For 64K Apples, an option is available that copies files to another disk. You can also get a display of the disk map or file map, which shows where free sectors are allocated. Also, the screen display can be printed at any time.

Thank Preston that *Disk arRanger*, like all Penguin utilities, isn't copy-protected. It'll be necessary to make a backup copy, since use of the program will likely be frequent enough to wear out the disk. With all these utilities available in one small package, anyone can easily turn a disorganized collection of files into a neatly arranged library. IH

Disk arRanger, by William Swanson, Penguin Software (830 Fourth Avenue, Geneva, IL 60134; 312-232-1984). $29.95.

STORY MAKER. By Bobbit! *Story Maker* is an educational program with which children can construct illustrated stories. It contains a simple drawing program and a stripped-down word processor that are used on a horizontally split screen. About three quarters of any given screen is for the graphics, and the remainder, about five lines' worth, is for text. The program disk contains a tutorial, which is clear as far as it goes but doesn't go far enough in explaining how to use the program. The program disk is also used to format a separate data disk on which the story is saved, and is needed in order to switch between the drawing and writing functions.

The word processor is fairly easy to use—probably easier for someone not already loyal to a word processing program. The drawing program is more difficult, but probably no harder than others in this generally hard-to-operate genre—if you're a small child, or if you draw like one, you're not exactly going to give Chagall any competition. In addition to drawing lines, however, you can create different-sized squares/rectangles and circles/ovals, so even the truly klutzy can produce somewhat pleasing abstracts. You can fill shapes and backgrounds with any of fourteen shades; however, the fill routine is rather slow.

The choice of commands in the program could have been thought out

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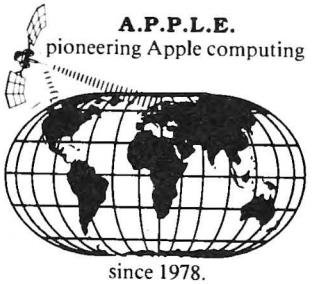
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a little better. For example, choosing L allows you to draw a line, which seems reasonable. But to move the cursor down a line in text-edit mode on a II or II Plus, you use control-L. Why not a sound-alike such as control-D (for "down")—and why couldn't the cursor-up instruction be control-U instead of control-O?

The maximum size of any one masterpiece, according to Sierra, is thirty pictures plus 500 lines of forty-column type—approximately twenty thousand characters, or thirteen double-spaced pages. If you use fewer pictures, you can use more words, and vice versa. However, regardless of the length of a composition, you can put only one on a disk. A story disk can be booted like a program disk, so you can give it to other Apple owners as a letter or a present (the program runs on all four versions of the II) but you can't print a hard copy of your work.

The package contains a reference card, a decently written manual of tips on program use and style suggestions, the program disk, one data disk, and ten disk labels. In the booklet and on-screen tutorial, the writer is addressed by an elflike creature called Hack—an understandable but unfortunate moniker given that term's less-than-positive connotations.

Though the program is recommended for children ages seven through fourteen, second-graders may find frustrating the dual-disk system, the number of commands, and the level of coordination needed for drawing and typing. It's a bit challenging even for older people, but those nine or over will probably enjoy it if they're on the patient side—it can take three hours or so to get the hang of it. *Story Maker* is a decent program, but considering that it's the latest offering in a product line being pushed by a major innovator in the software field, its edges seem a little rough. IP

Story Maker, by Bobbit!, Sierra (Sierra On-Line Building, Coarsegold, CA 93614; 209-683-6858). $34.95.

EL-IXIR. By Saied B. Nesbat. A game that uses a new kind of strategy is a remarkable discovery. While *El-ixir* is not that, it is a nifty only-on-a-computer implementation of an old one, and will probably prove more pleasurable to many than its direct ancestor and its more sophisticated relatives.

El-ixir is a two-player game (no one-player option) based on the venerable game of go, which, like chess, backgammon, and the like, is based on abstract military strategies of maneuvering, capturing, and conquering. Those of you to whom such games have always seemed like impenetrable celebrations of ennui should be able to dig this one.

El-ixir, see, is a strategy game based on chance. Your movement about the go board is dictated by randomly flashing squares. When you see one that looks as though it might be an advantageous offensive or defensive location for your forces, you hit the button. You then get a choice of four directions in which to extend your influence—occupying up to four squares in a row. But once you select your direction, it's up to the whim of the gods again as to how many squares you will be allowed to occupy. The random numbers flash, and you wind up with your chosen color or pattern occupying a territory of one, two, three, or four squares.

When you have enclosed any board area with a chain of occupied squares, you are given all the squares within that area, including any occupied by your opponent. You won't score any points, though, unless your chain is anchored in one of the four corners of the board. If it is, you receive one point for each chained or captured square. The first player to score more than 98 of the 196 possible points is the winner.

That's essentially it. It may sound simple, but so does checkers. It's unlikely that you'll play it just once. There are all kinds of subtle touches and strategies to this game that reveal themselves only with repeated play. It's amazing how infrequently you'll spot the one empty square that, once occupied by your near-vanquished opponent, instantly changes a twenty-point lead into a thirty-point deficit. It takes quite a few plays to become experienced.

Does the introduction of chance dilute the cool, cerebral pleasures of pure strategy and tactics? For high-level war-game jocks, no doubt it does. For the rest of us, it means fewer rules to remember and no danger of being overwhelmed by a surfeit of potential strategies and bewildering possibilities. Think of *El-ixir* as training wheels. AC

El-ixir, by Saied B. Nesbat, Isoft (Box 10762, Stanford, CA 94305; 415-857-9684). $29.95.

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BRODERBUND RALLIES FROM SUCCESS; DAVE MCFARLING NEVER SAYS NO







Beware of Large, Shy Dogs: Opposite page, the Broderbund Founders' Day Dinner and Roast: left to right, fiances Tim Brisbois and Cathy Carlston; Gary Carlston, flower child; and take-me-to-your-leader Doug Carlston. This page, left, Cathy Carlston; top right, roast perpetrators Brian Eheler and Bill McDonagh enjoy Gary Carlston's surprise; bottom right, Broderbund matriarch Alice Carlston shows appreciation for son Doug's Founders' Day attire (frnk, frnk).



At Broderbund, Big Is Just as Good

Broderbund Software, the San Rafael, California, based company that put more programs on *Softalk*'s Top Thirty in 1983 than any other company besides Apple, is a unique phenomenon in the Apple world. When *Softalk* published "Exec Broderbund: Saga and Star Craft Spell Success" in November 1981, they were one of many small, more-or-less family companies that were the standard microsuccess story of the day. Even then, they were not ordinary. It wasn't just that the combination of an ex-lawyer (Doug Carlston), an ex-buyer for Lord and Taylor (Cathy Carlston), and an ex-Swedish women's basketball team coach (Gary Carlston) was so staggeringly unusual. What most impressed *Softalk* publisher Al Tommervik, who wrote the story, were the fine characters of the Carlstons and their fledgling company.

That much doesn't seem to have changed. Their reputation for fair dealing is so widespread that it came as little surprise when Doug, the oldest of the Carlston siblings and the president of Broderbund, was elected president of the newly formed Software Publishers Association by a decisive margin last June. What has changed is much of the rest of Broderbund. They're bigger, obviously, and they're considerably better known; but those things by themselves are not too remarkable.

Broderbund has escaped the usual traps faced by a growing company in an infant industry. Many of their contemporaries from the old days have dropped out of the marketplace. Others have intentionally limited their growth and survived by remaining small. A few have fallen victim to unexpected, unplanned, or uncontrolled growth. Some of the programmers-turned-publishers have decided that they liked it better on the other side of the managerial headaches and have gone back to developing products for other companies to sell. Broderbund has succeeded not only on the bottom line, but also in a much more elusive way: It has maintained control of its growth.

Doug Carlston attributes Broderbund's success in a high-tech business to low-tech qualities. "I think our greatest strengths were that we always had a very conservative sort of Missouri approach to things." (Never mind that the family is from Iowa.) "We required that we maintain profitability, and that controlled a lot of the way we spent money here. We plowed everything back into the company instead of taking it out in large salaries and so on."

The quality of Broderbund's products has always been a notable factor in the company's success. Carlston says, "That was a personal preference rather than a strategic decision." Nevertheless, he admits that as a strategy it makes a lot of sense in the long run. Most of Broderbund's products, both at the start, when it was primarily a game publisher, and now, with a diversifying line of home entertainment and productivity software, are graphic in nature. Graphic quality is an aspect of a program that people tend to remember, especially when it's very good or very bad. Broderbund's have tended toward the very good. "We have not been 100 percent successful on everything we've ever put out, but I think we've been happy with every product."

In making the transition from a small company to a large one, Broderbund has evolved a more orderly structure. The company has become distinctly departmentalized and has developed a much more professional management group. Its products are now more often the result of planning than of submissions from brilliant, unknown programmers. Broderbund still gets from twenty to twenty-five unsolicited programs a day, but it's rare that the company publishes one.

On the other hand, the firm has an evaluation expert, Roy Freborg, who looks at all those programs and decides which ones have potential. A few sleepers still come in that way. *Lode Runner* was one such submission. It has been a big seller for Broderbund and was voted the most popular Apple program of 1983 by *Softalk*'s readers. A more recent program in that category is *Karateka*, an arcade game that Carlston says generated the most interest of all the entertainment products Broderbund showed at the Consumer Electronics Show last June. The program is slated for release this fall.

Even unsolicited submissions that *are* accepted go through a more rigorous period of evaluation and further development than they would have in the old days. When Broderbund was young, Carlston says, "it was a matter of Gary or me taking a look at a product when it came in the door and saying, 'Gee, if you did the following thirteen things to it, we think we could sell it.' " Now, the development group at Broderbund would be more likely to discuss not only programming changes but packaging ideas, sales opportunities, and marketing strategies as well. They might say, "This program would work well in the mass market but only if you can broaden the interest a little. So let's call it *Joy of Cooking*, get a license from them, and get some experts to help with this or that aspect of the program."

The perception of a market opportunity comes before the programming, not after. Carlston says that's why the company has moved away from its original entertainment focus. The Carlston clan has observed a decline in the popularity of games, especially in relationship to productivity software, certain areas of educational software, and serious home products. "When we started, it was largely a matter of what we had available to sell and what the market liked, and now we actually try to control our product line. We try to shape it to the changing market needs while holding on to the products' strengths."

When Broderbund decides to go with a project, whether the idea came from in-house or outside, a project manager is assigned to oversee the product's development. Carlston compares the process to that of producing or directing a motion picture. As an example, he cited the development of *Welcome Aboard*, a Muppet-licensed computer literacy program. Henson Associates approached Broderbund with several ideas for a computer literacy series. Cricket Bird, the project manager for *Welcome Aboard*, boiled the Henson people's ideas down into a product design. The design was then assigned to programmer Gene Kuzmiak, to start on the structure of the software, and to animator Gene Portwood to bring the artwork up to Broderbund and Muppet standards. Project managers oversee all elements of the final products—the programs themselves and the parallel work in package design and documentation.

The project managers come from diverse backgrounds, and each has unique perspectives to contribute to the Broderbund product line. Cricket Bird came to Broderbund from an editorial position with *California Lawyer*, a legal journal in the Bay Area. Richard Whittaker, a former television scriptwriter, is product manager for the entire Bank Street series as well as *Print Shop*. Other product managers are Rey Montez, a lawyer, and Ann Kronen, a recent graduate of Vassar College. Much of the graphics and animation in Broderbund programs are

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the handiwork of Gene Portwood, who was an animator at Disney for eight years.

At the top of the Broderbund organization are still the three Carlstons, who do much of the long-term strategic planning for the company. Gary, who claims that his current position is mostly honorary, focuses on special products, especially long-term ones. Cathy is working in marketing, at the moment trying to find a new director of marketing with additional experience that she could augment through public relations activities.

Ed Bernstein, in charge of the largest group at Broderbund, is director of product development. His work, supervising the product managers, is not unlike that of an editor-in-chief. Before coming to Broderbund he was city editor at the *Independent Journal*, a local newspaper in Broderbund's part of the world. Also a computer hobbyist, Bernstein is well qualified for his present position. Sharing the upper echelons with Bernstein and the Carlstons are Bill McDonagh, who's in charge of planning and finances, director of sales Stu Berman, and Brian Eheler, who accompanied Broderbund in its August 1981 move from Oregon.

According to Carlston, Eheler "originally came [from Oregon] just for a month to get us under way and then he was never able to leave. We chained him to the office." Although he started simply as a production worker, he has since become less dispensable in the company. He is now the expert in systems; he moves from department to department, "designing systems that work and training people to use them. It's really a very critical function." He has worked in manufacturing, purchasing, and, most recently, sales.

From his somewhat privileged position within the industry, Carlston has had good opportunity to observe how the software, the people, and the consumers are changing with time. The move away from games and pure entertainment that the market dictated and that Broderbund has been following is only part of the change. Asked why sales are down throughout the marketplace, he theorized, "You don't have as heavy a hobbyist orientation. You tend to get people buying computers for a specific application. They don't have the same breadth of interest as the early users did." He also observed that there is a higher dropout rate among new owners. They take their computers home, use them for a short time, then put them in the closet. It's hard to believe that computers have reached the status of impulse purchase for the American consumer, but it is clear that with their prices dropping, computers are reaching a less committed crowd. So computer sales climb and software sales drop.

On the other hand, he sees the trend of software being sold in department stores as a hopeful one in the long run. Because the people who buy programs in department stores won't have seen the software before buying it, they'll tend to buy name brands rather than known quality. The names they buy won't be Broderbund or Spinnaker anymore, but licensed names like Muppets, Hot Wheels, GI Joe and Barbie dolls. While these marketing strategies won't immediately encourage the best software, they will broaden the reach of software. Consumers will gain sophistication over time and learn to recognize quality, as well as famous names.

