October 1984
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inCider

The Apple II Journal

Computerize *for Bigger Profits*

Tips for Buying Business Software

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Boost Sales with Quick File

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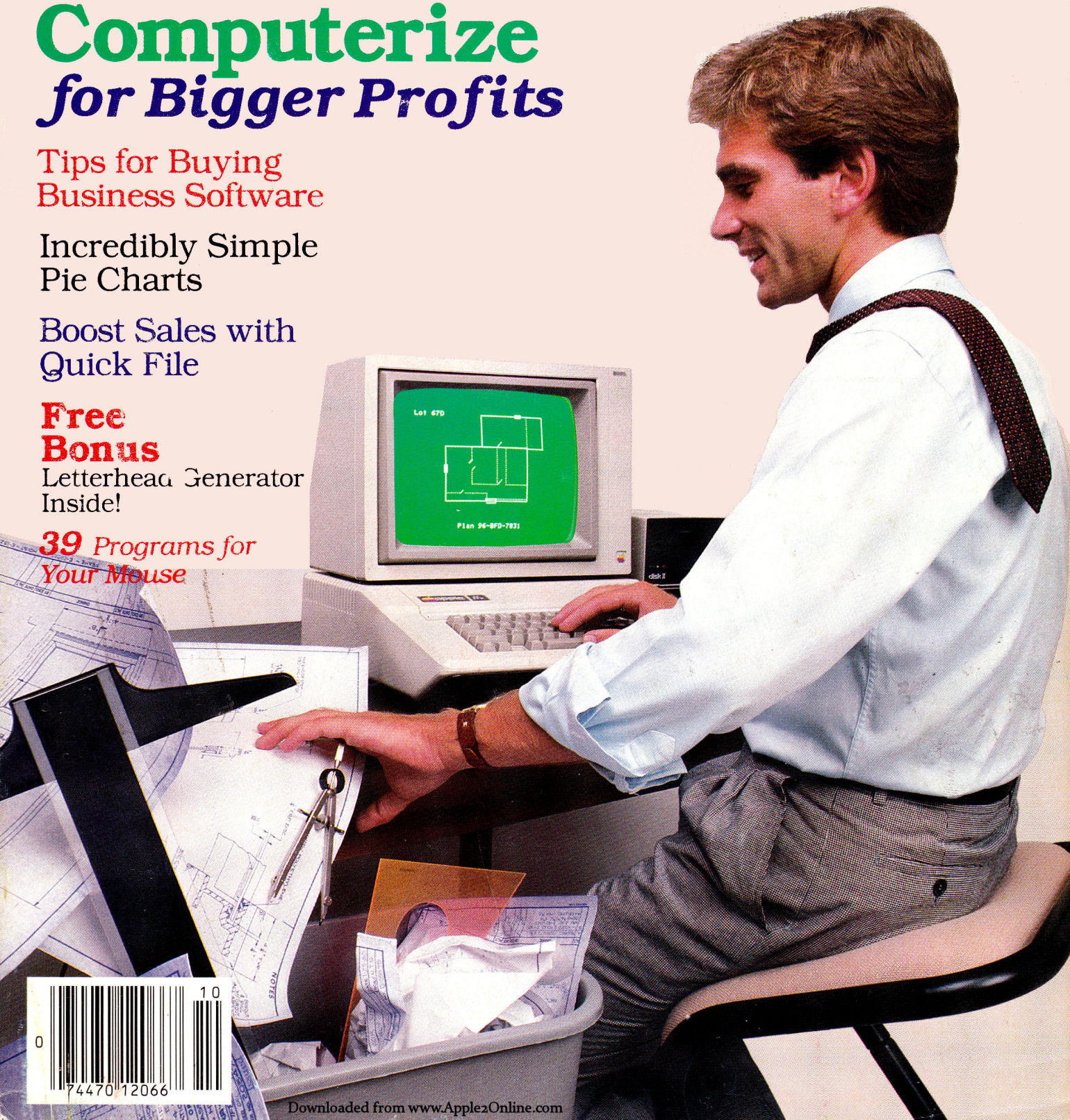
***39** Programs for Your Mouse*



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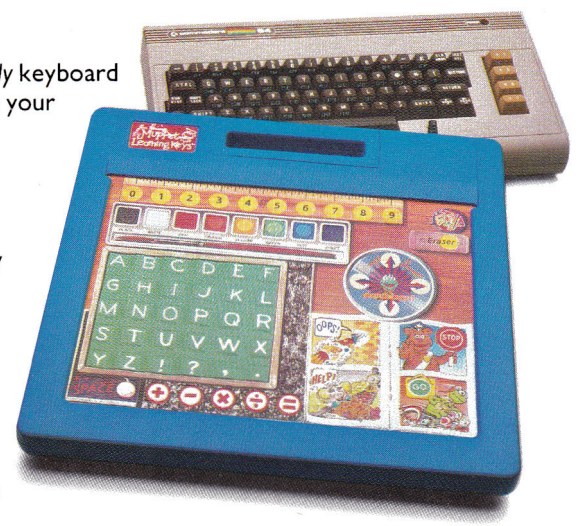
Finally, a computer keyboard kids can use.

A computer can help your child learn but the keyboard often gets in the way. It's a jumble of keys that's confusing and hard for little fingers to operate. And it's not much fun.

Introducing Muppet Learning Keys from Koala Technologies.

The first computer keyboard made especially for young children. And the *only* keyboard with Kermit, Miss Piggy and the Muppet gang right on it—ready to introduce your child to the magic of letters, numbers, and colors.



Imagine you're five years old. Now pick a keyboard.

An easy choice, isn't it? That's because Muppet Learning Keys was created by education specialists to make learning an adventure for your child.

Unlike conventional keyboards, all the letters and numbers are in order. So a child can find A-B-C and 1-2-3 without hunting all over the keyboard.

Press any key on the keyboard and something always happens. Kermit flies a kite. Miss Piggy eats a pretzel. Fozzie puts out a fire.

That's how the fun begins. But soon, your child starts to explore and experiment. How many kites can Kermit fly? In how many colors? What do the other letters mean?

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Then we wiped its washable mylar surface with a sponge, and plugged it in.

And those kids did their best with it—having fun while they experienced the joy and wonder of learning.

Give your child Muppet Learning Keys and make computer learning child's play.

Muppet Learning Keys. The hands-on keyboard for kids.

For the Apple IIc, Apple IIe, and Commodore 64 computers.

In-box software by Sunburst Communications. Muppet Learning Keys works with software that is designed or modified for it.

Jim Henson's Muppet Learning Keys™

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The second generation MACH II and MACH III Joysticks incorporate a **new slide-switch spring disconnect** feature that **requires no stick deflection** and **new rotary trims** which are **four times more precise**.

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These highly accurate and reliable 360 degree microcomputer cursor controls used for games, business and graphics applications provide more features, greater durability, and longer life cycles. Plug in compatible with Apple II, IIE, IIC, IBM PC, PCjr and TRS-80 Color Computers.
MACH II $44.95/MACH III $54.95

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MICRO-TRAK TRACKBALL

The MICRO-TRAK TRACKBALL is the ultimate 360 degree cursor control that is engineered with the latest state-of-the-art technology. The MICRO-TRAK is controlled by two custom designed microprocessors and is 100% digital for higher reliability. The unit plugs into the standard game I/O and is 100% software compatible. It has four switch selectable modes of operation and requires no additional hardware or software. Both the "Positioning Mode" and "Velocity Mode" have a choice of two sensitivity levels. In addition the "Velocity Mode" has an "Auto-Center" feature that returns the cursor to the selected center position to emulate a self-centering joystick. There is also a "Rapid Fire" feature and dual switches for either left or right handed operation. Available November 1984 for Apple II, IIE and IIC personal computers. $99.95

Manufactured in U.S.A.

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FORMERLY HAYES PRODUCTS
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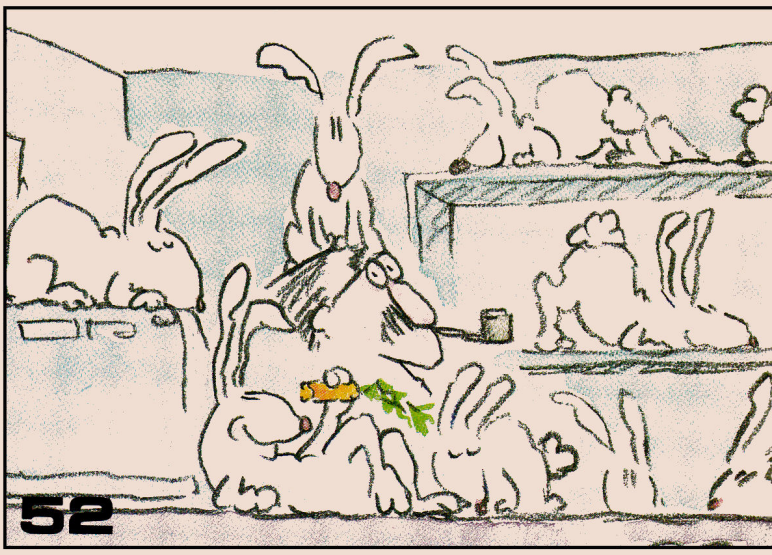

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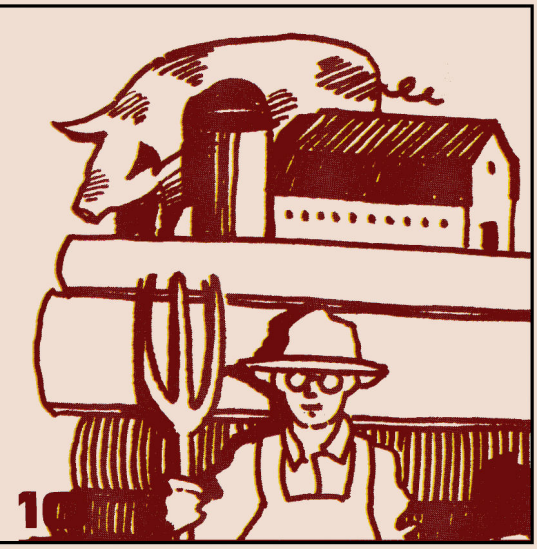

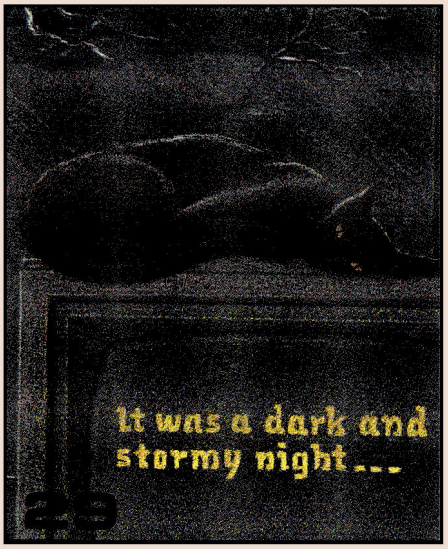

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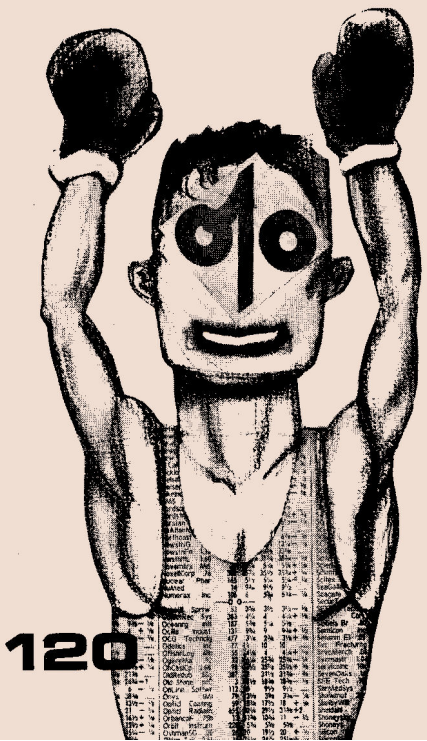

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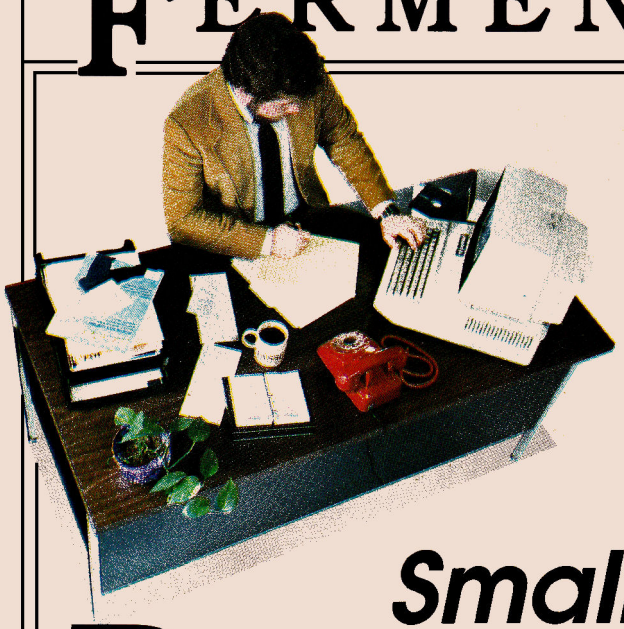

Wanted: Small-Business Ideas

Pardon me, is this the micro revolution? You know the one I mean: the one that will reshape the way America works; the one that's going to spawn thousands of new cottage industries; the one that's going to liberate all the closet entrepreneurs. Perhaps it's more of an evolution than a revolution, but make no mistake—it is happening.

Off-the-shelf business software such as general ledger, accounts receivable, accounts payable, inventory, and payroll packages put unprecedented power into the hands of current and aspiring business owners. With these programs the entrepreneur can perform vital functions that heretofore required extra employees, outside services, or lots of skill and time. Before, many small businesses either never got off the ground or folded because of insufficient bookkeeping services.

But this is all changing. Through the power of micros like the Apple II, traditional stumbling blocks are being cleared away, creating a more hospitable environment for the entrepreneurial spirit.

In this and previous issues of *inCider* we have described exciting business applications already used by Apple II owners. We've published a variety of applications that reduce administrative chores to manageable levels and place a premium on personal productivity. But we've only scratched the surface. We need to hear from you.

This month *inCider* intensifies its search for examples of Apples at work in small businesses. We're looking for individuals who have streamlined operations with their Apple II's or, better yet, started brand new enterprises with them.

We're talking about the grass roots of the business market. Here you'll find companies with 15 or fewer employees. You'll also find the small firms run by sole proprietors, self-employed moonlighters, ma and pa teams, and shirt-sleeve types who thrive on the long hours, challenge, and satisfaction of building their own companies. If you're one of "them that's doin' " we'd like to hear from you. We'd like to share your story with our readers, many of whom perhaps are on the verge of a business venture themselves. So write to us about your business—or your friends' businesses. Here's what we need to know.

First, tell us which Apple II you're using. Second, detail the rest of your system, including the names and models of the peripherals you employ. Third, identify which commercial software has been working for you and whether you've written any of your own customized applications. Fourth, give us a concise description of your business, how you started it, what problems you encountered, and how you dealt with them. Also, it would be interesting to know approximately how much start-up capital it took to get things rolling.

Please don't be overly concerned with prose or spelling. We're not asking for a polished article but rather a good description of your business. Any examples of charts, graphs, spreadsheets, or other visual tools that you use day to day would be helpful. Photographs, if handy, are great, but don't let their absence stop you from writing to us.

Send everything to me, Paul Quinn, c/o *inCider*, 80 Pine Street, Peterborough, NH 03458. Admittedly, it might take you an hour or two to write this stuff down, so we're prepared to make it worth your while. If we use your information in the magazine we'll pay you $75. Fair enough?

These are exciting times for the entrepreneur. We are witnessing the coupling of powerful, yet inexpensive technology with the dynamics of the free market. The world may never be the same again.■

by Paul Quinn

It Speaks For Itself

now with audio learning cassette

"... a super database from Precision Software ... this is one of the best of the lot." RUN magazine, May 1984)



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Consumer Products Division
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Stamford, CT 06905
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LETTERS

You Should Have . . .

How about a typo-checker program for the programs presented in *inCider? Softalk* has "S.W.A.T.," *Nibble* has "Key Perfect" (for a price), and *Core/Hardcore Computist* has "Checkbin" and "Checksoft." The latter programs, by Robb Canfield, took two issues to get right, but they are my favorites. They give a check on each line of Applesoft and every eight pairs of code in binary (more frequent checks than "Key Perfect"). They are easy to load (easier than "S.W.A.T."). I recommend them for your consideration.

I would like to join the many who have endorsed the bar code reader. I wrote to Databar Corporation, 10202 Crosstown Circle, Eden Prairie, MN 55344, after seeing a product description in *Family Handyman*. I asked them if they had a bar code reader for the Apple/Franklin line. They sent information on the OSCAR. None of the literature mentions use of the Apple/Franklin, so I assume it will not work for me. It does seem to be a good product, and with the right push of like-minded entrepreneurs, it might be adapted for our needs. Please keep the interest up.

James P. McHenry
Legal Services Support Office
3d FSSG
FPO San Francisco 96604

Advisor Advisory

Your magazine, I'm sure, is read by prospective buyers of computers as well as regular users. I would like to bring to public eye the incompetence of *some*, only some, so-called "computer advisors." They advise prospective buyers of computer software or hardware, mainly for businesses. When I talked to a local computer store owner, he said that many people who come in must ask questions and admit later to be "training" to be computer advisors. Some of these people obviously do not know their jobs and should be watched carefully.

If you decide to consult a computer advisor, you should talk to two or three advisors and see if they all pretty much agree. Watch out if an advisor is pushing one brand. He/she probably isn't making money from that company, but it might be the only kind he/she knows about well. Talk to friends about what products they like and what they think of the products an advisor recommends. Store owners are not good to talk to. Their next sale is the most important. Good computer magazines publish software reviews that can help in purchases.

Eric Tully
20 Henderson Drive
Avon, CT 06001

Sound advice, Eric. Also, another very effective safety measure is to request from the prospective consultant a brief list of references . . . and then check 'em out. —*eds.*

Codifying BASIC

While I fully agree with much of what Dan Bishop writes in his column in your June issue regarding the differences in machines (e.g. control key placement, escape key placement), and while I agree that manufacturers must strive for conformity rather than individuality in the enhanced BASIC languages, I feel that I must take exception to some of your examples.

Having cut my programming teeth on a government system and then moving to a more controlled shop at CompuServe before setting out on my own, I can state unequivocably the need to maintain a set of standards in programming. I fully applaud the change in the FOR . . .

NEXT loop application. To have anything else could, and most often does, result in programming suicide. However, why anyone would want to simultaneously end three FOR...NEXT loops in one step is beyond me. Anyone doing applications programming is aware that the client often needs to change or add to existing software. If standards are not maintained, these changes can be very time consuming. The time it takes to type one rather than three NEXT statements is insignificant compared to the extra time needed to alter the program if additional code is required between NEXT statements. While it might be possible for the expert programmer to understand what an IF...THEN...ELSE...ELSE statement is doing, it is not probable that a client's computer staff would be able to understand this sequence should a problem arise when the "expert" is not available.

I am a very strong believer in clearly defined programming standards in all programming. It is unnecessarily complex code only serving to confuse the client's computer staff that causes the need for expensive and time consuming modifications at a later date by the original programmer. I can best serve my clients (and therefore myself with additional programming contracts as well as glowing recommendations) by developing not only clear user-friendly software, but also with a product that can easily be modified as their needs change.

Amy Grunat
1611 Michelle Court
Greenwood, IN 46142

Mending Apple Writer

"Apple Writer Patchwork" (June 1984) was great, but perhaps a bit misleading, and probably unnecessary for most applications.

The article assumes that Apple

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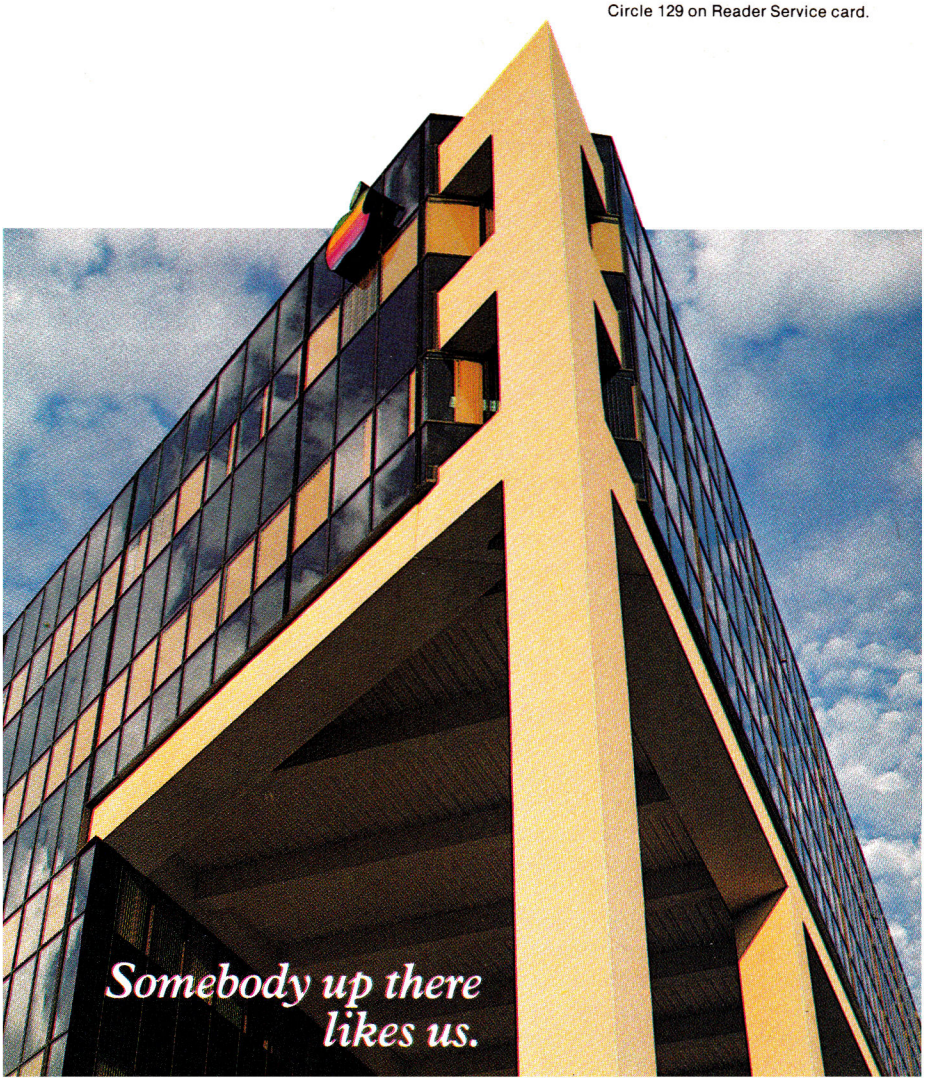


The people at Apple® should know a good peripheral when they see one. And when they developed ProDOS™ to upgrade the Apple II line, they made it automatically recognize and read Thunderclock.

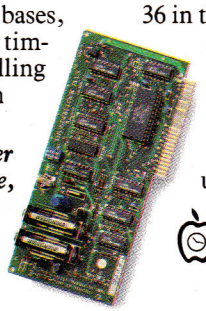
Not surprising, when you consider Thunderclock's long list of useful applications. In the office, the lab and at home. It starts with time and date stamping disk files and just keeps growing. To automatically accessing data bases, sending electronic mail, timing experiments, controlling your sprinklers and even tracking satellites.

The fact is, the better you are with your Apple, the more useful Thunderclock becomes.

Thunderclock adds a new dimension to all the new ProDOS-based software (like APPLEWORKS™ and WORD JUGGLER IIe™). And gives you access to the time from years down to milliseconds. It comes with a one-year warranty and never misses a tick. On-board batteries keep it running for up to four years before you snap in a new pair.

So if you want to make ProDOS really produce, turn to page 36 in the *Basic Programming With ProDOS* manual. Then get yourself a Thunderclock. You'll see why somebody up there likes us.

See your dealer or contact us today.



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LETTERS

Writer will not accept most control characters. This is not true. All you have to do is use a control-V before and after the control character to have the computer respond to it. You can build a glossary very easily with a series of commands for your printer. I have built such glossaries for both my Gemini Star and Brother HR-15 printers. The procedure is simple—you build a printing glossary in memory, save it as a text file, and then load it from disk into the glossary buffer when you want to use it.

You can even buy printing glossaries. I've seen ads for them in some computer publications. They are so easy to make that I see no real need to purchase one. Both of the Apple Writer manuals explain control characters as text entries—see page 51 of the Apple Writer manual.

It is a good idea to combine your printing glossary with a glossary of the most common phrases you use. The glossary is one of the most powerful and convenient features of Apple Writer.

Richard P. Lague
18434 Bermuda Street
Northridge, CA 91326

I greatly appreciated "Apple Writer Patchwork" (June 1984). However, my Apple II Plus (64K, 1981) refused to run the program in the form it was published. I made it run with the following changes:

```
239 PRINT
240 IF A$<"A" OR A$>"Z" THEN
    B$="LI":GOTO 400
610 A=ASC(MID$(C$,J,1))
615 IF A=32 OR (A>47 AND A<58)
    THEN NEXT J:GOTO 800
```

I thank you all. This is exactly what I was waiting for.

Constantin M. Osol
59 Travers Avenue
Yonkers, NY 10705

Innovative Isn't the Word

I don't think Sam Whitmore's piece on Electronic Arts (May 1984) went far enough in saying that it (EA) "displays no more character than most of its rivals." In my opinion it displays much less and results in a sanctimonious odor.

The article says the EA sells its software directly to retailers, skipping the middleman—presumably the distributor. Then as justification for the policy, EA's president, Trip Hawkins, says, "Distributors are concerned most with turning over their inventory. By law they're not required to observe your (his) suggested list price." What Hawkins is really saying is that they're going to engage in legal price fixing and trade restraint by selling only to those people he knows will sell at full list. Yet at the same time, part of his so-called innovative marketing method is to package his product so it doesn't require a demonstration. So why sell at full list if the product doesn't need dealer support?

Additionally, EA *does* sell to distributors. When our company made an inquiry to become an EA dealer, we were told to contact their local distributor, who in turn informed us they could not sell to us because their dealer agreement with EA forbids the sale of EA's products by mail order. Yet in the same issue of *inCider* that Whitmore's article appeared, there were four or five mail order software houses offering EA's products!

Mail order houses can afford to sell a variety of products lower than the software retailer can, because in the main, their costs are less and they are able to pass those savings on to the consumer. If Mr. Hawkins himself says that his products do not need retail demonstrations, then his marketing efforts are designed purely to increase his company's profits at the expense of the consumer who winds up getting fancy packaging with no increase in value. Indeed, if his idea is to "presell" his programs, all the more reason the consumer shouldn't have to shell out extra dollars to support his marketing programs. The bicountenance odor is overwhelming, Trip.

Richard M. Hausman
Appleseed Software
1103 Regent Street
Alameda, CA 94501

ProDOS Primer Needed

I recently updated my Apple //e with the new Apple ProDOS operating system. While my Apple is adapting quickly to ProDOS, my mind is still working with DOS 3.3. A quick search through my computer magazines told me that all of the writers must also still be working in DOS 3.3 because I was unable to find any articles on the subject.

"The Compleat Text File Primer" series by Lee Swoboda is an excellent and well written tutorial on DOS. A follow-up article on ProDOS would be a natural continuation to the current series. I know that many others like myself would appreciate any articles that you might publish on the new disk operating system.

Edward R. Verdelotti
216 Missimer Lane
Vinton, VA 24179

Great minds think alike. The response to Lee Swoboda's "The Compleat Text File Primer" has been so favorable and enthusiastic that Lee is working on a ProDOS follow-up. inCider *readers can look forward to his next series within the coming months.*

—eds.



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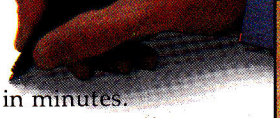

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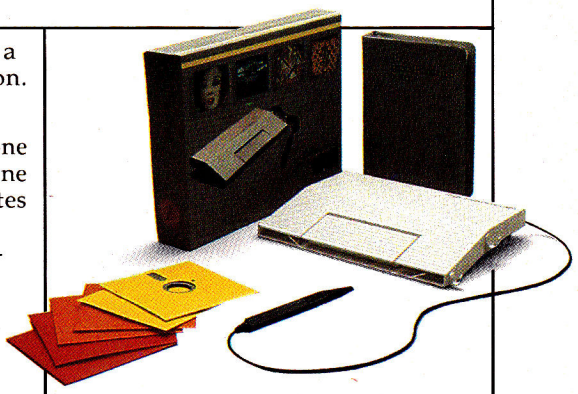

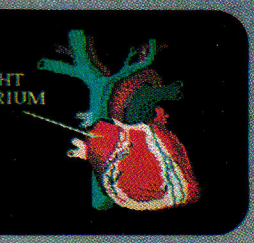

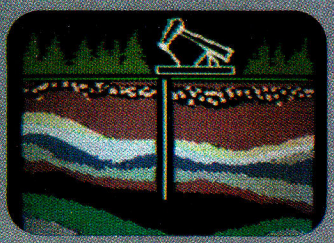



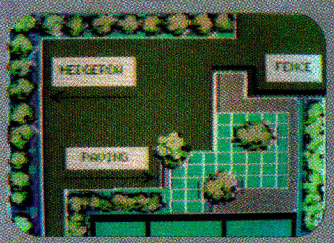

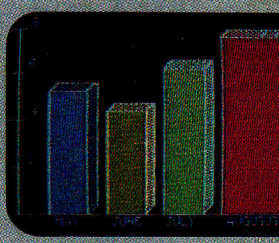

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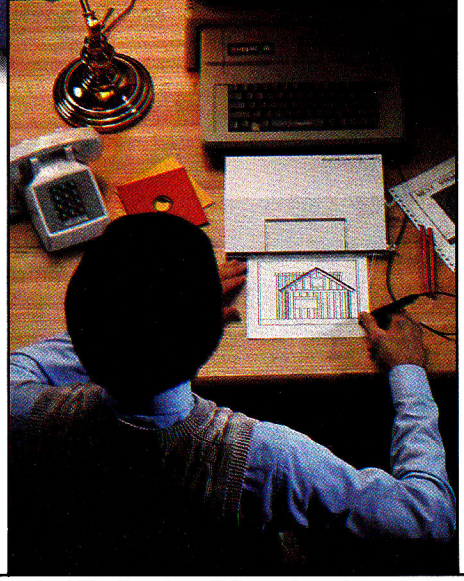

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Farmers' Software Library

Put the *Farmer's Almanac* aside. Agri-Source updates agricultural how-tos through its public domain software library.

The library has nine volumes of agricultural information ranging from livestock to crops to major accounting. Each volume contains three to 12 spreadsheet templates or programs. At $10 a volume, Agri-Source programs are available for the Apple, IBM PC, Commodore 64, and Radio Shack Models III and 4.

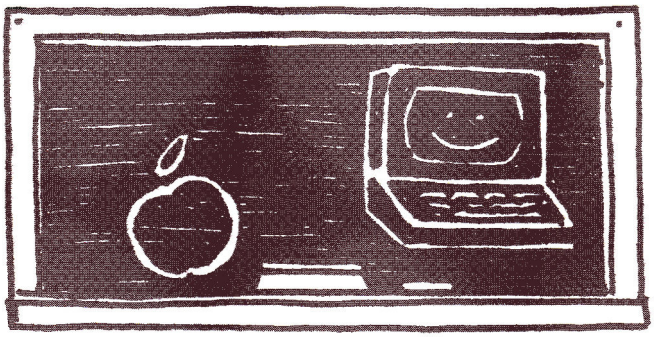
"Response has been terrific," Agri-Source Editor Diane Walkowiak said. "We've been pleased since we've done no major advertising. Half of our mail has been related to the library."

Started in November 1983, Agri-Source attempts to meet the technical needs of farmers across the country. Although computer use among farmers isn't growing as fast as predicted, Walkowiak noted that the technology is finally coming of age and is expected to increase in the next few years. Approximately 5 to 8 percent of farmers in the United States use computers.

Agri-Source also publishes a newsletter every two months to include additions and modifications to the library. For more information on how to obtain or donate software, write to Agri-Source at 3815 Adams Street, Lincoln, NE 68504.



Illustrations by Katherine Mahoney



Saturday's Child

Teen-agers equate Saturdays with free time—time to do everything, anything, or nothing. The last place you'd expect to find a rambunctious adolescent on a Saturday would be in a classroom. Yet Micro Lab, a midwestern software publisher, brought 15 of the top computer students from the Chicago public schools to its offices for six consecutive Saturdays. The all-day sessions were organized to teach advanced computer students Apple assembly language.

Micro Lab piloted the project in May and June. Judy Carter, a public relations consultant for Janet Diederichs and Associates, Inc., said the sessions were so well received by participating students that the program is being repeated this fall for a new crop of computer whiz kids.

Carter said Micro Lab President Stan Goldberg started the program because he believes "a company should do what it can to give students the opportunities no one else can."

Each Saturday from 9:30 a.m. until 4 p.m., students received instruction on Apple II's from a Micro Lab programmer. Carter pointed out that this was the students' first experience with Apples. What excited them, though, was that "they got to come to a real software company and ask questions of real programmers," Carter said.

Never on Sunday

Paramus, New Jersey, has got the blues—the blue laws, that is. Local ordinances make it illegal to conduct business on the Sabbath. And that includes computer work.

According to *USA Today* (July 12, 1984), a county judge refused to pull the law, but one company that uses computers in its operations wants to be exempted.

Until another ruling, the judicial powers of Paramus extol against Sunday computing in the workforce. For some, the blue law does not compute.

edited by Cynthia Carr

The Doctor Is On-Line

Lucy is everyone's favorite psychiatrist in Peanutsland, but what happens when personal problems require more than comic relief? Consult Timothy Miller, Ph.D., a licensed psychologist who started TelePsych, a counseling service offered through computer telecommunications.

Designed to serve clients who either can't see a counselor or can't afford one, TelePsych makes no pretense at replacing face-to-face counseling. Since telecommunications counseling is done via computer and modem, Miller notes that it tends to be less expensive than traditional counseling—especially for infrequent users with relatively minor problems.

Dr. Miller charges clients 7/10 of a cent per word in queries sent to him and two cents per word listed in his reply. The final billing works out to $50 per hour.

On-line 24 hours a day, TelePsych keeps client records confidential. Clients may call as frequently as needed and Miller responds to questions within seven days.

The doctor is in. Call (209) 473-8296 or write to Miller at 2155 W. March Lane, 2B, Stockton, CA 95207.



Helping Hands

For all those Applewriter //e users needing a little friendly advice, the Gila Valley Apple Growers Association maintains a helpline at (602) 428-4073. Except for standard telephone charges, the service costs nothing.

The association put together an eight-disk Applewriter //e "toolkit" to offer such worthy aids as patches for NULL, "shortline" and //c detrashing, microjustifying and proportional spacing, camera-ready secrets, disassembly script, source-code capturing, and answers to the most frequently asked helpline questions.

Stop pounding on the keyboard and call weekdays between 8 a.m. and 5 p.m., Mountain Standard Time. Write to the association at Box 809, Thatcher, AZ 85552.



Get Down!

And a one, and a two. . . would-be composers now sit down to their Apples for a few bars of melodious harmony. According to a recent *Newsweek* article, more computers are becoming equipped to handle musical programs. Limited sound reproduction, however, keeps musical programs tuned for entertainment and education.

Newsweek reported that with a commercially available disk and a keyboard synthesizer connected to a computer and a stereo system, users can compose on the keyboard or can play along to sheet music on the computer screen.

Among the first disks on the market is Michael Jackson's record-breaking album, "Thriller." Through Hal Leonard Publishing and Passport Designs computer musicians get the disk, lyrics, and music for approximately $30. (Disks are available for the Apple II or Commodore 64.)

Here's to making beautiful music with your Apple.



Dear Penpal

Problem: An empty mailbox.

Solution: Get a penpal. And if you're into Logo, so much the better.

The National Logo Exchange, a monthly newsletter for teachers who use Logo, established a Logo Class Penpal Network for the 1984–85 school year. The idea is to match Logo teachers and classes with their counterparts in the United States, Canada, or overseas countries. Logo penpals are matched according to grade level, experience, interests, and computer compatibility. Students learn Logo while exchanging ideas, procedures, and projects.

For a free application kit, send a long, stamped, self-addressed envelope to The National Logo Exchange Logo Class Penpal Network, P.O. Box 5341, Charlottesville, VA 22905. (Outside the United States, include international postage for one-ounce air mail.)