Despite an industry trend toward more businesslike modes of behavior, the Broderbunders still take time to have fun together. Last March, to celebrate the company's fourth anniversary, they held a Founders' Day Dinner. The Carlstons' parents, Alice and Chuck Carlston, were secretly flown out from Boston. Under the humorous guidance of programmer and master of ceremonies Chris Jochumson, the employees and parents of the founders proceeded to roast them in a manner Dean Martin would have approved of.

And this month the Carlston family and friends will convene again, not once but twice, for a more serious but equally happy purpose: the consecutive weddings of Doug Carlston to Mary Crowley and Cathy Carlston to Tim Brisbois. Neither Crowley nor Brisbois is in the industry: Crowley founded and runs Ocean Voyages, a company that arranges and books sailing adventures to the ends of the earth; and Brisbois is a food service consultant who plays a mean game of golf. In a business that rarely allows people time for lives outside the office, these events reveal one of the most extraordinary aspects of Broderbund life.

Anyone who has brothers or sisters is likely to have wondered, at one time or another, what it would be like to work with them. According to Doug Carlston, it's interesting. "It's fun because it gives you a chance to see the people you love. And it's also very hard because there are a lot of strains involved in running an organization; companies and people have different and changing needs. It really depends on the nature of the brothers and sisters and their relationship with one another. But I sure wouldn't dissuade anybody from doing it if they thought it was right, because it's certainly been an exciting thing for our whole family."

He says with some regret that Broderbund is not really a family company anymore, with more than seventy employees working there now. But an outside observer can see—from the way that the family at the top has set a tone and established a flavor for Broderbund, from the way the people there work together and play together, and from the way Carlston talks about the people he works with—that this isn't entirely true, and he doesn't wholly believe it himself.

—David Durkee

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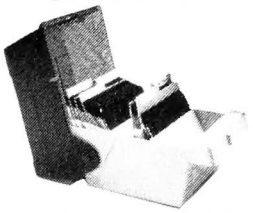
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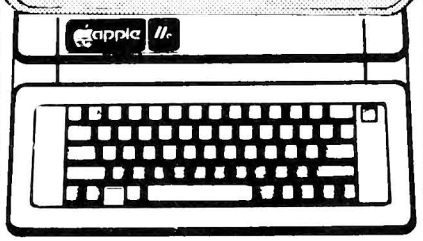
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something new when microcomputers appeared on the scene. Specializing in programming the 6502, the man started his own software company—Small Business Computer Systems.

Four years ago, he was interviewed by a young computer publication. An article on handicapped Apple users appeared in the second issue of that magazine and the man was featured prominently. Shortly after that, a woman recently hired by the man read the article and began to understand him a little better.

Now the man and woman are married, the company is still going strong, and the magazine is about to begin its fifth year of publication.

The man is Dave McFarling; the woman is Diane Walkowiak; and the magazine is *Softalk*. McFarling's story was first told in the October 1980 issue by *Softalk*'s editor Margot Comstock Tommervik. A year later, in the November 1981 issue, a letter appeared in Open Discussion from Diane Walkowiak. She wrote, "I'd like to thank *Softalk* for its role in the romance. Dave was too modest then to tell me of his accomplishments. I had to read about them in a magazine. Your article impressed me and gave me the determination to stick with a job I was unsure of, and I'm so glad I did."

McFarling's story is far from over. A fine programmer, he has marketed several accounting packages for farmers and has seen his company grow from two employees to eight in the last four years. He has more products in the works and is actually worried about the company growing too fast.

"Never in my wildest dreams did I think I'd be wrestling with a growth problem," he says.

McFarling's Small Business Computer Systems is currently concentrating on accounting programs for agricultural applications. McFarling says that agricultural software is the fastest-growing vertical market in the software industry today. Even so, farmers are not the easiest customer base to educate and satisfy.

Farmers are slow to change. It's safer to let your neighbor try something new and see if it works. "It took some farmers eight years to realize high red seed corn was the best to grow," says McFarling. Within farming communities, there are usually one or more innovators—farm talk for hackers. McFarling believes that the innovators are helping to bring computers into the farming process and that the market is stepping up.

"I don't think the software industry is that far behind the hardware manufacturers. When I look at the package I brought out four years ago, I'm embarrassed to admit that I wrote it. It's ironic. Not many farmers are aware of the changes that have occurred in this industry. When they're buying a computer today they're taking advantage of all our mistakes."

McFarling's *Agri-Ledger* and *General Accounting* are currently available for the Apple II. This fall, McFarling hopes to have something for the Macintosh. The company tries to work with the dealer base as much as possible but also sells directly to customers, most of whom live in rural areas.

"One of the other big problems," says McFarling, "is that farmers don't understand computers and the dealers don't understand farmers. We've been joking about writing a Farming 101 handbook for dealers."

Since *Softalk* first interviewed McFarling about the life of a handicapped computer user, his equipment has pretty much stayed the same. His requirements for a system are more a matter of placement than a need for special equipment. Still, the addition of a half-height disk drive that physically ejects disks has proven helpful.

McFarling still does most of the programming at SBCS. He's directly responsible for the products and works with a small staff. "I'd rather do that than manage the whole company." Programming is a very big part of McFarling's life.

He also appreciates the more entertaining and relaxing uses of the Apple. A pilot when he served in the armed forces, McFarling likes to play with SubLogic's *Flight Simulator*. Most action games are too difficult for McFarling to play because of his inability to move his fingers. But he says the Apple "plays a mean game of chess."

A man with a will to live courageously despite his physical shackles, McFarling is part of what is known around Lincoln as the E-Team—the Nebraska Land Communications Emergency Team. Among other things, the E-Team maintains several groups that specialize in spotting twisters during a tornado watch. Lincoln is smack-dab in the middle of Tornado Alley and has more spotter points per capita than any other city in the United States.

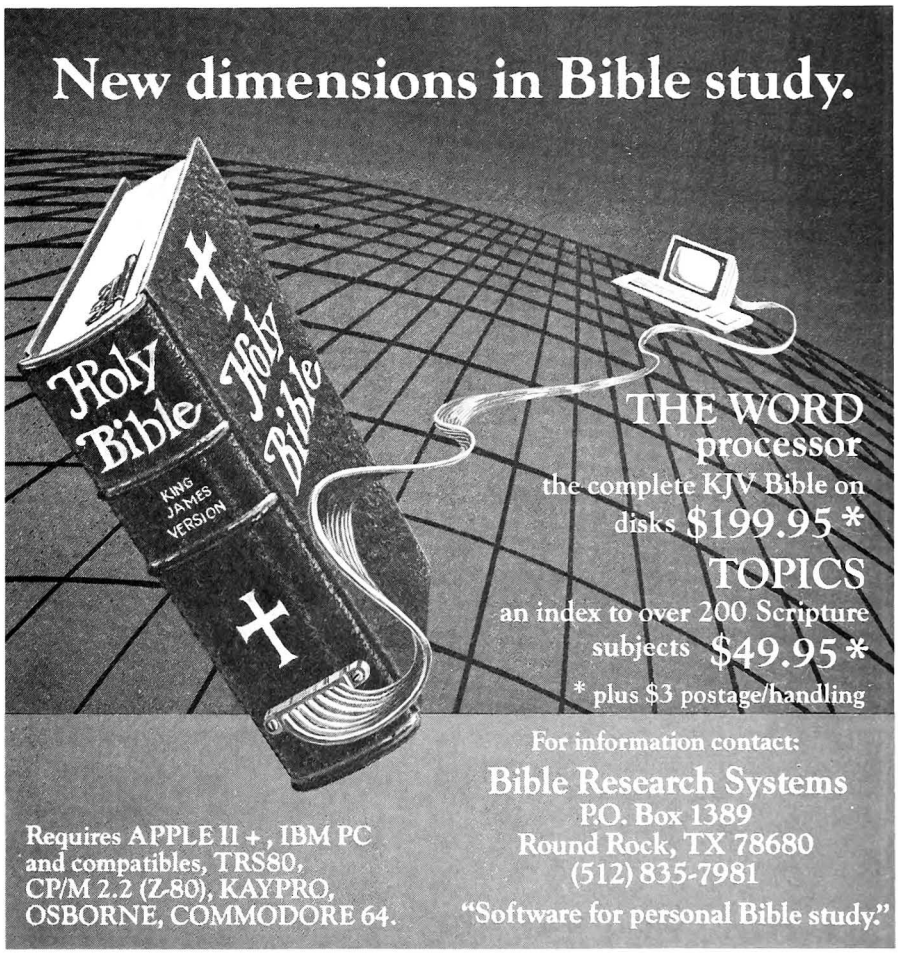
"It's a fact that less than 5 percent of tornados are spotable by radar before they touch the ground," McFarling explains. Assistant to his local E-Team group's civil coordinator, McFarling is prepared to stop what he's doing at the time of a tornado watch—including sleeping—to man the Lancaster County Emergency Operations Center, maintaining communications with spotters' posts, the weather bureau, and civil defense units. "There's no monetary reward for doing this," says McFarling. "It's strictly volunteer. But there's the self-satisfaction of doing a good job."

Diane Walkowiak is very much involved with the running of SBCS. She owns a piece of the company and is currently SBCS's business manager. "The company is definitely going places," she says with enthusiasm. A "people person" as opposed to a programmer, Diane counts on Dave to handle the technical side. "To think logically, continually, drives me up the wall."

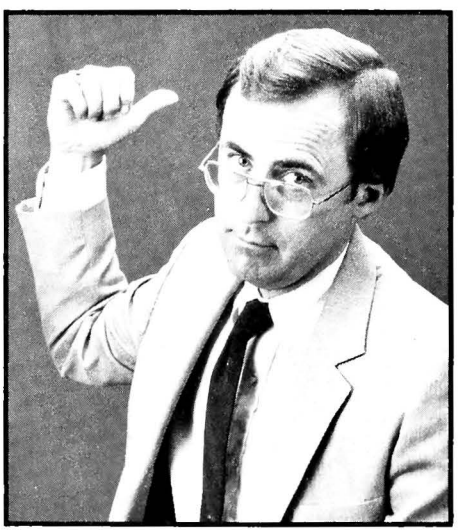
Dave and Diane will celebrate their third anniversary on August 15. Both are happy and excited about their business. Diane says that to this day she drags out that original *Softalk* article and shows it to new employees. It helps them understand who Dave is and what he has accomplished. Invariably, reading the article helps smooth over any awkward feelings about Dave's handicap.

What McFarling said in that issue three years and ten months ago is the best way to end this story. "Nothing, absolutely nothing, is impossible. True, there are some things the world is not yet ready for—or not yet willing to accept. When the chips are down, the difference between the possible and the impossible is the true measure of a man's ability."

—David Hunter



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A Different Form of Filing

Paint and promises are what've been responsible for Macintosh's resounding success to date. The "Paint" is of course *MacPaint*, and it very graphically demonstrates the quality of software we can expect for our Macs—just as soon as some of Apple's expansive promises of new software are fulfilled.

Which should be just about two weeks into this month. That's the day that Telos Software is releasing *Filevision*, which can quite honestly be called the first independently developed program to deliver on the "Macintosh promise."

Filevision is a first. It's a program whose career is as a database manager, but whose heart is in Art. The program manages to use Mac's graphics capabilities not only to make database operations easier but also to make them more effective. Looking at a demo of a prerelease version, which itself appeared to be far more of a finished product than some of the "production" software being sold by . . . ah . . . as I was saying, looking at the demo, you couldn't help but get some of the same feeling that must have been engendered by the first peeks at *VisiCalc*.

But enough of this rosy descriptive fluff. Let's get serious and say that *Filevision* is an object-oriented filing system allowing the user to key database information to a picture and then retrieve that info by pointing at the picture.

Filevision's graphics are very similar to those found in *LisaDraw* (and *MacDraw*, of which we've already seen beta test copies), which simply means that the individual elements (a.k.a. objects) that form a picture in *Filevision* maintain their identity. To use *Filevision*, you draw the picture much as you would in *LisaDraw* and then associate certain elements of the picture with records in a database. Later, you just click on part of the picture to call up the associated data. Imagine how useful that could be, for example, to a parts man looking at a schematic diagram of an engine. Customers could simply *point* to the doohickey in question, and, as if by magic, part numbers, inventory information, and other useful tids and bits would automatically appear. This is a product that's going to extend the boundaries of usefulness of personal computers.

Telos Software is a large software house whose parent company, Telos Corporation, does the programming for some of NASA's space shots. The professional touch is evident in *Filevision*, from the opening screen right down to the documentation. At $195 retail, Telos looks to have a winner on its hands.

Paint and Promises, huh? Okay, for you application types, this month brought *Filevision*, but the hacker types haven't been forgotten: We have recently seen announcements for not one, not two, but—yes, folks, count 'em—*three* C compilers. (That's three (3) compilers of the C persuasion, not one Three-C compiler, for those of you who just joined.)

The first of the three Cs to reach the market should be Aztec C68K from Manx Software (Shrewsbury, NJ)—which at press time was calling for an official release date of August 1. Manx will be offering two versions, one commercial and one "personal"; both are promised to be full K & R compilers. (No, it doesn't stand for kut and run; it stands for Kernighan and Ritchie, the authors of *The C Programming Language*, the bible of serious C users and abusers. C is too tempting *not* to abuse, bible or not.) In addition to a Mac native compiler, Manx will be offering cross-development systems for CP/M-86, the PDP-11, VAXes, the Lisa, and MS-DOS. (The last is the OS of the IBM PC. There. I've said it.) Both versions include the compiler, full Unix system library, editor, and shell command environment. The commercial system will include full access to the Macintosh Toolbox, as well as dynamically relocatable code of virtually unlimited size. Prices for the personal version start at $199.