What's going on in your corner of the Apple world? Spread the word through The Cider Press, inCider, *80 Pine Street, Peterborough, NH 03458.*

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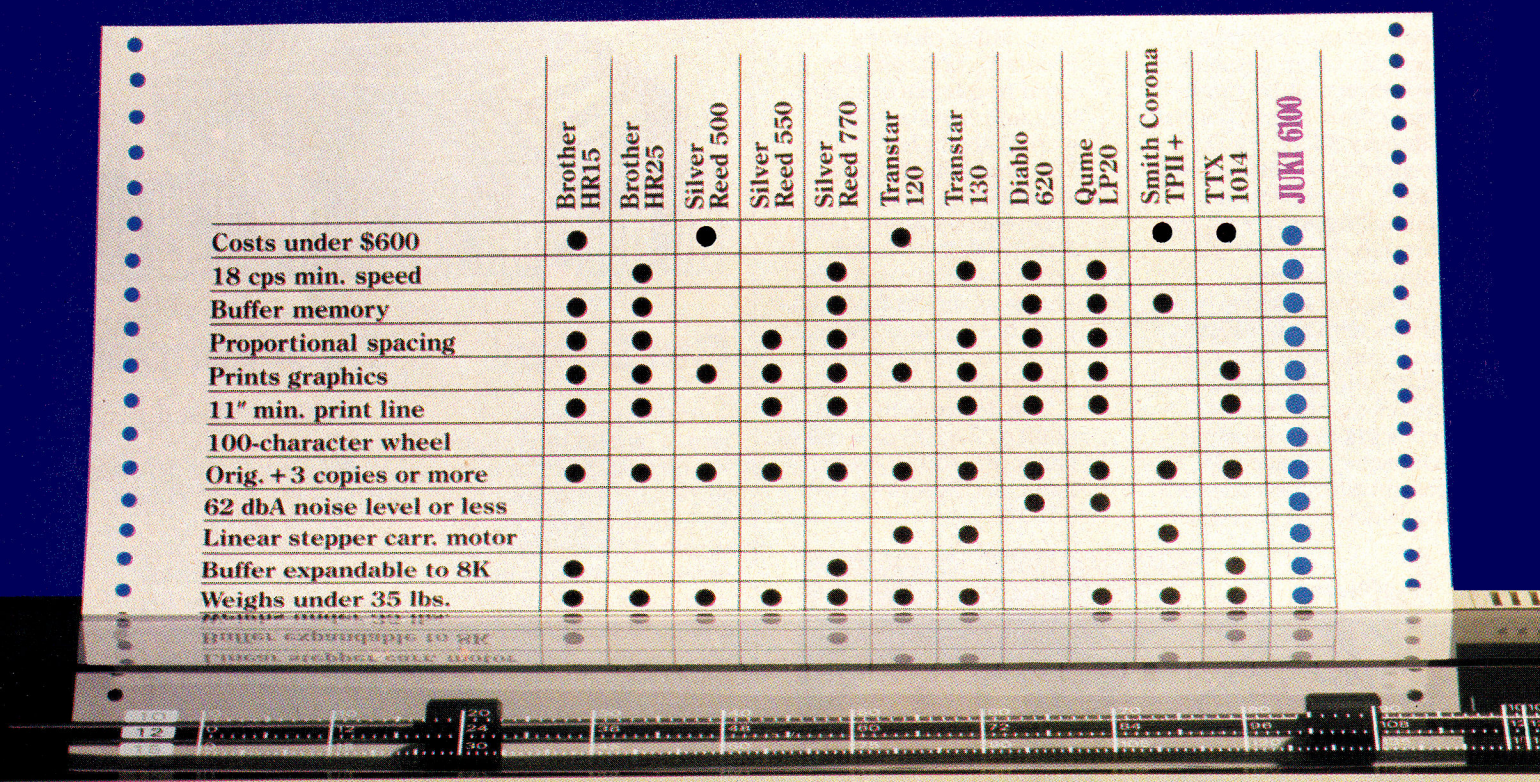

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Prints graphics	●	●	●	●	●	●	●	●	●		●	●
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100-character wheel												●
Orig. + 3 copies or more	●	●	●	●	●	●	●	●	●	●	●	●
62 dbA noise level or less								●	●			●
Linear stepper carr. motor						●	●			●		●
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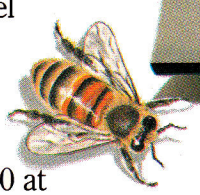

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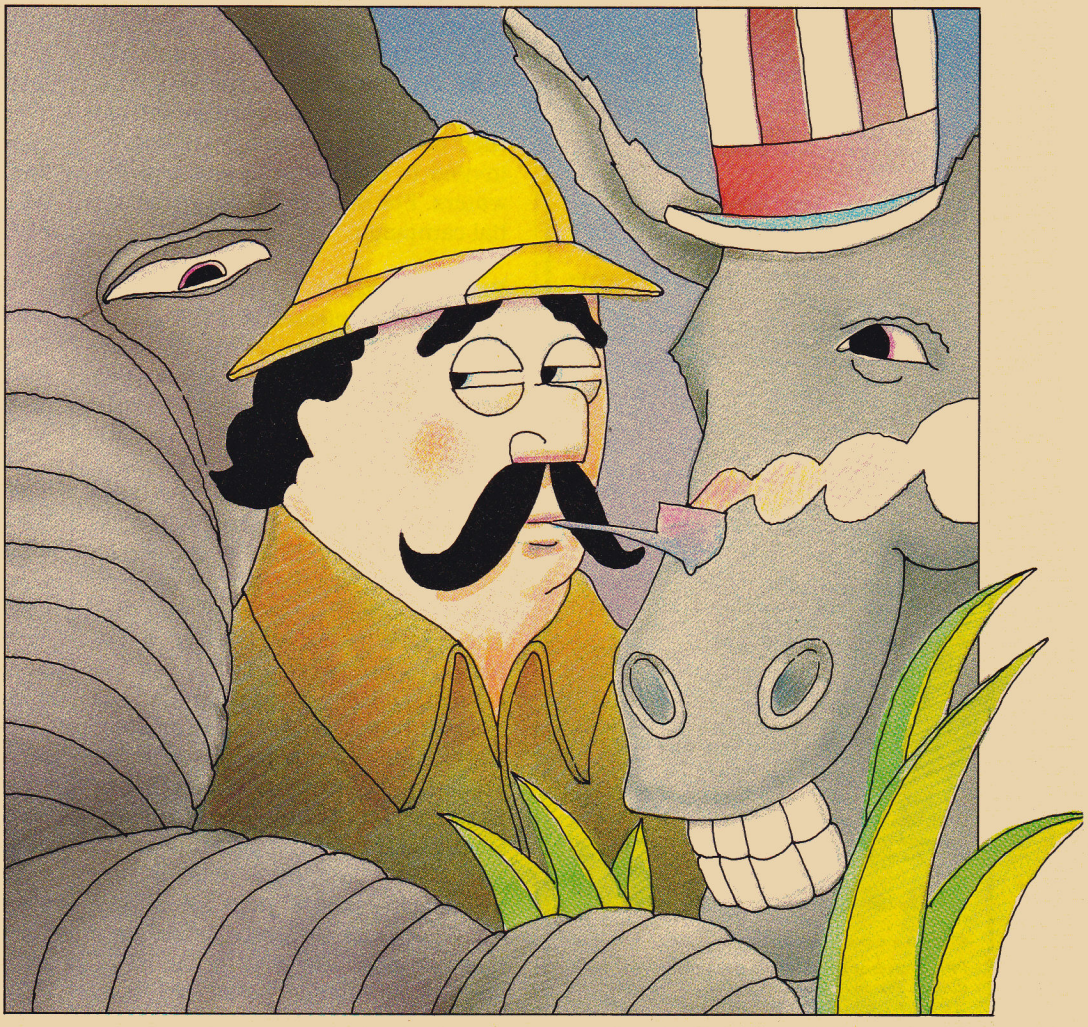

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Dusk on the plains of the magnificent Game Reserve. Bathed in the ruddy light of the setting sun, the base lodge sits solitary in a copse of banyan trees. On the veranda of the house lounges a solitary figure, his feet propped up on the railing, his safari shirt open to the breeze, and his mustache damp from the refreshing tumbler of Old Rhino (on the rocks with soda) clutched in his gnarled fist. Who might this romantic, if somewhat somnolent, figure be? Who else but Warden Shiftky of the Game Reserve.

While the world swirls in the confusion and conflicts of a presidential election, I spend my time calmly sipping Old Rhino and soda, Rhinomakers, and Old Rhino straight up. I'm not influenced by the commotion of the Reagan-Mondale race because I know who is going to win. Such foresight has prompted a visit to my bookmaker to back this prophecy with a financial token of faith.

I know that Reagan will carry every state, though not the District of Columbia.

Are the hyenas getting too close to the lodge, or is that your derisive laughter reaching my ears? Sure, some of you may say, Reagan seems the likely winner, but by a margin that disproportionate? Has the Warden been hitting the Old Rhino a little too hard?

Not at all! I have a few political

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blind spots, but my scientific method is flawless. I would not make such an outlandish political prediction if it did not come from the highest authority—the mighty 64K mind of my Apple II computer.

Simulations, war games, and fantasy/adventure will be the topics of my rantings and ravings for this column and for those of the next two months or so. Arcade gamers will get their due in January, but are hereby invited to stick around and test the waters. For now, on to the presidential campaign.

President Elect

SSI has re-released a 1981 game: President Elect by Nelson Hernandez. Now I don't usually draw your attention to games that are nearly four years old without good reason. In this case, my good reason is that it seems like fun to simulate the results of the November election with Reagan taking on Mondale. It also seems entertaining to see how well this game has held up since it was first introduced at the beginning of the Reagan administration.

First of all, the game prompted me for the names of the Democratic and Republican candidates. I selected Mondale and Reagan. In the list of available candidates, Senator Gary Hart doesn't even appear. Nor do any other Democrats seeking the nomination only a year ago except for George McGovern. McGovern's name appears for use in the 1972 election simulation—elections from 1960 on can be simulated. No matter what anyone else thought, it was pretty clear to Mr. Hernandez whom the Democrats would pick in 1984. Also, there is no way to test the impact of a vice-presidential candidate who is a woman.

So, placing Mondale in the November sweepstakes proved to be no problem, but putting Jesse Jackson in the race as a third-party candidate was. (Jackson didn't run, but I wanted to simulate the effect of his supporters staying away from the polls.) When asked for the last name of a third party candidate, I typed "JACKSON" and the machine replied "HENRY?" Obviously, data on Jesse Jackson had to be built from scratch.

It wasn't as hard as you might think. The program asked several questions about the simulated Jesse Jackson's qualities as a campaigner and his beliefs as a politician. To what degree, I was asked, does Jackson support the Equal Rights Amendment? How good a speaker is he? How does he stand on school busing? Disarmament? Civil Rights? Taxes? Recognition of the P.L.O.? I answered those questions accurately and the result was a candidate at the far left of the liberal spectrum. As for Reagan and Mondale, the program supplied its own models.

Next, I had to supply details of current domestic and world situations. How is the economy doing? What is the rate of inflation? What is the rate of unemployment? What is the international situation?

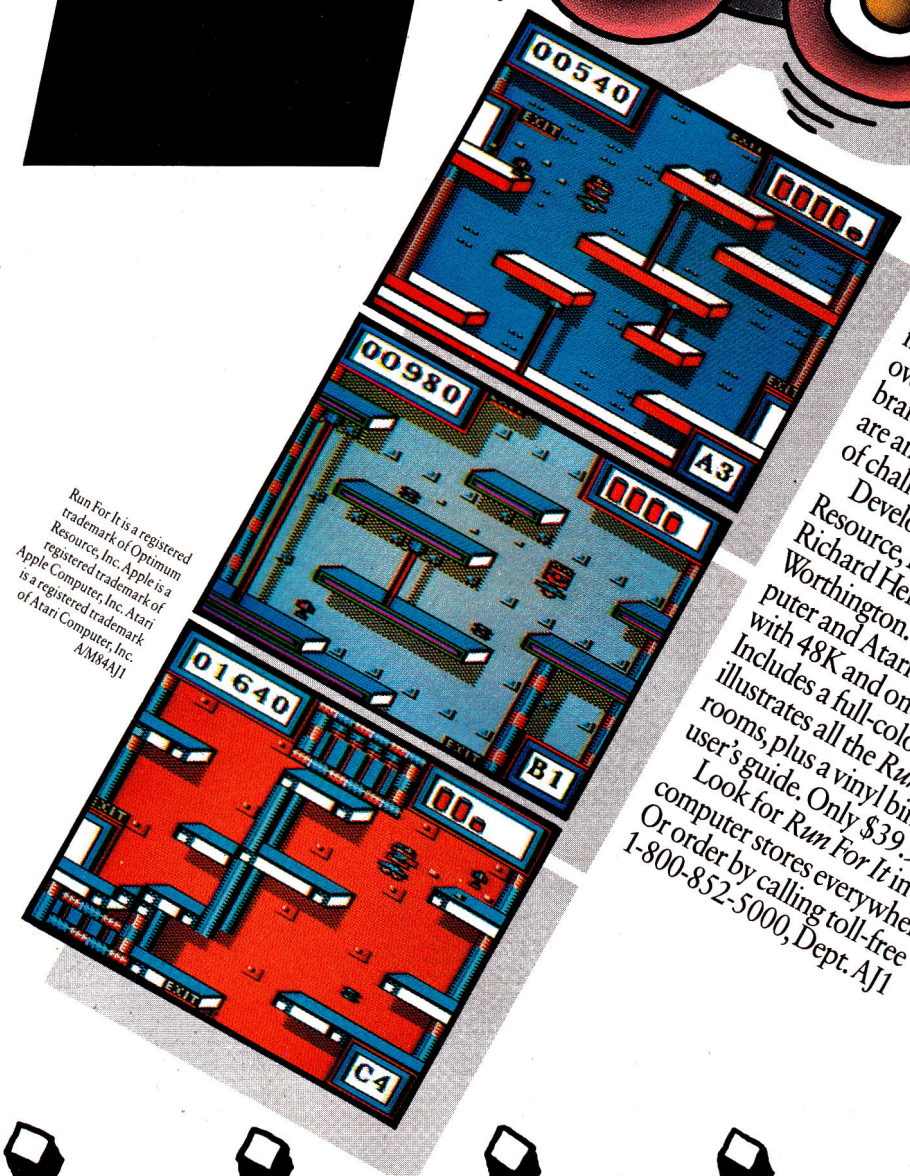
Then I began the simulation in earnest, letting the computer run the Mondale and Jackson campaigns while I ran Reagan's. A hi-res color map (**Photo 1**) told me that Reagan was likely to carry almost every state in the union, except for Massachusetts, Rhode Island, and Mondale's native Minnesota.

The campaign was divided into nine week-long turns, during which I allocated financial resources for advertising. The computer's allocation of these funds was based on electoral votes. For example, Illinois, with 26 electoral votes, always got more advertising bucks than nearby Wisconsin, with only 13 votes. My allocations stressed regional efforts in New England, the Middle Atlantic states, the South, the industrial Midwest, and the Pacific Coast. Individual states getting special allocations included Illinois, Texas, California, and New York, as well as the trouble spots of Massachusetts and Minnesota.

Aside from campaign spending, the incumbent has other tools to ply: debates, foreign trips, and campaign tours. The simulated Reagan's one trip abroad to a friendly country had a positive effect on public opinion. Reagan won two debates with Mondale in the opinion of both the press and the public. Finally, Reagan's campaign trips took him twice into New England, the South, the industrial Midwest, and the Pacific Coast.

Run For It™





Can you help ORBIT the Robot flee from room to mazelike room in his daring, thrill-a-second effort to escape the bad guys? With *Run For It's* amazing 3-D effect, you'll want to step right inside the screen to make sure ORBIT reaches the end of his dangerous journey! You can make ORBIT bounce up or scrunch down as he climbs from level to level in order to avoid his enemies—and fires powerful missiles of his own! The special effects on this brand-new arcade-like game are amazing—and a new kind of challenge for game players. Developed by Optimum Resource, Inc. Designed by Richard Hefter and Steve Worthington. For Apple® Computer and Atari® Computers with 48K and one disk drive. Includes a full-color poster that illustrates all the *Run For It* rooms, plus a vinyl binder and user's guide. Only $39.95 each. Look for *Run For It* in finer computer stores everywhere. Or order by calling toll-free 1-800-852-5000, Dept. AJ1

Run For It™
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A/M84AJ1

What was the result? At the end of each week, the "Intelligence Report" (**Figure 1**) showed that support for Mondale was gradually slipping. Each debate hurt him, but his concentration of spending during the first three and last two weeks of the campaign was especially damaging. International and domestic news broke in favor of the president, with no major blunders or gaffes committed by the Reagan camp to save the Democrats at the last minute.

The end result, as Campaign Manager Shiftky noted with satisfaction, was a massive Reagan landslide, with Ronnie collecting 535 of 538 electoral votes and a 67 percent majority of the popular vote. Mondale won the District of Columbia where, if he wishes to salvage his political career, he could presumably run for mayor.

I am confident of this outcome. Why, I hardly think it's necessary for people to vote at all—a mere formality. Still, if enough people were perverse enough to ignore these infallible conclusions and vote for Mondale, Jackson, or anyone else, anything could happen!

Figure 1. *Summary of election simulation by President Elect.*

```
NOW STARTING THE WEEK OF
SEPT. 29 - OCT. 5, 1984

AS OF LAST WEEK, THE AVERAGE NATIONAL
POLL GAVE THE FOLLOWING PERCENTAGES AND
PROJECTIONS FOR EACH OF THE CANDIDATES:

          MONDALE          36%
          REAGAN           63%
          JACKSON          1%

PROJ. ELECTORAL VOTES:

          MONDALE          3
          REAGAN           535
          JACKSON          0
          TOO CLOSE TO CALL 0
```

Ringside Seat

Have you ever been in The Argument? You know, the one where someone says "Listen, Jack Dempsey was the greatest heavyweight boxer in history. Look at the way he came back against Firpo after he got knocked outta the ring." Then another voice chimes in, "Oh yeah? Well, what about Joe Louis? Remember how he came back after losing that one to Max Schmelling? He kayoed the German in the first round." And a third jumps in with, "You're both wrong. Muhammad Ali is the greatest of all time. Look how he took apart Foreman in Zaire. Look at those last two fights with Smokin' Joe Frazier."

Of course The Argument is impossible to settle. None of these fighters was active in the others' eras. That leaves the question of ultimate ring superiority to sports writers, convivial clusters of fight fans, and Carl Saracini, who has devised a simulation to settle these arguments once and for all: Ringside Seat.

Ringside Seat lets you match the top fighters in every major weight division (bantamweight, featherweight, junior lightweight, lightweight, welterweight, middleweight, light heavyweight, and heavyweight) from the 1920s to the 1980s. The extensive list of simulated fighters even includes Gerry Cooney and Leon Spinks!

Want to match Sugar Ray Robinson against Sugar Ray Leonard in a battle of the boxing scientists? Want to pair off Rocky Marciano against Dempsey in the ultimate heavyweight sluggers' match? How about Muhammad Ali against Joe Louis for the "Greatest of All Time" crown? They're all possible, as are interdivision fights. Imagine a slugfest between Marciano and Roberto Duran. I simulated this with the game and the result was a narrow win for the Rock. Imagine the great Ray Robinson against Ali in his prime. Multi-million dollar match-ups are the norm in this game, as are match-ups of lesser known lights in the fistic world designed to settle arguments between true aficionados.

The simulation rates 26 qualities of a boxer, ranging from style, defense, and speed to such factors as ability to stick and move, to protect cuts, and to follow up a good combination. Select your fighters from the game roster or from a disk of fighters you construct. The computer can control either or both of the fighters.

When each round begins you select a strategy for the round. The choices are: (1) Flat-footed, (2) Cover up, (3) Charge in, (4) Stick and move, (5) Stay away, (6) Go for the KO, and (7) Protect cuts. The computer selects the other fighter's strategy.

As the bout progresses, "Blow by Blow" and "Color" commentaries below the hi-res image of the two fighters (**Photo 2**) let you know what damage is being inflicted and the probable opinion of the computer "judges" who are scoring the fight on the 10-point "must" system. The handling of this aspect of the game is adroit. Such details as knockdowns, slips, and knockouts are described and used realistically.

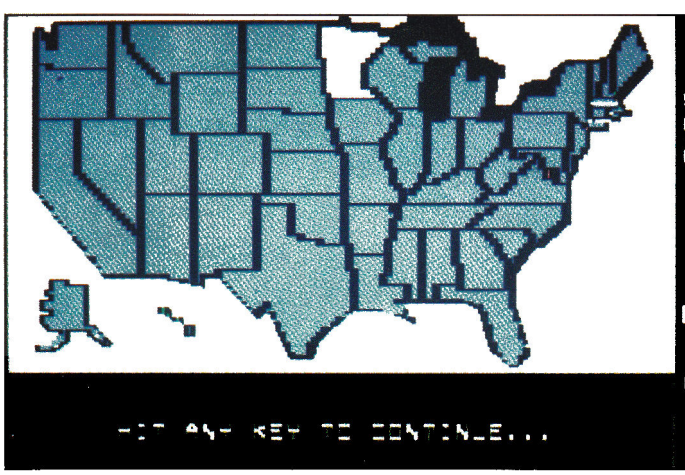


Photo 1. *Map of poll results from President Elect.*

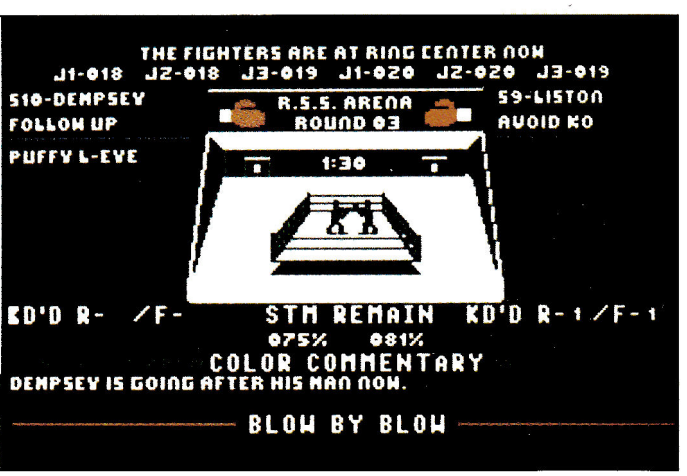


Photo 2. *A dream bout from Ringside Seat.*

"The end result, as Campaign Manager Shiftky noted with satisfaction, was a massive Reagan landslide, with Ronnie collecting 67 percent of the popular vote."

As the boxers suffer cuts, swollen eyes, and other marks, appropriate notations are made on screen. This record-keeping is an important facet of the game because if a streaming cut blinds a boxer and if the "cut man" in his corner is unable to stanch the flow, the referee will declare a TKO and end the fight.

As the battle seesaws you'll want to change your strategy. If your boy is a boxer, and not a slugger, you may want to stick and move during the early rounds to tire out your opponent. You can stick for four consecutive rounds at a stretch, stinging and wearing down your man, and then go for the KO later on. If your boy is a slugger, you can charge in or even go for the KO in the early rounds to inflict early damage from which the other man won't recover. Then you can stick and move to protect your lead.

Results depend upon how well you manage your fighter as well as on luck, but if you pick the right strategies and the match isn't too lopsided (Willie Pep versus George Foreman, for example) your guy will prevail. The decision will be rendered by the judges, whose cards are displayed at the end of the bout. You win or lose in all the traditional ways: decision, unanimous decision, TKO, and KO.

In some of the dream matches I tried out, the results were interesting. Marciano bowed to Ali. Ali destroyed Dempsey. Duran lost on points to Marciano, and Louis to Ali. Having settled those disputes, let's argue about something else.

Statis-Pro Baseball

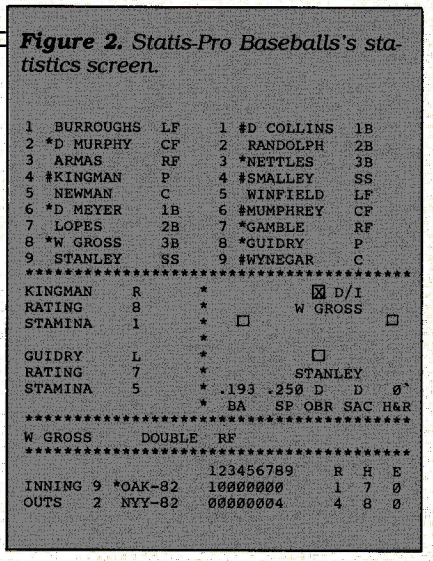
How about baseball? If there's one thing the die-hard fan seems to like more than hypothetical baseball match-ups, it's fiddling with statistics to prove that, say, Babe Herman was a greater offensive player than Rabbit Maranville in certain situations, or that Pepper Martin's base running was more effective when it counted than Maury Wills'. The presence of a book of baseball statistics on the best-seller lists this past spring says it all.

The fact is, you can prove just about anything with statistics, as Avalon Hill's Statis-Pro Baseball demonstrates. In this baseball simulation, it's not the strategy of the game that stars (though it is most certainly a factor), but the statistics themselves, which flood the screen at all phases of the exercise, dwarfing the diamond.

The game comes supplied with the major league teams of 1982. That was the year the Cards beat the Brew Crew in the World Series, if you'll recall. The game also supports team files you create yourself.

When you choose two teams to oppose one another in the game simulation, you have to keep your eye on more than the ball. For each player, 20 different performance statistics are recorded. There is batting average, of course, but also favorite position, fielding percentage, on-base running ability, stolen base running, clutch hitting, clutch defensive ability, ability to hit sacrifices, and more. For pitchers, 16 additional factors complete a full portrait of the athlete's ability, including: throwing arm, ability to control a game, history of hits, walks, strikeouts, wild pitches, and fielding percentage. These numbers assume a key role in determining the outcome of every play.

Figure 2. *Statis-Pro Baseballs's statistics screen.*



In the game itself, pertinent statistics are always within your reach to help you decide on player strategies. As a batter comes to the plate, you'll see ratings of his batting average, slugging percentage, on-base running ability, sacrifice hitting, and hit and run abilities. At the same time, the pitchers' stats let you know how much stamina the hurlers have left and their current abilities to control the game.

Now one thing must be made clear at this point: You do not play against the computer. You and a friend may play while the computer umpires the game, or you can manage both sides. Strategy options for the offense include: bunt, sacrifice, steal, hit away, squeeze play, and hit and run. Defense options are intentional walk and infield in.

Okay, so the defense doesn't have a lot of strategy decisions to make, but if things get boring, the manager can always pull his pitcher or substitute for one of the other fielders. The manager on offense can also use this option to put pinch hitters into the game.

At the end, you are greeted with what? Statistics! In fact, you get a whole box score's worth. My "Dream Match-up of the Cubs vs. the Red Sox" ended with a one-run Cubs' victory. Dennis Eckersley was knocked out of the box after two-thirds of the first inning—a typical Red Sox performance. (You get them into the World Series and they still lose.)

Statis-Pro Baseball is not your game if you like graphics or anima-

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tion: there are none (**Figure 2**). But if you love the lore of baseball stats, if you yearn to manage a team of your own, this is your game. You should note that as your "season" progresses the stats your players collect will be included in their permanent files, adjusting their ratings and their play as time goes by. Now that's realism.

Relax and enjoy. That's the Warden's motto. Remember, George Steinbrenner can't fire you, no matter how badly you fare.

Things to Come

Well, the sun has set, the tumbler is empty, and the Warden has business inside the lodge. In future months I'll take you on a trek through some unusual war game simulations, including two from a little-known company called Simulations Canada, two SSI recreations of the Eastern Front in World War II, and a high-seas adventure in quest of the Graf Spee by Avalon Hill. Next month, we'll check out a superb flight simulator. For now, aloha. ■

Product Information

President Elect
Strategic Simulations, Inc.
883 Stierlin Road
Building A-200
Mountain View, CA 94043
$39.95

Ringside Seat
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883 Stierlin Road
Building A-200
Mountain View, CA 94043
$39.95

Statis-Pro Baseball
Avalon Hill Game Company
4517 Harford Road
Baltimore, MD 21214
$35

Are You Another Rembrandt?

"Painting" by P. Thompson.



How would you like to find out if you're a born computer artist? Well, with the program presented in this article you'll have your chance. Of course, "computer artist" may sound like a strange job title, but keep in mind that many microcomputer software companies do employ artists to create graphics pictures and shapes using many types of utilities and peripherals.

The program is called CAD.PAINT and comes with two shape tables to use with it. The patterns defined in the PAINT shape table are the "brushes," so to speak, for your "painting." The ALLCHAR shape table provides upper/lowercase characters for labelling your hi-res creations.

If you plan to do computer painting and don't already have an appropriate program, you might find CAD.PAINT useful. However, note that it requires game paddles for its operation.

Key in and SAVE CAD.PAINT (**Listing 1**), then key in and BSAVE PAINT, A2048, L502 (**Listing 2**) and ALLCHAR, A4096, L1272 (**Listing 3**).

If you don't care about having upper/lowercase for labelling pictures, don't bother with ALLCHAR and omit line 15 in CAD.PAINT so the program doesn't attempt to BLOAD the ALLCHAR file. Also, if you've already BSAVEd ALLCHAR from my July 1984 column, you needn't resave it here.

If you're new at BSAVEing files, here's how, using ALLCHAR as an example. Type CALL-151 and press return. Then, since the first line in the file is 1000- 7E 00 FE 00 00 01 06 01, type 1000:7E 00 FE 00 00 01 06 01 and press return again. Do the same for the rest of the lines,

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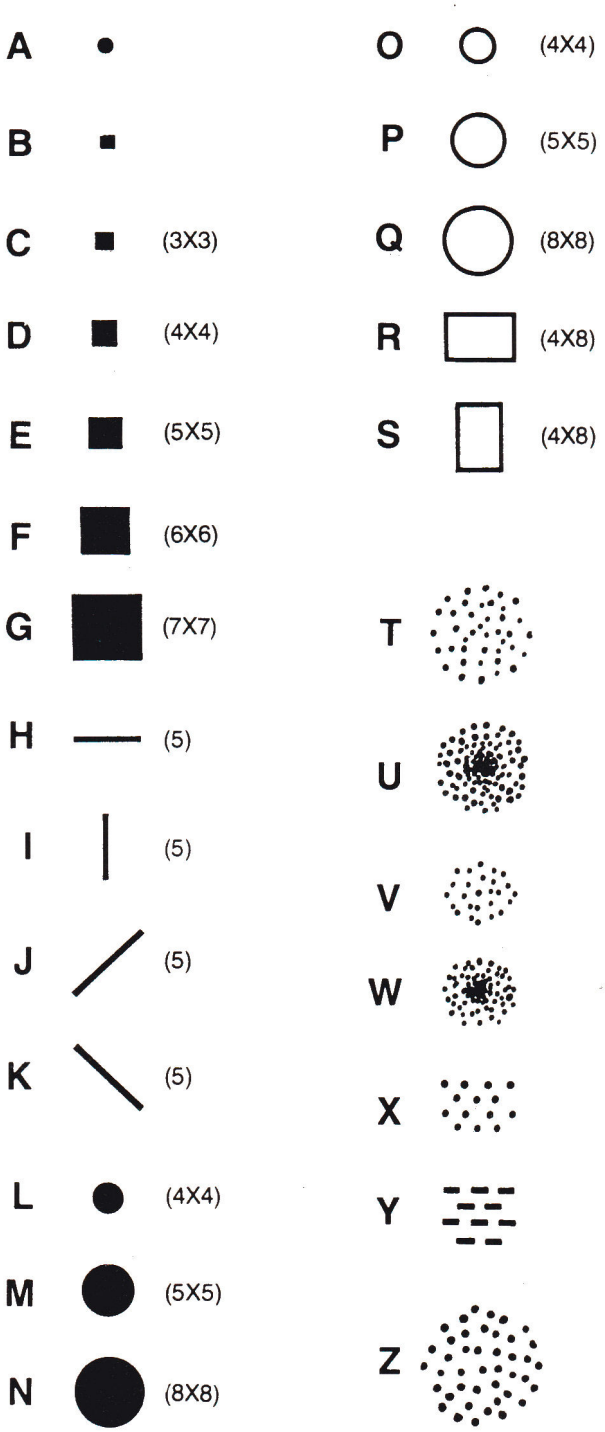
then type BSAVE ALLCHAR, A4096, L1272 and press return once more.

Remember that before loading or running CAD.PAINT you must do POKE 104,64 and POKE 16384,0 to ensure that the program does not step on toes in memory. Using the following lines as a hello program will do the trick:

```
5 POKE 104,64 : POKE 16384,0
10 D$ = CHR$(4) : PRINT D$ "RUN
   CAD.PAINT"
```

Figure 1. *"Brushes" to be used by CAD.PAINT. These patterns are defined by the PAINT shape table.*



CAD.PAINT Features

I constructed CAD.PAINT as a generalized CAD (computer-aided design) utility so its applications wouldn't be limited to painting. You can use the brushes I included in the PAINT shape table (**Figures 1** and **2**) or, if you prefer, create a new table of 26 shapes with a shape-drawing utility. Whether you use my PAINT shapes or your own, no changes in CAD.PAINT are necessary. Press any letter key (A–Z) to instantly see your shape on-screen. Press paddle button 0 to paint the shape in the picture.

Holding down button 0 prints up to ten shapes per second, perfect for painting, but sometimes you may want to produce only one shape at a time. The space bar will do this if you add the following line to CAD.PAINT:

```
9003 IF PK = 160 THEN XDRAW D AT
     X%,Y% : RETURN
```

You can accomplish the same purpose by pressing button 0 very quickly, but it's quite tricky to do.

With CAD.PAINT you can create continuous or dotted lines between any two points, erase block-shaped screen areas (turning the entire screen a chosen color), choose either DRAW or XDRAW mode, print dots, choose shape and line colors, label your creation in either vertical or horizontal mode with upper- or lowercase characters, and print out pictures (if you have the right type of printer). The program menu appears in **Figure 3**.

Notice that saving, loading, and deleting 33-sector hi-res pictures are functions included as standard CAD utilities. Cataloging the disk and viewing the commands, both painting commands (**Figure 4**) and shape commands (**Figure 2**), are other options.

Using CAD.PAINT

CAD.PAINT is a "friendly" program. However, if you don't know how to use paddles, or don't yet know which inputs require pressing return, you may have to get someone to hold your hand while you're learning to use this utility. I've fixed it so as few inputs as possible require pressing return.

Menu options 0 (quit), 2 (delete), 4 (catalog), 6 (save), 7 (load a picture), and 9 (view the screen) are self-explanatory. C displays the painting commands, a list of which appears in **Figure 4**.

Option 1, PAINT A PICTURE, sends you to the painting mode. To draw a line, press the period key to define one end, move the cursor to where you want the line to end, and then press dash for line-draw—or use the semicolon key to create a dotted line. You needn't keep pressing period, for once you're drawing, the dash or semicolon command will automatically draw a line from the last point (or line-end) plotted to the present cursor position.

To erase areas, press the @ key and then follow the instructions. You'll be setting a user-defined block of the screen to color number zero, black1 (one of the Apple hi-res colors listed in the **Table**).

The DRAW/XDRAW toggle switch is activated by the colon key. To test it out, use the G shape (a 7-by-7 square) and place, with button 0, lots of squares partially overlapping one another. Then use the colon to continue the overlapping. Depending upon how long you hold down the button, the XDRAWn shape will produce black where two white areas overlap (shape white area and background white area), or it will erase a previously drawn block.

Option 3, PRINT OUT PICTURE ON PRINTER, will be useful if you have an Axiom, Silentype, or other printer that needs no extra software to dump the hi-res screen to the printer. Just enter the control character sequence needed and press return. If you have an Epson or other printer that requires a special software routine, press control-reset and

Figure 2. *CAD.PAINT commands for making "brush" selections from the PAINT shape table.*

A	DOT
B	2-by-2 SQUARE
C	3-by-3 SQUARE
D	4-by-4 SQUARE
E	5-by-5 SQUARE
F	6-by-6 SQUARE
G	7-by-7 SQUARE
H	HORIZONTAL LINE
I	VERTICAL LINE
J	N.E. DIAGONAL
K	N.W. DIAGONAL
L	BALL (4 WIDE)
M	BALL (5 WIDE)
N	BALL (8 WIDE)
O	CIRCLE (4 WIDE)
P	CIRCLE (5 WIDE)
Q	CIRCLE (8 WIDE)
R	HORIZONTAL RECTANGLE
S	VERTICAL RECTANGLE
T	LARGE PAINTBRUSH
U	LARGE-TIPPED PAINTBRUSH
V	SMALL PAINTBRUSH
W	SMALL-TIPPED PAINTBRUSH
X	DARKER PATTERN
Y	LIGHTER PATTERN
Z	VERY LARGE SCATTERBRUSH

Figure 3. *CAD.PAINT menu.*

(0)	QUIT
(1)	PAINT PICTURE
(2)	DELETE PICTURE
(3)	PRINT OUT PICTURE ON PRINTER
(4)	SEE DISK CATALOG
(5)	INSERT EXTRA LABELS
(6)	SAVE PICTURE TO DISK
(7)	GET STORED PICTURE FROM DISK
(8)	ERASE & GIVE BACKGROUND COLOR
(9)	VIEW SCREEN
C	SEE COMMANDS

Figure 4. *CAD.PAINT painting commands.*

-	LINE FROM LAST POINT PLOTTED
;	DOTTED LINE FROM LAST POINT PLOTTED
.	BEGIN LINE HERE OR DRAW DOT
@	AREA ERASE
:	DRAW/XDRAW TOGGLE SWITCH
ESC	SEE COMMANDS
RETURN	BACK TO PROGRAM MENU
BUTTON #0	PAINT WITH SHAPE
KNOB #0	HORIZONTAL COORDINATE
KNOB #1	VERTICAL COORDINATE
1–7	CHOOSE COLOR

Continued on page 111.