Come September, Softworks Limited's C compiler should hit the market. This too sounds like a very good system; it's a complete C compiler, again with full access to all 483.2 (or whatever the number is; even Apple doesn't seem to know for sure) ROM routines. Softworks's compiler even spits out assembly code compatible with Apple's own assembler-debugger. Even better, the company has a deal worked out so that buyers of the compiler can pick up the assembler for a mere pittance (fifteen or twenty-five pittances, actually). Softworks's Macintosh C will go for $395 and will include the phone number of an actual *person* you can talk to should you run into troubles with the compiler. (This is not a rationale for not reading the manual, mind you.) That person is Bob Salita, one of the founders of Club Mac. You can get in touch with Salita and Softworks Limited at (312) 975-4030. Salita says Mac C runs the Byte benchmark more than *200* times faster than Microsoft Basic.

More information on these two compilers, plus a third coming from Hippopotamus Software (Sunnyvale, CA) as soon as our Mac wraps its hungry little disk drive around them.

Davong finally sent us a copy of their ten-megabyte hard disk, and it's a beauty. I mean that literally—it's long and low and looks quite nice sitting on a desktop. The Tecmar cartridge hard disk looks like a beige toaster, although to its credit is the fact that it takes up slightly less space on a desk.

This is not going to be a complete review of the Davong disk, or even an incomplete review. For that matter, it's not going to be a review, period—a minireview will follow later.

Speaking of disks, you'll discover when you use a hard disk that Apple's method of dealing with folders is woefully inadequate. Consider the following:

You fire up *MacWrite* and innocently try to open up a file. *MacWrite*, good trooper that it is, presents its standard little directory window, from which you can choose the file you want.

Whoops! If you're working on a hard disk, that directory could have hundreds of listings, because *all MacWrite* files in *all* folders on the disk will be shown. Trying to find the file you named last night at 3:00 a.m. in that jumble of file names . . . well, it's not going to be fun.

The folder system that the Mac uses to store files is really no more than a new name for the hierarchical file structure found in such mundane operating systems as ProDOS, Unix, or IBM's PC-DOS. (Yes, Virginia, if you scrape back that chic and glossy exterior, you will find a . . . a computer! Imagine that.) In a properly behaving hierarchical file structure, however, if you asked for a directory, you would get the directory of the current folder. And that's exactly what the Mac should do: When *MacWrite* presents you with the open file directory, the directory listing should be limited to either folders that are currently open on the desktop (the current folder) or other folders that you have in some way explicitly chosen. (Maybe a second window should be presented, from which you can pick folders of interest.) Something needs to be done. (Apple, are you listening?) ■

What made over 100,000 Apple II owners fall in love with System Saver?

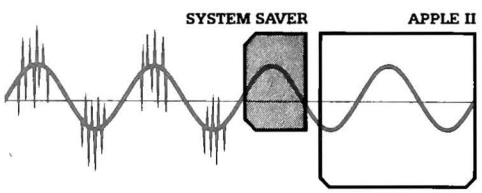
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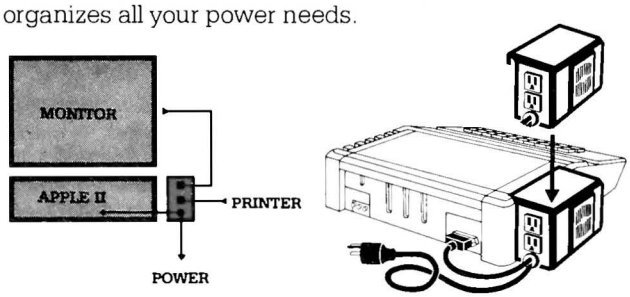
Power line noise can often be interpreted as data. This confuses your computer and produces system errors. Power surges and spikes can cause severe damage to your Apple's delicate circuitry and lead to costly servicing.

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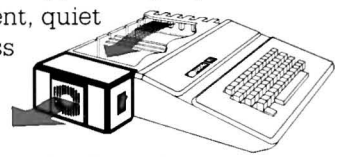


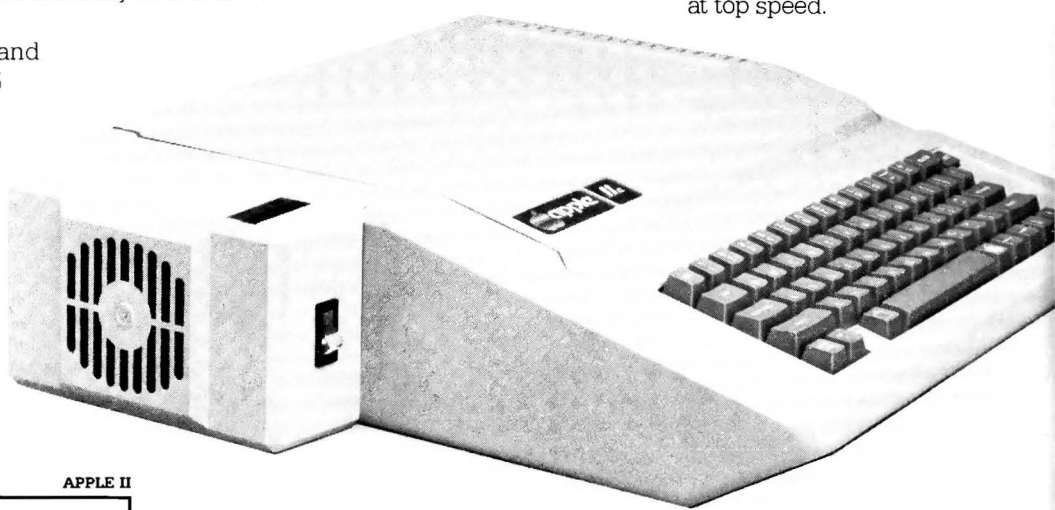
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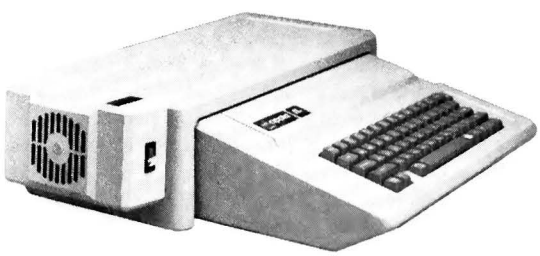
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Mind Your Business

BY PETER OLIVIERI



Investment Software, Mailing List Packages, News, and Speculations

In the course of this installment, we'll cover news of Mac, Lisa, and the Apple III, consider what's involved in choosing a mailing list program, mention some new products, and speculate about the future. But before we do all that, let's focus on an area we haven't touched on of late—namely, using your computer as an investment management/analysis tool.

Indeed, there are a variety of ways you might use a computer to satisfy your financial management needs. One way is by using a spreadsheet package to design a model that manages your stocks. This is not an especially difficult model to build, particularly if you're one of those who have been using spreadsheet models for a while. A second option is to use a database management system to help you manage your holdings. The trouble with both these options is that they're limited—the first by your own knowledge about and ability to construct financial planning models, and the second by the limitations of the package itself (for example, not all database managers offer the user extensive mathematical capabilities).

For the serious investor, a better choice is the purchase of a software package that's been designed specifically for the application he or she has in mind. There are two basic types of applications software for the investor: stock analysis packages and portfolio management systems.

An analytical package will usually contain a variety of complex mathematical models that can be used for tracking, predicting, and analyzing what's happening to some of your holdings or to the market in general. Effective use of such a package requires that you have a pretty good handle on what the information some of these methods generate might mean. You'd be unwise, for example, to request an "exponentially smoothed forecast" of the value of your holdings if you had no idea what the strengths and weaknesses of such a method might be. But if you know the territory, so to speak, having the ability to perform various analyses of the market may give you a significant advantage in planning your purchases and sales.

A portfolio management system helps you manage your portfolio (that is, your investment holdings) by keeping track of your past actions and of any gains or losses you may incur as a result of present actions. A portfolio management system is similar to a database management system in that it keeps records for you and allows you to look over what has happened at any time. Such a package provides far less sophisticated capability than an analytical package; but not everyone is analytical, and you may find that a portfolio manager is just what you need to help you manage your money more effectively.

There are a couple of things to look out for in your search for such packages. Once you've identified whether or not you want an analytical package or a portfolio manager, you must decide how you'll obtain the data that forms a basis for any work you want to do. Most users sign on with one of the computerized information services that provide up-to-date stock quotes and historical data. The most popular is the Dow Jones News/Retrieval Service, although more than fifty companies offer similar services.

Also worth noting are your setup costs. Your expenses include the cost of the stock analysis or portfolio management software package and the cost of the services provided by an information utility (there will be a sign-up fee and a user fee); if you don't already have them, you'll need to purchase a modem and some communications software.

Some other general questions to ask include:

1. Does the package you're considering allow you to display and print charts and graphs of the stored information? (It's often easier to spot a trend or identify a trouble spot if you can see a picture of it.)

2. How many stocks can be managed by the system? How much information can be stored on disk?

3. How many different kinds of investments can the package handle? Can it accommodate mutual funds, bonds, options, and preferred stocks?

4. Does the package keep records of all your gains and losses? Will it maintain the appropriate tax records?

It's a sure bet that many of you are sophisticated investors who could name specific features you'd require as a part of any investment package you'd consider using. Let's hear from you. Drop a note and tell other business users what investment package you'd recommend (and why), what services you find particularly appealing, and anything else about money management you think might be helpful.

Mail Call. There are two basic types of mailing list programs. First are those that act in many ways like a database system and are capable of retrieving information for printing in a variety of formats. Second are mail-merge application programs that can be used to merge information into form letters.

If you're considering a mailing list program, ask yourself the following questions to help make the best choice:

1. How many names and addresses can the program store? A program's label storage capacity may range anywhere from 100 to 50,000, depending on the program.

2. How many lines per label does the system allow? Some systems allow only three lines. Five-line labels are becoming more common in the business environment, however, and certain programs will let you have five lines.

3. How many labels does the system print across a page? The range here is anywhere from one to five.

4. Does the system permit the user to define the order in which labels are printed? For example, is it possible to specify that labels are to be printed in zip code order?

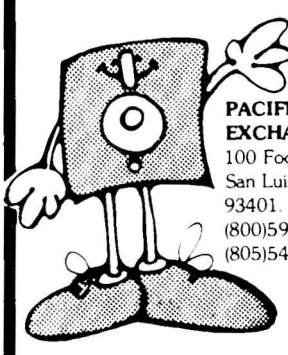
5. Does the system allow the printing of selected labels only? That is, can you print only the labels from a particular city or zip code range, or only those in which a certain title appears?

6. Does the system offer word processing capabilities so that you can merge your names and addresses into a form letter for printing?

7. How fast is the program? The speed with which labels can be prepared is important. Sorting can also be slow or fairly fast, depending on the techniques used. It's worthwhile to get some comparative information about the

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time various programs require to print, say, 500 labels.

If the mailing list you wish to maintain is fairly small, and if you really don't need sophisticated word processing capabilities, you'd do well to contact your local Apple user group and to check out issues of various Apple-oriented magazines. You just may find a Basic program to type in that will serve your purposes just fine. If you have fewer than two hundred records, you might want to consider Apple Computer's *Quick File IIe*. For larger files, Arrays/Continental's *First Class Mail* and Software Publishing's *PFS:File* are worthy candidates.

Apple III News. Although Apple has stopped development activities on the Apple III, there's still quality software being created for this machine. One package that's getting a strong reception from Apple IIIers who've used it is *III E-Z Pieces*, from Haba Systems. Priced at $295, this integrated package contains a word processor, a spreadsheet, and a database management system. Be sure to look carefully at the features offered in each of the programs included in the package. The "pieces" are not as powerful as standalone packages for the same applications would be, but the package is easy to use, well documented, and quite thorough for most applications.

The Lisa/Mac Impact. It's obvious to almost everyone that these new machines are having a big impact at Apple. Among the indications of this is the fact that Imagewriter printers are being sold first with these machines; Lisas get them if there are any left over, and Apple IIs are at the bottom of the priority list for these printers. Imagewriters seem to be selling as fast as they come off the line.

Other things are not coming off the line as fast as they will eventually. Expect to see a greater volume of Macs in early fall and again in midwinter. Meanwhile, January still seems to be the time we'll start seeing 512K Macs. The chips that are to be used are the same ones that would be needed for Apple's not-yet-announced laser printer. At some point, one will have to take priority over the other.

In other news, a wide-carriage Imagewriter is now available (and much in demand). Contact Apple or your dealer for details.

What's in Apple's Future? The laser printer and a 512K Mac are hot, eagerly awaited items. Now, while we're on the subject of the future, what else would you like to see? How about a color Macintosh (or some kind of interface to achieve color on the Mac)? Or a Mac with Apple's own microprocessor? Or how about a machine that can "become" any other machine at the wish of the user?

Why not think it over and then send in your description of what you'd like Apple's business computer system of 1986 to look like? In a future column, we'll summarize the thoughts and suggestions received; perhaps the picture that emerges will influence what really happens. ◨

Apple Computer (20525 Mariani Avenue, Cupertino, CA 95014), 408-996-1010. Arrays/Continental (11223 South Hindry Avenue, Los Angeles, CA 90045), 213-410-9466. Haba Systems (15154 Stagg Street, Van Nuys, CA 91405), 818-901-8828.



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" My accountant laughed at me when I told him I was doing my own books, *but then* I showed him my Balance Sheet ".

I am an independent type of businessman and it has always bothered me that I had to take my books to someone else. I always wanted do my own, but I'm not much of a bookkeeper. I knew if I was going to do my own books that I would need a reliable computer like the Apple™, and a strong business software package. Something that would not be too overwhelming to me, yet give me complete coverage of my business; and still be easy enough for my secretary to run, when I am away from the office. I had certainly heard of the Apple][e™ computer and how reliable it was, from Jim, a fellow I had met while golfing last week. But I didn't know of a good business package, and quite frankly, I was a little nervous about trying everything on my own.

I started visiting computer stores, trying to find the package that was right for me, but they just didn't seem to have what I was looking for. Then one day, while I was out shopping, I ran into Jim at the coffee shop, and told him that I had become totally frustrated in my search for business software. Jim was surprised that I was actually going to computerize my business, and said he had gone through the same thing about a year before. He told me how he was looking for a package that could do billing, invoicing, payables, general ledger and payroll, and had finally heard of a package from a company called Westware. He ordered the package and had been using it with great success.