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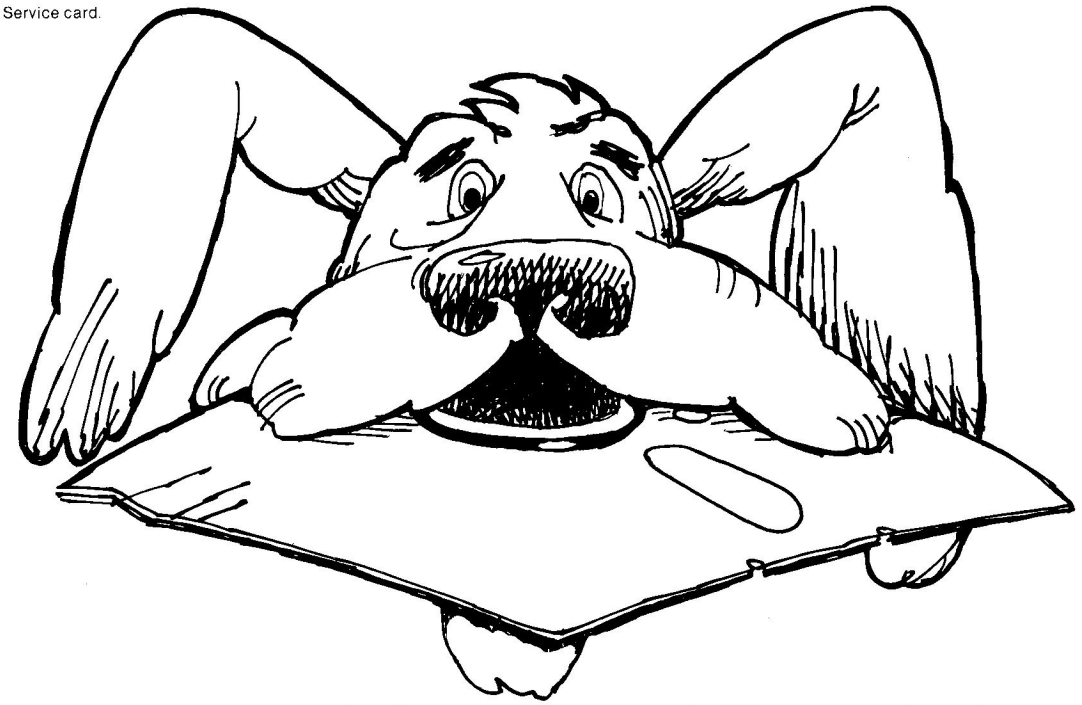

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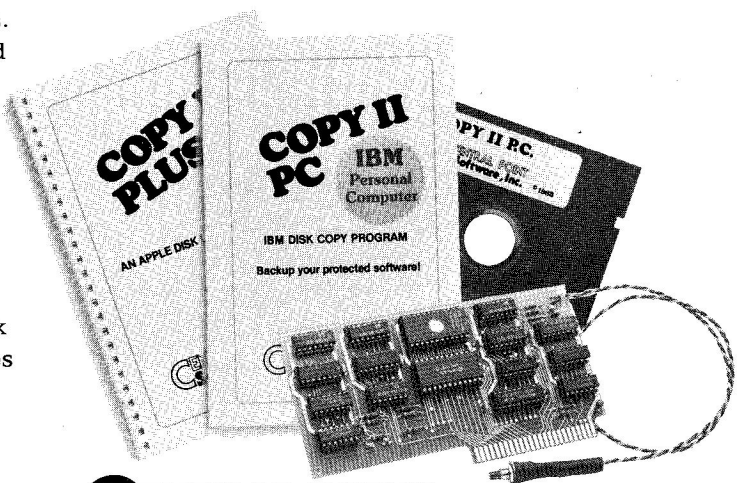

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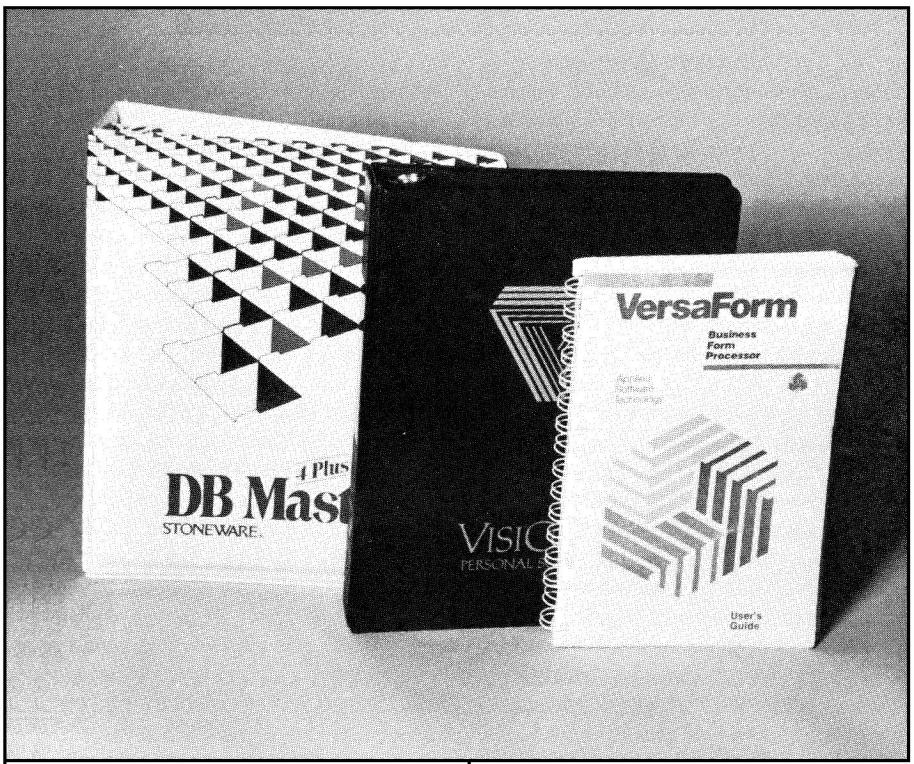
Data Bases: Power and Price



High performance and high price—here's a look at the Ferraris of the data base world.

Under my unscientific and slightly biased microscope this month are three data base programs that live in the high-rent district for such things: DB Master 4 *Plus* ($350), VersaForm ($289), and VisiFile ($250).

DB Master and VisiFile come from what might be called the original school of file-handling programs. Your information is stored as raw data, and when you want to retrieve it, you must structure a form in which to put it. This gives you complete control over your information and how you examine and work with your data. As its name suggests, VersaForm is designed to work with forms, much like the paper forms every business uses. Because of this, it's easy to use once the form design and associated information is set up. But this also restricts your flexibility, as it's a bit of a chore to change a form design once you've structured it and saved data into the system.

Documentation

DB Master arrives with an imposing set of documentation, including five disks, a wall chart, sample and blank forms, and a 415-page indexed manual. The tutorial section alone spans 178 pages; when you complete it you can understand and operate what first appears to be an intimidating program.

Actually, for all the fear you might experience when you first see and open DB Master's package, the manual is logical and leads you by the hand through each function. You get a good overview of how the system works, and quickly learn the basics. Every item you save is a *field*. Each screen you see is a *page*, and you save up to nine pages in a *form*. Once you fill in a form, you've created a *record*, and all of your records are saved in a *file*. Each file can cover many disks (up to 100).

You start with DB Master by creating a form and filling in sample data. About halfway through the tutorial you switch from the data you've entered to a sample disk, which has a

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by Gregory R. Glau

larger file that expands the information you've already put in, to give you a bigger base to work from. The tutorial is followed by a good reference section.

VersaForm comes with a 268-page indexed manual and a tutorial guide and tutorial disk that combine to do a good job of teaching you the system. The disk with sample information is particularly helpful. You work your way through the program as you learn how to operate each function. You start, as you'd expect, with the creation of a form on which you'll enter your information. Numerical data, as usual, is put into columns and VersaForm will do whatever math you need between the fields you create. You can perform arithmetic functions on two fields and store their information in another location.

Slightly more than half of VisiFile's 192-page manual is a tutorial. Like the other programs, this one comes with sample data on disk for you to use as you learn how to operate it. Perhaps I'm spoiled by other manuals from VisiCorp (VisiCalc and VisiTrend/Plot in particular), but this one just doesn't live up to its companions. The new user is taken through report-creation and printing before even getting started with the system. Some of the screen pictures are difficult to read. Sections of the text—specifically where you're told how to add data in what's called the "Index" mode—are confusing.

VisiFile organizes information logically. Each item you enter (like a ZIP code) is called a *field*; each *record* is a collection of related fields (like the warranty information for a particular customer). All of these records are combined into a *file*. Each disk can hold between 500 and 2000 records, depending on record size. VisiFile, like VersaForm, allows more than one file on a data disk. However, while both DB Master and VersaForm can extend files over multiple disks, VisiFile cannot.

Using the Data Base Programs

File creation with DB Master is quick and easy, but only if you first design your form on paper. This is because you position your fields by column and row locations, and while these are shown on the screen, it's necessary to transfer them from a worksheet. Even with this column/row approach, it's fairly easy to move a field from one page of your record to another. DB Master uses main menus to guide you through the system, along with a series of commands and prompt lines. The escape key backs you out of most selections.

Your fields can automatically format with seven field types, such as date format, an entry for a social security number, or a telephone number. You can instruct the system to accept only a yes or no answer, and to use a default—pressing return to accept the suggested answer—for any field. DB Master also allows mathematics between fields, where you can, for instance, multiply the value of one field by that of another, and store the result in a third field.

A helpful function of the DB Master program is its ability to use what it calls *short forms*. These allow you to keep whatever records you need in your files, but when you wish, you can display and work with just a section of each record. DB Master is powerful enough that you can enter and compute data and put this result in a field on the part of the record you can't see when you're using the short form.

DB Master requires you to use a master password for every file—a silly idea for a small business like mine, but perhaps not for yours. It also allows up to two other passwords, and you can protect fields so that only specific users—the ones who know the right passwords—can see and change them.

VersaForm always works with forms; what you see on your Apple's screen duplicates what you'd see on your desk. As such, its familiarity makes it a bit easier to get office workers to use the system. Form creation is intuitive; simply move your cursor where you want a particular time to appear and enter it, using trailing periods to indicate field length. Once you create a basic form design, you make room on your data disk for it. An average disk can hold about 300 VersaForm forms.

Since VersaForm's bent is toward number-crunching, it has things like automatic line extensions, tax calculation, and so on. The system has a powerful look-up function, which stores information on 99 items in a separate file. You can create more than one look-up table per file. If you use VersaForm to create invoices, you could design a form that, once you enter the part number, will go to the look-up tables, extract the item name and price, and enter them on the form for you.

VisiFile has the easiest form design of these three programs; it simply puts one field after another on your screen. If a field won't fit in a particular spot, the program automatically moves it onto the next line. As with other VisiCorp programs, VisiFile is mostly menu-driven. (Both DB Master and VersaForm use commands that must be learned before you can operate them.) If you want to position fields at a specific screen location, VisiFile lets you create a "custom screen map" that, while the process isn't as easy as VersaForm's, still works.

Searching and Sorting

DB Master uses both primary and secondary keys, which you determine when you create your record design (although the first field is always a primary key). A primary key search is very fast, even over multiple disks, because the system stores your data based on the key or keys you designate as primary. A secondary key search is slower than a search on a primary key, but much faster than a search with no key at all.

You create your search patterns by using a blank form design—just fill in what you want to match. DB Master has a powerful array of searching functions. It provides an include search, wild-card capability (if you don't know all of what you're looking for), and mathematical relationships such as greater than and less than. The system can look for data that falls within a range of numbers. You can ask for an exact find, which will extract only that data that matches your specifications perfectly, or conduct an OR search, which will find files that fit these conditions OR those conditions. You can search on up to 20 conditions at one time.

All three packages can sort your printed output in ascending or descending order, based on fields you select.

Apple //e users should note that both DB Master and the version of VisiFile for the //e insist that the case (upper or lower) of an item you're looking for be an exact match or it won't find it. Some functions of DB Master don't recognize lowercase letters, so you really end up being forced to use all uppercase characters. This is a major limitation of DB Master, as it doesn't really let you take advantage of the new features the Apple //e offers. VersaForm, on the contrary, is not case-dependent at all when you ask it to find something, or for that matter, when you enter commands. Any case is acceptable.

VersaForm saves and indexes your items based on a key, so it can find things very fast. The package allows a lot of options when you create a search pattern; you can have up to nine selection conditions with up to three tests in each. All the expected relationships (such as less than and greater than) are included. The system includes a helpful exclude-search instruction (as do the other two programs), so you can actually find what *doesn't* exist in your records. Searching is fast, and you're always informed what's going on inside VersaForm as it operates. It can also conduct an OR search (find this OR this OR this).

VisiFile can't match the other two packages in searching capability, as it can't conduct a true OR search. You can simulate this by making two passes through your data, but then you end up with some duplicate records (and spend more time in the process). However, it's easy to instruct the package to create a search pattern, and you can search on more than one field at a time for gathering report data. When you conduct a screen search—to look for an item to change it—you can search on only one field at a time.

The End Result: Reports

At the heart of any data base system are the reports you create based on your information. DB Master gives you both the best and the worst of things with its report generator. It will let you format your output in about any configuration your business finds advantageous. It will gather data and do computations on it that aren't in the original file format (up to 24 computed fields). You can position the output and its labels about anywhere you'd like. But along with this flexibility comes a time and knowledge investment; because of the different things you can do with DB Master, there are simply a lot of items to specify when you create a report. Report creation is a four-step process—the basic page format, the sort instructions, the search and select criteria you want, and the specific page design (what fields go where).

VersaForm uses a Report Work Disk to store the information for your printouts, in what amounts to a virtual storage area to hold the items retrieved and sort them as you specify. The program can skip from disk to disk to search for data, as long as each disk has a file with the same form. The report generator for VersaForm, like that of DB Master, is complex and powerful. It's really the most difficult part of the whole VersaForm package and takes a considerable amount of trial and error to get things the way you want them. You're allowed to create a report design and then change your selection conditions each time you use it.

VisiFile lets you create and save up to 16 report definitions per file (in contrast to DB Master's 255). The manual stumbles a bit in this area; while it tells you how to create a report design, it isn't as complete as it should be. You can specify up to three title lines, as well as position your fields where you want them to print. While VisiFile checks any tab settings you enter to make sure one field won't overlap another, if you allow the print position you select to "exceed the width of your printer, the fields at the end of the line may be shortened or excluded."

All three packages let you send control codes to your printer to format its output.

Disk Considerations

Each DB Master file must have two disks, a data disk and a utility disk. The program uses a reblocking function that structures your data files for the most room possible. However, when you reblock your utility file disk, you put the original in drive 2—the opposite from where the original goes when you reblock your data file, or when you use Apple's COPYA program to make back-up disks. While there are on-screen prompts for all of these procedures, a bit of consistency here would be helpful.

DB Master insists you enter your disk configuration each time you start the system. Even with two disk drives, a considerable amount of disk swapping is involved, often accompanied by a number of beeps from your Apple.

Other Problems

Perhaps the biggest weakness of DB Master is that it isn't simple. Each function requires some planning and thought in advance. There's nothing wrong with this approach (and in fact it almost forces you to get things right the first time), but it means that whoever designs your records and printed output will have to understand DB Master well—a task that will take some time and effort. You cannot simply hand this package to someone and expect an instant warranty file (or whatever).

As with DB Master, VersaForm's most difficult function is its report creation. And true to its Pascal heritage (the language VersaForm is written in), VersaForm is confusing when it comes to disk designations. Your drive 1 is called drive 4, drive 2 is called drive 5, and if you have another disk drive, VersaForm calls it *drive 9*. This is the kind of thing the software should automatically handle for the user.

VersaForm is a paradox when it comes to how users view it. If you're the one who must decide form design, where and how to error-check entries, and determine report creation specifications and other criteria for your records, you'll find it requires a lot of thought and effort to get it ready for your business. If you just enter data into the forms—once they're designed—you'll find VersaForm actually helps you as you input your information and (almost) won't let you make a mistake.

All data in each VersaForm field must be on the same line as its field name; this confirms the program's basic design, which focuses on the storage of numerical, rather than textual, information. Because VersaForm disks are initialized differently, you can't use the standard COPYA program to back them up. The process the program uses breaks each disk into nine sections and verifies the correctness of all copied data, but takes about a minute to make a copy. VersaForm uses a lot of commands, and only displays the first letter or two on the screen (SA means Save, N pulls up the Next form), so it's rather cryptic in its use.

VisiFile is probably the easiest of the three packages to actually use, but as noted, its manual isn't as helpful as it could be. If you fill your data disk, you see DISK ERROR = 9 and lose your latest two entries—a poor approach to a full disk. You can assign a default to any DB Master field. (A default automatically enters pre-selected data into a field.) VisiFile doesn't allow the use of defaults and neither does VersaForm.

VisiFile has no entry-checking of your data as you input it, and only allows two types of fields—alphanumeric and numeric. You can't designate a field to format in a specific order, like a social security or phone number. All fields are shown in inverse and were difficult to read on my Monitor ///. VisiFile and DB Master's ability to use the same field name more than one time in each file can be confusing to a user.

Extras

DB Master *4 Plus* includes what were formerly called Utility Paks. This set of helpful functions lets you add or change your fields (even after data's in your files), merge one file with another (if they both have the same format), and duplicate just the structure of a file. The system also provides a program to recover what it can from a damaged file and a global editor, so you can change all data in one field throughout your entire data base. DB Master can create and read files created by the data interchange format (DIF), which means you can send information back and forth between it and, say, VisiCalc or VisiPlot. The system includes the capability to update PFS: File and VisiFile data, so if you have one of those packages you can move your records to DB Master. The program also comes with an excellent mailing label function, and can print your data from one to five labels across.

VersaForm's latest version allows you to change your file format, even after you've put data into the system. With a program as dependent on the structure of its forms as this one is, a change function is a necessary tool. This capability, while it works, is a bit of a process. You can move fields around easily within each individual record, and you can also change the key item(s)—the first thing the program looks at when you request a search.

Because of its numerical orientation, you might expect VersaForm to come with an on-screen calculator; it does. This function even has its own limited on-screen help, and in fact through much of the package you can request on-screen help with a press of the ? key. VersaForm also includes a sophisticated mailing label generator, with which you can design mailing label formats up to nine labels across.

One of VersaForm's truly appealing qualities is its ability to check the data you and your people enter. If you must have an item in a specific format (such as an inventory number with three letters, a dash and two numbers, like CTG-33), you can so instruct VersaForm and it won't accept data in another format. If you want an entry to be a particular length, or within a range of numbers, VersaForm will handle that for you, too.

VisiFile, like the other systems, includes an excellent mailing label function, which can create labels from one to five across. If you know about where your data is located in a file, you can examine some of your data, rather than searching through it all. VisiFile also lets you copy all or part of your files to a back-up disk. You can even copy just-deleted records, and you can append one file to the end of another.

VisiFile lets you create up to 24 indexes for your files, and then will process your forms based on the index you select. For instance, you might enter warranty information into VisiFile records and then find you'd like to search through it, based on ZIP codes. You'd create a ZIP index and the program would, when you use this particular index, sort your records in ZIP code order. The ZIP code becomes the key field when you use this index. You can have other indexes for the same file, of course, based on any of your other fields.

In effect, then, VisiFile allows up to 24 key fields on which you can search. Both DB Master and VersaForm ask you to select primary (and sometimes secondary) keys when you design your file. VisiFile doesn't; you create indexes as you need them. The main disadvantage to this approach is that only the current index is updated when you add or change data in the files; other indexes must be updated—a process that takes a bit of time and effort, especially if you have a lot of indexes for a file.

VisiFile, like DB Master and VersaForm, lets you change the design of your files, even after data's been entered into them. It's very flexible in this process—one field can be sent to two new ones, you can eliminate fields, and so on. It's also an easy procedure, in contrast with how DB Master and VersaForm handle the same function. VisiFile comes with a File Fixer program that will save as much data as it can from a damaged disk. VisiFile's one truly strong suit is its ability to send data to other programs in the Visi-series (VisiCalc, VisiTrend/Plot, and so on).

A Buying Decision

DB Master is a powerful and adaptable data base system that allows almost unlimited flexibility in what you can do with your information. As such, you will have to put some time and effort into getting it up and running. While initial file creation and data entry aren't intimidating, the report function—because of its flexibility—is. Once you have data inside DB Master files, you can pull out exactly what you want to see or work with, on the screen or in the paper format that's best for you.

VersaForm also requires work and effort, but of a different sort. DB Master calls for a lot of organization to extract and print data from the system, while initial entry and file design is fairly simple. With VersaForm, some intense planning is required before you start to work, and the process gets a bit more involved when you create a report format. Once your files are designed, however, you get something of a payback in that you can create forms with almost any amount of error-checking that you'd like. You can even identify a field as *mandatory*, and until something is entered there, the system refuses to continue.

VisiFile is easier to operate than either of the others, and as such, is a better choice for simple file-handling chores. It's easy to operate because it's generally menu-driven. The system doesn't provide the power of the other two, particularly when it comes to searching capability and structuring information both on the screen and on paper. However, some less expensive packages can do almost the same things as VisiFile can, so I feel either DB Master or VersaForm is easily a better buy if you're willing to spend the money.

DB Master is designed to work with textual information. If you need to do truly complex data-handling, if your information is mostly textual in nature, and if you want the ultimate in flexibility, DB Master is the program to buy. Note, though, that it doesn't give you the full benefit of your Apple //e, because not all of DB Master can use lowercase characters.

VersaForm is designed to create invoices and tabulate columns of figures—to handle numerical data. If you want to keep track of accounting records, payroll data, and so on, VersaForm is the more comprehensive package, with no major weaknesses and a lot to recommend it.■

In a Nutshell

All three data base programs require two disk drives and 64K of memory to use all their functions. DB Master allows 1020 characters per record, VersaForm allows 4000 characters per record, while VisiFile allows only 232 characters per record.

VisiFile and VersaForm will recognize and use an 80-column card. DB Master can work with one, but parts of this program won't accept lowercase input. Both DB Master and VersaForm will run on an Apple II Plus or //e. VisiFile comes in two versions, one for the II Plus and another for the //e; both are the same price. All three packages will operate on the Apple //c with two disk drives.

DB Master is designed to work with textual data and can manipulate it in almost any manner you want and need. However, it's a complex package that takes some time to learn. VersaForm works best on numerical information in the format you're used to: *forms*. It, too, is complicated and will take some time and effort to master. VisiFile is more of a file-handling program than a true data base. While it's simpler than the other two packages, it isn't nearly as complete and powerful.□

Product Information

DB Master *4 Plus* **$350**
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VersaForm **$289**
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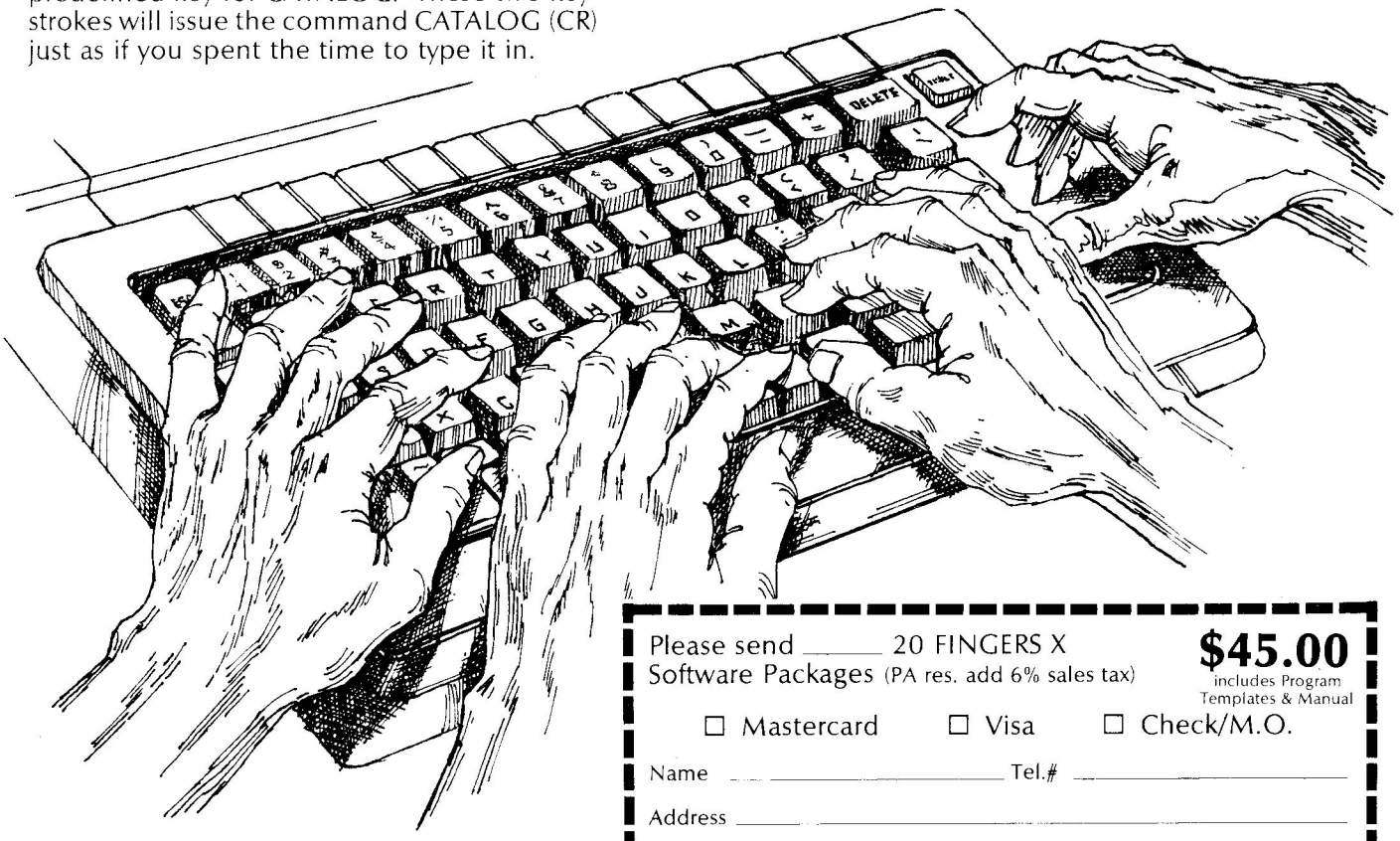

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KidWord



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Perplexed at what the computer can do for little kids with big ideas? Try KidWord, a word processor for children to write and print notes and letters without adult assistance. Adults can get in on the action, too, since KidWord designs quick notes and signs, and has a useful screen dump utility.

I wrote KidWord because my four-year-old daughter's favorite disk is my word processor. Although she loves to type on the computer, a real word processor is too complex for her to write letters and then print them without continuous help. Because an adult must sit with her, she doesn't feel in control or part of the process—an important aspect of computing for children. KidWord is simple enough to put the child in complete control.

Although simple, KidWord does many of the things a real word processor will do. With KidWord, the child can type one screen of text. The child moves the cursor with the right and left arrows, but cannot go beyond the top or the bottom of the screen because the screen does not scroll. To clear the screen and start over, the child presses escape. When the text is arranged, control-P dumps the screen to the printer.

Before you give KidWord to your child, check your printer carefully. Many printers have exposed parts that move rapidly or become quite

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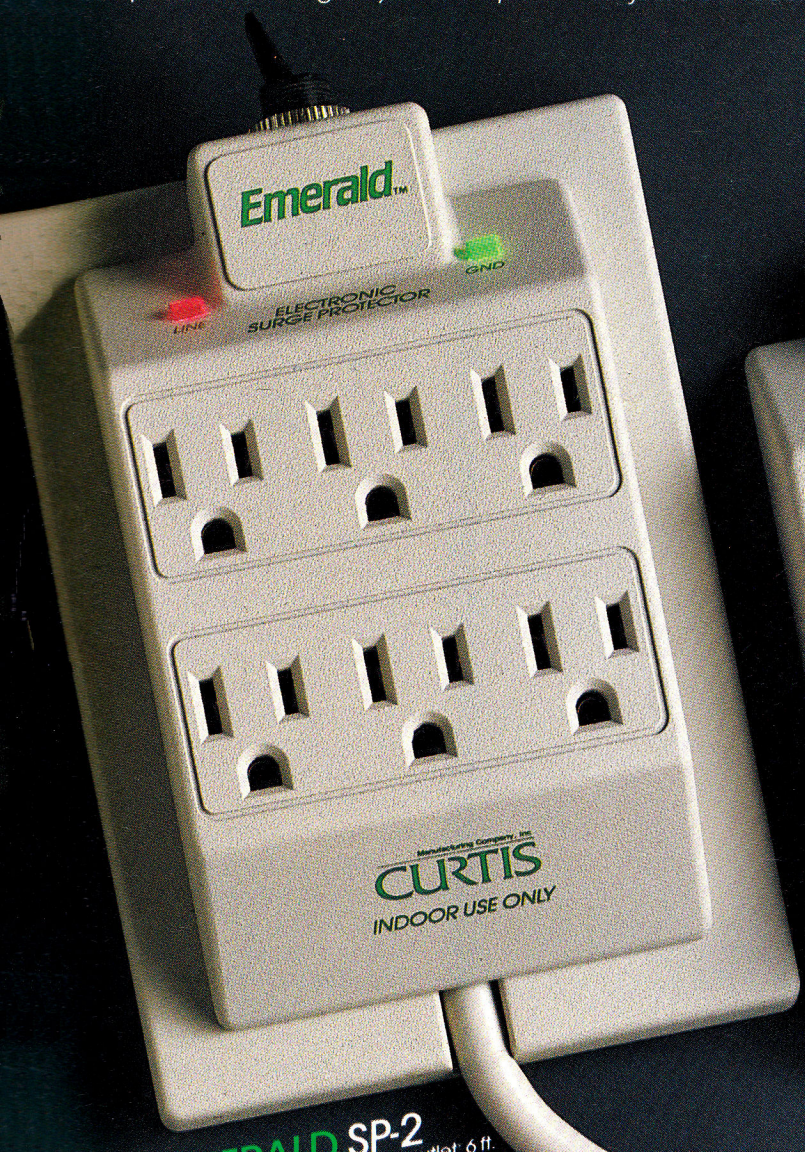



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hot. For safety's sake, make sure the child cannot stick fingers inside the printer, and stay in the room to keep an eye on things. Also, the child may need help in order to advance or remove the paper without pulling the printer off the table. They may control the computer, but even children are not immune to the hassles of paperwork.

When typing letters a child will sometimes need help, so I included cursor control commands. Also, hold down control and press E, S, D, or X to move the cursor around the screen and make minor corrections. These cursor movement commands are a bit too much for very young children, but they will quickly learn to print with control-P. Older children will master the cursor movement commands easily and can even draw pictures on the screen.

To keep KidWord simple, I did not include features found on big-time word processors. KidWord does not save files to disk or load previous files from disk. It does not include word wrap, insert, find, or find and replace. The list of what KidWord *will not* do is impressive, but what it *will do* is put children in control of their own word processor. As mentioned, adults will find KidWord useful, too. On dot matrix printers it produces big, bold print which is excellent for notices and signs such as, "Don't leave dirty cups on this counter or else!" If you don't like the bold letters, delete lines 40060 and 40175 in the **Program listing** for regular print.

The screen dump subroutine beginning at line 40000 copies characters directly from the screen memory buffer and assembles them into lines which are sent one at a time to the printer. Line 40110 is the algorithm that calculates the memory address for the first character in line WY. The loop between lines 40130 and 40150 assembles the line as WS$ and line 40160 sends the line to the printer. You could implement this subroutine in your own programs to print the text screen on command, but notice that it uses variables J, WY, WA, and WS$. You might want to remove the double width commands in lines 40060 and 40175.

The printer control commands work with an Epson or Epson-like printer. Line 40060 sets the printer to double width characters, and line 40175 resets to normal width. If you don't have an Epson printer you can delete these two lines, but many dot matrix printers will work fine.

If you use KidWord in your business you can change the title, but the program is intended for children. They need to be in control of the computer, since much of the commercial software makes them spectators. KidWord places them in the decision-making seat to creatively control their work.■

Program listing. *KidWord.*

```
490  REM  ***************
500  REM  *** KIDWORD ***
505  REM  ***************
510  HOME
520 WX = 2:WY = 2
530  VTAB 1: FOR J = 1 TO 40: PRINT "*";: NEXT J
540  VTAB 23: FOR J = 1 TO 40: PRINT "*";: NEXT J
550  FOR J = 2 TO 22: VTAB J: PRINT "*": VTAB J:
     HTAB  40: PRINT "*": NEXT J
590  REM
600  REM  *** MAIN LOOP ***
610  VTAB WY: HTAB WX: GET W$
620 W =  ASC (W$)
635  IF W < 32 THEN 640
637  VTAB WY: HTAB WX: PRINT  CHR$ (W):
     WX = WX + 1: GOTO  690
640  IF W = 5 THEN WY = WY - 1
650  IF W = 19 OR W = 8 THEN WX = WX - 1
655  IF W = 16 THEN  GOSUB 40000
660  IF W = 4 OR W = 21 THEN WX = WX + 1
665  IF W = 13 THEN WY = WY + 1:WX = 2
670  IF W = 24 THEN WY = WY + 1
675  IF W = 27 THEN  GOTO 500
680  IF WX < 2 THEN WX = 39:WY = WY - 1
690  IF WX > 39 THEN WX = 2:WY = WY + 1
700  IF WY > 22 THEN WY = 22
710  IF WY < 2 THEN WY = 2
900  GOTO 610
39990  REM
40000  REM  *** PRINT SCREEN ***
40050  PR# 1
40055  PRINT  CHR$ (9);"80N"
40060  PRINT  CHR$ (27)"W" CHR$ (1)
40100  FOR WY = 1 TO 24
40110 WA = 1024 + 128 * (WY - 1 - 8 *  INT
       ((WY - 1) / 8)) + 40 *  INT (WY / 8.5)
40120 WS$ = ""
40130  FOR J = 1 TO 40
40140 WS$ = WS$ +  CHR$ ( PEEK (WA + J - 1))
40150  NEXT J
40160  PRINT WS$
40170  NEXT WY
40175  PRINT  CHR$ (27)"W" CHR$ (0)
40180  PR# 0
40190  FOR J = 1 TO 1000: NEXT J
40200  RETURN
```

Thinking Is an Adventure



As a school principal and teacher for 17 years, I have seen the pendulum swing from complete academic freedom (with little or no accountability) to a back-to-the-basics curriculum.

I have listened to the Summerhill proponents tell us that children should be allowed complete freedom in the classroom and should not work if they don't want to work. I have watched children who didn't meet basic standards be forced to spend up to four years at the same grade level.

Right now, we are in a back-to-basics swing of the pendulum. Some schools do have exemplary programs that emphasize more than just the basics, but with the emphasis on the three R's, your child may be missing out on some of the more important skills that are often referred to as enrichment. To me, some of the so-called enrichment skills are more important than the basics.

For example, I think it is more important for a child to use multiplication in a practical application than to memorize the times tables. What good is it if children know the times tables but then cannot apply them?

Use adventure games and simulations to teach children critical thinking.

Dr. Fred Huntington is a school principal and parent of two teen-agers and two preschoolers. He has also been owner/president of an educational software company and is currently writing a book on educational administration. Write to him c/o inCider, *80 Pine Street, Peterborough, NH 03458.*

by Fred Huntington

Parents need to supplement what the school is doing with practice in applying these skills.

Critical Thinking

One of the most important skills a child can learn is critical thinking. Critical thinking includes analyzing facts, determining the logical steps from assumptions and facts to conclusions, comparing and contrasting different sets of facts, generalizing, and evaluating.

The traditional way to teach critical thinking is in a group situation, but it can be taught at home to a single child at a computer.

What-If Games

As a teacher, I would ask students "What if" questions. Then we would sit around and talk about what would happen if an event were to occur. These days a student can type a what-if question into a simulation game and receive an answer almost immediately.

Many simulation games available today stimulate a student's thinking and help him or her become a more critical thinker. For example, Apple's Lemonade Stand can be played by one person but works much better with two or more, so your child can be exposed to diverse ways of thinking by working with other children on the computer. I've even used this game successfully with a whole classroom of students.

Lemonade Stand is an entrepreneurial scenario wherein you try to earn the most money from your imaginary lemonade stand. You have to battle the elements, endure street repairs, invest your money in advertising, choose what prices to charge, and so on.

Critical thinking is not taught by lecture. Children learn to think critically by doing. If a child puts all of his or her money into advertising and sells the lemonade cheaply, then he or she soon learns about the economics of pricing and advertising. A lecture on good business strategies is not as effective as having the child actually practice them. By competing with others, he or she is exposed to other ways of thinking. If an opponent is more successful, then another player can emulate those successful strategies to try to win the game.

Another popular but simple game that teaches critical thinking is Oregon Trail, available from MECC (Minnesota Educational Computing, 2520 Broadway Drive, St. Paul, MN 55113) or as public domain software.

In Oregon Trail, the student decides how to spend his or her money in preparation for a long trip out West. If a student doesn't buy enough food, he or she may die from hunger. The student chooses how much ammunition to buy, when to run and when to fight, and how much to eat. If a wrong answer is given, there is immediate feedback.

Have an Adventure Party

Adventure games are numerous and challenging and among the best ways to stimulate critical thinking. In my family, every Friday night is adventure-game night, and this activity has a very high priority in our lives. We do it because it's fun and we enjoy the company of other avid adventure-game players.

Our group ranges in size from four to eight people. We usually break at eight and have refreshments and then put the kids to bed.

This would be a great activity to involve your children in. Have friends over and get everyone to solve the game together.

When we were playing an adventure called Coveted Mirror one Friday, Melody, our five-year-old daughter, suggested that we take our newly

Table 1. *Adventure games: mid-elementary to adult level.*

Game	Manufacturer	Price
Coveted Mirror	Penguin Software P.O. Box 311 Geneva, IL 60134	$34.95
Dark Crystal	Sierra On-Line Sierra On-Line Bldg. Coarsegold, CA 93614	39.95
Deadline	Infocom, Inc. 55 Wheeler Street Cambridge, MA 02138	49.95
Enchanter	Infocom, Inc.	49.95
Infidel	Infocom, Inc.	49.95
Mask of the Sun	Ultrasoft, Inc. 24001 SE 103rd Street Issaquah, WA 98027	39.95
Mystery House	Sierra On-Line	19.95
Planetfall	Infocom, Inc.	49.95
The Quest	Penguin Software	34.95
Saga 1. Adventureland	Adventure International Box 3435 Longwood, FL 32750	39.95
Saga 2. Adventureland	Adventure International	39.95
Seastalker	Infocom, Inc.	39.95
Serpent's Star	Ultrasoft, Inc.	39.95
Sherwood Forest	Phoenix Software, Inc. 64 Lake Zurich Drive Lake Zurich, IL 60047	34.95
Sorcerer	Infocom, Inc.	49.95
Starcross	Infocom, Inc.	39.95
Suspended	Infocom, Inc.	49.95
Time Zone	Sierra On-Line	99.95
Transylvania	Penguin Software	34.95
Ulysses and the Golden Fleece	Sierra On-Line	34.95
Witness	Infocom, Inc.	49.95
Wizard and the Princess	Sierra On-Line	34.95
Zork I, II, III	Infocom, Inc.	39.95 (each)

acquired ax and chop down the nearby tree. Though it didn't work it was a good suggestion, one we hadn't thought of. I didn't know that Melody was paying any attention to the game, but it's becoming obvious that she's learning some critical thinking skills.

Junior high and high schoolers may want to get into games like Zork, Mask of the Sun, and even dungeon and dragon games like Wizardry. See **Table 1** for more suggestions.

Adventuring with Robin Hood

One game we played as a group was Sherwood Forest. There is no doubt that it teaches higher-level thinking skills such as analysis, synthesis, and evaluation.

During play it becomes obvious that you have to cross the stream Little John is guarding. What isn't obvious is how to get across. Little John would just as soon kill you. But when you talk to him, he reveals that he'll let you pass if you're wearing green. Only after much searching do you finally realize that the only green material around is the awning on the kissing booth.

Taking the awning does not automatically get you across the stream. You have to figure out how to get it made into a suit at the tailor's. Each step as you proceed requires that you analyze the data you have, apply many what-if situations, try them out, and then have the computer evaluate them. The computer will let you know instantly whether you are right or wrong.

This process encourages and nourishes creative thinking. The situations encountered here can be used to solve problems in real-life situations. For example, in this game you learn to look at all your resources and find alternative ways of using what items you do have.

If you give your child the tools, she or he will be able to think creatively in critical situations. **Table 2** lists some of the available software you can use to teach your child critical thinking. Critical thinking—for critical times.

Whoops

In my July column I mentioned sources of educational software but neglected to mention Bytes & Pieces who have a special educational catalog and sell educational software at a discount. Contact them at Box 525, Dept. J, East Setauket, NY 11733; (516) 751-2535.

I'll be updating my list as new sources become available.

Dinosaurs Reviewed

If you're looking for a nifty new program for your preschooler, then take a look at Advanced Idea's Dinosaurs. Dinosaurs is one of the slickest new pieces of software I've seen for the Apple.

Touted as being for ages two and a half to five, Dinosaurs contains five entertaining programs. Even the menu is fun. You move a bouncing ball up and down with the right and left arrows. Choose a game, then press return. It loads quickly.

The first program is a matching game wherein the youngster matches like dinosaurs using the two arrows. When he or she makes a correct match, a song is played and the dinosaurs do a dance. There is no noise or reward for a wrong answer.

None of the games is complicated

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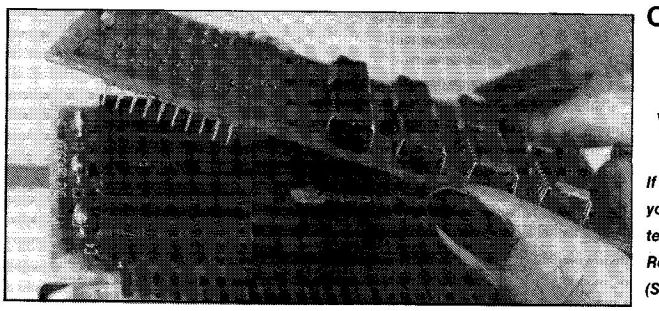

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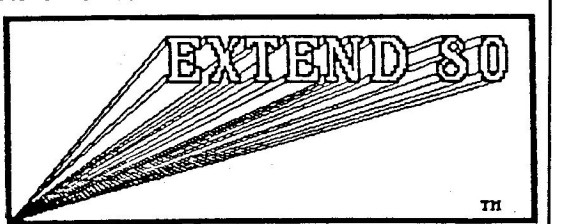

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and all are understood almost instantly. The music and sound effects are entertaining and add interest to all programs.

Game two helps youngsters learn which dinosaurs were carnivorous and which were herbivorous. The child directs the dinosaurs to either the bones or plants and is rewarded accordingly. The third game classifies animals according to where they live: in air, in water, or on land.

In the fourth game, children match dinosaurs in slot-machine-like graphics. This is cute but I'm not sure it's quite as educationally sound as the others.

The last game matches the spellings of the dinosaurs with their drawings. This one is a little difficult for some of the younger children.

The excellent documentation includes a coloring book that tells more about dinosaurs and contains a glossary at the end. There's also a bibliography so children can read more about dinosaurs.

I recommend this software very highly for anyone with preschoolers. The sound, graphics, animation, educational value, and entertainment value make it a bargain at $39.95. It is available from Advanced Ideas, Inc., 2550 Ninth Street, Suite 104, Berkeley, CA 94710, (415) 536-9100.

Questions

Don't forget to send in your questions and I'll try to answer as many as possible. Thanks for reading. ■

Table 2. *Software helpful in teaching critical thinking.*

Package	Manufacturer	Age Level	Price
Birth of the Phoenix	Phoenix Software, Inc. 64 Lake Zurich Drive Lake Zurich, IL 60047	10–adult	$22.00
Creative Play: Problem Solving Activities with the Computer	Math and Computer Educational Project Lawrence Hall of Science University of California Berkeley, CA 94720	8–adult	47.95
Dragon's Keep	Sierra On-Line Sierra On-Line Bldg. Coarsegold, CA 93614	7–adult	29.95
Elementary, Volume I	MECC 2520 Broadway Drive St. Paul, MN 55113	8–13	30.00
The Factory: Strategies in Problem Solving	Sunburst Communications 39 Washington Ave. Pleasantville, NY 10570	9–adult	49.00
Gertrude's Secrets	The Learning Company 545 Middlefield Road #170 Menlo Park, CA 94025	4–10	39.95
In Search of the Most Amazing Thing	Spinnaker Software Corp. 215 First Street Cambridge, MA 02142	10–adult	39.95
Jigsaw	Island Software P.O. Box 300 Lake Grove, NY 11755	8–14	25.00
Programmable Cube	Metacomet Box 31337 Hartford, CT 06180	9–adult	34.95
Rocky's Boots	The Learning Company	7–adult	49.95
Snooper Troops	Spinnaker Software	10–adult	44.95
Troll's Tale	Sierra On-Line	8–adult	29.95

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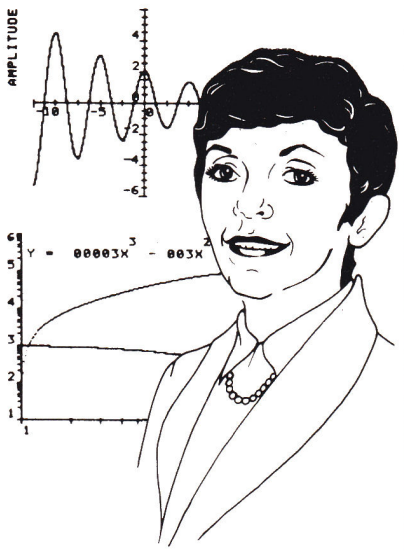
—Virginia Lawrence, Ph.D.
Chief Executive Officer



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Consumer Retorts



Two letters have arrived in the Futility Base mailbox this month that deserve special attention. The first comes from Robert in Connecticut, who purchased a Votrax Personal Speech System (PSS) and an Apple Super Serial Card (SSC) from a local dealer. The PSS is a combination speech synthesizer, clock, programmable message announcer, and music and sound effects generator. Altogether, with the serial card, it was a hefty dollar outlay at just under $600. The PSS/SSC combination looked like what Robert wanted at the store, but when he got home, the problems started.

The main problem was that he couldn't find software to make the Personal Speech System and the Super Serial Card combination work adequately for his application. In Applesoft, PR#s (where s is the slot number of the card to which the PSS is connected) followed by the literal you want it to say ("Hello" or "It's a nice day") and a return to the Apple with PR#0 will do the job fine. Unfortunately, everything on the Apple doesn't run under the aegis of Applesoft, and some programs don't give you much latitude for tampering. When that's the case, as Robert found, you can't force output into the Votrax. (ProDOS 1.0, in its set-up menu, will allow you to simultaneously send all screen output to the printer, which can actually be a speech unit.)

Let me introduce you to an award I have for this type of circumstance. It's called Bill's Bogus Buying Award (or the BBBA for short). The statuette itself is a bronze dollar bill sprouting wings, mounted on an alabaster pedestal.

Unfortunately, its first recipient is not Votrax. Nor is it the dealer who sold Robert the PSS, although he's a good bet for runner-up. The winner is Robert himself—and that may take a bit of explanation.

Caveat Emptor

The point is that the first step in purchasing any computer paraphernalia is ascertaining just what it can do and what environment it needs to operate in. Robert either hadn't stopped to consider these things, or thought he could work around any problems. To be fair, we all do.

Nowhere in his letter does Robert indicate that he discussed his PSS application with his dealer. Of course, if he did he might have a legitimate

Write to Bill O'Brien at P.O. Box 1010A, Fort Lee, NJ 07024. He can also be reached through CompuServe user ID 74216.1215.

by Bill O'Brien

"Remember, you have the same rights as a corporation, even though you might not have the same resources. If your complaint is fair, it should be acted upon."

gripe against the dealer, and the *dealer* would be the recipient of the BBBA.

Votrax is definitely beyond blame. They have produced a fine piece of equipment that works quite admirably within the parameters they designed it for.

The second phase of making a purchase is asking for a demonstration. If a claim is made that a product works for an application you have in mind, then the claim should be demonstrable. Barring that, there should be a return privilege, stated in writing, should the device fail to meet your needs.

Finally, shop around. Price, whether high or low, doesn't guarantee anything. When the more esoteric computer devices are involved, you'll probably need to get the advice of someone familiar with the principles involved. If you are adventurous by nature, or if the product would have to be returned to the manufacturer for any repairs anyway, you can save a bundle by using mail order.

Worms in Appleworks

The second letter comes from Stan in Pennsylvania. It relates to a problem with Appleworks running on his //e equipped with an extended 80-column card. (Refer to *inCider*, July 1984, page 80, for an Appleworks review.)

For those who haven't seen it yet, Appleworks is an adaption of another program called /// Easy Pieces, by Rupert Lissner, originally marketed by Haba Systems for the Apple ///. It's a combination spreadsheet, data base, and word processor. Lissner did the conversion for the //e, which needs the full 128K memory, 80-column screen output, and ProDOS to accommodate it.

Stan believes he has found a bug in the horizontal replication of formulas when using the spreadsheet. He is having problems duplicating a formula across the sheet in all columns up to and beyond column BJ. He describes the difficulty in detail as follows:

"You can verify this bug for yourself by loading Loan Schedule, which is on the Appleworks Sample Files Data Disk. Go to cell H13 and try to copy it beyond cell BJ13. Use the No Change option as you do this. You should now see the following error message: 'Some cells were lost from row 13.' "

He further explains that he has talked to Apple's Eastern Support Region and they admit to the problem, but can offer no immediate fix for it. Stan suggests that it presents a serious limitation to the program.

Is It a Problem?

First, some quick background. Column BJ is 62 columns deep (to the right) into the spreadsheet. Replicating, or, as Appleworks calls it, copying, with the No Change option means you're duplicating the exact contents of the cell being copied. This, by itself, might not be significant, but it also happens when you use the Relative option, which *is* important when copying formulas across the sheet.

I have a data disk with a file on it called Our Budget. Plugging it into Appleworks, I find there is indeed a horizontal replication problem, which, with this file, will allow copying only up to column BR. It would appear, as Stan suggests in his letter, that this limitation will vary according to the spreadsheet design.

My thoughts on the problem come from an experience I had several months ago. Five writers, with varying fields of interest, gathered in New York to analyze an integrated software package. (Integrated software is typically described as one program that combines the features of a variety of other individual programs, as does Appleworks.)

It was the consensus of the panel that there isn't a single integrated package that can, currently, perform as well as the stand-alone programs they seek to combine. I believe that this opinion is valid across the board.

Sometimes these limitations arise from original conceptual problems that go ignored until the programmer is too far into the program to back out and correct them. These are often fixed later and released as updates. There was, at last look, an unresolved problem in the original /// Easy Pieces package, and, I imagine, there will be some more problems found in Appleworks. In situations like these, corrections follow, but in the world of software the word "immediately" has little significance. Often it means when time allows, depending on the status of other projects.

There are also times when limitations are consciously programmed because of restrictions in the hardware.

All in all, I don't know if I would ever expect Appleworks to adequately handle a large spreadsheet (more than 40 columns by 60 rows, which is a subjective definition of "large").

A better spreadsheet might be the answer for Stan. Many provide ASCII output to disk, which is then compatible with a word processor. If the data is being retrieved from a data base, there are some spreadsheets on the market that will interact with the DIF file format of VisiCalc.

Were I in Stan's position, with this bug indeed significant in my work and no indication of a fix forthcoming, I would return the Appleworks package.

Summary

These are two problems of dissimilar nature with one point in common: sometimes you will wind up with merchandise you can't use, whether this happens through your own fault or through no fault of your own. While most consumers feel an obligation to carry back the 69-cent can opener that doesn't work, there seems to be reluctance when it comes to the $100 or $200 (or up!) piece of software.

Corporations feel few compunctions about returning software or hardware that fails to perform. Retailers are wary of fighting a barrage of corporate lawyers and many times will simply take the merchandise back if the defect or omission can be demonstrated. Remember, you have the same rights as a corporation, even though you might not have the same resources. If your complaint is fair, it should be acted upon.

If you meet resistance on the dealer level, try the manufacturer. They don't always advertise that they accept returns on their products, but many are quite responsive and do if the situation is reasonable. In worst case situations, tell them you're going to write to me about it. Adverse publicity does hurt sales.

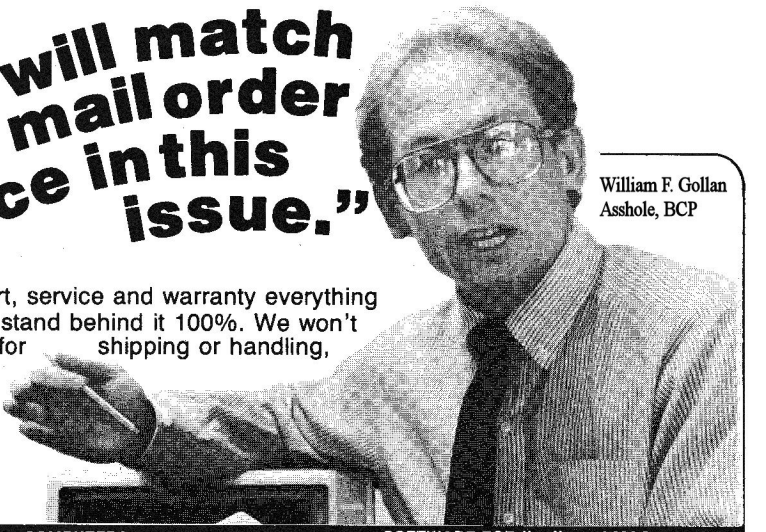
A Consumer Advocate Data Base

This brings up another issue. I would like to compile a data base of agencies, organizations, and individuals that can advise you on your rights regarding software and hardware problems.

If you will supply me with the information, I'll compile it and make it available to anyone who writes to me, either on an individual basis or in this column. If you are a software or hardware manufacturer with a return policy and you'd like people to know about it, I'll take that information also. Please include the name and phone number of the person in your organization to contact. It's nice to know who the friendly people are. Let's see what we can do.

Until next month, I expect you to enjoy the fall weather and have a great time. And make mine Apple!■

"We will match any mail order price in this issue."



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Ad Number 182 — *"All the News That Fits"* — *Fall/Winter 1984*

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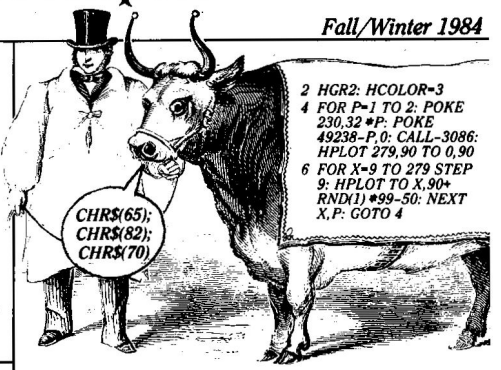

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DiskQuik has many uses. For example, load often-used files into memory when you boot up, so they are always available when you need them.




```
5 INVERSE: PRINT SPC(7): A=A+1-3*(A=3)
8 POKE 2053,A+156: B=B+1: IF B<143 THEN 5
```

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Beagle Basic loads Applesoft into RAM and enhances it by replacing unused cassette commands (Shload, etc.) with *new commands* like ELSE—

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Plus HSCRN reads the color of a hi-res dot for collision testing, SWAP exchanges variable values, TONE writes music without messy Pokes or Calls, SCRL scrolls text in *either* direction.

GOTO and GOSUB may precede variables, as in "GOSUB FIX" or "GOTO 10+X". Replace awkward graphics screen pokes with one-word commands, change your ctrl-G Beep to any tone you want...

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10 POUR X=1 TO 3: ECRIVEZ "BONJOUR": ENSUITE

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```
A$="Dogfood"  ←VARIABLE-DISPLAY: prints
X=3.14159       all of a program's strings &
Y=255           variables with current values.

A$: 5 10 150  ←CROSS-REFERENCE: Sorts
X: 10 20 3000   & displays line numbers of
Y: 5 40 55 60   each variable & string.
```

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ASK inCIDER

If you have a question, our technical editor has the answer. Send your queries about Apple computing to Bob Ryan, Ask inCider, 80 Pine Street, Peterborough, NH 03458.

//c's, They Are Assemblin'

Dear *inCider*:

I recently became the proud owner of an Apple //c system. I read the featured //c article in the July *inCider* and it mentioned that the //c's 65C02 microprocessor is a little different from the 6502. I would like to know if I can use assemblers such as the Lisa assembler or if there are any assemblers on the market that are made for the //c.

Joe Buchanan
P.O. Box 185
Grove City, OH 43123

Dear Joe:

As the article pointed out, the 65C02 is an enhanced version of the 6502. The 65C02 has eight new instructions (and some new addressing modes for old instructions), bringing the total number of new opcodes available to assembly language programmers to 27. The instruction set of the 6502 is a subset of the 65C02 instruction set. That is, all programs written for the 6502 will run on the 65C02 but some 65C02 instructions won't work on the 6502.

The upshot of all this is you can use assemblers written for the 6502 on the //c. These include the Lisa, the S-C Macro Assembler, Merlin, and the Apple Tool Kit Assembler. If you use these assemblers, though, you will not have access to the new opcodes provided by the 65C02.

The only assembler I know of that supports all of the 65C02 opcodes is the ORCA/M Assembler from Hayden Software, 600 Suffolk Street, Lowell, MA 01853. Hayden mailed a 65C02 upgrade to every registered owner of ORCA/M months before the //c was introduced. The current version of ORCA/M includes the 65C02 upgrade.

That's the situation as of this writing (mid-July). Without doubt, other companies will have upgraded their products by the time this column is printed.

By the way, all of you Apple II, II Plus, and //e owners don't have to feel left out of the CMOS revolution. The 65C02 is plug compatible with the 6502's in your Apples. You can replace your microprocessor with a 65C02, with the help of an IC (integrated circuit) extractor. The 65C02 chip, available from mail order houses, costs less than $20. Be forewarned, however, that replacing your microprocessor is a delicate task which should not be undertaken lightly. It will also void your warranty.

Apples in the Fast Lane

Dear *inCider*:

I use VisiCalc on my 64K Apple II Plus. Some of my spreadsheet programs are quite extensive and take a long time to recalculate and load. Is there an interface board or program available to speed up these functions? I would appreciate any assistance you can give.

Ernest L. Masson, Jr.
436 Crystal Street
New Orleans, LA 70124

Dear Ernest:

The only product that comes to mind that you may be interested in is the Accelerator II card from Titan Technologies, Inc., P.O. Box 8050, Ann Arbor, MI 48107. The Accelerator II, a peripheral card, plugs into one of the expansion slots in the back of any Apple II except the //c. In the same manner as Microsoft Softcard or DRI's new Gold Card, it functions like a co-processor. Unlike these other products, the Accelerator II doesn't use a Z-80 microprocessor (which permits the use of the CP/M operating system on the Apple). Rather, it uses an enhanced version of the 6502 MPU (microprocessor unit).

The 6502 used by the Accelerator II has a clock rate of 3.6 MHz. The 6502 in your Apple is clocked at 1.02 MHz. When you plug an Accelerator II into your computer, you substitute your slower 6502 with a much faster one. The resulting performance improvements are significant.

The Accelerator II recalculates spreadsheets faster than your 1.02 MHz Apple. It will not, however, speed up disk access. The Apple drives work at only one speed and you can't change that. If disk access speed is critical, you might investigate some of the hard disk systems on the market. With such a system, you would be able to fly through your spreadsheets.

Periodical Problems

Dear *inCider*:

Our library recently purchased an Apple //e and we are looking for software capable of handling records for about 400 periodical subscriptions. We would also like any information you can supply on library science software that is available for the Apple.

Robert Underbrink
Lumpkin Library
Blackburn College
Carlinville, IL 62626

Dear Bob:

Your subscription records could be handled easily by one of the file management programs on the market. Any of these simplified data base programs, such as Quick File //e from Apple, will do a good job in keeping your subscription records straight. See your dealer for demonstrations and details.

Software concerning library science is not as readily available as general file handling programs. The leading company in the field appears to be Right On Programs. You can reach them at P.O. Box 977, Huntington, NY 11743.

by Bob Ryan, inCider staff

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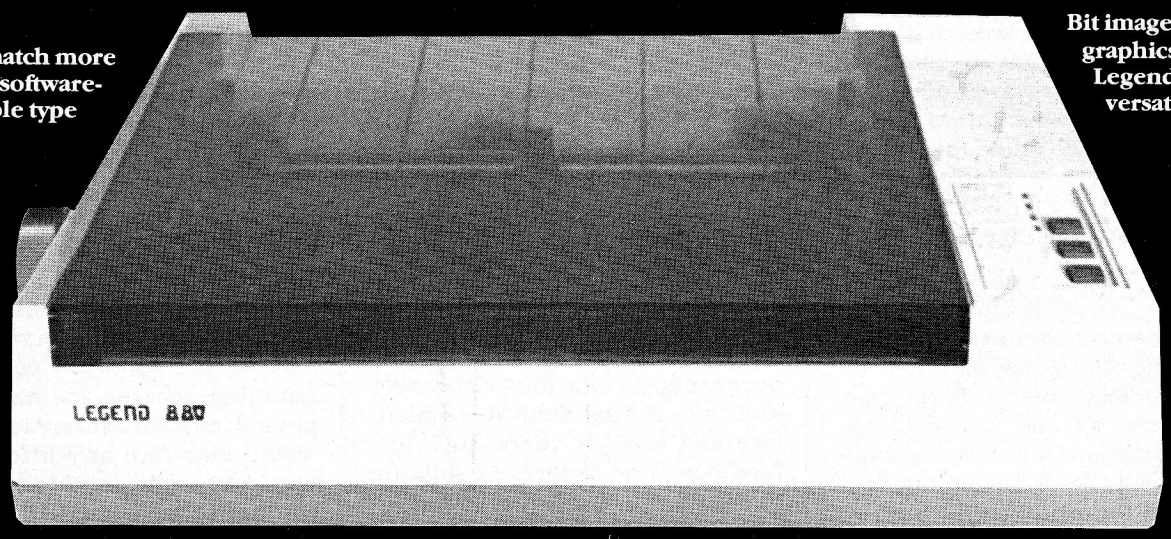

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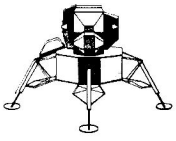
EAGLE I

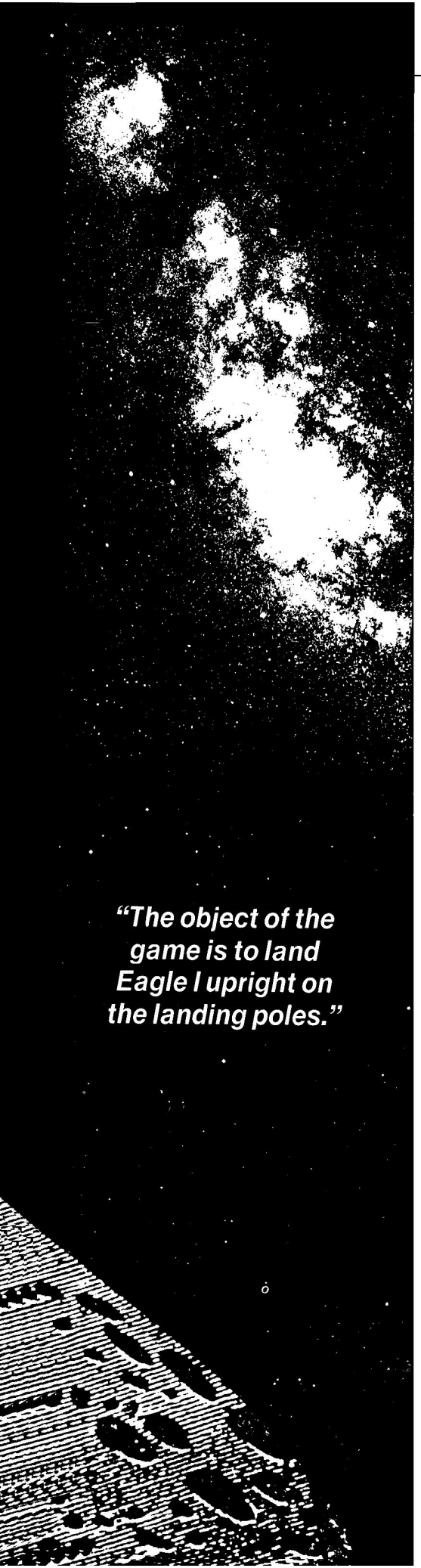


Recreate man's historical lunar landing with Eagle I, an Applesoft hi-res skill game.

Picture yourself in Neil Armstrong's seat aboard the lunar module, Eagle, descending into the Sea of Tranquility. Be careful not to hit the rough walls of the crevice. Don't get nervous or you'll blow the mission. Can you handle it?

This is Eagle I, a hi-res skill game written in Applesoft. Eagle I has no special graphics techniques, just standard commands such as DRAW and HPLOT. The object of the game is to land Eagle I upright on the landing poles positioned on the surface without going outside the edges of the screen. You move the ship with the following keys: I, J, K, M.

by Aric Branchfield



As you prepare for blastoff, take the following precautions. First, type in the shape table found in **Listing 1**. Second, type in the program printed in **Listing 2**. **Table 1** explains the main variables while **Table 2** contains a line-by-line program description. Be sure to include POKE 104,64 and POKE 16384,0 in your hello program before you run Eagle I. If you plan to write other programs on Eagle I, reboot the computer or you'll interfere with the memory.

Have fun with Eagle I. . . and safe landing.■

Write to Aric Branchfield at 8216 Audrain Drive, St. Louis, MO 63121.

Listing 1. *The shape table. BSAVE SHAPEU,A$930,L$15.*

```
0930- 01 00 04 00 12 3F 20 64
0938- 2D 15 36 1E 07 2E 15 36
0940- DF 23 64 25 00
```

Table 1. *Main variables.*

SP	Ships Left
SC	Score
X	Horizontal
Y	Vertical

Listing 2. *Program listing for Eagle I.*

```
1 HS = 0
2  POKE 234,0
3  PRINT  CHR$ (4);"BLOAD SHAPEU"
4  POKE 232,48: POKE 233,9
5 SC = 0:SP = 3:HS = 0
7  TEXT : HOME
8  PRINT "THIS WAS PROGRAM WAS WRITTEN BY ARIC BRA
     NCHFIELD"
9  FOR PL = 0 TO 2500: NEXT PL
10  HGR : HCOLOR= 3
20  HPLOT 0,90 TO 10,90 TO 30,70 TO 60,70 TO 70,60 TO
     70,40 TO 60,30 TO 50,30 TO 50,20 TO 70,20 TO 80,3
     0 TO 90,30 TO 110,50 TO 110,60 TO 100,70 TO 90,70
      TO 90,80 TO 80,90
30  HPLOT 80,90 TO 70,90 TO 50,110 TO 40,110 TO 40,120
      TO 60,140 TO 70,140 TO 80,130 TO 80,110 TO 100,9
     0 TO 100,90 TO 110,90 TO 130,110 TO 140,100 TO 15
     0,100 TO 170,80
40  HPLOT 170,80 TO 170,60 TO 180,50 TO 190,60 TO 190,
     80 TO 200,80 TO 200,60 TO 210,60 TO 220,70 TO 220
     ,80 TO 200,100 TO 200,120 TO 220,140 TO 230,140 TO
     240,130 TO 230,120
50  HPLOT 230,120 TO 230,110 TO 220,100 TO 230,90 TO 2
     50,90 TO 260,100 TO 270,90 TO 270,70 TO 279,60
60  HPLOT 0,0 TO 279,0 TO 279,159 TO 0,159 TO 0,0
65  HPLOT 195,75 TO 195,80: HPLOT 225,135 TO 225,140: HPLOT
     65,135 TO 65,140
69  GET A$
70 X = 5:Y = 83
75  HOME
76  VTAB 22: PRINT " SHIPS LEFT ";SP
77  VTAB 23: PRINT "SCORE ";SC
80  FOR W2 = 0 TO 1
90  ROT= 0
100  SCALE= 1
110  DRAW 1 AT X,Y
130  IF  PEEK ( - 16384) < 127 THEN 150
140  GET A$
150  IF X < 0 THEN 600
160  IF Y < 1 THEN 600
170  IF X > 279 THEN 600
180  IF Y > 159 THEN 600
190  IF A$ = "I" THEN Y = Y - 2: HCOLOR= 0: DRAW 1 AT
     X,Y + 2: HCOLOR= 3: DRAW 1 AT X,Y
```

Listing continued.

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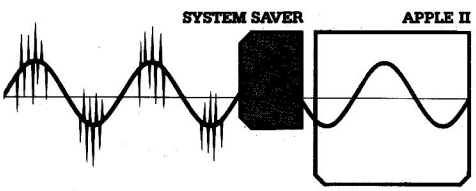
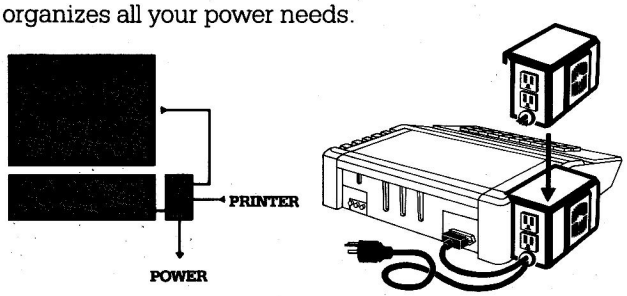


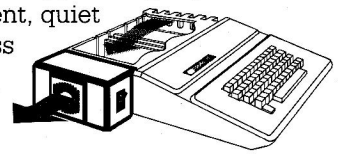
System Saver makes your Apple more convenient to use.
No more reaching around to the back of your Apple to turn it on. No more fumbling for outlets and cords to plug in your monitor and printer. System Saver organizes all your power needs.

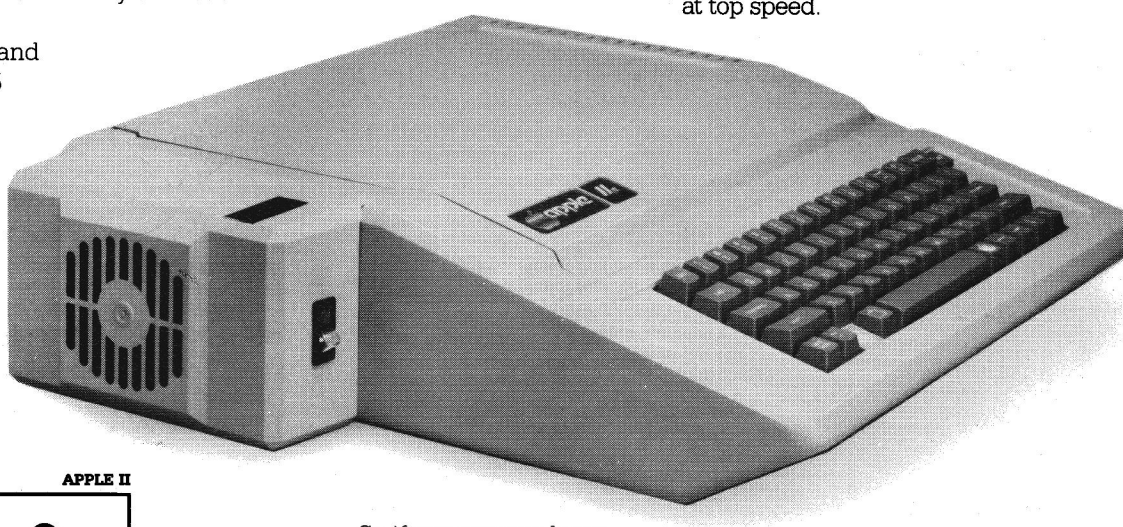


It functions as a multi-outlet power strip with two switched outlets. Plus System Saver offers the ultimate convenience; a front mounted power switch for fingertip control of your entire system.

System Saver lets your Apple keep its cool.
Today's advanced peripheral cards generate heat. In addition, the cards block any natural air flow through the Apple IIe creating high temperature conditions that shorten the life of the Apple and peripheral cards.

System Saver's efficient, quiet fan draws fresh air across the mother board, over the power supply and out the side ventilation slots. It leaves your Apple cool, calm and running at top speed.





So if you want to keep damaging heat, line noise and power surges out of your system for good, pick up the only peripheral that's in use every second your computer is in use. The System Saver. You'll soon come to think of it as the piece Apple forgot.

Compatible with Apple stand



$89.95 at Apple dealers everywhere.

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Circle 86 on Reader Service card.

*PC Magazine: March 1983.

System Saver is UL Listed. System Saver's surge suppression circuitry conforms to IEEE specification 507 1980, Category A. Available in 220/240 Volts, 50/60 Hz.

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Circle 156 on Reader Service card.

Flight Simulator II

For Apple II, Apple II+, & Apple IIe

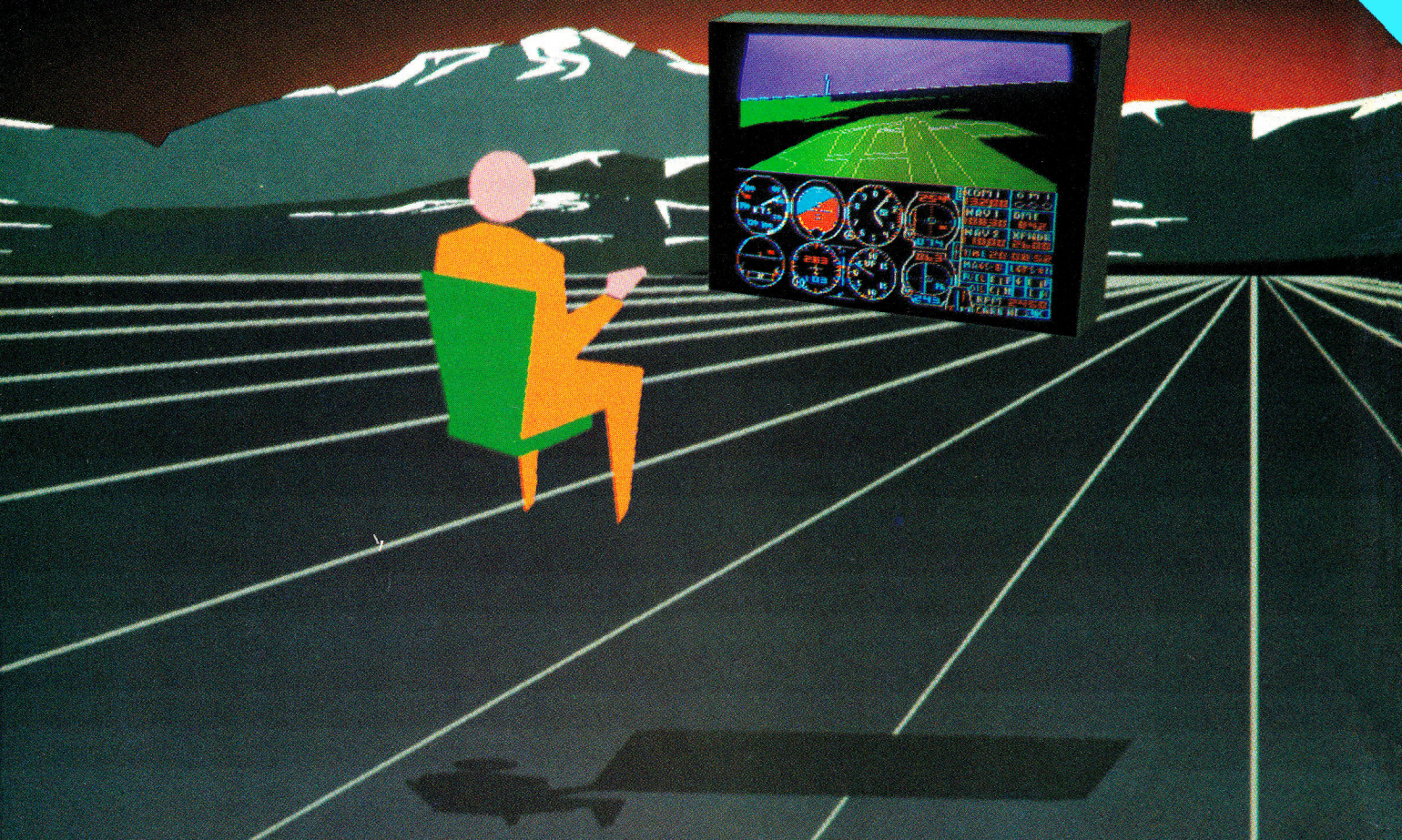

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Table 2. *Program description.*

Lines	Description
2	Sets collision counter to 0.
5	Sets ships to 3.
7–9	Introduction.
10	Sets hi-res graphics mode.
15	Sets score to 0.
20–65	Draws moon surface.
70	Sets x,y coordinates of ship.
75–77	Tells player score and ships left.
80–110	Draws ship.
130–140	Clears the keyboard.
150–180	Checks if ship goes out of the screen borders.
190–220	Checks if a key is pressed.
230–240	Checks if ship lands safely.
499	Checks if ship has crashed into the walls.
600–640	Tells player he has gone out of screen borders.
700–710	Tells player he has landed safely.
720–800	Increases the score.
1010–1070	Explosion sequence.
1100–1160	Tells player game is over and asks if he/she would like to play again.

Listing continued.