I was glad to hear Jim was experienced with software, but I told him I needed a complete package, and that Receivables must not only do billing, but also be able to charge interest to selected customers and do invoicing. Also payables had to print checks and produce reports, to help me with cash flow.

Jim said I was in for quite a surprise. Not only did receivables do what I wanted, but it also interacted with Inventory, and would report all accounting directly to the General Journal after generating an invoice.

Also the Payables did more than just produce checks. It had a loan amortization program for calculating interest on loans, and automatically did correct accounting when you made a loan payement, applying so much to interest and the rest to principal.

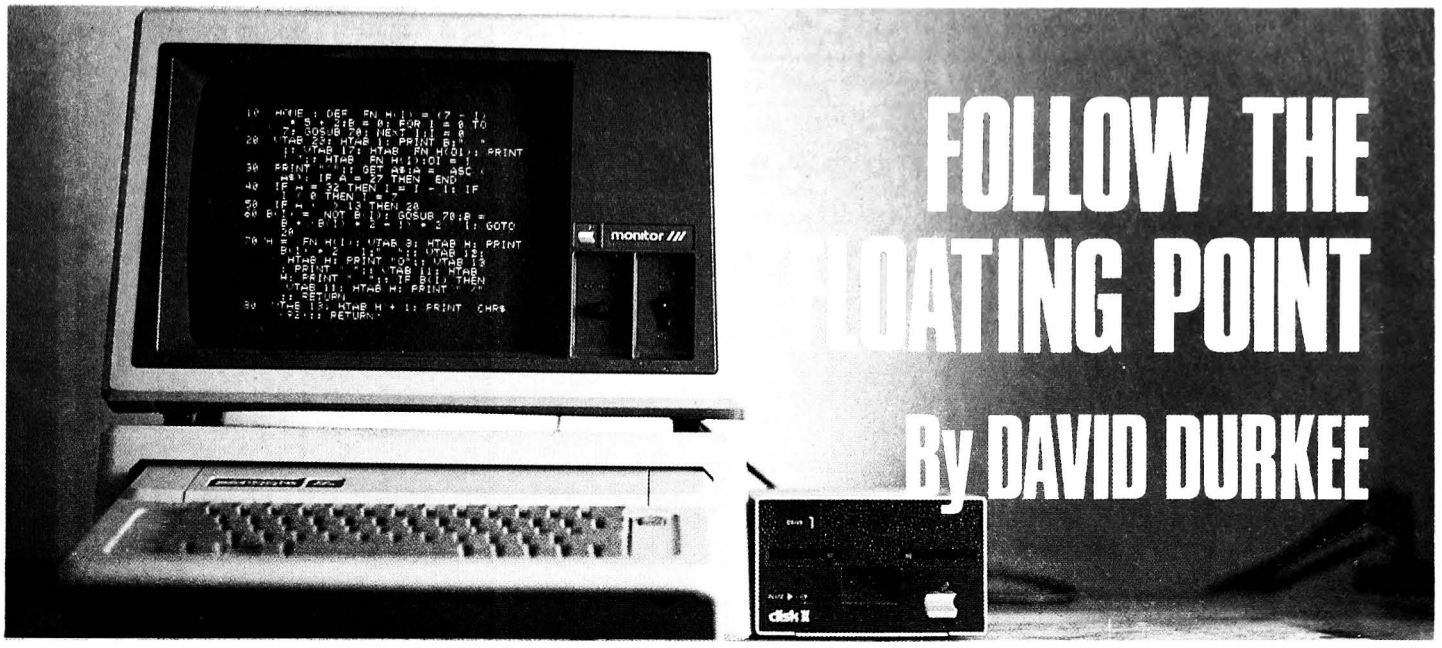
Now that really impressed me, but how about payroll? I was sick of looking up payroll taxes every week. Jim said that payroll is so easy that the secretary can do it in only a few minutes, and it handles complicated deductions like IRA, as well as simple bonus pay and insurance deductions.

Jim finally explained that I could also produce my own Balance Sheet and Profit and Loss Statement anytime I needed, instead of having to wait to get it back from the accountant.

Well, my search was over and I ordered the BREAKAWAY™ package immediately, and was up and running in no time, producing my own Balance Sheet the very first month.

Jack, my accountant, stopped by to ask why I hadn't been in to see him lately. He laughed when I told him I was doing my own books, *but then* I showed him my Balance Sheet.

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FOLLOW THE FLOATING POINT

By DAVID DURKEE

Nights of the Shape Table

If you missed June's cliffhanger, call our back-issues department. You wouldn't want to read the exciting conclusion before you had a chance to examine all the clues, would you?

In the June column's *Shape Designer* program, we have a tool for designing single shapes and saving them into binary files in a way that is useless. As it stands, that is. This month's program, *Shape Table Assembler*, puts utility into our utility.

Another Old World Craft Bytes the Dust. A lot has been written detailing how to create shape tables "by hand." It calls to mind romantic images of the skills passed from generation to generation in the family of Juan Valdez, doesn't it? Don't bet on it. Creating shape tables by hand is very boring work. First you have to understand what vector means, then you have to learn binary, then you have to learn hexadecimal, then you have to learn some of the most absurd rules invented by man since Captain Kirk came up with Double Fizzbin. Even if you want to learn binary and hexadecimal, which are useful in advanced programming, no human really needs to spend part of his or her precious childhood, brief adolescence, or otherwise sane adulthood learning yet another set of stupid rules.

If you disagree on principle, proceed directly to whichever version of the Applesoft reference manual you might have and read about it there. Or (special one-time offer here) the *first* person to write in can get the one and only copy of the original manuscript for this month's column, which contained a valiant but hopeless attempt to cover the subject more succinctly than anyone else has. Oh well.

For the rest of you, this month's program is presented not as an educational exercise but as an important utility so that we can all learn how to use shape tables without getting our fingernails dirty. Hence, the rest of the article explains not how the program works internally but rather how to use it.

The Overblown List Editor. When you run the program, you get a blank screen with a greater-than sign in the upper left corner and instructions displayed at the bottom, as shown in figure 1.

This display is created by lines 1410 and 1420 of the program. If it doesn't look like this when you run the program, you may have to fiddle around with the spaces in line 1420 until it does. That one line prints three screen lines from *∧F for files* to *escape to assemble*. The line must be padded with spaces so that the second screen line begins with the forty-first character of the string and the third screen line begins with the eighty-first character. When you type the line in on a forty-column display, it should look something like the line as shown in figure 2.

The important thing to notice is that the characters that will begin the second and third lines on the screen when the string is printed will be directly beneath the character that begins the first line. There is no space between the end of the word *pointer* and the caret in *∧D*; those characters will be separated by a line break when the lines are printed on-screen.

Follow the Printed Prompts. This section of the program allows you to enter and edit a list of shape names. These will be shapes you have created with June's *Shape Designer* program, which adds the prefix *SH.*, short for *shape*, to the name you specified. To distinguish *Shape Designer*'s files from those created by this program (both use binary files), *Shape Assembler* uses the prefix *ST.*, short for *shape table*. You don't have to type the *SH.* prefix when entering shape names in the list; the program adds it to the name automatically.

To get a list of the files on a disk, type control-F. That's what the *∧F for files* line at the bottom of the screen means. The caret is a traditional symbol for a control character; although it isn't used much in the Apple II world, it is used here because it is the shortest of the conventional shorthand forms. Because there is no easy way in Applesoft to have the computer look at a catalog and display only the names of the kind of files you're looking for, control-F gives you a standard catalog list from which you will have to pick out shape files. (If you'd like a way to have your programs read the catalog, then read this month's IInd Grade Chats.) When the catalog is finished listing, hit a key and the edit screen will return.

The greater-than sign in the corner of the screen is a pointer to the currently selected item in the list. Since there are no items in the list yet, you can't move it around. However, if you type the word *house* and hit return, you will be able to use the left and right arrows to move the pointer back and forth between the word *house* and the blank space to the right of it. Stop at the blank space and type a few more words and you'll be able to move the pointer through the list of words.

Notice that when you start typing a word, the display at the bottom of the screen changes to what is shown in figure 3. That's because the other commands are no longer active; now you're in the typing mode. The left arrow deletes a character and return accepts the word and moves the pointer to the next space. Notice that hitting return or deleting all the

```
>
========================================
^F FOR FILES          ARROWS TO MOVE POINTER
^D TO DELETE          ^I TO INSERT BLANK
^E TO EDIT ENTRY      ESCAPE TO ASSEMBLE
```

Figure 1.

```
1420  PRINT "^F FOR FILES          ARROWS TO
 MOVE POINTER^D TO DELETE          ^I TO INS
ERT BLANK     ^E TO EDIT ENTRY    ESCAPE TO
 ASSEMBLE";
```

Figure 2.

```
==========================================
LEFT ARROW TO DELETE
RETURN TO ENTER
```

Figure 3.

characters in a word returns the display at the bottom of the screen to its former state. All those commands have come back into effect.

The remaining commands are control-E, used to edit; control-D, used to delete; control-I, used to insert; and escape, to assemble. If you move the pointer to a word and hit control-E, you will be able to add to it, delete from it, or change it. The second prompt display comes back and a flashing cursor appears at the end of the word as if you had just finished typing the word but hadn't yet hit return.

If instead of editing a word you want to replace it completely, just move the pointer to the word and start typing the new one. The old word will disappear as soon as you start to type the new one.

If you want to delete a word but not replace it with anything, move the pointer to the word and hit control-D. The words after it will move in to fill its space. On the other hand, if you want to add a new word at a certain point in the list but don't want to delete the one that's already there, hit control-I. The words after the pointer will move over to make a space for you to type the new word in.

Easy To Assemble; Batteries Not Included. When the list meets your approval, hit escape to assemble it into a shape table. Normally, the word *assemble* is used with computers to talk about the process of turning assembly language listings into machine language code, but the process being performed here is pretty similar, so we're bending the rules of terminology. There's no jargon more satisfying than jargon you make up.

When the program assembles the shape table, it displays each shape after encoding it. If it runs across a shape name in your list that isn't on the disk, it gives you the opportunity to skip that shape (when you tell it to draw the shape, it won't draw anything, but the rest of the table will still function), abort the assembly, or change disks. With this option, you can assemble shapes from more than one disk.

When the assembly is finished, you will be prompted for a file name for the shape table. Type a name and the program will save the table in a form that Applesoft can use. Next time, we'll look at how to use the shapes you can create with this program to do things like simulation, animation, and hi-res labeling of graphs. If you want to get started right away, the shape table you create will be in memory when you have finished running this program. Line 460 may provide some hints on how to use it. ◨

```
10 REM  SHAPE TABLE ASSEMBLER
20 DIM F$(61):NF = 0:EN = 1:LN = 1:D$ =  CHR$ (4)
30 DEF  FN V(N) =  INT ((N - 1) / 3) + 1: DEF  FN H(N) = (N -
   (( FN V(N) - 1) * 3 + 1)) * 13 + 2
40 TEXT : HOME : GOSUB 1400: IF NF > 0 THEN  GOSUB 1000
50 VTAB  FN V(LN): HTAB  FN H(LN): PRINT " ";: VTAB  FN V(EN):
   HTAB  FN H(EN): PRINT ">";:LN = EN
60 WAIT  - 16384,128: GET A$:A =  ASC (A$)
70 IF A = 8 THEN EN = EN - 1: IF EN = 0 THEN EN = NF + 1:
   IF EN = 61 THEN EN = 60
80 IF A = 21 THEN EN = EN + 1: IF EN = NF + 2 OR EN = 61
   THEN EN = 1
85 IF A = 13 THEN EN = EN + 3: IF EN > NF + 1 THEN EN =
   NF + 1
90 IF A = 27 THEN 200
100 IF A = 5 THEN W$ = F$(EN): GOSUB 1100
110 IF A = 6 THEN  TEXT : HOME : PRINT : PRINT
    D$;"CATALOG": GET W$: GOTO 40
120 IF A = 9 AND NF < 60 THEN  FOR N = NF TO EN STEP -
    1:F$(N + 1) = F$(N): NEXT N:F$(EN) = "":NF = NF + 1:W$ =
    "": GOSUB 1000
130 IF A = 4 AND EN < > NF + 1 THEN FOR N = EN TO
    NF:F$(N) = F$(N + 1): NEXT N:NF = NF - 1: GOSUB 1000
140 IF A > 32 THEN W$ = A$: GOSUB 1100
150 GOTO 50
200 REM  CREATE SHAPE TABLE
210 TEXT : HOME : HGR : VTAB 24: SCALE= 1: ROT= 0: PRINT
220 IF NF = 0 THEN PRINT "NO SHAPES REQUESTED": FOR DL
    = 1 TO 2000: NEXT : GOTO 560
230 DIM C$(3)
240 LP = 16384:SH = 0
250 IN = 24576: POKE 233, INT (IN / 256): POKE 232,IN - PEEK
    (233) * 256
260 POKE IN,NF: POKE IN + 1,0:TP = IN + 2 * (NF + 1)
270 SH = SH + 1:LP = 16384
280 PRINT "SHAPE "SH": "F$(SH)
290 SB = TP - IN: POKE IN + 2 * SH,SB - 256 * INT (SB / 256):
    POKE IN + 2 * SH + 1, INT (SB / 256)
300 ONERR  GOTO 800
310 PRINT D$;"BLOAD SH."F$(SH)",A"LP
320 POKE 216,0
330 FOR N = 1 TO 3:C(N) =  PEEK (LP + N - 1) - 1: NEXT N
340 EF = 0: FOR N = 1 TO 3: IF C(N) = - 1 THEN EF = N:N = 3
350 NEXT N: IF EF THEN 420
360 FIELD = 3:FS = 3
370 IF C(FIELD) > 0 AND C(FIELD) < 4 THEN  GOSUB 900: GOTO
    330
380 FS = FS - 1:FIELD = FIELD - 1
390 IF C(FIELD) < > 0 THEN  GOSUB 900: GOTO 330
400 IF FIELD = 1 THEN FIELD = 3:C(2) = 1:C(3) = 3: GOSUB 900:
    GOTO 330
410 GOTO 380
420 REM  END OF SHAPE
430 FIELD = EF - 1: IF FIELD = 0 THEN 450
440 GOSUB 900
450 POKE TP,0:TP = TP + 1
460 S = SH - 1: XDRAW SH AT (S -  INT (S / 10) * 10) * 28 + 14,
    INT (S / 10) * 26 + 13
470 IF SH < NF THEN 270
480 HOME : VTAB 23: PRINT "SAVE THIS SHAPE TABLE? (Y/N) ";
490 GET A$: IF A$ < > "Y" AND A$ < > "N" THEN 490
500 IF A$ = "N" THEN 560
510 TEXT : HOME
520 INPUT "FILENAME (? TO CATALOG): ";F$
530 IF F$ = "?" THEN  PRINT D$;"CATALOG": PRINT : GOTO 520
540 IF F$ = "" THEN  POKE  - 16304,0: POKE  - 16297,0:
    GOTO 480
550 PRINT D$;"BSAVE ST."F$",A24576,L"TP - 24576
560 TEXT : HOME : END
800 REM  FILE NOT FOUND HANDLER
810 POKE 216,0
820 IF  PEEK (222) < > 6 THEN  RESUME
830 PRINT "  NOT FOUND ON DISK."
840 PRINT "(S)KIP, (A)BORT, OR (C)HANGE DISK";
850 GET A$: IF A$ < > "S" AND A$ < > "A" AND A$ < > "C"
    THEN 850
860 PRINT : IF A$ = "S" THEN  POKE TP,0:TP = TP + 1: GOTO
    450
870 IF A$ = "A" THEN 560
880 PRINT : INPUT "INSERT NEW DISK AND HIT RETURN";A$:
    GOTO 280
900 REM  DO THIS BYTE
910 BYTE = 0
920 FOR N = 1 TO FIELD
930 BYTE = BYTE + (8 ^ (N - 1)) * C(N)
940 NEXT N
950 POKE TP,BYTE:TP = TP + 1
960 LP = LP + FS
970 RETURN
1000 REM  SHOW SHAPE FILE NAMES
1010 HOME
1020 FOR N = 1 TO NF
1030 VTAB  FN V(N): HTAB  FN H(N) + 1
1040 PRINT F$(N);
1050 NEXT N
1060 RETURN
1100 REM  FILE INPUT ROUTINE
1110 GOSUB 1500
1120 VTAB  FN V(EN): HTAB  FN H(EN) + 1
1130 PRINT W$;
1140 GET K$
1150 IF  ASC (K$) < 32 THEN 1200
1160 IF  LEN (W$) = 11 THEN 1140
1170 W$ = W$ + K$
1180 PRINT K$;
1190 GOTO 1140
1200 IF  ASC (K$) < > 8 THEN 1250
1210 IF  LEN (W$) = 1 THEN W$ = "": PRINT K$;" ";K$;: GOTO
     1320
1220 W$ =  LEFT$ (W$, LEN (W$) - 1)
1230 PRINT K$;" ";K$;
1240 GOTO 1140
1250 IF  ASC (K$) = 13 THEN 1270
1260 GOTO 1140
1270 F$(EN) = W$
1280 IF  EN = NF + 1 THEN NF = EN
1290 EN = EN + 1: IF EN = 61 THEN EN = 1
1300 PRINT  SPC( 11 - LEN (W$));
1310 GOSUB 1400
1320 RETURN
1400 REM  LIST EDITOR PROMPTS
1410 TEXT : VTAB 21: HTAB 1: PRINT
     " = = =
```