```
200  IF A$ = "M" THEN Y = Y + 2: HCOLOR= 0: DRAW 1 AT
     X,Y - 2: HCOLOR= 3: DRAW 1 AT X,Y
210  IF A$ = "J" THEN X = X - 2: HCOLOR= 0: DRAW 1 AT
     X + 2,Y: HCOLOR= 3: DRAW 1 AT X,Y
220  IF A$ = "K" THEN X = X + 2: HCOLOR= 0: DRAW 1 AT
     X - 2,Y: HCOLOR= 3: DRAW 1 AT X,Y
230  IF X = 195 AND Y = 73 OR X = 225 AND Y = 133 OR X
      = 65 AND Y = 133 THEN 700
240  IF X = 3 OR X = 275 OR Y = 3 THEN 600
499  IF  PEEK (234) > 2 THEN 1010
500  GOTO 130
600  FOR AZS = 0 TO 1500: NEXT
605  TEXT : HOME
610  VTAB 9: HTAB 13: PRINT "OUT OF SPACE!!"
620 SP = SP - 1
625  IF SP = 0 THEN 1100
630  FOR TIME = 0 TO 2500: NEXT TIME
640  GOTO 10
700  FOR W = 0 TO 2500: NEXT
702  FOR S = 0 TO 150:ZQ =  PEEK ( - 16336): NEXT S
705  TEXT : HOME
710  VTAB 9: PRINT "ONE SMALL STEP FOR MAN,ONE GIANT L
     EAP    FOR MANKIND!!"
712  IF X = 195 AND Y = 73 THEN SC = SC + 1000
713  IF X = 225 AND Y = 133 OR X = 65 AND Y = 133 THEN
     SC = SC + 5000
730  FOR GT = 0 TO 4000: NEXT
800  GOTO 10
1010  FOR P = 0 TO 64
1020  ROT= P: SCALE= 2
1025  DRAW 1 AT X,Y
1027 F =  PEEK ( - 16336)
1030  NEXT P
1040  FOR Q = 0 TO 2500: NEXT
1050 SP = SP - 1
1060  IF SP = 0 THEN 1100
1070  GOTO 10
1100  TEXT : HOME
1110  VTAB 9: HTAB 16: PRINT "GAME OVER"
1112  PRINT : PRINT "YOUR SCORE IS ";SC
1115  FOR Q1 = 0 TO 1500: NEXT
1120  NORMAL
1130  INPUT "WOULD YOU LIKE TO PLAY AGAIN?(Y/N)";K$
1140  IF K$ = "Y" THEN  RUN
1150  IF K$ = "N" THEN  END
1160  GOTO 1130
```


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inCider's inSidious inSolubles

"Curiouser and curiouser," said Alice. There she is every month, PEEKing and POKEing around the curtains. It would be terrifying to find the Queen of Hearts waiting to lock all the gates; or growing and shrinking to such proportions that she could no longer fit in 64K. What terrible hazards in Wonderland—or CompuLot. Even more shocking to Alice is that chip of silicon with bits and bytes running amuck.

But you, dear reader, can come to her rescue. Just identify the ilLusory, ilLogical, inAccuracies emBedded inSide *inCider*'s inSolubles—BASIC programs that run but, like the White Rabbit, down a hole; or seem to be programmed by the Mad Hatter.

Because we are receiving multiple submissions by some inSidious programmers, the policies are changing. Starting this month the new award for having your puzzle appear will be $20. The more you're published, the more pictures of Jackson you can collect. Remember to abide by the simple rules in both solving and submitting the inSolubles. A magazine like *inCider* has a lead time of several months, so enclose a SASE for a reply to your entry prior to its appearing behind Alice's curtain.

Rules for inSidious inSolubles

1. An inSoluble is an Applesoft BASIC program. Any poked machine language subroutines and calls to that subroutine must be correct.

2. The program should accomplish something. In other words, when it's run it will produce some kind of result.

3. The program, when typed in correctly, should not generate an error message of any kind, and it shouldn't crash.

4. Include a short explanation of what the program is supposed to do. The explanation may contain clues to the problem.

5. The program may make use of common peripherals such as disk, printer, and modem. DOS 3.3 or ProDOS commands are acceptable.

6. The program may have more than one error.

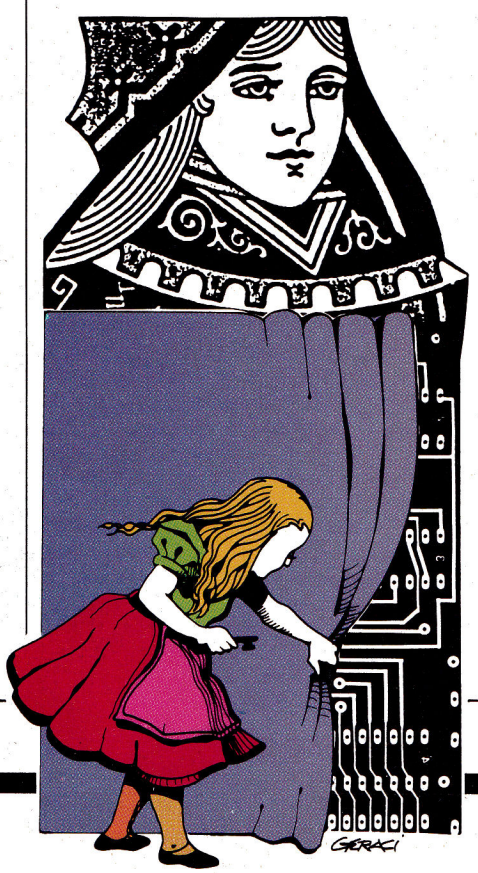
7. Provide the solution with the problem.

The shorter the inSoluble, the better—but we like programs that do something useful.

Notice the addition to rule #5. The greater use of ProDOS, Apple's new operating system, will present more traps for Alice as she wanders through CompuLot. It's about time we discovered the hazards lurking behind Prefix, Pathname, and Chain.

The Sine Wave

With school just opening for another term it is appropriate that this month's entries both are contributed by math teachers. Jerome Cherry of Worsley, Alberta would like his students to write a simple program that produces a sine wave. Nothing complicated with graphics, just the text screen and a few asterisks on a horizontal line. The Sine Wave *seems* to fulfill his requirements.



Send your inSolubles to Art Ude c/o inCider, 80 Pine Street, Peterborough, NH 03458.

by Art Ude

Listing 1. *The Sine Wave.*

```
10  REM THE SINE WAVE
20  TEXT : HOME
30 PI = 3.14159
40  FOR X = 0 TO 10 STEP 2
50 Y =  SIN (PI * X / 20) * X
60  PRINT "!";: HTAB (10 - Y): PRINT
     "*";: HTAB (10 + Y): PRINT "
     *"
70  NEXT
80  PRINT "----------------------
     ----------------": REM 39 DA
     SHES
90  FOR X = 10 TO 1 STEP  - 2
100 Y =  SIN (PI * X / 20) * X
110  PRINT "!";: HTAB (30 - Y): PRINT
     "*";: HTAB (30 + Y): PRINT "
     *"
120  NEXT : END
```

Costly Manhattan

Joseph Serico of Wayne, NJ was wondering how those gullible Indians who received $24 for Manhattan Island would have fared if, instead of wearing the beads, they had invested their money at 6% compounded annually. His students came up with two solutions. One is a typical programmer's way of solving the problem, the other uses the conventional formula for compound interest. One of the solutions is correct, one isn't—I think. What do you think of Costly Manhattan? ■

Listing 2. *Costly Manhattan.*

```
10  REM COSTLY MANHATTAN
15  REM METHOD #1
20  TEXT : HOME
30 R = .06:P = 24
40  FOR X = 1626 TO 1984
45 P = P + P * R: NEXT
50  PRINT "MANHATTAN REALLY COST
     $;P


10  REM COSTLY MANHATTAN
15  REM METHOD #2
20  TEXT : HOME
30 R = .06:P = 24
40 P = P * (1 + R) ^ (1984 - 1626
     )
50  PRINT "MANHATTAN REALLY COST
     $;P
```

Solutions on page 79.

Get into the Black with Your Apple

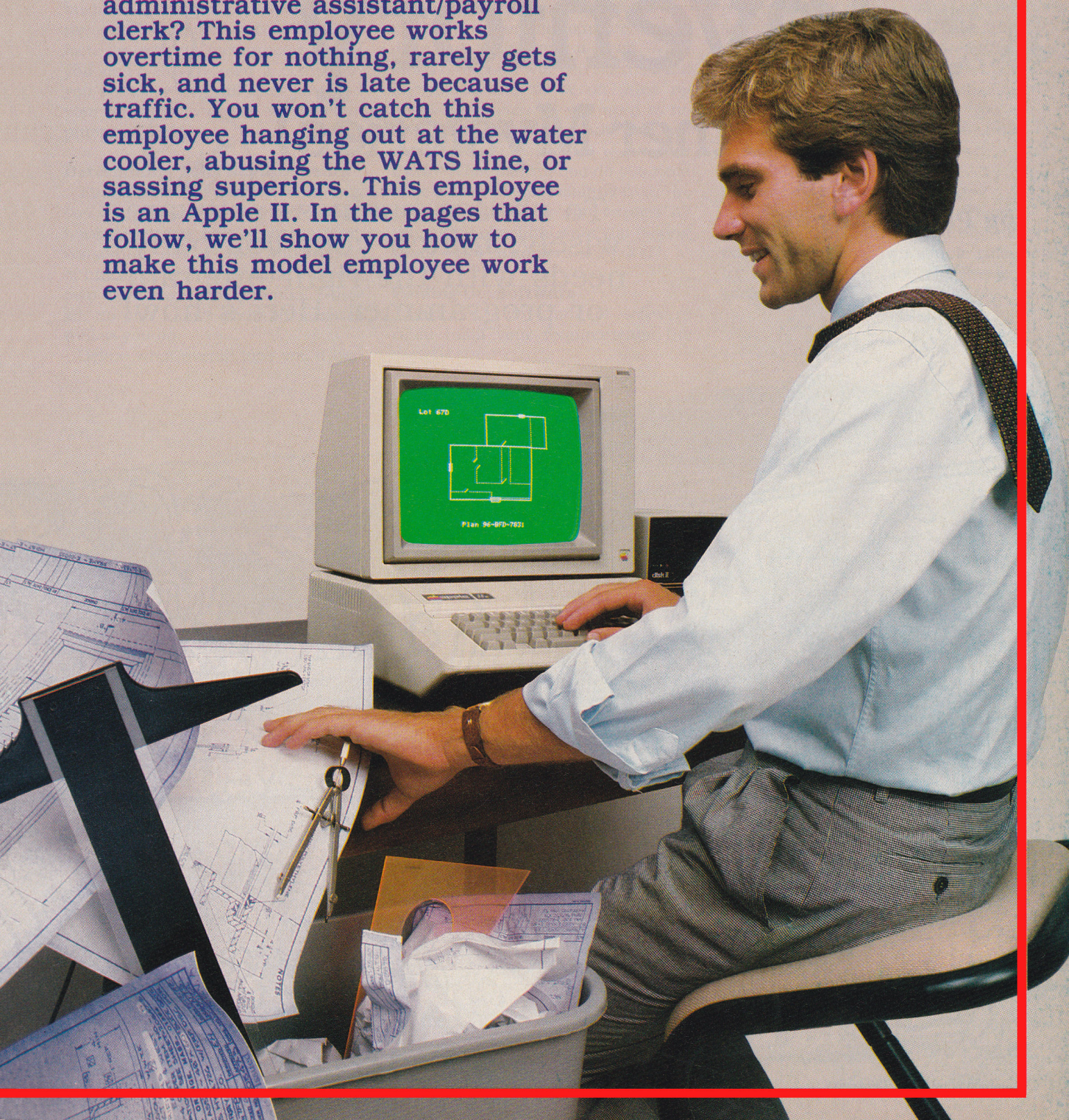
Taming the Wild Inventory (and Other Mysteries) . . . pick the most efficient software for your business needs.
by Peggy Burnett . . . . . page **52**

Customers on File . . . boost sales with a little help from Quick File.
by Howard Frazier . . . . . page **56**

A Piece of the Pie . . . slice through confusing corporate costs with picture-perfect pie charts.
by Steve Miller . . . . . page **66**

Letterheads Unlimited . . . save a trip to the printer for your business stationery.
by Ken McGuire . . . . . page **68**

Good help is hard to find these days, and harder still to keep. So what businessperson could resist a chance to hire a combination bookkeeper/accountant/typist/ administrative assistant/payroll clerk? This employee works overtime for nothing, rarely gets sick, and never is late because of traffic. You won't catch this employee hanging out at the water cooler, abusing the WATS line, or sassing superiors. This employee is an Apple II. In the pages that follow, we'll show you how to make this model employee work even harder.



Taming the Wild Inventory (and Other Mysteries)

by Peggy Burnett

To choose business software wisely, match your company's needs with the right program—or programmer. Here's how!

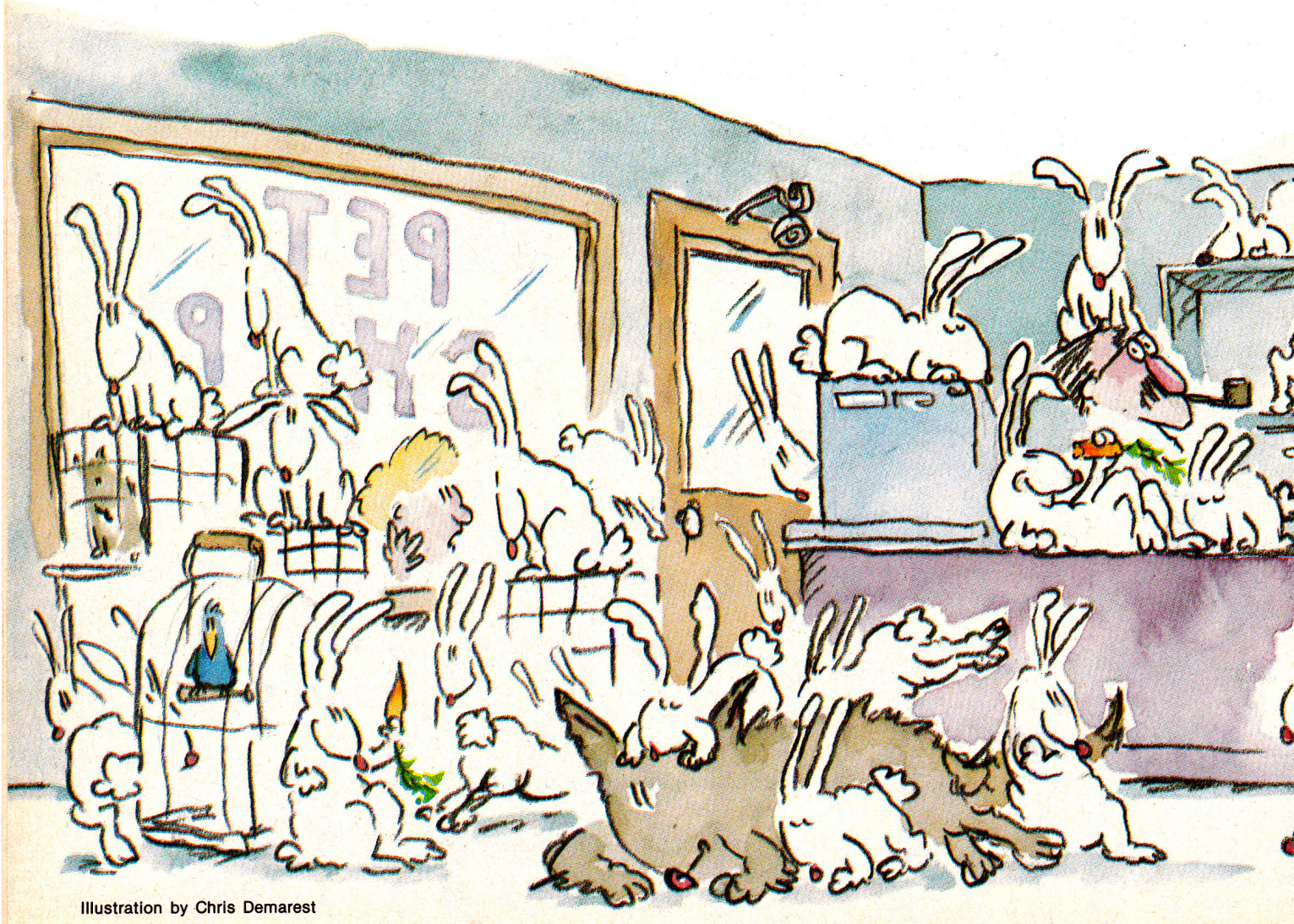


Illustration by Chris Demarest

Software ill-suited to your business can be worse than no software at all: it can introduce errors and cost you more money than the old manual procedures ever did. Appropriate software, on the other hand, improves efficiency, helps eliminate errors, and enables managers to make better decisions. But how do you discriminate between the two?

Choosing the right software for your business is crucial to your ability to use your computer successfully. In fact, the experts recommend that if you don't already own a computer, you should wait until *after* you find your software to decide which computer you'll use.

Determining Your Requirements

First determine exactly what it is you want the software to do. You may have to delegate part of such a time-consuming process to a subordinate or hire an outside consultant, but your own involvement is essential. After all, no one knows your business as well as you do.

Define what overall jobs you'd like the computer to do. Billing? Word processing? Payroll? Decide what tasks you'd like to automate, and then set priorities. You may decide that the most important tasks for the computer will be billing and payroll, with word processing and general ledger accounting getting lower priority at this point. Record your decisions, along with your priorities.

That was the easy part. Now you have to be more specific. For each task you listed, decide exactly what information you want the computer to produce and, again, write it down. What kinds of reports will you need? What information has to be on those reports? How often do you need to receive those reports, and how long can it take for the computer to produce them? What information do you need to be able to obtain instantly from the computer whenever you request it? What kind of volumes are you talking about—100 customers or 10,000?

Finding the Software

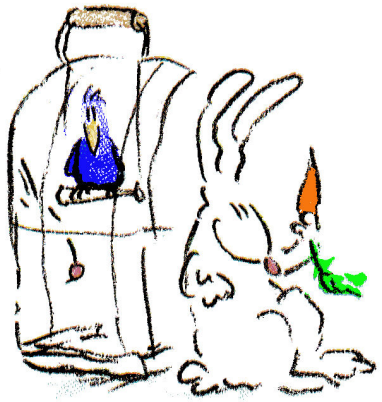
Basically, two kinds of software could fulfill your requirements: the already existing software package, and custom written software. The former is available from a variety of sources, including computer retail stores, computer manufacturers, software stores, and mail order. Such a package is usually (but not always) the least expensive kind of software.

Sometimes you need to have software written especially for you. The procedure used most often is to have software written to your specifications under contract with a computer consultant or programmer. Take this route when you can't find a prewritten software package that measures up to your requirements, or when having software written especially for you is less expensive than buying one of the packages available on the market.

Choosing a Software Package

Choosing a prewritten software package can take time, but it isn't difficult if you follow two simple rules: try before you buy, and check references.





A main advantage to buying a software package is that you don't have to guess whether or not it will work for you: all you have to do is try it out. If you're serious about a package, you can usually find a way to do this. Most computer stores are happy to let you try a package in their store. Some companies will sell you a low-cost demonstration version to try in your own office. Some companies even let you rent software on a monthly basis.

When you try out the software, refer to your list of requirements to be sure all the necessary features are available. Then try to make it work yourself. Using your own data, see if you can get the information you need in the format you want. Include the staff member who will be the primary user of the software in the decision-making process to ensure not only the software's viability but also the user's commitment to it.

Most important of all, check references. If other users have had problems with the software, chances are so will you. Find out how they're using it, what its weak points are, and whether, if they had it to do over, they'd buy it again.

Custom Software

Your business requirements may be so unique that no prewritten software package can do the job. You need custom software.

An element of risk is involved in having custom software designed. Consider only a reputable computer consultant or programmer to do the job. Unfortunately, there isn't any widely used certification process for computer programmers, so the burden falls on you to be sure the programmer who produces your software knows how to do it well.

Don't forget to check references. Has the programmer done any projects like yours in the past? Were his or her clients happy with the finished products? Were the cost figures exceeded?

Once you've chosen a programmer to work on your project, be specific about what you want the software he or she designs to do. You should present the written requirements list described above to the programmer, or the programmer should present written specifications to you for your review. Either way, both parties must thoroughly agree on what the software is to do and how it will work.

The programmer will then estimate how much the software will cost. Put this written cost figure together with the written specifications, sign, and have the programmer sign it. In essence, this document is your contract with the programmer, who agrees that the software will meet the specifications as written and will not exceed the agreed-upon price—as long as you don't change the specifications.

Aye, There's the Rub

As you see the product taking shape, you may realize that you didn't fully explain your needs to the programmer, or that you need features you didn't think of before. This happens. As these changes emerge, discuss them with the programmer. He or she can estimate the additional cost of such modifications, and you can then make an informed decision about their importance. The more specification changes you make, the more expensive the project. That's why you took so much time at the beginning of your software search to fully analyze your needs and write them down in detail.

Be involved during the development of the software. The sooner you notice a feature you don't like, the more quickly and less expensively the programmer can change it. If you stay involved, you'll know exactly how well the project is progressing.

Avoiding Pitfalls

Even as the most experienced and capable typists occasionally make mistakes, so do people who are entering data into the computer. Human beings make errors that the software must undo. Sounds obvious, doesn't it? But, believe it or not, some software provides no way to correct an error once it has been entered.

Another common problem centers in support—that often overlooked but important area. Is the manual clear and easy to understand? Does the vendor know enough about the software to answer your questions? If your vendor doesn't use the software regularly for his or her own business, the chances are slim that you'll receive much help once your staff is trained. Some software manufacturers have seminars available, consultants to answer your questions, or telephone hotlines. If you don't have someone, somewhere, to turn to when you have problems or questions, you may be in trouble later on.

Modifying the Software Package

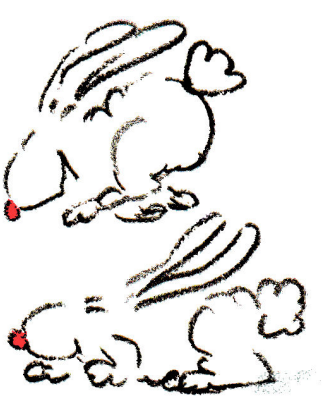
Occasionally, a business buys a prewritten software package and then has it changed to fit the particular needs of the business. Ideally, the advantage of this approach is in saving money over completely custom-written software, while still providing a package that fits the business's requirements perfectly.

But the world of computers is not ideal (at least *mine* isn't), and this approach can sometimes lead to problems like the following:

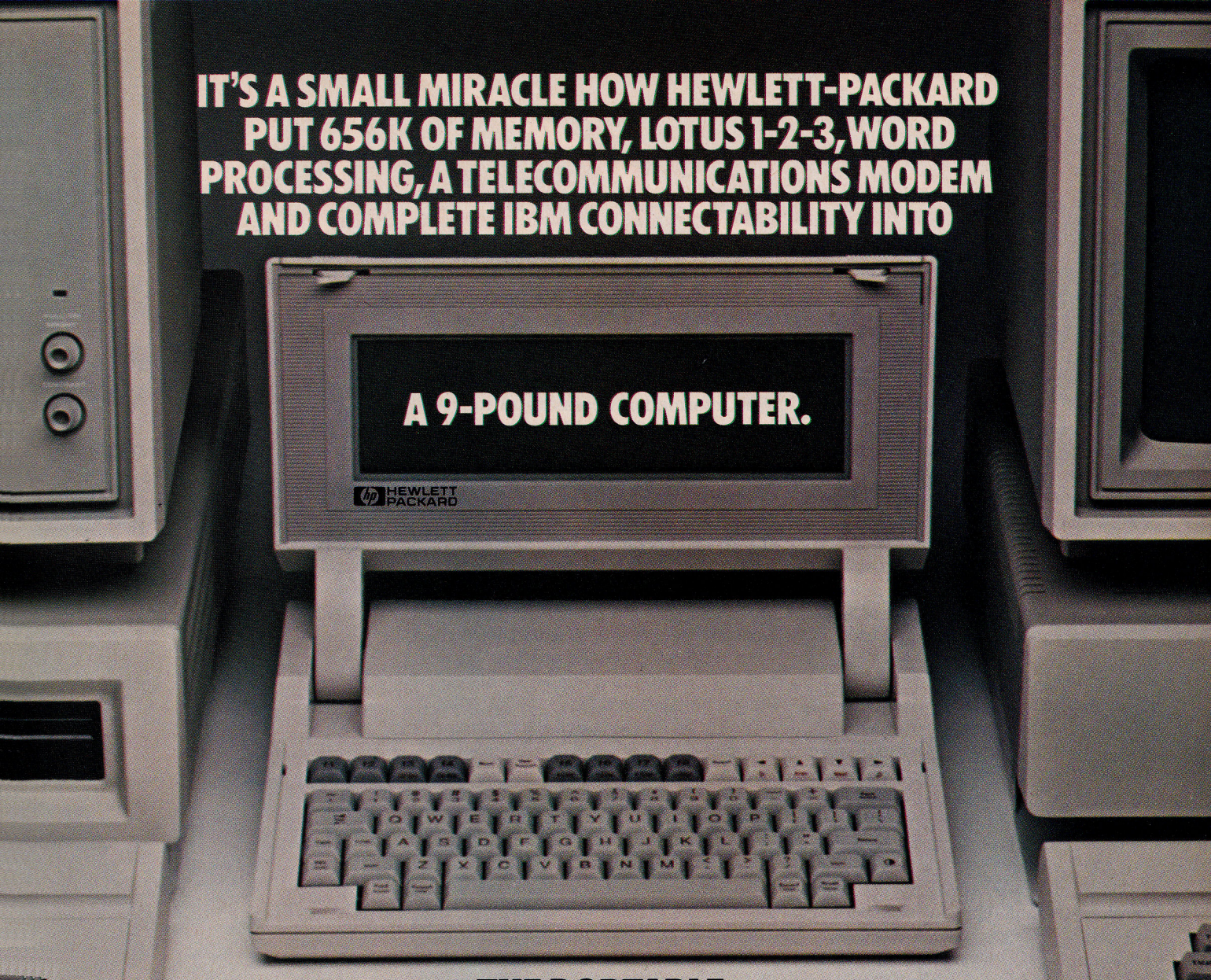
- The programmer changes the package and then moves away, leaving software that the original manufacturers will no longer support because of the changes.
- Changing one aspect of the software causes some unforeseen side effects, introducing errors into the data base.
- The software package couldn't be modified in the first place.

So if you must take this approach, do so with caution. Check references, expect to pay enough to allow the programmer to research the software thoroughly before getting started, and make sure the programmer will still be around to answer your questions in the future.■

Peggy Burnett has specialized in small-business computer applications since 1972. Write to her at P.O. Box 1355, Lawrence, KS 66044.



IT'S A SMALL MIRACLE HOW HEWLETT-PACKARD PUT 656K OF MEMORY, LOTUS 1-2-3, WORD PROCESSING, A TELECOMMUNICATIONS MODEM AND COMPLETE IBM CONNECTABILITY INTO



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Customers on File

This salesman found that his Apple was the secret to reducing paperwork and increasing accounts.

by Howard Frazier

Selling time is that all-important moment when a *seller* is actually in contact with a *buyer* and writing an order. All too frequently, a far greater portion of our time as salespeople is spent in lesser pursuits. Paperwork, record-keeping, reports, non-productive calls, and similar activities rob us of valuable time we could spend making sales. However, my computer and I have discovered some practical ways to reduce busy work and gain more of that critical selling time.

Hidden Sales Opportunities

Field salespeople are generally "movers and shakers" who loathe detail work. Consequently, we often spend our time calling on the routine or obvious account situations and miss lucrative hidden sales stimuli in our territories.

The difference between the successful and unsuccessful salesperson is often poor or no historical information about accounts. This data is critical to identifying key sales opportunities.

Most companies do provide account records for their salespeople, but these alone are limited and woefully inadequate. They seldom identify the strategic information necessary to maintain meaningful sales histories.

Quick File to the Rescue!

Early in my Apple ownership, I purchased Quick File for personal filing and record-keeping. I have been very happy with its speed and ease of use. In the beginning, I rarely applied it to business purposes other than phone and address listings. But as I used it more, I began to see the creative ways it could be applied to my account record-keeping situations.

Within its limits, Quick File is an extremely versatile and sophisticated





Illustration by John Pirman

Figure 1.

The file catalog.

```
FILE CATALOG                                                  Escape: Main Menu
File: None

File Name                    Records  Date        File Name                    Records  Date
==========================================================================================
1. CUSTOMER INFORMATION        15  JAN 15 84   14. PROD/SUM:WHSE. STG.    1 JAN  6 84
2. PROD/SUM:ABC RUBBER          1  JAN 15 84   15. CALL/PATT:WHSE. STG. 15 JAN  6 84
3. CALL/PATT:ABC RUBBER        15  JAN 15 84   16. ACCT/HIST:WHSE. STG. 12 JAN  6 84
4. WEEKLY EXPENSES             15  JAN 10 84   17. PROD/SUM:MACHO WEAR    1 JAN 12 84
5. ACCT/HIST:ABC RUBBER        12  JAN 15 84   18. CALL/PATT:MACHO WEAR 15 JAN 12 84
6. ACCT/SUM:(A-L)               3  DEC 22 83   19. ACCT/HIST:MACHO WEAR 12 JAN 12 84
7. ACCT/SUM:(M-Z)               3  DEC 22 83   20. PROD/SUM:DRUGS-R-US    1 JAN  3 84
8. CALL/PATT:GROWTH PR.        15  JAN  5 84   21. CALL/PATT:DRUGS-R-US 15 JAN  3 84
9. PROD/SUM:GROWTH PR.          1  JAN  5 84   22. ACCT/HIST:DRUGS-R-US 12 JAN  3 84
10. ACCT/HIST:GROWTH PR.        12  JAN  5 84   23. PROD/SUM:PETITE BR.    1 JAN 11 84
11. PROD/SUM:FACTORY O.          1  JAN 13 84   24. CALL/PATT:PETITE BR. 15 JAN 11 84
12. CALL/PATT:FACTORY O.        15  JAN 13 84   25. ACCT/HIST:PETITE BR. 12 JAN 11 84
13. ACCT/HIST:FACTORY O.        12  JAN 13 84   26. PROD/SUM:ART CREA.     1 JAN 10 84
------------------------------------------------------------------------------------------
Type selection and press Return:
```

Figure 2.

Customer names, addresses, and telephone numbers.

```
File: CUSTOMER INFORMATION      REVIEW/ADD/CHANGE                    Escape: File Menu
Selection:  All records

CLIENT/PROSPECT COMPANY                STREET/P.O. BOX   CITY/STATE/ZIP        PHONE
==========================================================================================
WARREN PEACE, M RUSSIAN IMPORTS 1212 TOLSTOY BLVD ATLANTA, GA  30313  908-3493
TERRY CLOTH, PR FABRICS, INC.   98 SILK ST.       ATLANTA, GA  30567  435-9086
MYRON PILLPUSHE DRUGS-R-US, INC 123 ASPRIN AVE.   COLUMBUS, GA  31943 309-567-8
MILES FORBUSH,  ACE TRUCKING    298 INDUSTRIAL BL ATLANTA, GA  30335  244-0342
MARVIN FARNSWOR FACTORY OUTLET  P.O. BOX 7000  (4 ATLANTA, GA  30356  233-4565
JOHN JONES, PUR ABC RUBBER      P.O. BOX 12681 (1 ATLANTA, GA  30333  233-9876
JOE BLOW, OWNER BREEZY FAN CO.  111 WINDY WAY     COLUMBUS, GA  31944 309-546-9
JIM WALTERS, OW NORTHSIDE RESTA 22345 STATE STREE COLUMBUS, GA  31945 309-998-8
FRED WARREN, CO XYZ PLASTICS    768 AMES AVE.     ATLANTA, GA  30345  345-8765
DAVID HABERSHAM ART CREATIONS,  12 NORTH AVE.     ATLANTA, GA  30323  765-0989
BRUCE ARMBENDER GROWTH PRODUCTS P.O. BOX 345  (67 COLUMBUS, GA  31945 309-234-9
BOBBY HEARD, OW WAREHOUSE STORA 34 FIFTH STREET   COLUMBUS, GA  31944 309-885-3
BILL UPCHURCH,  OIL PRODUCTS, L 983 SLIPPERY LANE COLUMBUS, GA  31943 309-987-5
BART STUDD, OWN MACHO WEAR, INC 235 NINTH AVENUE  ATLANTA, GA  30345  949-4384
BARBARA UPANDCO PETITE BRANDS   P.O. 7688   (455 ATLANTA, GA  30322  567-0989
------------------------------------------------------------------------------------------
Type entries or use OA options.                                   OA-? for Help
```

piece of software. While not a true data base program (it can access only one file at a time), it has proven capable for all the applications I have attempted—and without a great amount of monetary investment and learning time. A novice can be up and running in a couple of hours. At $100, it is one of the biggest bargains in the market today. But let's get down to specifics.

Organizing the Files

In your typical office file drawer, you have only so much space. In each file, you generally have lumped together all of your customer information, account history, and other data. Sometimes those files can get pretty thick! Consequently, you don't want to fill the drawer with pieces of paper that are seldom or never used. The same considerations are true for computer memory and disk space.

This type of thinking helps identify the fields we must define to satisfy our particular needs. The ones that follow are those I deemed important. You may wish to use some and eliminate others. Quick File allows you to select and define anything you wish, as long as it conforms to certain parameters.

Quick File can maintain up to 26 records per disk. Field salespersons generally have anywhere from 10 to 150 accounts, with the average falling between 20 and 40. So you can generally keep all your information on just a few disks, depending on how many separate files you maintain for each account.

Breaking data down into different files makes it easier if you must give a report to your boss by 5 o'clock on "How much Product C did you sell in the first six months of last year?" or "What are your expenses to date for this quarter?" Instead of having to rummage through all your files to extract the needed information, you can refer to just one.

When you start to use Quick File, the file catalog is the first screen to come up (**Figure 1**). This catalog listing is much like tabs in a file drawer.

Best Connection



ProModem™ 1200A Apple Card Pack

It's the best 300/1200 baud 212A telephone modem for your Apple® II, II+, and IIe. "Best" because it's the easiest to install and use, provides more useful modem features for your money, and lets you add software capabilities as your needs grow.

We really do mean easy. Just plug the ProModem Card Pack into any expansion slot and connect the telephone cord. On-board intelligent software in ROM includes a simple but powerful terminal program. With a few keystrokes, you'll be "on line" and communicating.

ProModem 1200A offers you the best price-to-performance modem available with Auto-Answer and Auto-Dial, Programmable Intelligent Dialing, Built-in Speaker with Volume Control, Help Commands, Extensive Diagnostics, and more.

And when you need more sophisticated capabilities like Terminal Emulation, you're all set.

The 1200A is fully Hayes compatible. You'll be able to use most of the Apple II communications programs available.

PRICE COMPARISON

PROMETHEUS

(1) ProModem 1200A Apple Card Pack, complete with on-board software and all necessary hardware
List Price: $449

HAYES

(1) Smartmodem 1200 "standalone modem"
(2) Serial Card
(3) RS-232C Cable
(4) Communications Software
Total List Price: $957

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The "Help" Screen and "Auto redial if busy" functions make the 1200A convenient to use. The second phone jack for the telephone handset allows switching from voice to data. You get all of this, ready to use, complete with easy to understand documentation, and a telephone cord for only $449.

See your local dealer for a demonstration. He'll show why ProModem 1200A is your best connection.

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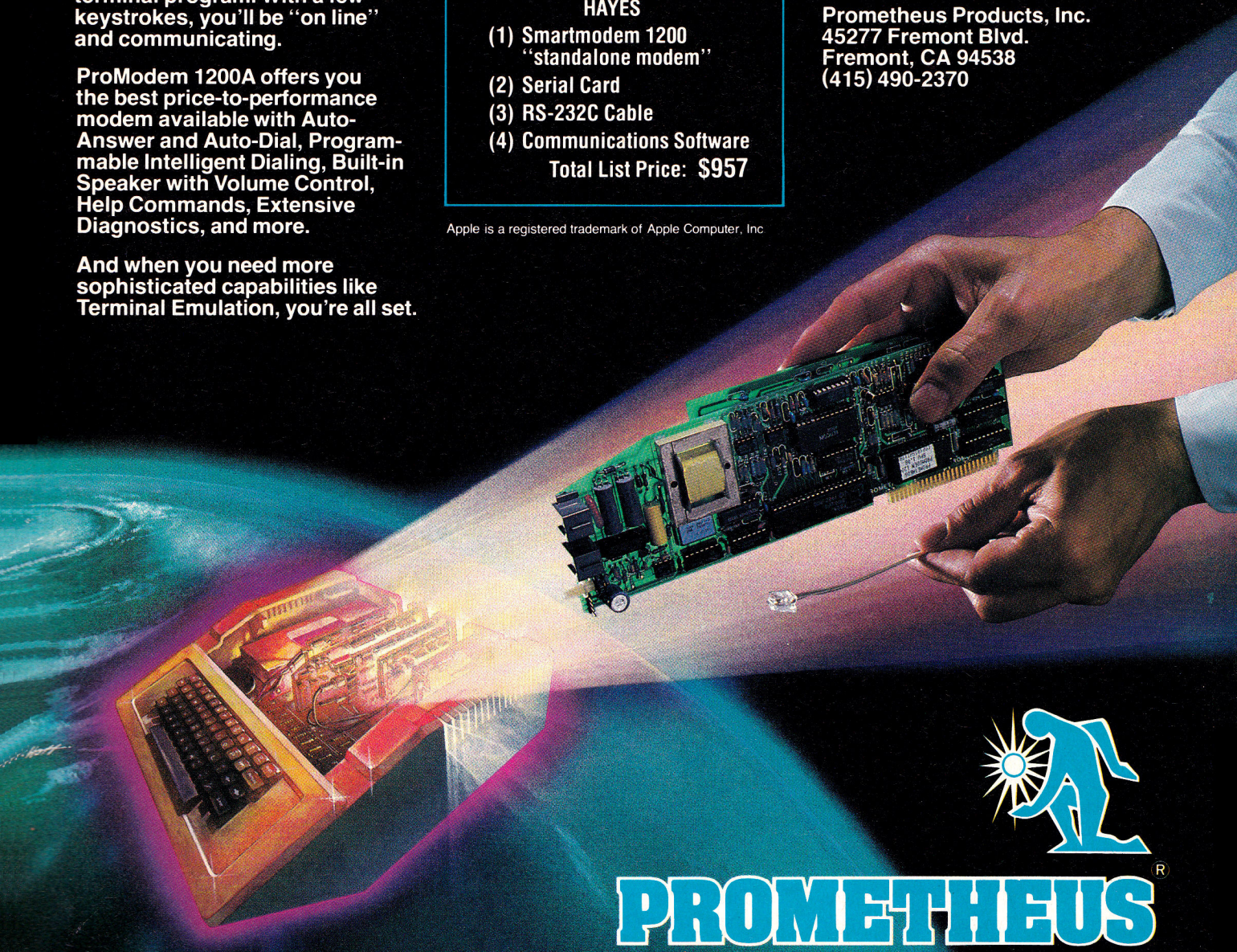
45277 Fremont Blvd.
Fremont, CA 94538
(415) 490-2370



PROMETHEUS®

Circle 268 on Reader Service card.

Figure 3.

The customer profile reminds you of details that will help you work with your client.

```
File: CUSTOMER INFORMATION      REVIEW/ADD/CHANGE          Escape: File Menu

Selection: ABC RUBBER

Record 6 of 15                  Additional: 15
==========================================================================
CLIENT/PROSPECT: JOHN JONES, PURCHASING AGENT (BEING TRANSFERRED IN 3 MOS.)
COMPANY: ABC RUBBER
STREET/P.O. BOX: P.O. BOX 12681 (123 FOURTH ST.)
CITY/STATE/ZIP: ATLANTA, GA  30333
PHONE: 233-9876 (HOME  256-0990)
OTHER KEY CONTACTS: FRED SMITH--CONTROLLER, ANN MARSH--VP OF MARKETING
SECRETARY NAME: LISA (BIRTHDAY - OCT 15)
ACCOUNT CLASSIF.: -A-
REMARKS: CLIENT NERVOUS TYPE, BEEN WITH COMPANY 18 YEARS, BUT CONCERNED ABOUT
-: MAKING IT TO RETIREMENT, WIFE'S NAME--ALMA
-: LIKES GOLF, HAS BOAT AND LAKE HOUSE, MEMBER OF COUNTRY CLUB
-: PREVIOUS POSITION WAS WITH MARKETING
-:
CALL FREQUENCY: MONTHLY
DATE OF LAST CONTACT: JAN 14 84
--------------------------------------------------------------------------
Type entries or use OA options.                              OA-? for Help
```

Figure 4.

From past purchasing patterns, you can predict what the client is likely to buy, and when.

```
File:  ACCT/HIST:ABC RUBBER    REVIEW/ADD/CHANGE          Escape: File Menu

Selection: All records

YR PROD JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
==========================================================================
83 A   2690  2380  2120  3030  2130  3020  2910  2250  2290  2970  3120  2810
83 B   1060  1200  1500  1000  1200  1090  3000  1210  1400  890   980   780
83 C   770   890   700   690   720   780   750   740   790   700   680   740
83 D   560   530   870   480   340   550   780   520   600   560   520   540
82 A   2480  2200  2610  2340  2420  2800  2510  2080  2120  2750  2890  2610
82 B   980   1110  1160  990   870   1010  1070  1120  1300  820   910   720
82 C   710   820   690   740   680   720   830   680   730   650   630   680
82 D   520   490   610   380   510   500   460   480   550   520   480   500
81 A   2290  3010  2110  2080  2800  2170  2150  2090  2100  2230  1970  2510
81 B   780   900   1030  790   1080  1100  1190  1010  950   760   820   720
81 C   650   680   720   640   580   610   710   550   630   710   730   690
81 D   460   490   410   420   470   510   400   470   430   490   510   480
--------------------------------------------------------------------------
Type entries or use OA options.                              OA-? for Help
```

Specific Files for Different Purposes

To examine the first file, customer information, type 1 and press return. In **Figure 2**, the initial screen page in this file, is a listing of the first 15 names. To see additional listings on the next "page," press the open-apple key and the down arrow.

To see "inside" an individual file, place the cursor at the beginning of that record and press open-apple-Z. In **Figure 3**, the screen illustrates some fairly standard file information, but I usually try to load each field with as much data as I can.

For example, on the first line (CLIENT/PROSPECT), I made a note about his transfer in three months. This is a reminder to push for all the business I can before the new (unknown quantity) person arrives. This also prompts me to start researching who the replacement might be. I can then start making preliminary contacts, or even ask the incumbent for an introduction.

I always try to remember the secretary on her birthday. That thoughtfulness can carve a special place in her heart, and maybe help me get that tough appointment when her boss is really busy.

I use the remarks section for any information which might help me paint a better customer profile. For example, knowing that he has a marketing background suggests to me that he will probably respond to a sales presentation with flair and imagination. However, I also note that he's security conscious, so I want to couch everything I present with reassuring facts and figures. He's probably not going to be willing to do anything that will put him out on a limb.

The maximum number of fields per screen in Quick File is 15, and these can be no more than 76 characters in length, or one line maximum. I overcame that limitation by creating four blank fields following the REMARK

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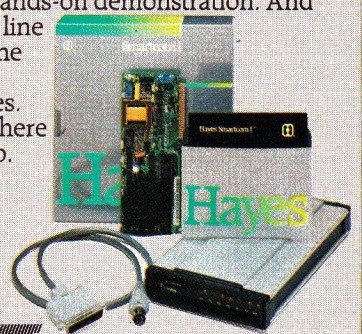

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Circle 51 on Reader Service card.

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Figure 5.

Quick File took no time at all to generate this report, comparing sales of four products in the first six months of the past three years.

```
                                                                  Page  1
File:   ACCT/HIST:ABC RUBBER                                      JAN 14
Report: TOTALS (JAN-JUN)
YR  PROD     JAN      FEB      MAR      APR      MAY      JUN     TOTAL
--- ---- -------  -------  -------  -------  -------  -------  --------
83  A       2690     2380     2120     3030     2130     3020     15370
83  B       1060     1200     1500     1000     1200     1090      7050
83  C        770      890      700      690      720      780      4550
83  D        560      530      870      480      340      550      3330
82  A       2480     2200     2610     2340     2420     2800     14850
82  B        980     1110     1160      990      870     1010      6120
82  C        710      820      690      740      680      720      4360
82  D        520      490      610      380      510      500      3010
81  A       2290     3010     2110     2080     2800     2170     14460
81  B        780      900     1030      790     1080     1100      5680
81  C        650      680      720      640      580      610      3880
81  D        460      490      410      420      470      510      2760
            13950*   14700*   14530*   13580*   13800*   14860*   85420*
```

Figure 6.

The account summary displays totals for each year.

```
File:   ACCT/SUM:(A-L)          REVIEW/ADD/CHANGE
Selection: All records                                  Escape: File Menu

YEAR   ABC RUBBER   ART CREATIONS  DRUGS-R-US   FACTORY OUTLET  GROWTH PRODUCTS
==========================================================================
1983   59560        20310          33460        48120           46980
1982   56430        18090          29870        45040           38930
1981   52080        16500          26410        43070           31900
--------------------------------------------------------------------------
Type entries or use OA options
                                                                OA-? for Help
```

line to create the extra space I needed. (That's why you see "-:" at the beginning of each line.) With 128K of memory, Quick File has the capacity to store approximately 125 records of this size *per file*, but 64K has been enough to handle my situations easily.

The Account History file (ACCT/HIST, **Figure 4**) provides a picture of past purchasing patterns by product. For example, are purchases seasonal, sporadic, level, based on contact frequency? This type of data might show that I can postpone making face calls on certain customers who are in a buying limbo. That would free me to approach those accounts which are in their buying peaks, or to develop new business.

What About "Number Crunching"?

What if I wanted to compare totals, such as how much revenue I generated in 1982 versus 1983? Quick File can calculate this in the reports section, producing reports, at the touch of a button, which can satisfy those last-minute requirements we salespeople often face. **Figure 5** is an example of a report derived from ACCT/HIST.

Notice that this includes only the first six months. A screen has only so much space. **Figure 4** has no room for a totals column. Therefore, I divided the data into two six-month parts, since I have reports that address that time span. However, Quick File allows me to select out whatever data I want (in any order I prefer) for the report, as long as it fits on the screen. When you think about it, this is necessary to print on standard paper anyway. Regular 8½-by-11 sheets are also only 80 characters wide in the vertical format.

If I wish to see totals for each of the past three years by account, I use my account summary (ACCT/SUM) file (**Figure 6**). Again the data had to be split, so the file is defined as including A–L. That makes it easy to locate the particular information I need quickly.

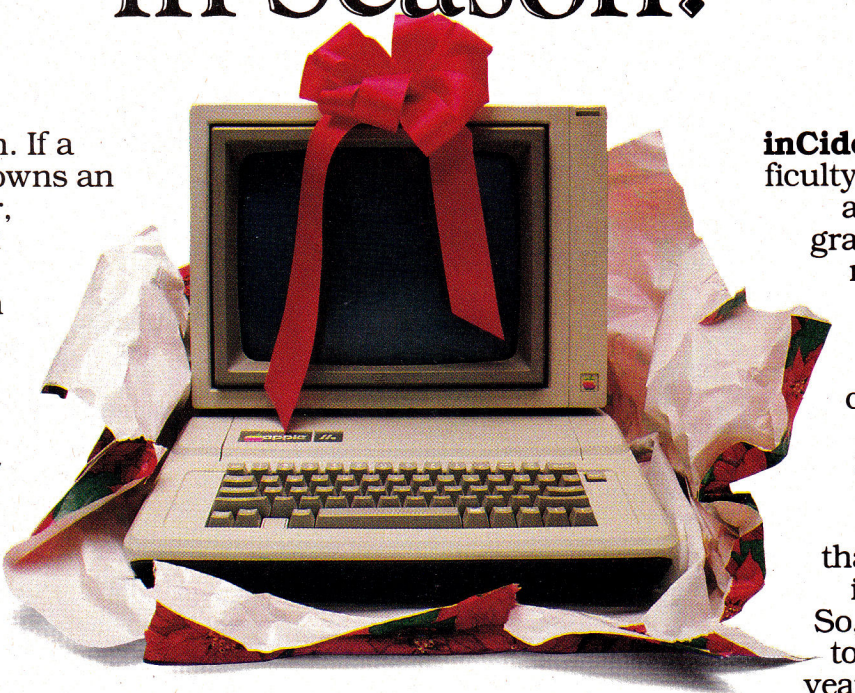
An old favorite of all salespeople is the expense report (**Figure 7**). The calculation feature of Quick File again allows me to enter my expenses and produce a report with all the totals computed. By making a habit of entering my expenses every night (except when I'm out of town), I save quite a bit of time on Fridays when I have all the other paper work to submit.

Special Files

I have created a file that helps me a great deal. I labeled it the call pattern (CALL/PATT) file (**Figure 8**). This illustrates an account's call activity for the past 15 months.

In this example, the two principal contacts are Bruce and James Armbender. The record shows that Joe Barnes (my vacation replacement) also made a successful face call and got an order, so a sale doesn't require *my* presence. (There goes the old ego!) Look at the "NO ORDERs" in the results column. Each one is a result of

It's Christmas and Apples are in Season.



Christmas again. If a relative or friend owns an Apple II computer, you ought to start thinking about what to give them for Christmas.

Why not give them the most useful gift of all, **user-friendly information**. Information like that found only in **inCider** magazine, the Apple II Journal.

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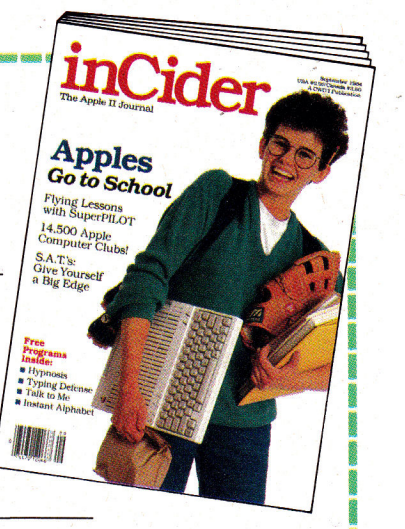

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Figure 7.

The expense report.

```
                                                                                  Page  1
File:   WEEKLY EXPENSES                                                           JAN 14
Report: EXPENSE SUMMARY
WEEK OF:   MILES  GAS,OIL  MEALS ENTER.  LODGING    TIPS  PHONE  OTHER    TOTAL
-------- ------ -------- ------ ------ -------- ------ ------ ------ --------
1-9-84     1024   128.00  83.67  12.16   124.50   5.00   1.25          354.58
1-2-84      996   124.50  78.45          139.00   6.25   2.00          350.20
12-26-83    854   106.75  34.18   9.12    67.00  10.00   1.25          228.30
12-19-83    876   109.50  81.84  11.07   142.16   7.50   1.75  12.00   365.82
12-12-83   1065   133.13  68.94          129.90   4.00   1.50          337.47
12-5-83    1087   135.88  80.56   8.34   130.14   6.50   2.75   5.98   370.15
11-28-83    923   115.38  75.87          126.75   6.00   2.00          326.00
11-21-83    801   100.13  51.27           78.13   3.50   2.25   6.75   242.03
11-14-83   1093   136.63  82.38  11.23    84.56   9.00   3.25   2.38   329.43
11-7-83    1034   129.25  78.56           76.23   6.50   3.40          293.94
10-31-83    996   124.50  67.67           87.54   8.75   2.45          290.91
10-24-83    897   112.13  86.34  14.03    85.50   6.00   3.25   4.78.  312.03
10-17-83   1094   136.75  78.12           78.98   5.60   3.40   7.16   310.01
10-3-83     966   120.75  73.43   6.78    88.54   7.50   2.75          299.75
9-26-83     897   112.13  78.90           90.12   8.90   4.32   3.45   297.82
          14603* 1825.41*100.18* 72.73* 1529.05* 101.00* 37.57* 42.50* 4708.44*
```

Figure 8.

The call pattern helps you develop strategy.

```
File:   CALL/PATT:GROWTH PR.      REVIEW/ADD/CHANGE
Selection: All records                                                  Escape: File Menu

PERSON CONTACTED   SCH/DATE   ACT/DATE  BY WHOM      HOW CONTACTED  RESULT
=================================================================================
BRUCE ARMBENDER    JAN  4 84  -         -            -              $5430
JAMES ARMBENDER    DEC  5 83  DEC  6    -            -              $4980
BRUCE              NOV  6     -         -            PHONE          NO ORDER
BRUCE              OCT  4     -         -            -              $4120
JAMES              SEP  5     -         -            -              $4680
BRUCE              AUG  6     -         -            -              $4870
BRUCE              JUL  7     JUL  9    -            PHONE          NO ORDER
BRUCE              JUN  5     -         JOE BARNES   -              $4230
JAMES              MAY  4     -         -            -              $3990
BRUCE              APR  5     -         -            -              $4620
JAMES              MAR  6     -         -            -              $5520
JAMES              FEB  4     -         -            PHONE          NO ORDER
JAMES              JAN  6 83  JAN  8    JOE BARNES   PHONE          NO ORDER
BRUCE              DEC  7 82  -         -            -              $3430
                   NOV  4     -         -            -              $4570
Type entires or use OA options.                                   OA-? for Help
```

phone contact instead of a face call. I learned from this pattern that this account evidently wants to see me (or someone) before placing an order.

I use an actual date (ACT/DATE) column as well as a scheduled date (SCH/DATE) column to determine if I'm getting an unusual number of stand-ups. This alerts me to certain bad days for appointments (such as all Tuesdays when they have staff meetings), or it might suggest that I'm being avoided and I need to identify a more receptive contact.

By looking at this picture of activity, I can detect wasted motion and identify a more effective sales strategy. The blank spaces on the screen represent economy of data entry. The only entries made are exceptions. If a face call is the rule, then "phone" is the exception. I ordinarily make the calls, so Joe Barnes is the exception. Since I know the Armbenders' last name after the first entries, I don't enter it each time. My only exception to these exceptions is the NO ORDER statement rather than a blank in the results column. I want to confirm that I *didn't forget* to make that important amount entry.

You may have certain unique needs in your territory that you want to address in a special file. The only limit is your imagination!

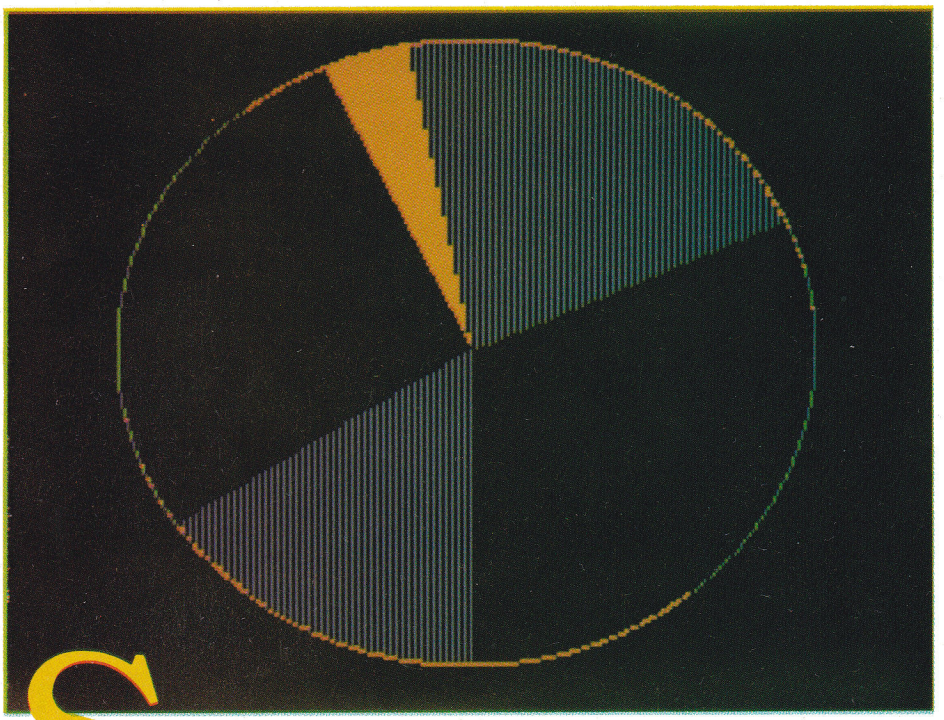
Other Features

Quick File can perform a global search to find a specific file or files by a selected keyword, number, or phrase *anywhere* in the file. (Some programs can only search selected fields—and that can be a nuisance.) For example, I can list certain accounts with a specific zip code for a limited promotional mailing. Or if I happen to have a new tennis racket that I want to try out, I can find which of my customers are tennis buffs. Quick File can also alphabetize a list of your accounts by any category in seconds.

You can adapt this useful tool in many other ways to fit your specifications for efficient field sales management and general use. I hope these examples can stimulate ideas of your own. ■

Write to Howard Frazier at 50 Saratoga Drive, Lawrenceville, GA 30245.

A Piece of the Pie



by Steve Miller

It's as easy as pie to delineate corporate costs in a visual presentation with this pie chart routine.

Photo. *Screen shot of a pie chart divided by radials.*

Sales costs, overhead costs, advertising costs. Sometimes it's enough to make anyone in business doubt that the whole equals the sum of its parts. Pie charts are one way to see quickly how the entire corporate picture is divided and how each part relates to the whole.

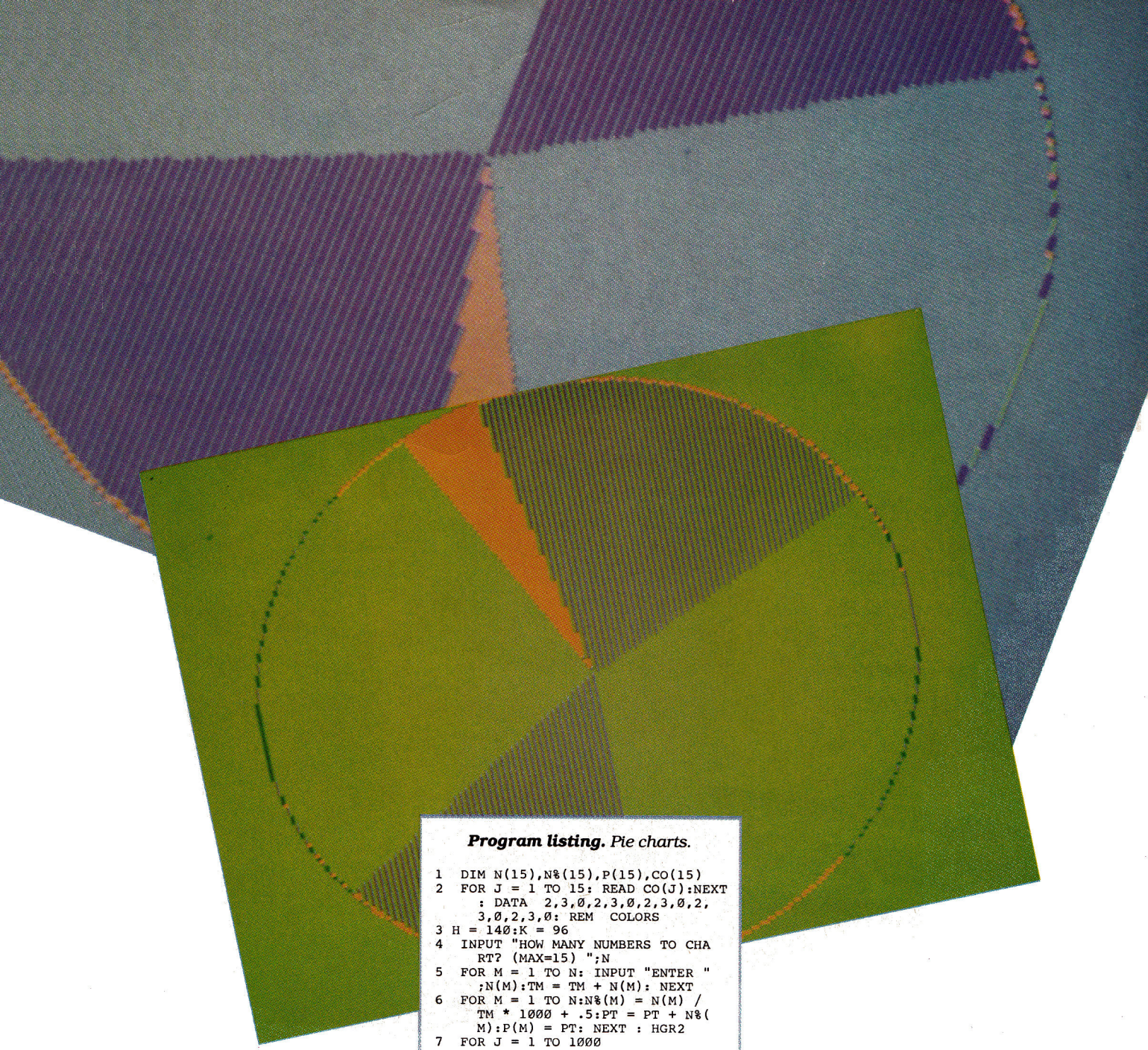
Here is a short routine to produce pie charts on the Apple II Plus. It arbitrarily limits the number of observations to be graphed to 15, since some data lend themselves to this graphic technique better than others. The charts will look fine as long as each number you graph constitutes at least ½ percent of the total.

In line 2 of the **Program listing**, a color schedule for the pie's slices is read into the array CO(J). H and K are the screen's center coordinates. N is the total number of observations being plotted. The loop in line 5 gets the data and finds the grand total. In line 6, this total is prorated into points that indicate the partitions between sectors, based on 1000 points around the circle. These points are stored in the array P(M).

Line 7 begins a loop which draws 1000 lines radiating from the center to the perimeter. Line 8 checks if a partition has been reached, and if so, changes the color of the radial lines. (Note the use of a Boolean expression to increment the subscript of the color when a partition is reached.) Lines 9 and 10 locate the 1000 points around the circumference. You can adjust the coefficient 113 in line 9 to make the chart circular on your monitor. (Try values between 90 and 110.)

Line 11 draws a line from the center to the current point on the circumference, and line 12 plots a point on the circumference for each X and Y, enclosing the chart in a circle.

The program has 1000 points on the perimeter. This number must be high enough to force the plot routines to completely fill in the slices of the pie. The program also works when you reduce the number of points to



Program listing. *Pie charts.*

```
1  DIM N(15),N%(15),P(15),CO(15)
2  FOR J = 1 TO 15: READ CO(J):NEXT
     : DATA  2,3,0,2,3,0,2,3,0,2,
     3,0,2,3,0: REM  COLORS
3 H = 140:K = 96
4  INPUT "HOW MANY NUMBERS TO CHA
     RT? (MAX=15) ";N
5  FOR M = 1 TO N: INPUT "ENTER "
     ;N(M):TM = TM + N(M): NEXT
6  FOR M = 1 TO N:N%(M) = N(M) /
     TM * 1000 + .5:PT = PT + N%(
     M):P(M) = PT: NEXT : HGR2
7  FOR J = 1 TO 1000
8  FOR T = 1 TO 15:F = F + (J = P
     (T)): NEXT
9 X =  SIN (J / 159) * 113
10 Y =  COS (J / 159) * 96
11  HCOLOR= CO(F): HPLOT X + H,Y +
     K TO H,K
12  HCOLOR= 3: HPLOT X + H,Y + K
13  NEXT : REM  BY STEVE MILLER
```

800. Reduce the 1000 in lines 6 and 7 to 800 and the number 159 in lines 9 and 10 to 127.2 to speed up the plotting. If you do this you should add the following new line:

```
14 HPLOT H,K TO H,190
```

This line separates black sectors if the total number of slices is 4, 7, 10, or 13. Such a line is always drawn if you plot 1000 around the circle even though the code does not call for it, because the program reaches a partition when J = 1000 and changes colors and draws one line from the center to the bottom of the screen. With other numbers, the final value of J does not always reach a partition, and may plot two black sectors adjacent to each other (the first and last slices).

Three methods fill in the colors for the pie's slices. Two are quick and easy, but the best procedure poses difficult mathematical problems for a layman.

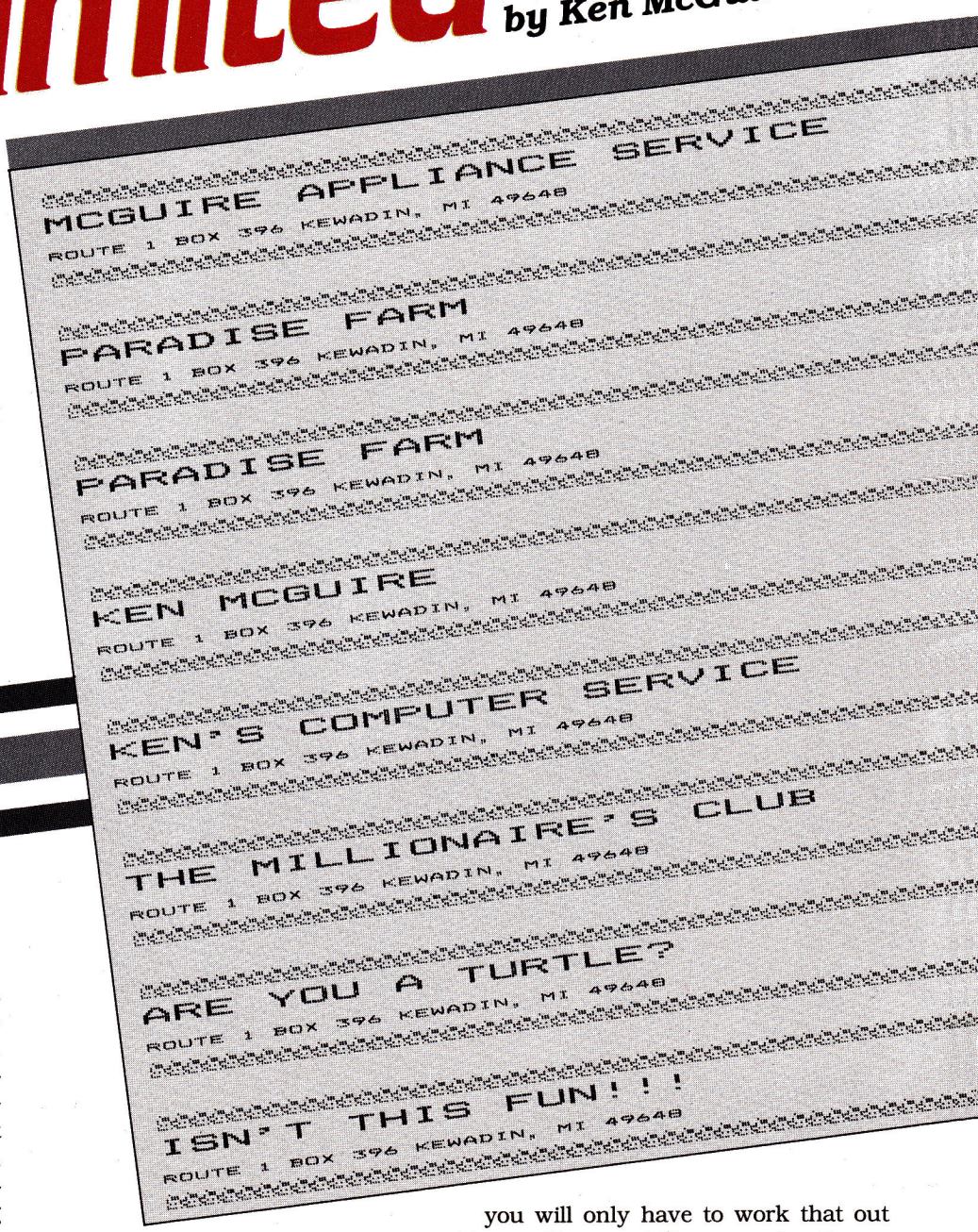
The **Photo** shows the scheme I adopted—drawing radials. Another easy solution would be to draw lines parallel to the circumference. But if the program calculated the locus of points along the radials that compose the partitions between sectors, and then drew horizontal lines within each sector to fill in the colors of various slices, I suspect that the plot would run from four to six times faster than the one presented here, which takes three and a half minutes. In such an approach, you would need to plot about 600 points around the circle (pi × 192 = 603).

Besides finding all the points along the radials, you would plot horizontals that begin on a radial and terminate on the perimeter, and vice versa: a nice little challenge that would be worth the final product. ■

Write to Steve Miller at P.O. Box 1723, Jackson, MS 39205.

Letterheads Unlimited

by Ken McGuire



Announce yourself with personalized stationery you can produce on your Epson MX-80 printer with Graftrax.

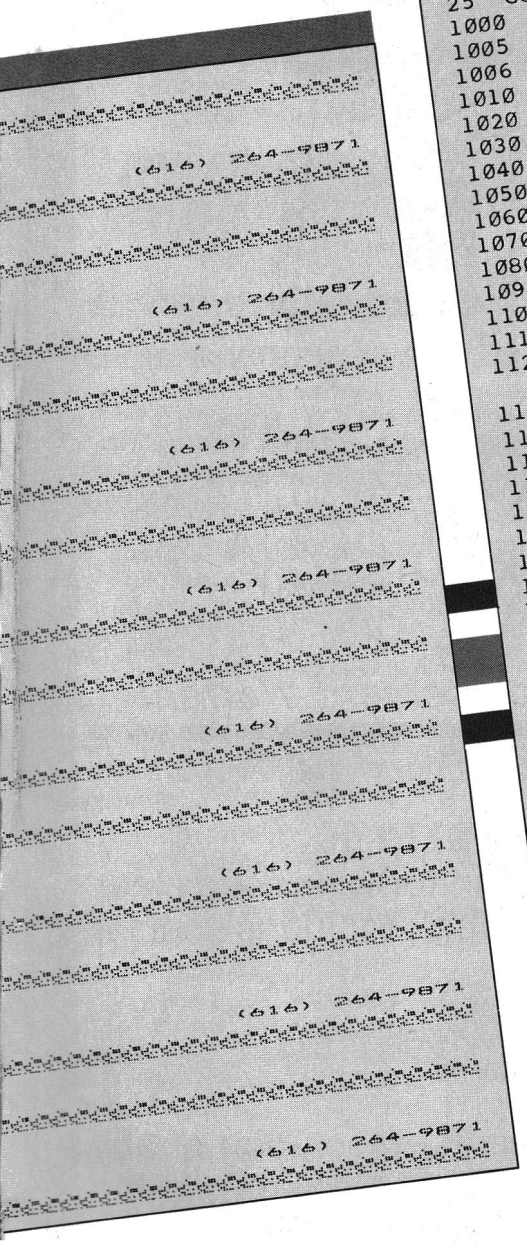
When I first got an Apple, I had visions of perfect statements, aging reports, mailing labels, customer data files, and, most of all, absolutely perfect letters. I naively thought that my word processing program would fix me up with a decorative letterhead, but no such luck. Buying printed letterhead was out of the question, since I was using my computer for business letters, personal correspondence, and a variety of other things.

One day, I decided to write a program for business stationery. It was a simple little thing, and with my printer manual in hand and an afternoon to kill, I wrote my first original program. It worked so well that my wife wanted me to modify it so that she could have stationery for her use. What you see here is an improved version.

The most fun of all is the *do-it-yourself* part. You can truly be anything or anyone you want to be—as long as you can spell it (or even if you can't). Change lines 1150–1210, 1240–1280, and 1590 to put in your own information. Line 1590 will require a little counting to bring the end of the line out to the right margin. Fortunately, you will only have to work that out once. You must also renumber the selections, depending on how many letterhead designs you want to access with a single keystroke.

Later, I added the following lines (*n* is the menu choice number):

```
900 D$ = CHR$(4):
905 PRINT D$; "RUN PRINTER
    CONTROL D1"
1200 PRINT TAB(8) "<n>EPSON
    PRINTER CONTROL"
1290 IF A = <n> THEN GOTO 900
```