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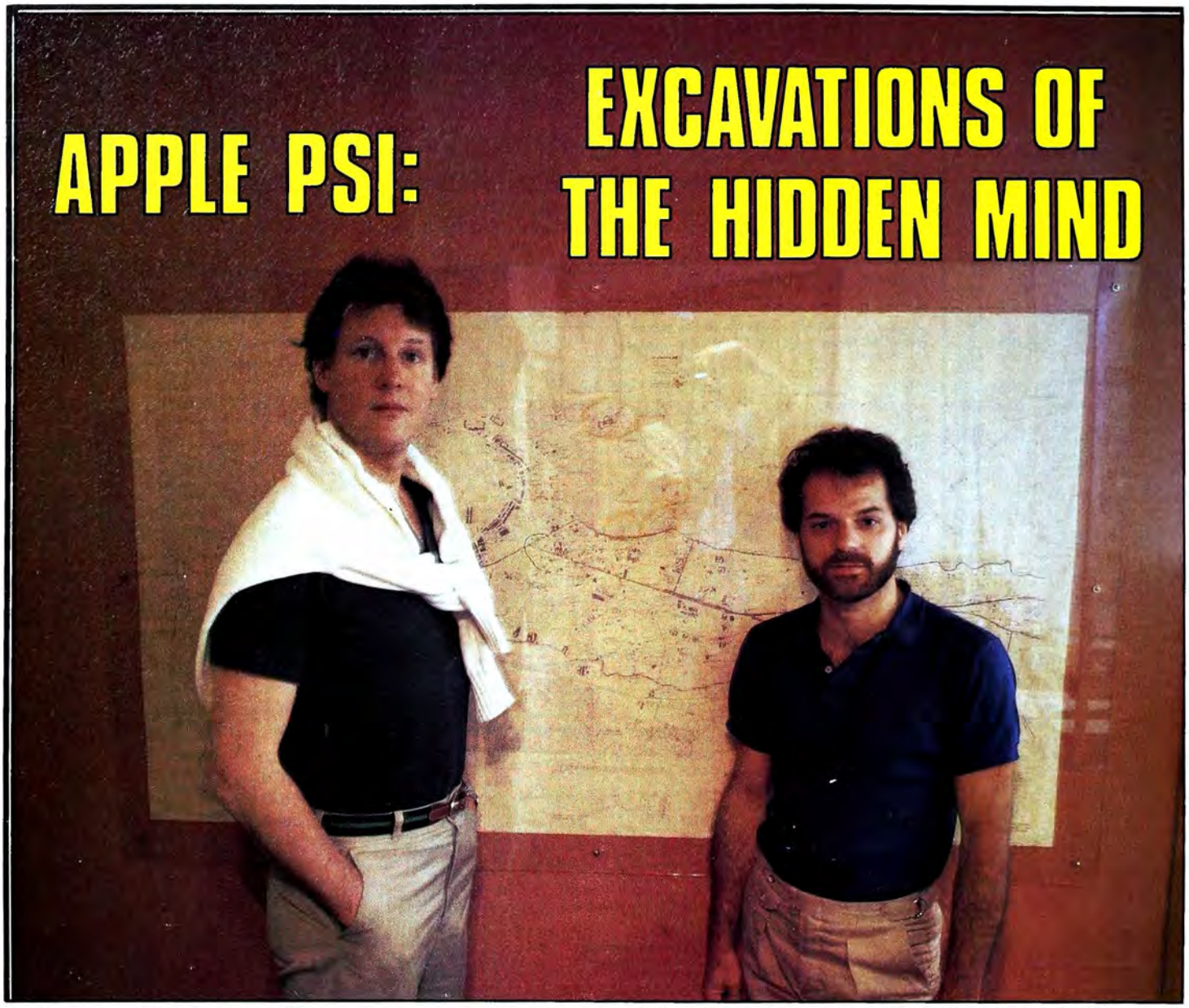
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What is psychic phenomena?

At this point, no one knows. Could it be possible to use the power of the mind to look back into the past, forward into the future, or to remote places in the present? Stephan Schwartz, chairman and research director of the Mobius Society, a Los Angeles-based psychic research group, has some ideas.

"There is evidence that it has a strong acculturated factor," posits Schwartz. "If you are an aboriginal bushman, knowing that a gazelle is on the other side of the hill may be the difference between eating and not eating. If you are a Marine platoon leader and you need to know where the guys who are trying to kill you are, it becomes extremely important that you use all your senses—including your intuitive one—to keep your men from getting zapped. And there is evidence—quite a lot of it—that there have been some platoon leaders who had it and some who didn't. In Vietnam, as reported in the *New York Times* and *The Observer*, the Marines ended up teaching people to dowse (use a divining rod) to find Viet Cong tunnels because they found it was the only way they could do it."

Schwartz also refers to a series of studies done using chief executive officers of large corporations (*Executive ESP*, Schroeder and Ostrander, Prentice-Hall). The correlation between being able to do a precognitive task and the profit-making ability of the executive's company was so straightforward that the researchers could look at the balance sheet of the company and tell how well the CEO would do on the precognition test.

"It seems to be a normal human trait," says Schwartz, "an information signal that living organisms—at least, human beings—possess, subject to acculturation. Margaret Mead made the point that in those cultures that bring it forward, it tends to flourish. Those cultures that suppress it don't seem to have it except in very specialized ways. We don't usually call it psychic functioning. We say 'they have good hunches' or 'they've got a good track record, a feel for the marketplace.' When you test these people on specific, formal, academic, parapsychological tests, they do well.

"It is present, but we don't know how widely present, and because of the cultural factors it's very hard to get a baseline measurement of what the human organism is capable of doing, because by the time you can test people, they've been heavily acculturated."

Realitybusters. Schwartz—formerly special assistant for research and analysis to the U.S. chief of naval operations, editorial staffer with *National Geographic*, and associate editor of *Psychic* magazine—founded Mobius in 1977 as "a nonprofit organization to research extended human performance."

In addition to performing the usual business of a psychic research lab, conducting theoretical experiments to test the exis-

BY ANDREW CHRISTIE

tence of psychic phenomena, Mobius specializes in the practical applications of psychic ability, particularly in archaeology and criminology. Schwartz and company take the existence of psychic phenomena as a given, and they get results—real, incontestable, unexplainable-by-any-other-means results. Mobius uses the "triple-blind" type of psychic experiment—one in which the correct answer involves an event that has not yet occurred and is not known to the subject, the researcher, or anyone else. As Mobius executive director Rand De Mattei points out, the results of such an experiment "could not possibly have been falsified or planted, and could not have happened by chance."

Why is parapsychology still considered to dwell on the shady, outermost fringes of science?

Stephan A. Schwartz (left) and Rand De Mattei of the Mobius Society, standing before a map of Alexandria. Circled areas are those in which psychics sensed that archaeological finds would be made. Below: Research submersible Taurus I, used in Project Deep Quest. A previously unknown wreck off Santa Catalina Island was located by psychic respondents, who also described specific objects that would be found.



Schwartz is well acquainted with the particularly militant variety of close-mindedness that is the special hazard of his profession. He ascribes it to a four-part "Grand Material Metaparadigm," which forms a sort of personality profile of twentieth-century humankind: "The mind is the result of physiological processes governed by bioelectrical impulses; each consciousness is a discrete entity; organic evolution moves toward no specific goal but simply flows according to Darwinian survivalism; and there is only one time-space continuum, and it provides for only one reality."

To gain any degree of serious acceptance, psychic research must overcome, or disprove, nothing less than the primary bulwark of the currently accepted beliefs by which the majority of us live.

"I See a Multicolored Fruit with a Bite Out of It." Schwartz describes Mobius's use of psychic respondents as a system of "consensual methodology," the same system used by a detective or a reporter who interviews a number of people about an event that the reporter/detective has not seen. "Not everybody would see it correctly; not everybody would see everything; but if you interviewed them all individually, you would get, in the aggregate, a pretty clear picture of what had taken place. We do the same thing."

When transcribing interviews with a project's respondents, or intuitive witnesses, Mobius looks for patterns—similar ideas or phrases and descriptions of places or events that could be matched up with each other.

"I used to type the transcriptions of these interviews out," he recalls. "I would cut each sentence into a little strip of paper, like a fortune cookie paper, then rent a big space or go to a high school gymnasium. I'd lay these things down and put lead washers on top of them with little flags on suction cups for the headlines. I'd keep moving around, and I'd create a kind of database—a *dBase II* in real space—only I was the computer. It was crazy. I came in about five o'clock one morning after working sixteen hours, and someone had turned the air conditioning on and blown it all away. I knew I had to get a computer."



Polish archaeologist Mieczyslaw Rodziewicz (left) and Stephan Schwartz explore Byzantine cistern located and described weeks earlier in Alexandria, Egypt, by psychic Hella Hammid as part of the Alexandria Project.

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When De Mattei joined Mobius five years ago, he already owned an Apple. Mobius has since purchased two, one of which was stolen and replaced by a recent donation. Another researcher, David C. Keith, residing at Lake Tahoe, California, communicates with Schwartz and De Mattei via modem. They now use the Apples for all report writing and analysis, articles, and books, and will soon be moving all their accounts onto them.

"We have developed a kind of database program that we tied into our word processor," says Schwartz. "It's very unsophisticated, but it's very effective for us. The Apples are essential."

Rand De Mattei brought more than his Apple when he joined Mobius. With Schwartz, he thought up the idea of conducting an ongoing, cross-cultural mass experiment to determine the distribution of psychic ability in the general population and to see whether there might be some kind of psychological profile that would correlate with the greatest incidence of those abilities. Using the results of the test, dubbed the Psi Q series and published in *Omni* magazine in the U.S. and Japan, they reasoned that it might be possible to predict what kinds of people would be psychologically disposed toward precognition. (Currently, results heavily favor extroverts.)

"We've since carried out several such experiments, with twenty-three thousand people taking part," says De Mattei. "The

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first one was a precognitive task, predicting a fairly abstract computer-generated event that would occur in the future. We also looked at the people's left-brain/right-brain hemisphere dominance pattern, as measured by the psychological questionnaire. The second task was to have people describe a distant place. They had no knowledge about the place selected at any given time. This kind of test is called remote viewing."

Journey to the Unknown. Remote viewing is one of the most common experiments in psychic research. Mobius's studies with remote viewing involve respondents describing locations in pictures being viewed by a researcher, or describing a location to which a researcher has gone. The destination's name is one of many put in sealed envelopes with numbers assigned. The researcher selects one based on a random number generated by the Apple. Thus, the destination is known only to the researcher, and only when he is already en route.

Mobius is evaluating the data from its Psi Q experiments as part of a consortium of labs, including Princeton and SRI International. "We've changed our position a little about the distribution of ability in the population at large," De Mattei admits. "We've always held the idea that everybody's psychic. We expected it to turn up readily, but there's been more resistance. It's there, distributed much like any other talent."

"With Psi Q one and two," Schwartz notes, "there's just no way you could conduct such an experiment—twenty-three thousand cases, each of which has fifty-six questions, each question having three to five possibilities—without computers. In parapsychology, computers really have made a difference in the ability to look at phenomena and process large amounts of data. They not only give us interesting ways of developing experiments, but also the ability to see small factors and patterns emerge out of large, apparently amorphous bodies of information."

In parapsychology, Apples are widely used for the information age equivalent of card-calling, the traditional form of ESP experiment—used forty years ago at Duke University by J.B. Rhine, the man who coined the term "extrasensory perception." In card-calling, the subject must divine a number or symbol on an unseen flash card. With the Apple, it's done with random number generation and a monitor. (See "In Search of the Sixth Sense," *Softalk*, June 1983.)

Making use of the Apple's built-in (if somewhat crude) random number-generating ability, De Mattei, in 1981, programmed a guessing game in which you attempt to predict the next random number that the computer will generate. Two "hits" out of ten tries scores as chance; three or more is a positive indication of precognition. The game proceeds through a series of 100 trials and an evaluation tells you how well you did. Mobius consultant Alan Vaughan is currently perfecting a more dynamic version.

"The problem with card-calling," says Vaughan, "is that the more people do it, the worse they get. A lot of parapsychologists have stopped using it because they get such dismal results. They haven't been able to really pin down why people always show this decline effect, but it's been characteristic of all ESP forced-choice testing so far."

After five years of research, Vaughan, former editor of *Psychic* magazine, has developed an Apple II game called *Psychic Defender*, an improved, alternative ESP experiment for the computer age.

Texas Psych-Out. Mobius is currently conducting formal testing of *Psychic Defender* and expects to have the whole package ready this month for the Dallas convention of the Parapsychological Association, a group of about three hundred international scientists who investigate ESP phenomena. Vaughan is the only one of the association's scientists who also works professionally as a psychic.

"I think that's why this design works, because I designed it from the psychic's point of view rather than from the scientist's point of view. It's a precognition test in game format with four levels. Each level is a wheel. Level 1 has six segments, level 2 has ten segments, level 3 has fourteen, and level 4 has eighteen. The idea is to predict which one of those sectors is going to be selected by a random number program—the one we're using now is the peek system in the Apple II, so it's a real-time random generator, depending on which billionth of a second you hit a key.

"You score so many points for a direct hit, but if you hit anywhere in the target half of the wheel, you get points. If you hit in the nontarget half of the wheel, you lose a man. Scores are recorded automatically and printed out." Vaughan explains that tests done so far indicate that out of 100,000 tries, 225 hits would occur by pure chance. "The really interesting thing about this is that people seem to show a learning effect; the more they play it, the better they get."

In the course of designing the game, Vaughan noticed an ESP example of the close-but-no-cigar phenomenon. Starting with roulette experiments, he discovered that there was a tendency to get the previous number in serial order to the actual target. In other words, if the target was a 3, Vaughan would tend to come up with a 2.

He decided to dispense with numbers altogether. *Psychic Defender*'s wheel has no numbers; the subject must sense which sector of the circle is going to be chosen by chance as the target. This method calls upon the intuitive rather than the logical function of the brain.

Psychic Marketplace. Vaughan and Mobius plan to market the game in a redesigned format with improved graphics and to have it translated for several other computer systems—after they get experimental results in. It may be offered as an intuition trainer, which was Vaughan's initial concept of the game.

"Precognition is the most important form of intuition," he says. "We hope by November to have this available with a manual and training tapes. The computer part will just be one aspect of it. The point is to train people to recognize the internal signals that accompany accurate predictions. The next step is to transfer that learning into your daily life, whether you're trying to predict which stocks are going up and which are going down or whatever kind of decision you have to make.

"We hope to show that anybody can do it and get good results. We're currently using nine respondents, and I'm sending the disk to other laboratories so they can repeat the experiment. We'll see what the tests indicate before we make any grand pronouncements," says Vaughan.

Perhaps the primary benefit of the Apple for Mobius has been the freedom it gives parapsychologists, working in the most sparsely populated and underfunded of academic areas, to enlarge the scale of their experiments. De Mattei notes that "a lot of research in universities is done on really small groups—grad student classes of twenty to forty people. A lot of the suppositions made are based on the projections from these small experiments. While they may be neat, tidy little models based on a class of forty middle-class students, when you pump that up to the general population and pour several thousand people through the model, it starts to creak and groan and grow holes. It's only with the computer that we're able to expand these models to a larger format so that they might make sense within the general population."

Community of Minds. For such experiments, Mobius works with nonprofessional psychics. "A lot of these people had never really tried this before they began to work with us," says Schwartz. "Our predisposition is not to work with people who are professional psychics; they have a lot on the line. Our method is designed to take the pressure off of any one person and to

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transfer it onto the group. It's a team methodology, like a group of computers hooked up in parallel.

"The Mobius approach to research is essentially to create a kind of supermind in which a team of respondents participates. For the model, the respondents are the intuitive half of the project and scientists are the analytical half. It's a team because this is not something that one discipline can study. Parapsychology alone is inadequate to really get a handle on what psychic functioning is. You have to put together a team, as we do in every project, of an interdisciplinary group of researchers, each of whom is highly skilled in one part of the puzzle."

When Mobius mounted a psychic archaeology project in Alexandria, Egypt, the expedition consisted of archaeologists, geologists, electrical engineers, hydrographers, oceanographers, historians, and psychics. "What you want are people who are on the cutting edge of their specialty," says Schwartz. "When we select people to be involved with the teams, we go through the literature and recruit the best people available based on peer evaluation.

"People always ask us whether we run into a lot of controversy and skepticism. The answer is no. When you ask people to be in an exciting project, and to participate in their discipline, they don't have to go out on a limb on something they don't know much about. They very rarely say no. We find this to be true with the creative geniuses, the leaders in their field, not the followers. They are quite open and interested, fascinated to participate in these experiments."

While Mobius has a central full-time staff, its entity changes with each project, says De Mattei, and it becomes "this larger mass of people who are the scientists and the respondents."

Challengers of the Unknown. And yet, it seems the research hasn't brought us any closer to a definition or understanding of psychic phenomena. Schwartz admits this.

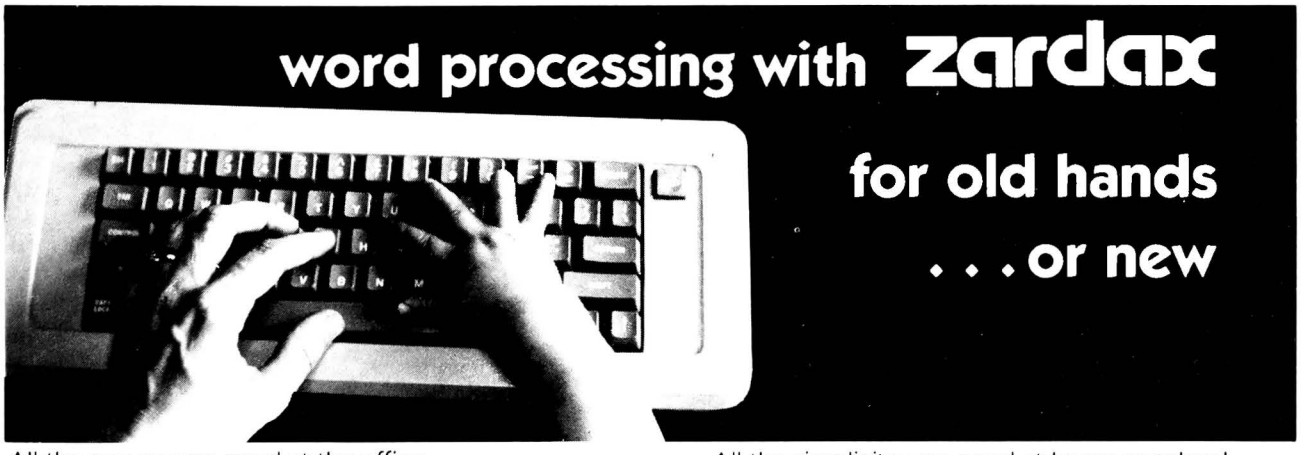
"Our field is about where the nineteenth-century explorers of Africa were when they were coming back to talk about elephants. You're seeing a very early stage of a developing science. It's been around a hundred years, and it's only had a statistical modeling ability for about fifty years. Just over a hundred years ago, doctors were sharpening their scalpels on the soles of their boots before going in to operate.

"It wouldn't upset me," says Schwartz, "if psychic functioning turned out to be some explainable process that doesn't require an extension of present theory. We just want to go over the data without any biases. People develop enormous biases about information, and that information becomes invisible. They just won't look at it because it doesn't fit their preconception of what ought to be going on.

"Paranoia about being picked on by others has had a very fruitful result in parapsychology. It has forced us to develop very rigorous protocols. The strictest policing of potential fraud or bad methodology comes from other parapsychologists. I don't know of another field in science that is as rigorously policed by its own membership. Parapsychologists, more than anybody else, are concerned with misuse of information, or falsification of information, and with badly constructed experiments that produce imperfectly understood results."

Digging Deeper. Psychic phenomena has managed to make some gains in respectability over the last hundred years. Archaeology is currently the one traditional, reputable academic field in which it has made at least a small dent.

For Mobius's first major field operation, Deep Quest, an experiment in deep-ocean psychic archaeology, five psychics using a sea chart covering an area of fifteen square miles independently pinpointed the predicted site of a shipwreck in an area of 180



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square yards off the shores of Santa Catalina Island.

The experiment was conducted using the triple-blind protocol. The challenge was to find a sunken ship, whose precise whereabouts were unknown, in waters that were too deep for divers.

As De Mattei explains the curious results, "The wreck was described by the respondents as a wooden ship, steam- and wind-powered, sunk by an explosion amidships. One respondent also described a large, enigmatic block—a huge cube—saying that it may have been part of the cargo. That didn't make any sense to anybody."

Using a submarine provided by the Institute for Marine and Coastal Studies of the University of Southern California, the Mobius researchers first found a tie bar from a ship's hull in the target area—by itself not conclusive evidence of a wreck. They kept going and found a massive winch. "And you don't lose a marine winch over the side of a boat," De Mattei points out.

After locating the hull and additional remains of the predicted wreck, the last thing the researchers found was a large, rectangular concrete block. No one could say what it was for or what it was doing there.

"It was one of those elegant hits," recalls De Mattei, "not something you'd guess in advance or just associate with a sunken ship."

Independent analysis by researchers from the Bureau of Land Management, Lawrence Livermore Laboratories, and the Canadian deep-ocean engineering firm of Hyco confirmed the critical elements of the psychics' reconstruction: the ship's age, the fact that the site had been previously unknown, and the cause of the ship's sinking.

With the nationally publicized success of Deep Quest, Mobius was able to apply for grants and foundation money needed to mount more ambitious fieldwork. In 1979, they were able to send to Egypt a team of psychics and scientists that psychically pinpointed a Byzantine structure in the buried city of Marea—an ancient settlement now under the Egyptian desert—in a location where archaeologists and an electronic survey assured them that nothing would be found. In the harbor of Alexandria, underwater, the team found the ruins of the long-lost lighthouse of Pharos, one of the Seven Wonders of the ancient world. They also found a temple of Isis Pharia, the palace where Mark Antony committed suicide, and the location of the city's original sea wall—allowing archaeologists to redraw the maps of the probable orientation of the ancient city.

Psychic Defenders. It's been a long, hard struggle, and the history of the acceptance of the psychic even among a handful of practitioners of archaeology (academically, an underdog discipline among the sciences) is littered with broken careers.

Still, in 1973, J. Norman Emerson, "the father of Canadian archaeology," addressed the subject at a meeting of the Canadian Archaeological Association. He said, "It is my conviction that I have received knowledge about archaeological sites from a psychic informant who relates this information to me without any evidence of the conscious use of reasoning. By means of the intuitive and parapsychological, a whole new vista of man and his past stands ready to be grasped. As an anthropologist and as an archaeologist trained in these fields, it makes sense to me to seize the opportunity to pursue and study the data thus provided."