```
5  REM  LETTERHEAD PROGRAM
10  REM   COPYRIGHT (C) 1983 KENNETH C MCGUIRE
15  REM  RT 1 BOX 396 KEWADIN MI 49648
25  GOTO 1000
1000  HOME : REM  CLEAR SCREEN
1005  PRINT : PRINT : PRINT
1006  PRINT : PRINT : PRINT : PRINT
1010  PRINT  TAB( 5)"*****************************"
1020  PRINT  TAB( 5)"*                           *"
1030  PRINT  TAB( 5)"*";
1040  INVERSE : PRINT "  FANTASTIC LETTERHEADS ";
1050  NORMAL : PRINT "*"
1060  PRINT  TAB( 5)"*                           *"
1070  PRINT  TAB( 5)"* BE WHAT YOU WANT TO BE *"
1080  PRINT  TAB( 5)"*                           *"
1090  PRINT  TAB( 5)"*****************************"
1100  FOR PAUSE = 1 TO 2000: NEXT PAUSE
1110  HOME : PRINT : PRINT
1120  PRINT  TAB( 5)"PREPARE YOUR PRINTER FOR LETTERHE
AD"
1130  PRINT  TAB( 5)"TURN THE PRINTER OFF AND THEN ON"
1140  PRINT : PRINT  TAB( 5)"PRESS THE <#> KEY"
1145  PRINT  TAB( 5)"TO MAKE YOUR CHOICE:"
1150  PRINT  TAB( 8)"<1> APPLIANCE SERVICE"
1160  PRINT  TAB( 8)"<2> PARADISE FARM"
1170  PRINT  TAB( 8)"<3> CHERYL'S"
1180  PRINT  TAB( 8)"<4> KEN'S"
1190  PRINT  TAB( 8)"<5> DO IT YOURSELF"
1210  PRINT  TAB( 8)"<6> EXIT TO BASIC"
1220  PRINT : PRINT  TAB( 5)"ENTER A NUMBER FR
OM 1-6"
1230  GET Y$:A =  VAL (Y$): PRINT
1235  HOME
1240  IF A < 1 OR A > 6 THEN  PRINT "1 TO 6 PLEASE!": GOTO
 1140
1250  IF A = 1 THEN L$ = "MCGUIRE APPLIANCE SERVICE": GOTO
 1430
1260  IF A = 2 THEN L$ = "PARADISE FARM": GOTO 1430
1270  IF A = 3 THEN L$ = "CHERYL MCGUIRE": GOTO 1430
1280  IF A = 4 THEN L$ = "KEN MCGUIRE": GOTO 1430
1300  IF A = 5 THEN  GOTO 1400
1350  END
1400  PRINT : PRINT : PRINT  TAB( 5)"TYPE IN THE NAME
YOU WANT TO USE"
1410  PRINT  TAB( 3)"TO A MAXIMUM OF 40 LETTERS AND SP
ACES"
1415  PRINT  TAB( 10)"(NO COLONS OR COMMAS)"
1420  VTAB (20): INPUT "";L$
1430  HOME
1440  IF  LEN (L$) > 40 THEN  PRINT "TOO MANY CHARACTE
RS!": PRINT : GOTO 1400
1500  PR# 1
1510  PRINT  CHR$ (27) +  CHR$ (75)
1520  FOR X = 1 TO 75
1530  PRINT  CHR$ (27) +  CHR$ (69)"150"
1540  NEXT X
1550  PRINT  CHR$ (13);
1560  PRINT  CHR$ (27) +  CHR$ (71) +  CHR$ (27) +  CHR$
(14);L$;
1570  PRINT  CHR$ (20); CHR$ (27) +  CHR$ (83) +  CHR$
(1)
1590  PRINT "ROUTE 1 BOX 396 KEWADIN, MI 49648
                    (616) 264-9871"
1600  PRINT  CHR$ (27) +  CHR$ (75)
1610  FOR X = 1 TO 75
1620  PRINT  CHR$ (27) +  CHR$ (69)"150"
1630  NEXT X
1640  PRINT  CHR$ (13)
1650  PRINT  CHR$ (27) +  CHR$ (72);
1660  PR# 0
1665  HOME
1670  GOTO 1140
```

They allow me to use a program called PRINTER CONTROL to set up the print style I want to use for printing my letter.

When I finished writing this program, I booted up the disk, made my selection and—*wow!*—what were all of those 150's anyhow? But it did the trick.

My program now presents an identity crisis: Who will I be next time?■

Use your new letterhead stationery to write to Ken McGuire at Route 1, Box 396, Kewadin, MI 49648.

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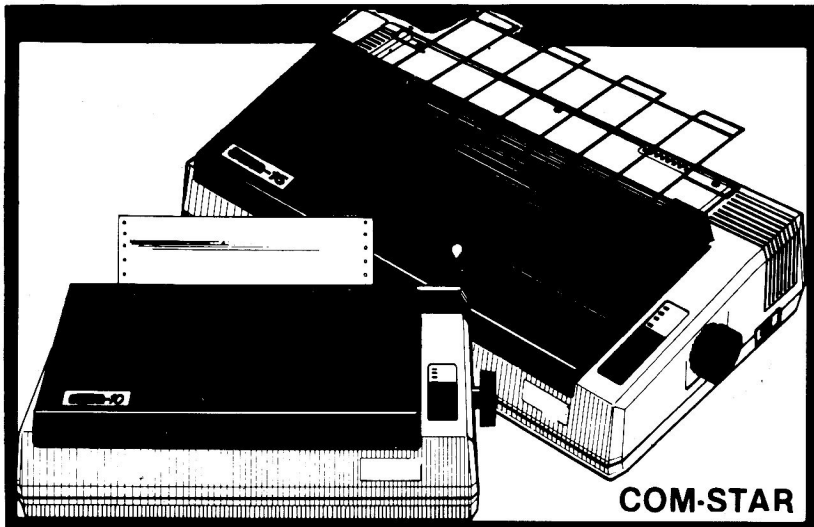

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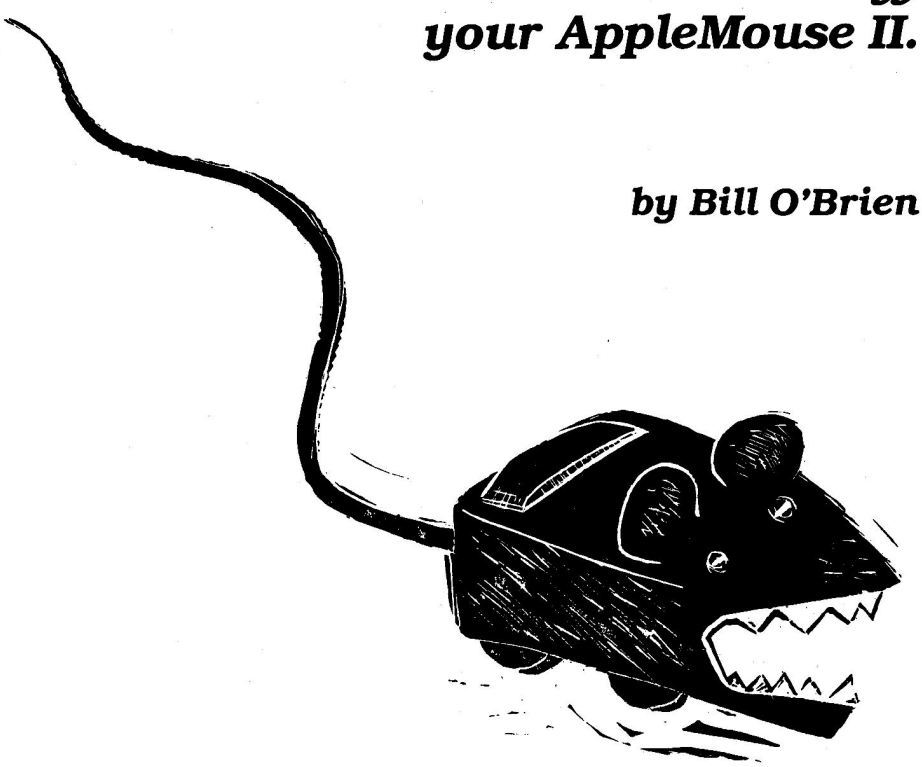
ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890

THE MOUSE THAT ROARS

Avoid mousetraps with a little guidance and a BASIC routine that will show off your AppleMouse II.

by Bill O'Brien



You and your computer must learn to live together. While you may not be opposed to such symbiosis, the onus of achieving it should not necessarily rest on your shoulders alone. The computer should be able to meet you halfway.

Apple's contribution to ergonomics and to the growing menagerie of mechanical devices is the mouse. But Apple cannot claim its invention. In one form or another, the little creature has been around for some time. It gained most of its popularity at Xerox's Palo Alto Research Center (PARC), whence also emerged much of the window technology.

Apple has, though, delivered the mouse in one of its simpler forms and, although it does work along similar lines, resisted the temptation to create merely an alternative to a joystick.

Like any new development, the mouse evokes both praise and criticism. Some claim that a mouse is cumbersome to use in programs such as word processing, and that, for the experienced computer user, it can actually be an impediment. Apple, on the other hand, freely admits such a possibility but adds that the mouse was never destined to replace the keyboard. Rather, it is only what they claim it to be: an innovative technique used to ease the novice into an environment that is often radically different from what he or she is accustomed to.

Whichever side of the debate you favor, if you intend to use Apple computers over the next few years, you might as well get acquainted with the mouse. After all, it has infested the //e, the //c, the Macintosh, and the Lisa divisions already.

The Mac and the Lisa were designed to incorporate mouse technology. But when the mouse migrated to the Apple II it was as an alien organism invading the host body. Apple screens and menus were never meant to receive the assistance the mouse offers. Thus, the market has been characterized by a period of integration as software developers readjust their products to account for the mouse. Apple has included the first AppleMouse software, MousePaint, at no charge with the mouse itself. Penguin has followed Apple's lead with a revamped Complete Graphics System (and its little brother, The Graphics Magician). Scholastic has come hot on their heels

with The Fact and Fiction Toolkit. Other software is in the works or is being released as you read this. See the guide to Apple II mouse software that follows this article.

Table 2. *A glossary of mouse terms.*

Term	Explanation
Clicking	Switching the button at the top of the mouse on and off to select a function or a menu option.
Dragging	After selecting an object, placing it in the mouse's tow and moving it across the screen with the mouse.
Icon	An image or representation of an object or person. Apple uses these images to represent functional features. In MousePaint, the spray can, pencil, and other left-side objects are all icons.
Mouse	Apple's is a small, palm-sized device, roughly trapezoidal in shape. At the top, front section is a single, momentary on/off switch to select objects or functions from the screen. Inside the mouse are: a small rubber ball protruding through the bottom of the mouse enclosure that rotates as the mouse is moved along a flat surface and two moving disks set against the surface of the ball that move as it does. Further inside: an optical device that reads the movement of the two disks and sends the information to the Apple where it is translated into x- and y-axis values (similar to a joystick) in the range of 0–1023. The electronics inside the Apple track this movement and record the varying status of the mouse position, the button, and whether or not a key at the keyboard has been pressed.
Pointer	A small arrow that moves along the screen relative to the mouse's movement.
Pull-Down Menu	If you move the pointer to any of the one-word options at the top of a mouse-oriented program and press the button, the list of additional menu items will appear from beneath the main option. (Used only in MousePaint for the time being.)

Do-It-Yourself Mouse

In that mass of applications, though, someone forgot something. Someone forgot to let you know how to program the mouse. Where is MousePlay—a little program that could show you the precepts and expectations behind that plastic creature?

Apple does provide a brief, three-page hands-on tutorial in Appendix A of the mouse manual, but divides its best intentions with Appendix B: Assembly Language. Let's take BASIC and the mouse itself and combine them into something a little more informative.

For the Apple //e and its 64K older brothers, you'll need the complete mouse package, including an interface board that inhabits a slot. Although the nine-pin joystick D-connector on the back of the Apple //e resembles the connector used with the mouse, it isn't an appropriate mating point in this version of the //e. The interface card comes with its own connector which you must mount on the back panel.

Apple //c users, on the other hand, don't need additional electronics. The MouseWorks are built into the portable, and its rear I/O connector is the mouse's correct home. Since this is the major difference between its functions on the two machines, a look at the //e card might be wise.

As with other Apple II interface cards, you can use the mouse card in any slot. Over the years, the positioning of cards in the various slots has crystalized to the point where "any slot" actually means "either of two slots." This may not make sense even if you peer inside. There are eight open slots in a new machine. However, slot 0 (AUX CON in the Apple //e) is reserved for memory or an extended 80-column card. Slot 1 is traditionally used for the printer card, as slot 2 is for a serial or modem card. Slot 3 has always been, and is expected to be, the home for an 80-column board or serial interface to an external terminal. Slot 6, on the other hand, must be the first pair of disk drives.

Table 1. *The mouse button status values.*

Value	Now	Last Time
1	Pressed	Pressed
2	Pressed	Released
3	Released	Pressed
4	Released	Released

That accounts for five of the eight possibilities. Slot 7 is a question mark. Both an interface to an RGB color monitor and a SuperSprite card need the information from that slot. No other slot provides the video signals these types of interface cards require.

Apple "suggests" slot 4. Indeed, when connected to the Apple //c, the mouse is assigned "slot" 4 in the portable's soft-slot system. Read that to be a requirement, which means that somewhere along the line someone won't follow the hint.

The Basic Mouse

Luckily, the interface card demands attention. When inserted in the Apple II, it changes the contents of two memory locations to advise the world of its presence. These are $Cn0C and $CnFB (where "$" indicates that the number is in hexadecimal notation and "n" may be any number between 1 and 7, corresponding with the possible slots). Into the former, the card places the value $20 (decimal 32). Into the latter goes $D6 (decimal 214). A simple BASIC program to determine the position of the card would look like **Listing 1**. Once the program establishes that the card is present (although you can't pre-verify that the mouse is actually attached), you can proceed to play with it.

Tracking the Mouse

The mouse's field of travel resembles a two-dimensional Cartesian system. Its home, or start, position (also called the point of origin) is 0,0. Its farthest movement along either the x- or y-axis is to a distance 1023 "mouse-steps" from home.

You can see that this is somewhat different from the approach taken by joysticks and game paddles. The potentiometers in these devices vary in value from 0 to 255 when read from the I/O port.

The 1023 mouse-steps present a translation problem. In hi-res mode, the Apple's resolution is 280 hori-

You can write to Bill O'Brien at P.O. Box 1010A, Fort Lee, NJ 07024. He can also be reached through CompuServe user ID 74216.1215.

Listing 1. *BASIC subroutine to find the mouse's slot number.*

```
10 SLOT = 0: GOSUB 1000
20 IF SLOT = 0 THEN PRINT "CANNOT FIND
   MOUSE INTERFACE CARD!": END
.
.
.
1000 FOR S = 0 TO 6
1010 IF PEEK (-16116 + (S * 256)) = 32
     AND PEEK (-15877 + (S * 256)) =214
     THEN SLOT = S + 1: RETURN
1020 NEXT S
1030 RETURN
```

Listing 2. *Getting information from the mouse.*

```
100 PRINT CHR$(4); "PR#4": PRINT CHR$(1)
110 PRINT CHR$(4); "PR#0"
120 REM THESE TWO LINES INITIALIZE THE
    MOUSE CARD, SET THE HORIZONTAL AND
    VERTICAL COORDINATES TO 0,0, AND THEN
    RETURN TO THE SCREEN. CHR$(1) IS THE
    INITIALIZATION CHARACTER.  WHEN YOU'RE
    DONE, FOLLOW THE SAME PROCEDURE, BUT
    SEND CHR$(0) INSTEAD.
.
.
.
200 PRINT CHR$(4); "IN#4"
210 INPUT ""; X, Y, B
220 REM FIRST, YOU OPEN THE CARD FOR READING
    WITH IN#4.  THEN, YOU USE THE INPUT
    STATEMENT TO GET THE HORIZONTAL (X) AND
    VERTICAL (Y) COORDINATES.  B IS THE STATUS
    OF THE BUTTON.  USING DOUBLE QUOTE MARKS
    PREVENTS THE APPLE FROM SENDING A QUESTION
    MARK (?) TO THE CARD AS IT USUALLY DOES
    WHEN YOU USE AN INPUT STATEMENT.  THE CARD
    ALWAYS RESPONDS WITH THESE THREE VALUES
    WHEN YOU READ FROM IT.
```

zontal by 192 vertical dots. (Double hires on the Apple //c and modified //e's is the exception, but the general principle you'll be using remains the same.) They are hardly equivalent.

The obvious answer is to set a ratio of screen resolution to mouse resolution. It's simple math:

Horizontal = 280/1024 = .273
Vertical = 192/1024 = .188

Before your mind boggles I'll explain that every one increment of the mouse is equivalent to moving .273 dots horizontally or .188 dots vertically on the Apple screen. Of course, since the Apple screen doesn't relate to partial dots, you should use the INT statement to produce an integer value suitable for use. The pronounced difference between the two should even smooth out the movement some.

A Mouse Turn-on

Like all of the Apple cards the mouse card must be turned on before you can use it. Assuming you've followed the "suggestion" and filed it in slot 4, **Listing 2** will provide you with the BASIC code needed to do that and determine the relative position of the mouse.

A note of caution: if you read from the card without first attaching the mouse, you'll get a repetitive syntax error message. At such times, Reset may be your only alternative.

Keep aware of the mouse's button as well as of its position. Its status can be used as a directional clue for your program flow. In the example, the variable B is used to contain the various values corresponding with the different button position over time.

Button Fever

Table 1 tells you what values you can expect for B, the button variable. When you use a mouse, you'll be clicking, pressing, or double clicking the button. For a definition of terms peculiar to the mouse, see the glossary in **Table 2**. To identify the function, you can use the comparative values.

For instance, if, after going to line 210 four times, the value of B was 3, 2, 4, and 4, you can assume that the button was clicked. That is, its first state was the up or released condition and then it was pressed (the first 3). Then it was released (the 3). Finally, it stayed released (the first 4) and was left that way (the last 4).

Double clicking (clicking twice in rapid succession) might appear as 3, 2, 3, and 2. The button had been released but was pressed during the first reading. After that it was released, but because it was pressed in the last reading, B will equal 2. Then it was

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pressed again, assigning B the value 3, only to be released on the fourth pass for a value of 2.

Ideally, if the button's value appears as anything other than 4, make at least three additional reads immediately to determine just what action has occurred. If the second time through you receive a value of 1, you should also track X and Y, since the operation is probably "dragging"—another mouse term, not a condition of being (see **Table 2**).

Hands On

Of course, you won't be relying solely on the mouse. At best you'd lose the typing skills you've developed. At worst, one of your arms would atrophy from disuse.

And there are times when a mouse is not appropriate. It would be rather difficult, for instance, to write a letter with one. There's even a mouse routine called shift-clicking which requires the keyboard. In the best of all possible worlds, keyboard and mouse procedures would be combined.

The mouse's electronics already understand this interdependence. In fact, the mouse monitors the keyboard at all times. When you press a key, the value of the third variable—B in the example—becomes negative. The numbers used to represent the various button movements don't change; they are merely multiplied by −1.

Unfortunately, the mouse is also stubborn. It doesn't recognize when you release the key. The value of B will remain negative forever unless you interfere a little. To reset the key recognition, you poke zero into memory location −16368, causing B to revert to a positive value until you press the next key.

Initiative

The rest of the code is left to your own expression. If you apply some thought to it, you'll see that it's quite easy. With a bit more juggling you can even use the mouse with the text screen. A good hint, under such conditions, would be to remember that the text screen characters are actually an arrangement of dots.

You don't need to know BASIC to be computer literate, but as you've seen, sometimes it takes older concepts and abilities to make sense out of the latest technological whizbang—in this case, the AppleMouse II.■

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inCider's Guide to Mouse Software

A lag always exists between the introduction of a hardware product and the production of software that supports it. The AppleMouse II is a case in point. It worked with only one software package when it was first introduced—MousePaint, the package bundled with the mouse. Today, nearly a year after its introduction, the AppleMouse II is attracting a lot of attention and support from the software industry. The following guide lists software products that use the AppleMouse. Expect the list to grow exponentially over the next few months. The AppleMouse II is here to stay.

compiled by Joan Witham, inCider staff

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010

MousePaint
$149 with AppleMouse for //e, $99 for //c
Designs charts, diagrams, freehand drawings, for reports and presentations. Inserts text and selects various character fonts and fill patterns.

Arktronics
520 East Liberty Street
Ann Arbor, MI 48104
(800) 225-5275

Jane
$179
AppleMouse II replaces keyboard commands and selects menu options in this integrated software program with word processing, file management, and spreadsheet.

Arrays, Inc./Continental Software
11223 South Hindrey Avenue
Los Angeles, CA 90045
(213) 410-3977

Home Accountant
$74.95
Additional features are included in this updated financial program using the mouse on the //c.

ARTSCI, Inc.
5547 Satsuma Avenue
North Hollywood, CA 91601
(818) 985-2922

Mouse Apple "21"
$24.95
Mouse selects hi-res cards in a casino blackjack game.

Baudville
1001 Medical Park Drive S.E.
Grand Rapids, MI 49506
(616) 957-3036

Blazing Paddles
$49.95
Graphics program uses mouse to select and help create pictures.

Beagle Brothers, Inc.
3990 Old Town Avenue
Suite 102C
San Diego, CA 92110
(619) 296-6400

Beagle Graphics
$59.95
Select, draw, and fill in colors on this graphics program.

Broderbund
17 Paul Drive
San Rafael, CA 94903
(415) 479-1170

Dazzle Draw
$49.95
Pull down window menus, select options, and execute with the AppleMouse II on this graphics tool program.

CyberLYNX
4828 Sterling Drive
Boulder, CO 80301
(303) 444-7733

SmartHome I
$495
Wireless home control and home security system for Apple II family.

Designware, Inc.
185 Berry Street
San Francisco, CA 94107
(415) 962-9555

Crypto-Cube
$39.95
A vocabulary and spelling game, Crypto-Cube uses the mouse to rotate the cube.

Electronic Arts
2755 Campus Drive
San Mateo, CA 94403
(415) 571-7171

Financial Cookbook
$50
Menu selection and cursor movement from the mouse makes this personal financial program easy to use.

Cut and Paste
$50
Home word processor uses the mouse for menu selection.

Pinball Construction Set
$40
Customize your own pinball game using the mouse for easy selection of parts.

Music Construction Set
$40
This computer music program uses the mouse for menu selection, choosing notes, moving around measures, and so on.

Epyx Computer Software
1043 Kiel Court
Sunnyvale, CA 90505
(408) 745-0700

Summer Games
$29–$35 (about)
Compete in eight athletic games, using the mouse to choose options and move around the screen.

Hayden Software Co.
600 Suffolk St.
Lowell, MA 01853
(617) 937-0200

Sargon III
$49.95
Computerized chess game.

Human Engineered Software (HES)
150 North Hill Drive
Brisbane, CA 94005
(213) 398-7259

Cell Defense
$44.95
Select and maneuver mechanisms to defend your body against a virus.

John Wiley & Sons
605 Third Avenue
New York, NY 10158
(212) 850-6164

Imagination Series: Music
$34.95
Select menus to hear music as well as see it on the screen.

Imagination Series: Picture
$39.95
Select from the menu to create stories with a cast of 50 animated graphics characters.

Imagination Series: Quilt
$34.95
Select drawings created from colors and designs.

Odesta Corp.
3186 Doolittle Drive
Northbrook, IL 60062
(800) 323-5423

How About a Nice Game of Chess!
$34.95
Apple //c game combines the AppleMouse II with ten levels of play and other features.

How About a Nice Game of Checkers!
$34.95
The AppleMouse offers freedom from the keyboard in this many-featured game.

How About a Nice Game of Backgammon!
$34.95
Use the AppleMouse II to help plan backgammon moves.

How About a Nice Game of Odin!
$34.95
Play Othello rules using the AppleMouse to make moves easier.

Penguin Software, Inc.
P.O. Box 311
Geneva, IL 60134
(312) 232-1984

The Complete Graphics System
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The Graphics Magician
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Catalyst
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Scholastic, Inc.
730 Broadway
New York, NY 10003
(212) 505-3403

Storymaker: Fact and Fiction Tool Kit
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Program encourages children to write and illustrate their own stories using the mouse to give commands and draw in colors.

Sensible Software
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Oak Park, MI 48237
(313) 399-8877

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Sir-Tech Software
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Ogdensburg, NY 13669
(315) 393-6633

Wizardry Series (coming soon)
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Create characters and travel mazes using the mouse to find your way.

Spinnaker
215 First Street
Cambridge, MA 02142
(617) 494-1200

Grandma's House
$34.95
Move around different scenes using the mouse as a cursor; pick up items and return them to Grandma's house.

Street Electronics
1140 Mark Avenue
Carpinteria, CA 93013
(805) 684-4593

Cricketware/The Cricket Sound Synthesizer
$179
Select from menus to construct music and words.

The Learning Company
545 Middlefield Road, #170
Menlo Park, CA 94025
(415) 328-5410

Rocky's Boots
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Forty games in this electronic erecter set manipulate tools to teach computer logic.

Reader Rabbit and the Fabulous Word Factory
$39.95
This early reading program selects words, matches letters, words, or pictures, and so on.

Transend Corp.
2190 Paragon Drive
San Jose, CA 95131
(408) 946-7400

Easy Com Easy Go
$129
Integrated word processing and terminal communications package uses the AppleMouse II on the Apple //c.

Video Vision Associates
7 Waverly Place
Madison, NJ 07940
(201) 377-0302

LazerMouse
Around $75
Can position interactive laser disk pictures. Needs video disk interface (VAI//).

Virtual Combinatics
P.O. Box 755
Rockport, MA 01966
(617) 546-6553

Micro Cookbook
$40
Computerized cookbook series (nine recipe disks available) uses the mouse for selection procedures.

Xerox Educational Publishing Co.
245 Long Hill Road
Middletown, CT 06457
(203) 347-7251

Stickybear Shapes
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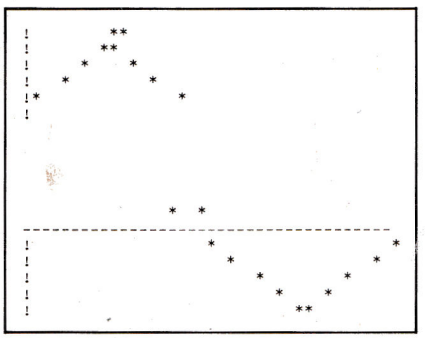
Three colorfully animated games use the mouse to maneuver shapes.

(from page 49)

Solutions to inSidious inSolubles

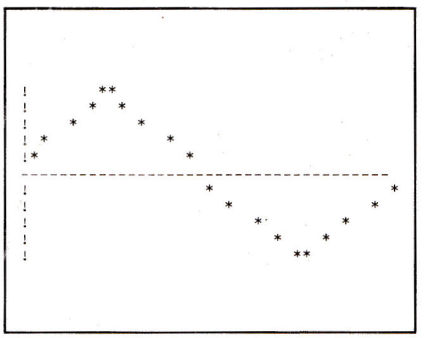
Solution to The Sine Wave:

This is how your screen will appear when running the listing as it is printed. Not quite correct.



This is a better display. Don't make Apple HTAB at location 0. Change line 40 to:

40 FOR X = 1 TO 10 STEP 2



Solution to Costly Manhattan:

The Indians made their sale in 1626. I hope you caught the lack of the quote (") on line 50. This was just an oversight; now to the real problem.

Method #1 uses a FOR. . . NEXT loop and is the typical approach by the BASIC programmer. The problem is one extra year, or time through the loop. If you insist on doing it this way, subtract one year from 1984. Notice the execution time difference between the two methods.

Of course, exponential notation is OK for engineers, but we common folk prefer dollars and cents. How to do this is a future problem for Alice. In the meantime, give it a try.

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The Compleat



Text File Primer

Part 7—Visi-Data

by Lee Swoboda

In the first six parts of this series, I have discussed the various aspects of Apple II and //e text files: disk arrangement, memory management, sequential files, random access files, sorting, and searching. Now, I will tie all those principles together by building a database program, a "look alike" to the famous spreadsheet programs. Instead of being a table of numbers, however, my spreadsheet, Visi-Data, will be a table of text. This may include numbers, of course, but the accent will be on alphabetic data.

This final installment wraps up our series with a data base program.

Spreadsheets

Imagine a table made up of 50 columns and 100 rows. The table contains 5000 locations, or cells, in which we can store data. If we name each column with a unique letter of the alphabet (all right, rows greater than 26 would require double letters), and number each row, each data cell will have a unique "address," consisting of one or two letters and a number.

Imagine such a table laid out on the floor of your den. You can place a different colored pebble in each cell and refer to it by its address. Now take a piece of cardboard and cut a hole or "window" in it five columns wide by ten rows high. Place the window in the upper left corner of the table. The pebbles that are in the first five rows and ten columns will be visible. Now move the window around the table. You will be able to see any contiguous five columns and ten rows on the spreadsheet. The remaining 4950 data cells will be hidden until the window in the cardboard passes over them. Whether the data cells contain pebbles, numbers, or—in the case of Visi-Data—text, the concept is the same: a spreadsheet is a large table of data cells, with a small window moving around "exposing" parts of the table to view.

Visi-Data

A spreadsheet is a memory-resident data base. The disk is used to store text, but editing, searches and sorts, and any other required operations are performed in memory. This limits the ultimate size of the spreadsheet to whatever will fit in memory (remember to leave some room for string storage and concatenation). The payoff is the speed of memory searches and sorts. Visi-Data will thus be very useful for small "quickie" data bases (name, address, and telephone, for example), but not for large data bases. We will limit our spreadsheet to 10 columns by 70 rows, or 700 data cells. Since the program occupies about 9350 bytes and takes about 4000 bytes for overhead, that leaves

The "Compleat Text File Primer" requires a 48K Apple II Plus, Apple II with a language card (16K RAM card) or Apple //e. It also requires one disk drive and DOS 3.3. A disk containing all the listings in parts 1–6 of this series, Visi-Data, and an optimized version of Visi-Data is available from the author for $10 plus $1.50 postage and handling. Send a check or money order to Lee Swoboda, 1451 NE Paulson Road, Poulsbo, WA 98370. Washington residents add 7.8% sales tax. Allow four to six weeks for delivery.



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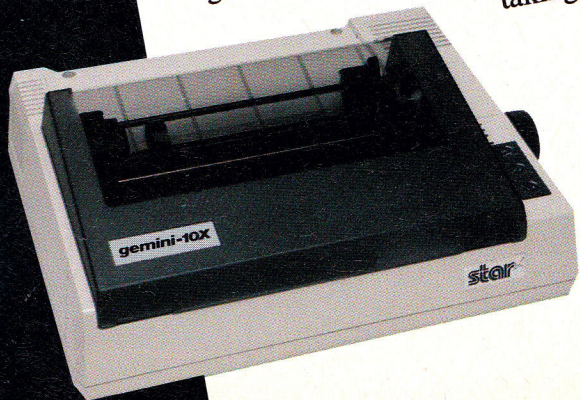

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Program listing. *Visi-Data.*

```
10  REM **********************
20  REM **                    **
30  REM **    VISI-DATA       **
40  REM **                    **
50  REM **    ELECTRONIC      **
60  REM **    DATASHEET       **
70  REM **                    **
80  REM **  BY LEE SWOBODA    **
90  REM **                    **
100  REM **********************
110  REM
120  GOTO 2000
1000  REM
1010  REM ==========
1020  REM SHELL SORT
1030  REM ==========
1040  REM
1050  VTAB 1: HTAB 25
1060  FLASH
1070  PRINT "SORTING"
1080  NORMAL
1090 B = 1
1100 B = 2 * B
1110  IF B < YMAX GOTO 1100
1120 B =  INT (B / 2)
1130  IF B = 0 THEN  RETURN
1140  FOR I = 1 TO YMAX - B
1150 C = I
1160 D = C + B
1170  IF A$(D,X) = "" THEN A$(D,X) =  CHR$ (1)
1180  IF A$(C,X) <  = A$(D,X) GOTO 1260
1190  FOR J = 1 TO 10
1200 A$ = A$(C,J)
1210 A$(C,J) = A$(D,J)
1220 A$(D,J) = A$
1230  NEXT J
1240 C = C - B
1250  IF C > 0 GOTO 1160
1260  NEXT I
1270  GOTO 1120
1280  REM END OF SUBROUTINE
2000  REM
2010  REM =====
2020  REM SETUP
2030  REM =====
2040  REM
2050  PRINT D$"MAXFILES 1"
2060  CLEAR
2070  HOME
2080 D$ =  CHR$ (4)
2090  DIM A$(70,10),CW(10),H$(10)
2100 YY = 1
2110 XMAX = 1
2120 YMAX = 1
2130 XX = 1
2140  FOR I = 1 TO 10
2150 CW(I) = 9
2160  NEXT I
2170  FOR I = 1 TO 36
2180 BL$ = BL$ + " "
2190  NEXT I
2200  FOR I = 1 TO 10
2210 H$(I) =  CHR$ (64 + I) + "."
2220  NEXT I
3000  REM
3010  REM ============
3020  REM INPUT PROMPT
3030  REM ============
3040  REM
3050 CD = 1: REM CURSOR DIRECTION
3060  HOME
3070  GOSUB 6000
```

Listing continued.

about 23,000 bytes for strings. We can fill every data cell with a string 30 characters long. Before you conclude that you don't have much room, remember that you will seldom fill *every* cell, so the capacity of Visi-Data really isn't all that bad.

Program Description

The program is modular; that is, it is composed of a number of discrete modules and subroutines. This construction makes the program easier to write since each module can be tested and debugged separately before being incorporated into larger programs. **Figures 1**, **2**, and **3** illustrate the program logic structure.

The Data Screen

Figure 4 shows how the data screen appears. The *column header* and *row indicator* mark the addresses of the data cells that show in the current data window in inverse characters. The location of the cursor is shown in the upper left corner of the screen; the cursor itself and the label contained in the data cell marked by the cursor are also in inverse characters. The entire contents of the data cell (not just the portion that shows in the data window) is displayed in the screen header. Think of the data screen as the control panel for Visi-Data. It is from the data screen that you control the functions of the program. The various indicators and headers are the instrument-panel gauges that tell you what is happening at any time.

Alphanumeric Data

Visi-Data treats all data as text. It will accept letters or numbers equally readily. It will sort or search for numbers as well as letters, but will not perform any calculations with numbers. If the first character that you enter is a letter or number, the computer will interpret the entry as the beginning of a label. It will include any succeeding entries as additional characters in the label. If you make an error, press the back-arrow (←) key. A carriage return will terminate the label entry process and insert the label in the current data cell (the one specified by the location indicator in the upper left corner of the screen).

Sorting

Lines 1000–1280 provide sorting capability. I used the Shell sort because it was the best for this application.

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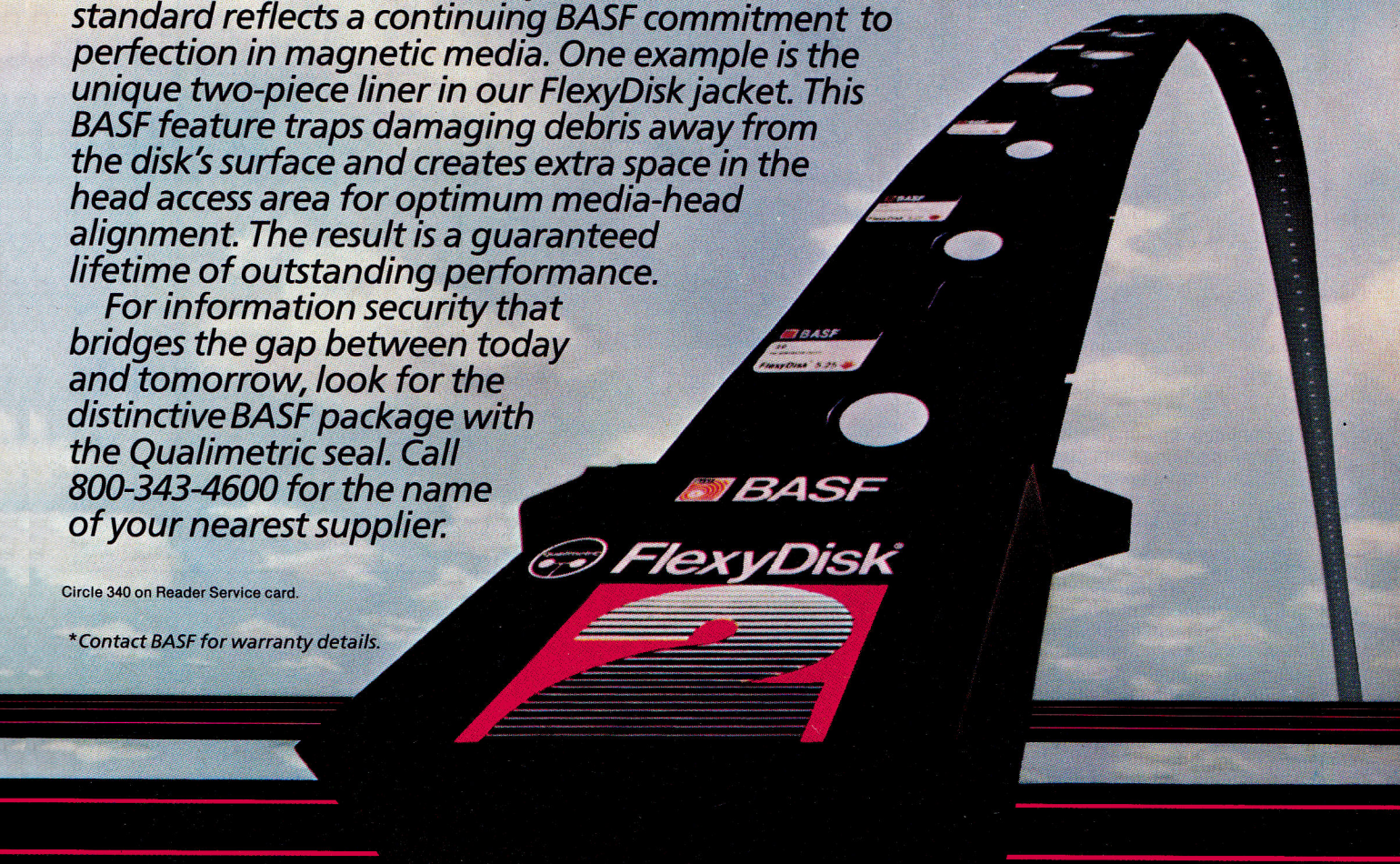

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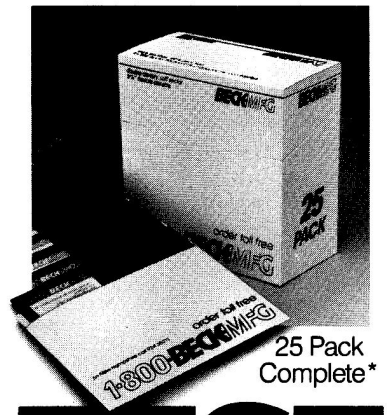

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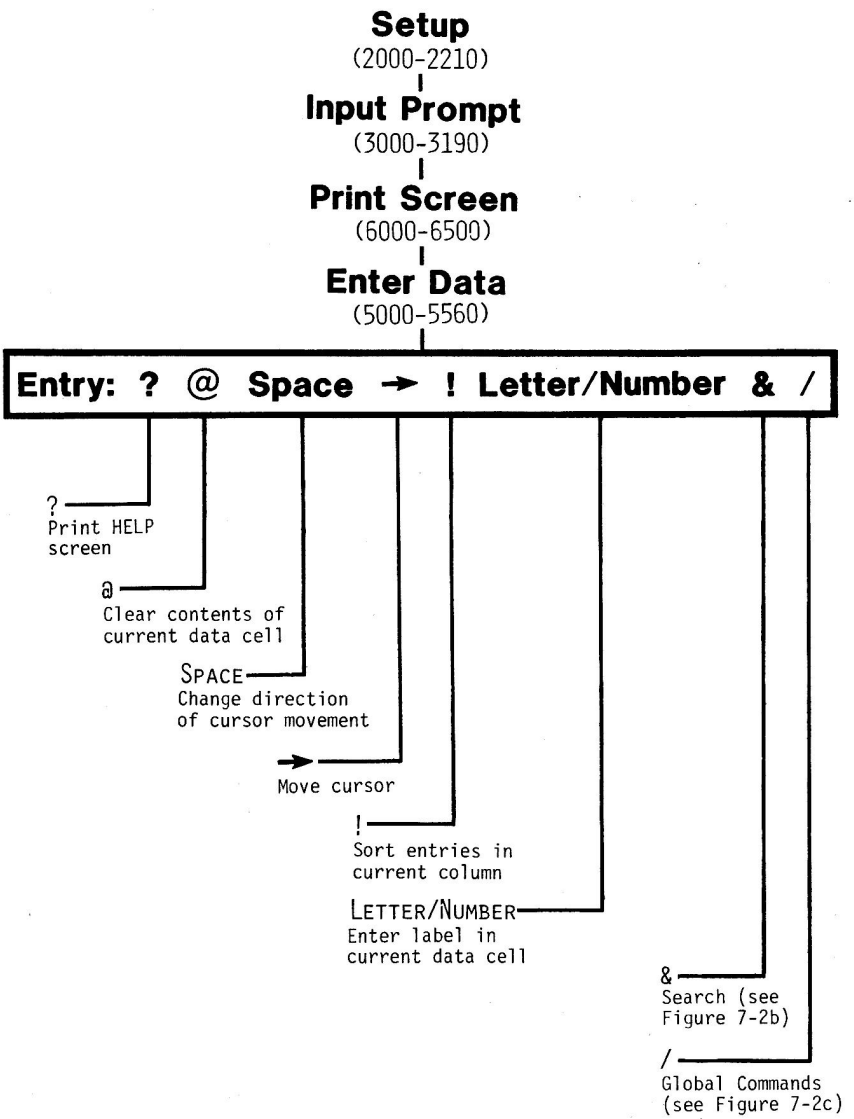
Figure 1. *Visi-Data main menu.*



Listing continued.