This endorsement took considerable courage to make, and probably only a man in Emerson's unassailable position would have dared to do it. With such recognition, and with the now inescapable conclusion that psychic ability can work as a useful research tool—with a little help from a faithful computer—the wild frontier of pyschic research is being tamed. ■

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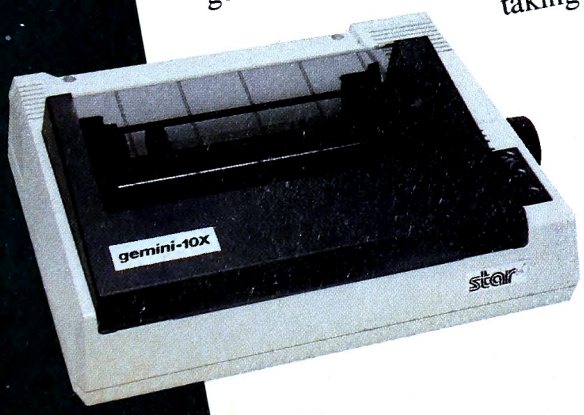
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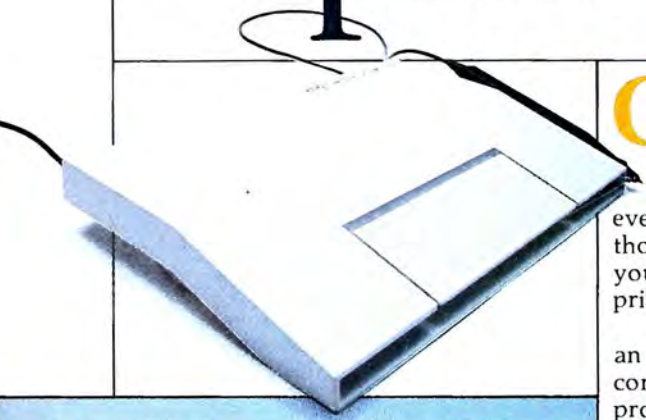
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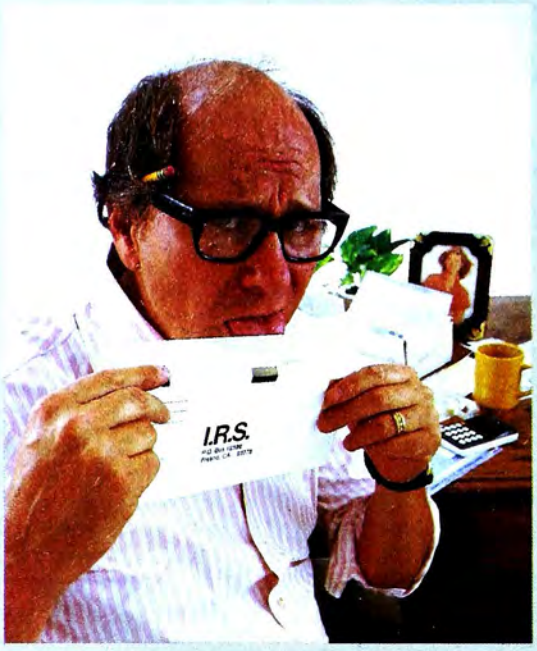


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The big loser appears also to be the biggest winner—Rupert Lissner, author of *Quick File IIe* and *AppleWorks*. *AppleWorks* has become the biggest seller by far in the Apple market and appears set to remain that way for a long time to come. The program most impacted by its introduction was *Quick File IIe*.

Quick File IIe had consistently rated high in the Top Thirty since its introduction until *AppleWorks* came along. In June, it disappeared from those ranks and dropped to the bottom rung of the Business 10. Its days seem to be clearly numbered.

In contrast, Silas Warner of Muse brought out *Beyond Castle Wolfenstein*, a sequel to his previous bestseller. For the most part, *Castle Wolfenstein* had been out of the Top Thirty but had remained strong in the Strategy 5 category. It would be not at all illogical to assume that the new Warner offering would sound the death knell for the old.

Quite the opposite happened. While *Beyond Castle Wolfenstein* was climbing into sixth position in the Top Thirty, it was fueling renewed interest in *Castle Wolfenstein*. That program made it to twenty-seventh on the Top Thirty, its first appearance there since the end of last year's holiday selling period.

Likewise, the introduction of *Sorcerer* by Infocom generated additional interest in *Enchanter*, the first in the projected trilogy. *Enchanter* rose to score twenty-eighth, while *Sorcerer* dug in at thirtieth on the list.

Sometimes, even what appears to be a directly competitive product from the same company will help an older product out. VisiCorp scored big in its first month with *FlashCalc*, a spreadsheet product aimed at the IIc market. An unexpected beneficiary of the interest in *FlashCalc* was *VisiCalc*, which tied with *Sorcerer* for thirtieth after several months off the Top Thirty.

In all, there was a one-third changeover in the composition of the Top Thirty in June. That's a high percentage of turnover in a thirty-day period, but only a few of the new entries were new products. Others were rejoining the list after benefiting from the resurgence of sales that typi-

Word Processors 10

This Month	Last Month	
1.	1.	**Bank Street Writer**, Gene Kuzmiak and the Bank Street College of Education, Broderbund Software
2.	2.	**Apple Writer IIe**, Paul Lutus, Apple Computer
3.	3.	**PFS:Write**, Sam Edwards, Brad Crain, and Ed Mitchell, Software Publishing Corporation
4.	7.	**Bank Street Speller**, Sensible Software and the Bank Street College of Education, Broderbund Software
5.	6.	**HomeWord**, Ken Williams and Jeff Stephenson, Sierra
6.	9.	**Apple Writer II Pre-Boot Disk**, Kevin Armstrong and Mark Borgerson, Videx
7.	—	**Format-II**, G.K. Beckman and M.A.R. Hardwick, Kensington Software
8.	4.	**Word Juggler IIe**, Tim Gill, Quark
9.	10.	**Word Handler**, Leonard Elekman/Silicon Valley Systems, Advanced Logic Systems
10.	8.	**WordStar**, MicroPro

Apple III

This Month	Last Month	
1.	1.	**III E-Z Pieces**, Rupert Lissner, Haba Systems
2.	—	**General Ledger**, Great Plains Software
3.	—	**Professional Time and Billing**, State of the Art
4.	—	**Catalyst**, Quark

Arcade 10

This Month	Last Month	
1.	1.	**Julius Erving and Larry Bird Go One-on-One**, Eric Hammond, Julius Erving, and Larry Bird, Electronic Arts
2.	2.	**Lode Runner**, Doug Smith, Broderbund Software
3.	3.	**Pinball Construction Set**, Bill Budge, Electronic Arts
4.	4.	**Zaxxon**, John Garcia, Datasoft
5.	5.	**Choplifter**, Dan Gorlin, Broderbund Software
6.	—	**Arcade Boot Camp**, John Besnard, Penguin Software
7.	—	**Jungle Hunt**, Atarisoft
8.	—	**Ms. Pac-Man**, Atarisoft
9.	8.	**Hard Hat Mack**, Michael Abbot and Matthew Alexander, Electronic Arts
10.	—	**Dino Eggs**, David Schroeder, Micro Fun
	—	**Sammy Lightfoot**, Warren Schwader, Sierra

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Oval Editing	No	Yes
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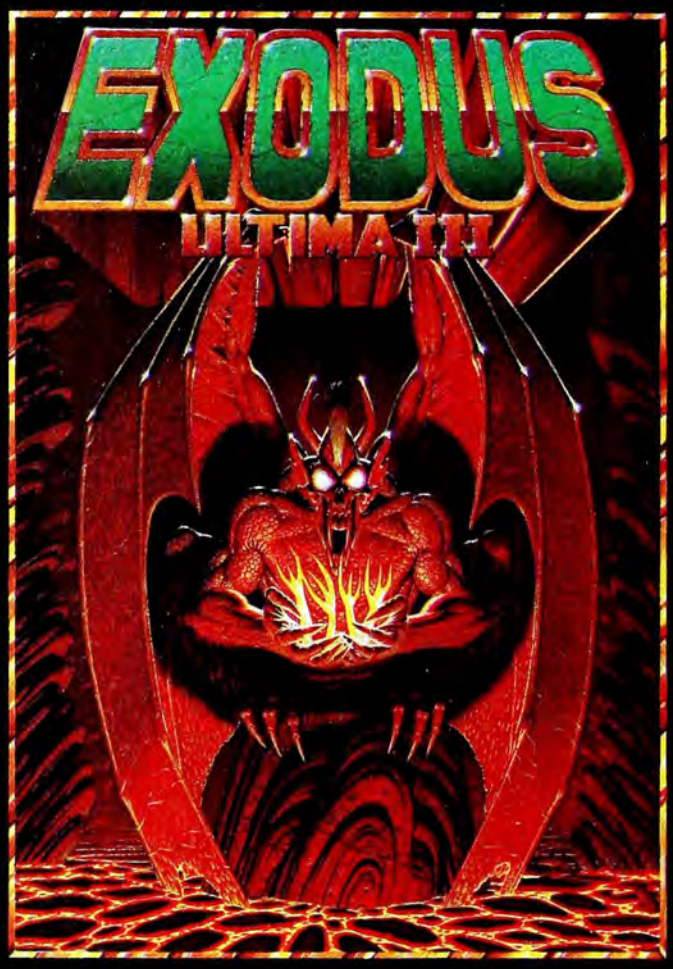
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fied the last two weeks of the month.

Highest placed among the newcomers was *Barron's SAT*, in sixteenth. It had been a strong contender on the Education 10 list for months before cracking the Top Thirty. *FlashCalc* came in at eighteenth in its first month of distribution. Rejoining the list at nineteenth was *Legacy of Llylgamyn*, third in the Wizardry series.

Print Shop, a new entry from Broderbund Software, nailed down the

Home Education 10

This Month	Last Month	
1.	1.	**MasterType**, Bruce Zweig, Scarborough Systems
2.	2.	**Typing Tutor**, Dick Ainsworth, Al Baker, and Image Producers, Microsoft
3.	5.	**Barron's SAT**, Barron's
4.	7.	**Computer SAT**, Harcourt Brace Jovanovich
5.	4.	**Algebra 1**, EduWare, MSA
6.	—	**Early Games: Piece of Cake**, Bob Eyestone, Springboard Software
7.	—	**Math Blaster**, Janice Davidson and Richard Eckert, Davidson & Associates
8.	—	**Win with Words I**, Vicki Willoughby and Christine Bridges Clark, Advanced Ideas
9.	—	**Type Attack**, Jim Hauser and Ernie Brock, Sirius Software
10.	6.	**Early Games for Young Children**, John Paulson, Springboard Software

Adventure 5

This Month	Last Month	
1.	1.	**Zork I**, Infocom
2.	5.	**Death in the Caribbean**, Philip and Bob Hess, Micro Fun
3.	—	**Enchanter**, Marc Blank and Dave Lebling, Infocom
4.	3.	**Sorcerer**, Steve Meretzky, Infocom
5.	—	**Deadline**, Infocom

Strategy 5

This Month	Last Month	
1.	1.	**Flight Simulator II**, Bruce Artwick, SubLogic
2.	2.	**Beyond Castle Wolfenstein**, Silas Warner, Muse
3.	4.	**Castle Wolfenstein**, Silas Warner, Muse
4.	3.	**Sargon III**, Dan and Kathe Spracklen, Hayden
5.	—	**Millionaire**, Jim Zuber, Blue Chip Software

Fantasy 5

This Month	Last Month	
1.	4.	**Legacy of Llylgamyn**, Andrew Greenberg and Robert Woodhead, Sir-tech
2.	1.	**Wizardry**, Andrew Greenberg and Robert Woodhead, Sir-tech
3.	2.	**Exodus: Ultima III**, Lord British, Origin Systems
4.	3.	**Knight of Diamonds**, Andrew Greenberg and Robert Woodhead, Sir-tech
5.	5.	**Ultima II**, Lord British, Sierra

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*Cary Hara, **Softalk Apple**, May 1984*



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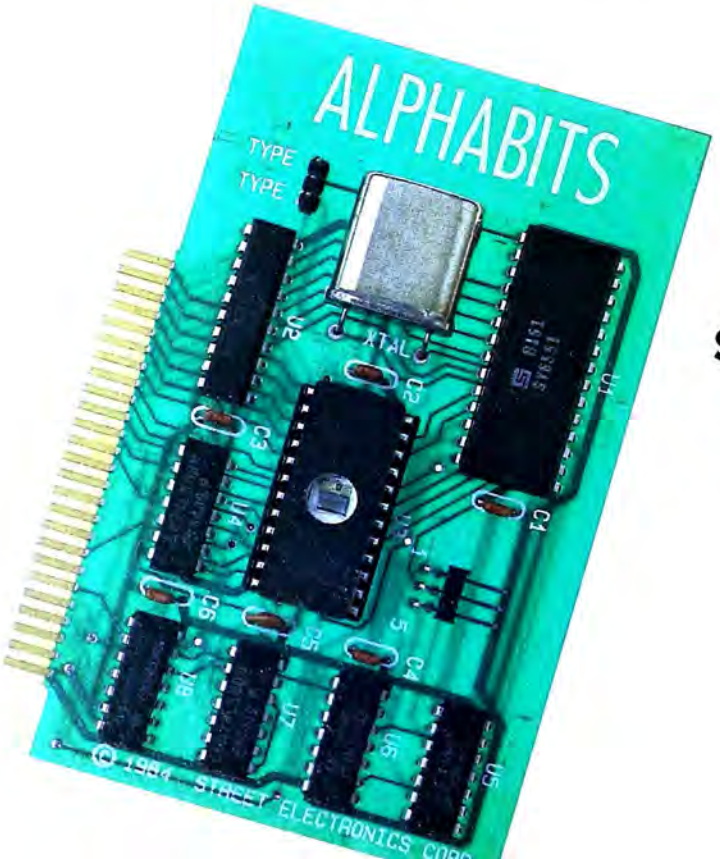
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twentieth position. *ProDOS User's Kit* from Apple was twenty-second. *Death in the Caribbean*, consistently the strongest selling of the hi-res adventures, finally made it into the Top Thirty at twenty-fourth.

There were plenty of changes in most of the subsidiary lists as well.

In the Apple III market, *III E-Z Pieces* continues to lead, followed by the *General Ledger* from Great Plains, *Professional Time and Billing*

Business 10

This Month	Last Month	
1.	1.	**AppleWorks**, Rupert Lissner, Apple Computer
2.	2.	**PFS:File**, John Page and D.D. Roberts, Software Publishing Corporation
3.	3.	**PFS:Report**, John Page, Software Publishing Corporation
4.	—	**FlashCalc**, Neried/Bill Graves, VisiCorp
5.	4.	**Multiplan**, Microsoft
6.	6.	**PFS:Graph**, Bessie Chin and Stephen Hill, Software Publishing Corporation
7.	9.	**VisiCalc**, Software Arts/Dan Bricklin and Robert Frankston, VisiCorp
8.	—	**Versaform**, Joseph Landau, Applied Software Technology
9.	8.	**VisiCalc: Advanced Version**, Software Arts/Dan Bricklin and Robert Frankston, VisiCorp
10.	5.	**Quick File IIe**, Rupert Lissner, Apple Computer

Utility 10

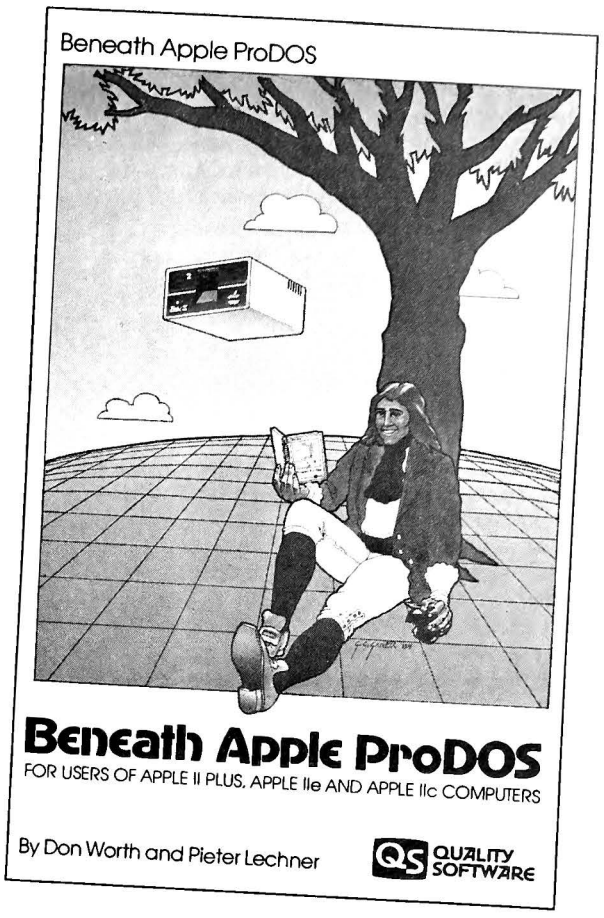
This Month	Last Month	
1.	7.	**ProDOS User's Kit**, Apple Computer
2.	2.	**Graphics Magician**, Chris Jochumson, David Lubar, and Mark Pelczarski, Penguin Software
3.	—	**Fontrix**, Steve Boker and Duke Houston, Data Transforms
4.	1.	**Zoom Grafix**, Dav Holle, Zooom
5.	—	**Frame-Up**, Tom Weishaar, Beagle Bros
6.	5.	**Apple Mechanic**, Bert Kersey, Beagle Bros
7.	—	**The Complete Graphics System**, Mark Pelczarski, Penguin Software
8.	4.	**Global Program Line Editor**, Neil Konzen, Beagle Bros
9.	—	**ProDOS Assembler**, Apple Computer
10.	—	**Pronto DOS**, Tom Weishaar, Beagle Bros
	—	**DOS Boss**, Bert Kersey and Jack Cassidy, Beagle Bros

Home 10

This Month	Last Month	
1.	2.	**Home Accountant**, Bob Schoenburg, Larry Grodin, and Steve Pollack, Arrays/Continental Software
2.	3.	**Dollars and Sense**, Frank E. Mullin, Monogram
3.	—	**Print Shop**, David Balsam and Martin Kahn, Broderbund Software
4.	1.	**Music Construction Set**, Will Harvey, Electronic Arts
5.	5.	**Micro Cookbook**, Brian E. Skiba, Virtual Combinatics
6.	6.	**Financial Cookbook**, Stan Trost, Electronic Arts
7.	7.	**Crossword Magic**, Steve and Larry Sherman, L&S Computerware
8.	10.	**ThinkTank**, Dave Winer and John Llewellyn, Living Videotext
9.	4.	**ASCII Express: The Professional**, Bill Blue and Mark Robbins, United Software Industries
10.	8.	**Data Capture 4.0**, George McClellan and David Hughes, Southeastern Software

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from State of the Art, and *Catalyst* from Quark. Other than Brock's *Keystroke* database, no other Apple III product made a significant dent in the market.

The top half of the Arcade 10 stayed the same, but there were radical revisions in the bottom half. *Arcade Boot Camp* from Penguin jumped to sixth in its first full month in distribution. Atarisoft scored the next two positions with *Jungle Hunt* and *Ms. Pac-Man*. *Hard Hat Mack* clung to ninth, followed by two other newcomers to the list: *Dino Eggs* and *Sammy Lightfoot*.

On the word processing list, the rule was shuffle rather than change. The only new entry was *Format-II*, which is often on the list but hadn't made it in May. *Bank Street Writer*, *Apple Writer IIe*, and *PFS:Write* continue to dominate the category.

Four new programs made the Education 10, although it was the first time for only one of them. Rejoining the list were *Early Games: Piece of Cake*, *Math Blaster*, and *Type Attack*. Making the list for the first time was *Win with Words I*, gaining eighth place.

The Adventure 5 list remained the domain of Infocom, with four of the five programs coming from that company. For what seems like the umpty-umpth time, it was *Death in the Caribbean* that prevented Infocom from making a clean sweep of the category.

The only change in the Strategy 5 list was the return of *Millionaire* to the chart after a one-month absence. *Castle Wolfenstein* and *Sargon III* changed places.

There were no new additions to the Fantasy 5 list, where Sir-tech has three entries and Lord British has the other two. *Legacy of Llylgamyn*'s strength pushed three of the programs down a notch.

FlashCalc was one of two new entries on the Business 10. It edged out *Multiplan* for fourth, making it the highest-placed spreadsheet product. The other new entry was *Versaform*, enjoying a renaissance of popularity after several months off the chart.

The Utility 10 category got the biggest shakeup. *ProDOS User's Kit* from Apple jumped into first. *Graphics Magician* held second, but *Fontrix* rejoined the list in third. *Zoom Grafix* dropped from first to fourth, *Frame-Up* rejoined the chart in fifth, and *Apple Mechanic* dropped one position to sixth.

The Complete Graphics System, after several months off the list, vaulted into seventh. *Global Program Line Editor* dropped to eighth. Apple's *ProDOS Assembler* scored ninth, and two Beagle Bros products—*Pronto DOS* and *DOS Boss*—tied for tenth after being off the list last month.

The Home 10 category got shuffled at the top. *Home Accountant* regained the lead, a position it had previously held for twenty-seven consecutive months before being bumped last month. *Dollars and Sense* climbed into second, while newcomer *Print Shop* jumped to third.

Music Construction Set, the giant killer that bumped off *Home Accountant* last month, trailed off to fourth.

Sales were generally higher in June than in May. The biggest beneficiaries of the activity were products in the Home and Adventure categories. For the second consecutive month, sales of educational software suffered more than any other market segment. ■

Apple-franchised retail stores representing approximately 5.06 percent of all sales of Apple and Apple-related products volunteered to participate in the poll.

Respondents were contacted early in July to ascertain their sales for the month of June.

The only criterion for inclusion on the list was the number of units sold—such other criteria as quality of product, profitability to the computer store, and personal preferences of the individual respondents were not considered.

Respondents in July represented every geographical area of the continental United States.

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 the relative strength of the programs listed. Index numbers are correlative only to 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 rating of 50 in another month.

Probability of statistical error is plus or minus 2.51 percent, which translates roughly into the theoretical possibility of a change of 2.78 points, plus or minus, in any index number.

The Top Thirty

This Month	Last Last	Index	
1.	1.	144.83	**AppleWorks**, Rupert Lissner, Apple Computer
2.	2.	96.37	**Flight Simulator II**, Bruce Artwick, SubLogic
3.	3.	80.09	**Bank Street Writer**, Gene Kuzmiak and the Bank Street College of Education, Broderbund Software
4.	5.	72.15	**Apple Writer IIe**, Paul Lutus, Apple Computer
5.	4.	51.61	**PFS:File**, John Page and D.D. Roberts, Software Publishing Corporation
6.	18.	50.03	**Beyond Castle Wolfenstein**, Silas Warner, Muse
7.	6.	47.39	**PFS:Write**, Sam Edwards, Brad Crain, and Ed Mitchell, Software Publishing Corporation
8.	7.	46.34	**MasterType**, Bruce Zweig, Scarborough Systems
9.	19.	41.07	**PFS:Report**, John Page, Software Publishing Corporation
10.	13.	40.02	**Home Accountant**, Bob Schoenburg, Larry Grodin, and Steve Pollack, Arrays/Continental Software
11.	8.	38.97	**Julius Erving and Larry Bird Go One-on-One**, Eric Hammond, Julius Erving, and Larry Bird, Electronic Arts
12.	14.	30.54	**Dollars and Sense**, Frank E. Mullin, Monogram
13.	11.	29.49	**Lode Runner**, Doug Smith, Broderbund Software
14.	15.	26.85	**Typing Tutor**, Dick Ainsworth, Al Baker, and Image Producers, Microsoft
15.	26.	24.22	**Bank Street Speller**, Sensible Software and the Bank Street College of Education, Broderbund Software
16.	—	23.17	**Barron's SAT**, Barron's
17.	25.	22.99	**HomeWord**, Ken Williams and Jeff Stephenson, Sierra
18.	—	22.11	**FlashCalc**, Neried/Bill Graves, VisiCorp
19.	—	21.06	**Legacy of Llylgamyn**, Andrew Greenberg and Robert Woodhead, Sir-tech
20.	—	20.53	**Print Shop**, David Balsam and Martin Kahn, Broderbund Software
21.	12.	19.48	**Wizardry**, Andrew Greenberg and Robert Woodhead, Sir-tech
22.	—	18.95	**ProDOS User's Kit**, Apple Computer
23.	21.	18.43	**Zork I**, Infocom
24.	—	17.90	**Death in the Caribbean**, Philip and Bob Hess, Micro Fun
25.	28.	17.37	**Graphics Magician**, Chris Jochumson, David Lubar, and Mark Pelczarski, Penguin Software
26.	10.	16.32	**Music Construction Set**, Will Harvey, Electronic Arts
27.	—	15.79	**Castle Wolfenstein**, Silas Warner, Muse
28.	—	15.75	**Enchanter**, Marc Blank and Dave Lebling, Infocom
29.	23.	14.74	**Multiplan**, Microsoft
30.	—	14.21	**Sorcerer**, Steve Meretzky, Infocom
		14.21	**VisiCalc**, Software Arts/Dan Bricklin and Robert Frankston, VisiCorp

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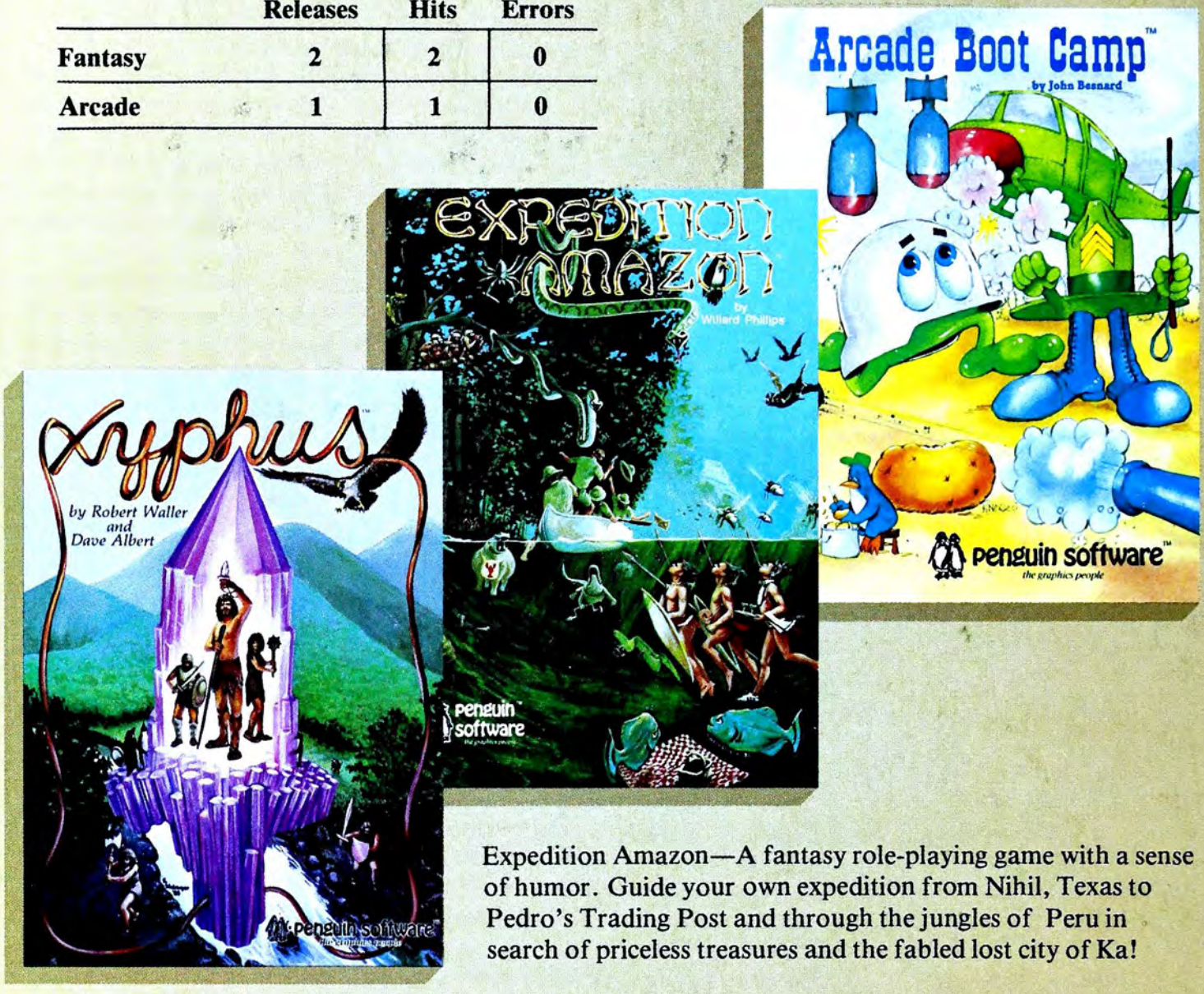
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