```
3080 X = 1
3090 Y = 1
3100  VTAB 1
3110  HTAB 1
3120  PRINT  LEFT$ (H$(1),1)Y; TAB( 25)"HELP=?"
3130  VTAB 2
3140  HTAB 1
3150  PRINT A$(Y,X);
3160  INVERSE
3170  GOSUB 7010
3180  NORMAL
3190  GOTO 4060
4000  REM
4010  REM ======================
4020  REM SHOW CURSOR DIRECTION
4030  REM ======================
4040  REM
4050 CD = CD *  - 1
4060  VTAB 1
4070  HTAB 38
4080  ON CD + 2 GOTO 4090,12070,4110
4090  PRINT "-";
4100  GOTO 4120
```

Listing continued.

Since the data we will be sorting must be assumed to be randomly ordered, the Shell sort will outperform any algorithm except the quicksort. Quicksort, however, requires extra overhead for the stack (see Part 5 of this series in the July 1984 *inCider*). Since we are already constrained by memory, we cannot afford to relinquish additional overhead. Besides, we are dealing with a relatively small number of elements (70 rows), so the sorting times should be acceptably short. When the computer finds two elements out of order, it exchanges those two elements as well as the corresponding elements in other columns (lines 1190–1230).

Searching

Lines 10000–10930 search for specific matches. Although Visi-Data provides four searching options, they all use the same technique—the linear or sequential search (see Part 6 of this series in the August 1984 *inCider*). This is the appropriate alternative, because we simply don't know the order of the data we want to search. The linear search will work with any order of data; the binary search will work only with ordered data. Again, the number of items in the spreadsheet is small enough that the search times will not be excessive. The four options include two which examine data in the current column only, plus two that search all the data cells in the spreadsheet. One of the options also allows one substring to be replaced with another.

Global Commands

Lines 11000–16999 provide nine global commands, which allow control of the data sheet. The commands let you change column widths, save or load files, print all or part of the spreadsheet data to a line printer, insert and delete columns or rows, and label the columns.

Text Files

Visi-Data uses sequential text files. Since Visi-Data is a memory-resident program, random access text files offer no advantage for sorting and searching. Since random files use more disk space than sequential files, why use them? Also, if we used random access text files, we would need to specify the length parameter. Since we do not know the length of the longest label that we will enter, we have two choices.

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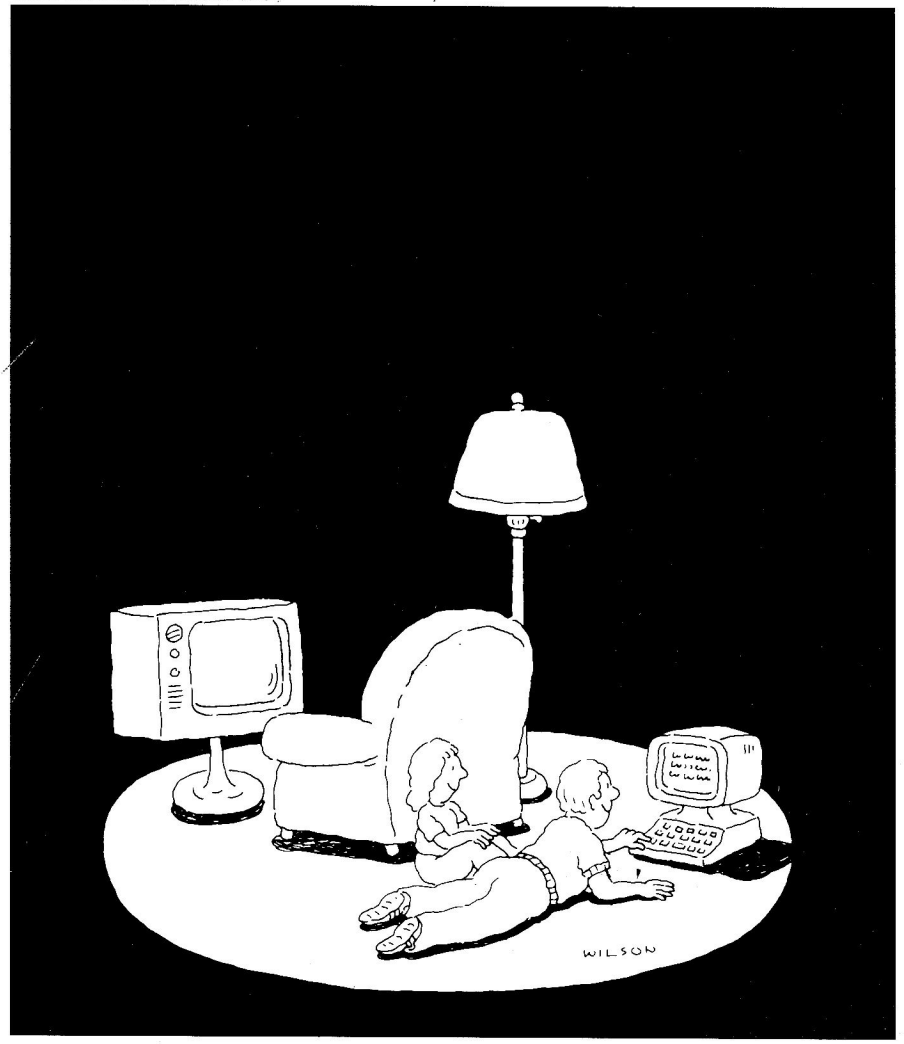

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We could assume the "worst case" and specify a record size of 255 characters. This would cover us for any length line, but would, of course, waste disk space on lots of nulls for shorter lines. As an alternative, we could be a little more sophisticated and make the computer keep track of the length of the longest line. This value would become the "L" parameter for a random access text file. But what if the length of the longest line changed? If it shortened, we are wasting space again. If it lengthened, we would have to redefine the file parameters. Whether we use sequential or random access files, the data will be written and read sequentially (record 1 first, then record 2, and so on), so why bother with random files?

Program Operation

Enter the **Listing**. When you first run the program, the computer will display a blank spreadsheet on the video screen similar to **Figure 4**. Note the deliberate similarity to most of the popular numeric spreadsheet programs. Imitation, they say, is the sincerest form of flattery, so the designers of these programs (including yours truly) are flattering each other all over the place.

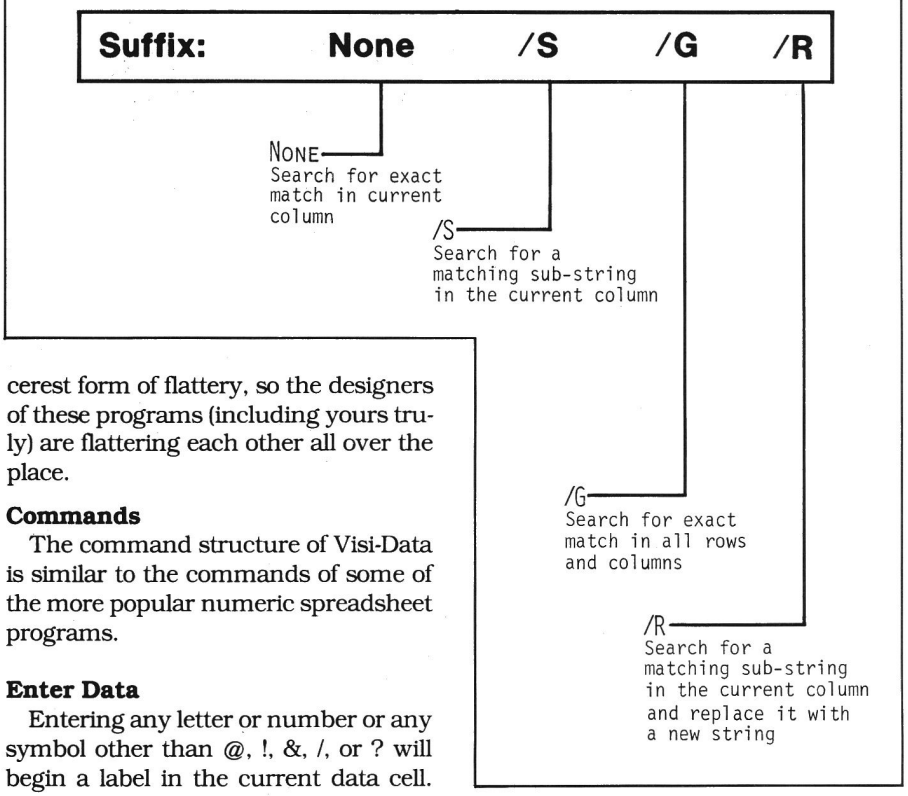
Commands

The command structure of Visi-Data is similar to the commands of some of the more popular numeric spreadsheet programs.

Enter Data

Entering any letter or number or any symbol other than @, !, &, /, or ? will begin a label in the current data cell.

Figure 2. *Visi-Data search options.*



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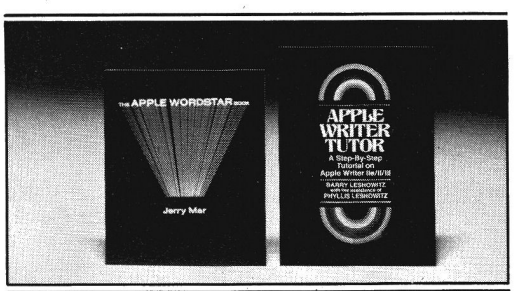

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Listing continued.

```
4110  PRINT "↓";
4120  VTAB 1
4130  HTAB 1
4140  PRINT  LEFT$ (H$(X),1)Y; TAB( 25)"HELP=?"
4150  VTAB 2
4160  HTAB 1
4170  PRINT A$(Y,X);
4180  CALL  - 868
5000  REM
5010  REM ================
5020  REM INPUT AND PERFORM
5030  REM ================
5040  REM
5050  GET A$
5060 A =  ASC (A$)
5070  IF A = 63 GOTO 17000
5080  IF A = 47 GOTO 11000
5090  IF A > 43 GOTO 5640
5100  IF A = 33 THEN  GOSUB 1000: GOSUB 7010: GOSUB 60
      00: GOTO 3160
5110  IF A = 21 GOTO 5180
5120  IF A = 8 GOTO 5350
5130  IF A = 32 GOTO 4000
5140  IF A = 38 GOTO 10000
5150  IF A = 34 THEN  GET A$: GOTO 5640
5160  GET A$
5170  GOTO 5000
5180  GOSUB 7010
5190  ON CD + 2 GOTO 5200,5340,5270
5200 X = X + 1
5210  IF X > 10 THEN X = 10: INVERSE : GOSUB 7010: NORMAL
      : GOTO 4120
5220  IF X > MT THEN XX = XX + 1: GOSUB 6000: GOTO 522
      0
```

Additional letters, numbers, or symbols may be entered to continue the label. A label may contain up to 255 characters, but if the length of the label is greater than the column width, VisiData will display as much of the label as will fit in the data cell. The entire label will be displayed in the screen header, however. Use the carriage return to terminate the entry.

Clear Cell

Entering an @ symbol and pressing return will clear the label in the current data cell. This will not affect column widths or the labels in other data cells.

Sort

Entering the ! symbol will sort the labels in the current column into ascending alphabetical order. Labels in other

```
5230  INVERSE
5240  GOSUB 7010
5250  NORMAL
5260  GOTO 4120
5270 Y = Y + 1
```

Listing continued.

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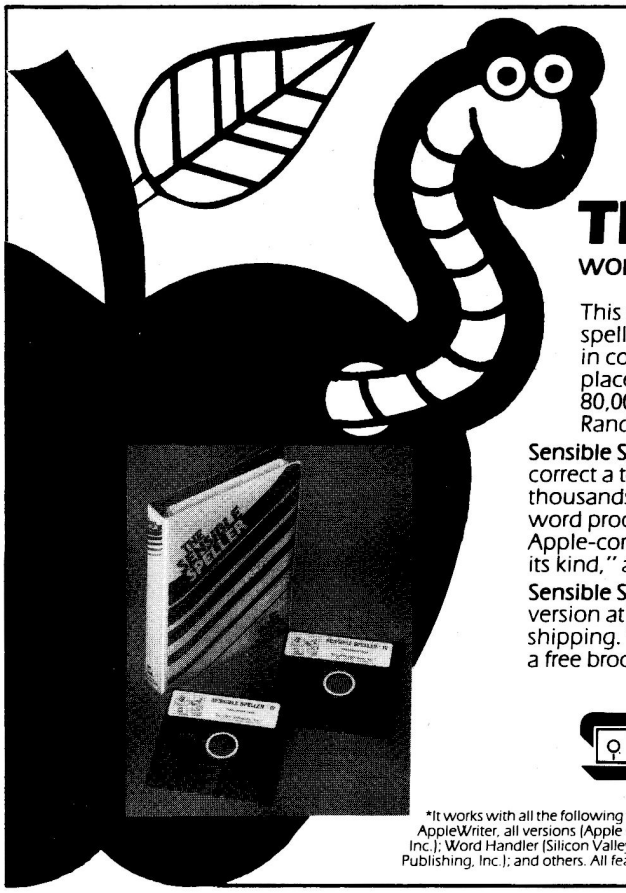

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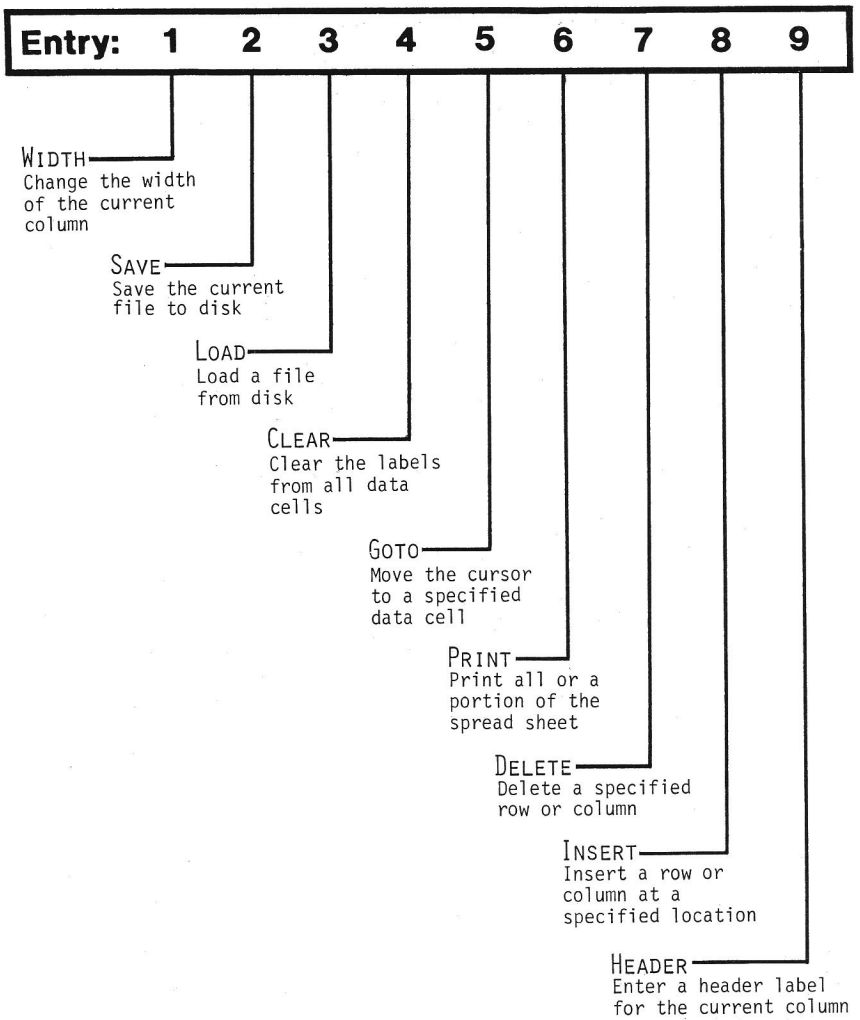
Figure 3. *Visi-Data global commands.*



Listing continued.

```
 5280  IF Y > 70 THEN Y = 70: GOTO 5310
 5290  IF Y > 18 + YY THEN X3 =  - 1:YY = YY + 1:Y = YY
       + 18: IF Y > 70 THEN Y = 70:YY = 51
 5300  IF X3 =  - 1 THEN  GOSUB 6000:X3 = 0
 5310  INVERSE
 5320  GOSUB 7010
 5330  NORMAL
 5340  GOTO 4120
 5350  ON CD + 2 GOTO 5360,6400,5460
 5360  GOSUB 7010
 5370 X = X - 1
 5380  IF X =  > XX THEN  INVERSE : GOSUB 7010: NORMAL
       : GOTO 4120
 5390 XX = XX - 1
 5400  IF X = 0 THEN X = 1:XX = 1: GOTO 5420
 5410  GOSUB 6000
 5420  INVERSE
 5430  GOSUB 7010
 5440  NORMAL
 5450  GOTO 4120
 5460  GOSUB 7010
 5470 Y = Y - 1
 5480  IF Y =  > YY THEN  INVERSE : GOSUB 7010: NORMAL
       : GOTO 4120
 5490 YY = YY - 1
```

Listing continued.



> ***"The replacement string may be any length."***

columns will also be rearranged to match the new order. In other words, the data is sorted row by row, using the data in the current column as a key.

Search

Entering the & symbol will allow you to search through the spreadsheet for occurrences of a specific word or number. Visi-Data will display the prompt "SEARCH STRING." Enter the word or number you want to locate. The computer will find and display each occurrence of matching data. After the computer displays each set of data, you may continue the search by pressing return, or terminate the search by pressing escape. Four options are available:

Exact Match—If you do not specify any options, the computer will search through all the labels in the current column to find exact matches. It will display the spreadsheet data for each matching label.

Substring—If you add the suffix "/S" to your entry, the computer will search the labels in the current column for any substring (part of a word) that matches your entry.

Global—If you add the suffix "/G" to your entry, Visi-Data will search for an exact match in all labels in the spreadsheet.

Replace—If you add the suffix "/R" to your entry, Visi-Data will replace any substring in the current column with another substring. The format for this option is XXX/YYYYYY/R, where "XXX" is the substring to be replaced and "YYYYYY" is the replacement string. The replacement string may be any length—longer, shorter, or the same length as the substring it replaces.

Move Cursor

The arrow keys move the cursor vertically (row to row) or horizontally (column to column). Movements are as follows:

←	LEFT	UP
→	RIGHT	DOWN

When the cursor reaches the edge of the current screen, the computer will

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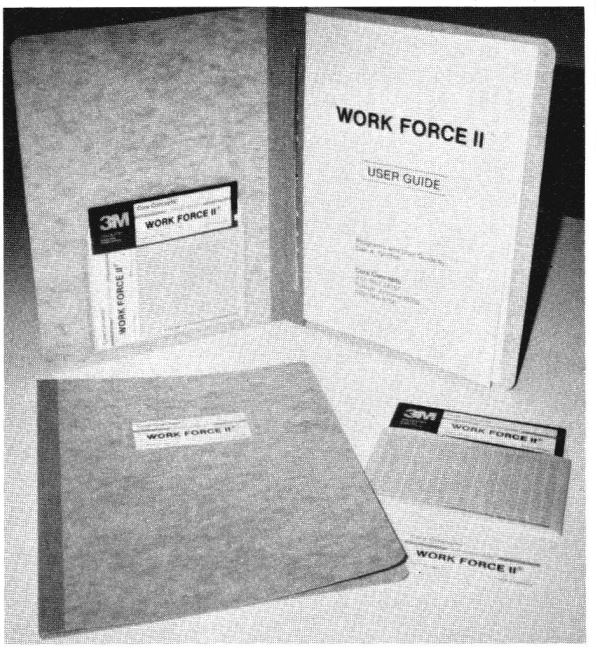

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"move" the entire spreadsheet to display an additional column or row. Visualize the screen as a stationary "window." As in our example above, the computer moves the spreadsheet around so that a portion of the data cells is visible through the "window."

Change Cursor Direction

The space bar changes the direction of cursor movement back and forth between vertical (row to row) and horizontal (column to column). The direction of cursor movement is indicated by the symbol in the upper right corner of the screen. An exclamation point (!) denotes vertical movement; a hyphen (-), horizontal movement.

Help

Entering a question mark (?) will display a list of available commands and their symbols, as shown in **Figure 5.**

Global Commands

Entering a slash (/) will display the global commands menu in the screen header. The global commands allow you to reformat the spreadsheet window and perform other operations, such as searching and sorting. The nine global commands follow; select the desired command by pressing the appropriate number key:

1—Width

Selection 1 allows you to change the width of the current column without changing the other columns. Visi-Data will display the prompt "WIDTH=." Enter a number between 3 and 36 and press return. Include an asterisk (*) after the entry to change all column widths.

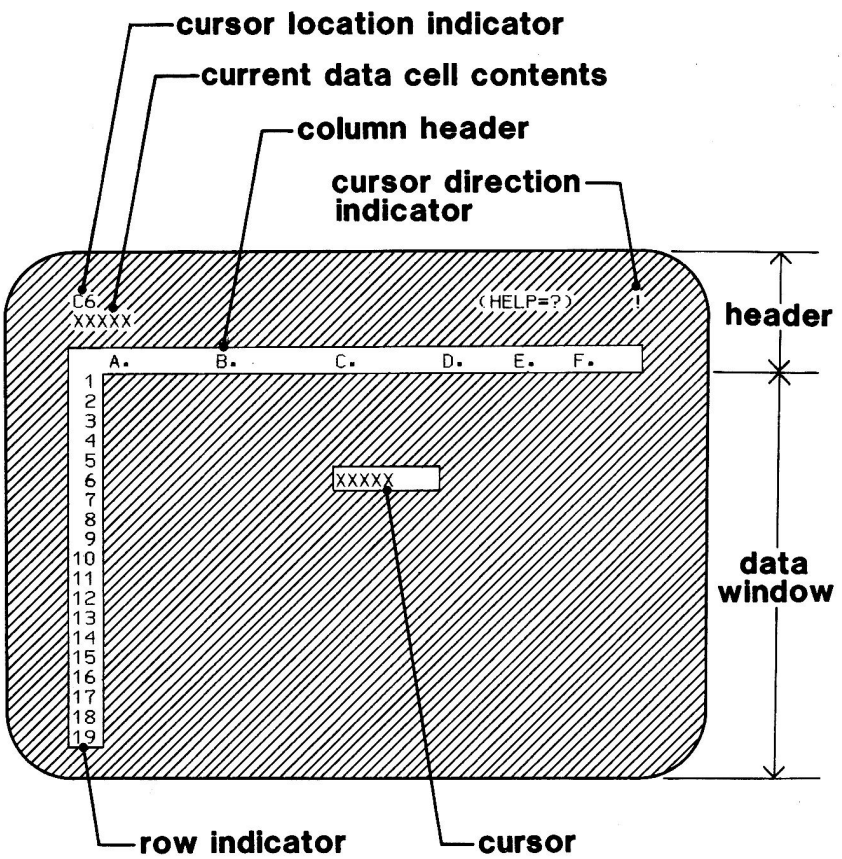
2—Save

Selection 2 allows you to save the existing spreadsheet data to disk. The computer will save column widths as well as alphabetic and numeric data. Visi-Data will ask you to enter a file name. You may use a new name or the name of an existing file. Remember that, in the latter case, any data previously stored in the file will be overwritten.

3—Load

Selection 3 allows you to load a file from disk. Visi-Data will first display a catalog and ask you for a file name. Enter the name of the file from the catalog and press return. Visi-Data will load the file and display the spreadsheet data.

Figure 4. *Visi-Data screen layout.*



Listing continued.

```
5500 Y = YY
5510  IF Y <  = 0 THEN Y = 1:YY = 1
5520  GOSUB 6000
5530  INVERSE
5540  GOSUB 7010
5550  NORMAL
5560  GOTO 4120
5570  REM
5580  REM ---------------------
5590  REM INPUT STRING FOR PAGE
5600  REM ---------------------
5610  REM
5620  GOTO 11000
5630  IF A$ = "&" GOTO 10000
5640  VTAB 2
5650  HTAB 1
5660  PRINT A$(Y,X);
5670  VTAB 2
5680  HTAB 1
5690  GOSUB 8020
5700  IF A$ = "" GOTO 5730
5710 A$(Y,X) = A$
5720  GOSUB 9010
5730  GOTO 3100
6000  REM
6010  REM ============
6020  REM SCREEN PRINT
6030  REM ============
```

Listing continued.

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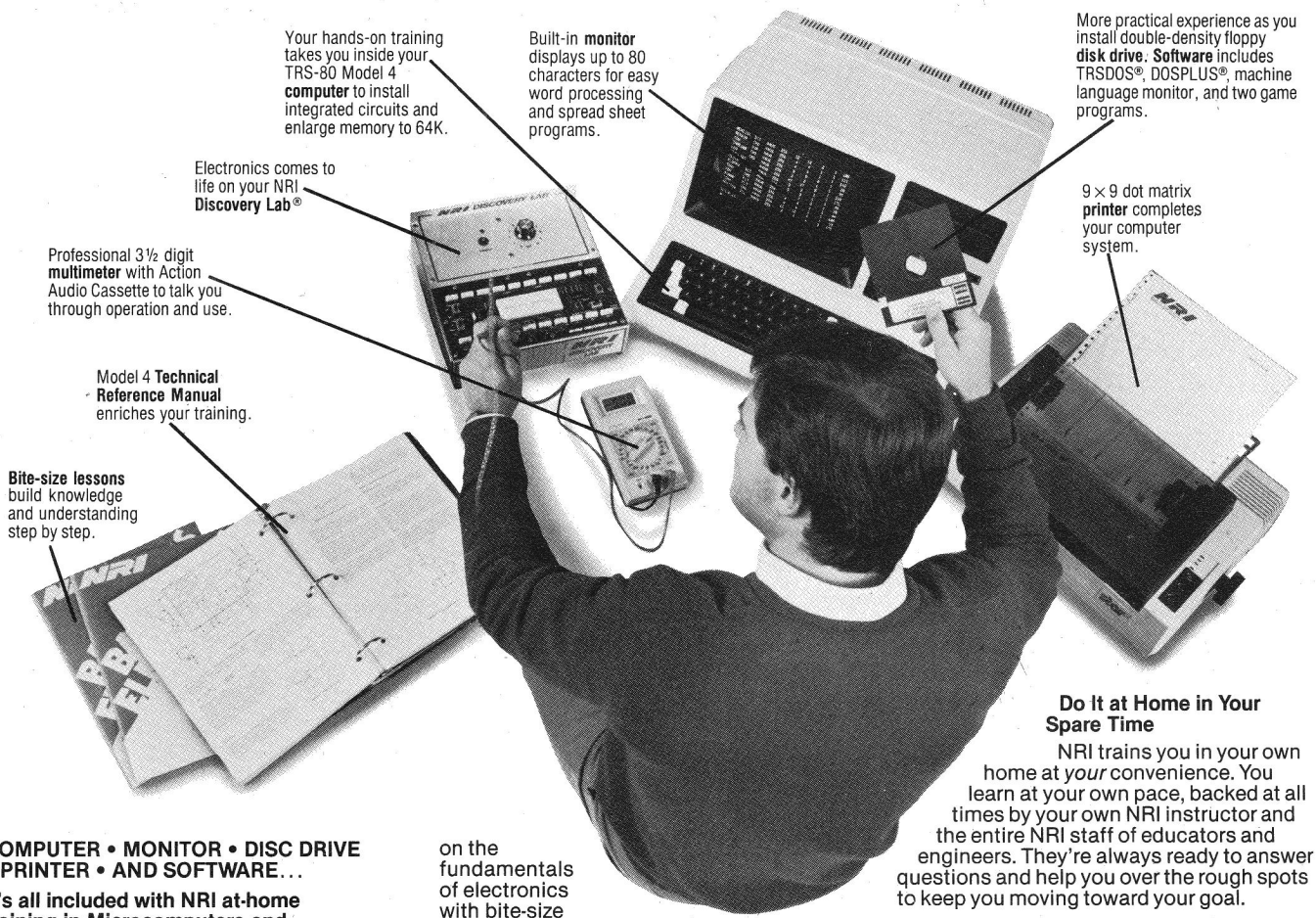

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Listing continued.

```
6040  REM
6050  VTAB 1: HTAB 25: CALL  - 868
6060  REM ** PRINT COLUMN HEADER **
6070  VTAB 4
6080  HTAB 1
6090  INVERSE
6100  PRINT "   ";
6110 MT = 10
6120  IF XX < 1 THEN XX = 1
6130 I = 0
6140  FOR FX = XX TO 10
6150 I = I + CW(FX)
6160  IF I > 37 THEN MT = FX - 1:FX = 16
6170  NEXT FX
6180  FOR FX = XX TO MT
6190 T$ =  LEFT$ (H$(FX) + BL$,CW(FX))
6200  PRINT T$;
6210  NEXT FX
6220  CALL  - 868
6230  REM ** PRINT ROW INDEX **
6240  VTAB 5
6250  HTAB 1
6260  FOR FX = YY TO YY + 18
6270  IF FX > 70 THEN  NORMAL : PRINT "   ";: GOTO 6300
6280  PRINT FX;
6290  IF FX < 10 THEN  PRINT " ";
6300  PRINT
6310  NEXT FX
6320  REM ** CLEAR SHEET **
6330  NORMAL
6340  FOR I = 5 TO 24
6350  VTAB I
6360  HTAB 3
6370  CALL  - 868
6380  NEXT I
6390  REM ** PRINT CELL VALUES **
6400 T = 3
6410  FOR A = XX TO MT
6420  VTAB 5
6430  FOR X1 = 0 TO 18
6440  IF YY + X1 > 70 THEN X1 = 19: GOTO 6470
6450  HTAB T
6460  PRINT  LEFT$ (A$(YY + X1,A),CW(A))
6470  NEXT X1
6480 T = T + CW(A)
6490  NEXT A
6500  RETURN
7000  REM
7010  REM ====================
7020  REM SCREEN VALUE PRINTER
7030  REM ====================
7040  REM
7050 CW(0) = 0
7060  IF X = XX THEN COL = 3: GOTO 7110
7070 COL = 3
7080  FOR X2 = XX TO X - 1
7090 COL = COL + CW(X2)
7100  NEXT X2
7110  VTAB Y + 5 - YY
7120  HTAB COL
7130  PRINT  LEFT$ (A$(Y,X) + BL$,CW(X));
7140  RETURN
8000  REM
8010  REM ===============
8020  REM INPUT STATEMENT
8030  REM ===============
8040  REM
8050 I = 2
8060 I$ = A$
8070  HTAB 1
8080  PRINT A$;
8090  GOTO 8110
8100  IF  LEN (I$) = 0 THEN A$ = "": RETURN
```

Listing continued.

Figure 5. *Visi-Data help screen.*

```
/   = GLOBAL COMMAND MENU
@   = CLEAR DATA CELL
!   = SORT ON CURRENT COLUMN
&   = COLUMN SEARCH (EXCEPT /G)

  /S = SUBSTRING MATCH
  /G = GLOBAL SEARCH (ALL DATA)
  NO SUFFIX = EXACT MATCH
  XXX/YYY/R = REPLACE 'XXX' WITH 'YYY'
```

4—Clear

Selection 4 clears all existing labels in the spreadsheet matrix and moves the cursor to data cell A1.

5—Goto

Selection 5 allows you to move the cursor and the spreadsheet window to any data cell. Visi-Data will display the prompt "GO TO PAGE LOCATION." Enter a letter between A and J, followed immediately by a number between 1 and 70 and press return. Obviously, this is faster than using the cursor for large-scale movements. Since the computer must generate a new display window each time it adds a new column or row, cursor movements are slow relative to jumping to a new location.

6—Print

Selection 6 allows you to print all or part of the spreadsheet. Visi-Data will ask for the upper-left and lower-right corners of the portion of the spreadsheet you want to print. Enter the letter/number address for these two data cells. Visi-Data will print a matrix of the contents of the data cells within this range. Be certain to set the column width for each column wide enough to reveal the entire label, before printing. Since the program has no printer formatting characters imbedded, it should work with any printer. The program assumes that your printer interface card is in slot #1. If your card is in another slot, change line 14180. Add any formatting commands (such as compress print>) as line 14185.

The total width of the portion of the spreadsheet you print cannot exceed the length of the line on your printer, or the extra characters will "wrap around" to the next line.

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7—Delete

Selection 7 allows you to delete an existing column or row. The computer will ask you to specify the column or row you want to delete. It will delete the specified column or row and move the remaining columns or rows to close the gap left by the deleted data.

8—Insert

Selection 8 allows you to insert a new (blank) column or row between two existing columns or rows. The computer will ask you to enter the location of the new column or row and insert the new element immediately after the column or row you specify. It will move the existing columns or rows to make room for the new data.

9—Header

Selection 9 allows you to enter a header label for the current column. Visi-Data will display the prompt "HEADER." Enter any combination of letters, numbers, or symbols (except colons or commas) up to 255 characters. The header will be displayed in inverse characters at the top of the column, following the letter that identifies the column's address. If the length of the header label is greater than the column width, Visi-Data will display as much of the label as will fit in the cell.

Applications

Obviously, Visi-Data is not a program for all applications. But when you need a quick data base similar to 3 × 5 index cards, Visi-Data offers some advantages. It is easy to set up, easy to use, fast and convenient, in that the data "window" allows you to look at more than one record at a time. It should be particularly good for the usual name-address-telephone number data files.

I hope that "The Compleat Text File Primer" has increased your knowledge of text files. More important, I hope that it has piqued your curiosity about text files and encouraged you to learn more and use text files more astutely. Text files are probably the most powerful tool available to the BASIC programmer. Use them often.

Additional Notes on APPEND (June 1984 *inCider*, p. 91)

If you create a sequential text file named "XXX" with three records, "ONE," "TWO," and "THREE," it will appear on the disk as follows:

ONE<cr>TWO<cr>THREE<cr>0

Listing continued.

```
 8110  GET A$
 8120  IF A$ =  CHR$ (8) THEN L =  LEN (I$):I$ =  MID$
      (" " + I$,2,L - 1): HTAB 1: PRINT I$;: CALL  - 86
      8: GOTO 8100
 8130  IF A$ =  CHR$ (21) GOTO 8210
 8140  IF A$ =  CHR$ (13) GOTO 8230
 8150  IF  ASC (A$) < 31 GOTO 8110
 8160 I$ = I$ + A$
 8170  HTAB 1
 8180  PRINT I$;
 8190 I = I + 1
 8200  GOTO 8110
 8210 A$ =  MID$ (A$(Y,X),I,1)
 8220  GOTO 8160
 8230  IF I = 1 THEN A$ = "": RETURN
 8240 A$ = I$
 8250  RETURN
 9000  REM
 9010  REM ======
 9020  REM PARSER
 9030  REM ======
 9040  REM
 9050  IF A$(Y,X) = "@" THEN A$(Y,X) = ""
 9060  IF X > XMAX THEN XMAX = X
 9070  IF Y > YMAX THEN YMAX = Y
 9080  RETURN
10000  REM
10010  REM ======
10020  REM SEARCH
10030  REM ======
10040  REM
10050  VTAB 2: HTAB 1: CALL  - 868
10060  INPUT "SEARCH STRING-";A$
10080 B$ =  RIGHT$ (A$,2)
10090  IF B$ = "/G" GOTO 10290
10100  IF B$ = "/S" GOTO 10530
10110  IF B$ = "/R" GOTO 10750
10120  REM ** EXACT MATCH **
10130 Y1 = YY
10140 Y2 = Y
10150  FOR J = 1 TO YMAX
10160  IF A$(J,X) <  > A$ GOTO 10250
10170 YY = J
10180 Y = J
10190  GOSUB 6000
10200  VTAB 2: HTAB 1
10210  PRINT "RETURN TO CONTINUE, ESC TO END";
10220  GET B$: PRINT  CHR$ (1);
10230  IF B$ =  CHR$ (27) GOTO 3100
10240  IF B$ <  >  CHR$ (13) GOTO 10220
10250  NEXT J
10260 YY = Y1
10270 Y = Y2
10280  GOTO 10910
10290  REM ** GLOBAL SEARCH **
10300 A$ =  LEFT$ (A$, LEN (A$) - 2)
10310 X2 = XX
10320 X3 = X
10330 Y1 = YY
10340 Y2 = Y
10350  FOR K = 1 TO YMAX
10360  FOR J = 1 TO XMAX
10370  IF A$(K,J) <  > A$ GOTO 10460
10380 YY = K:Y = K
10390 XX = J:X = J
10400  GOSUB 6000
10410  VTAB 2: HTAB 1
10420  PRINT "RETURN TO CONTINUE, ESC TO END";
10430  GET B$: PRINT  CHR$ (1);
10440  IF B$ =  CHR$ (27) GOTO 3100
10450  IF B$ <  >  CHR$ (13) GOTO 10430
10460  NEXT J
10470  NEXT K
10480 XX = X2
```

Listing continued.

Figure 6. *When an existing file is opened, a new record will write over the file.*

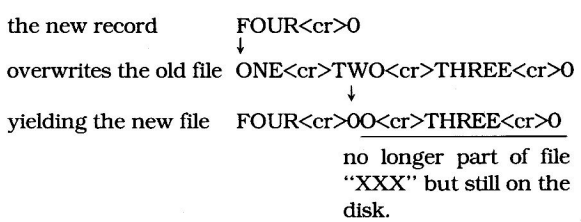
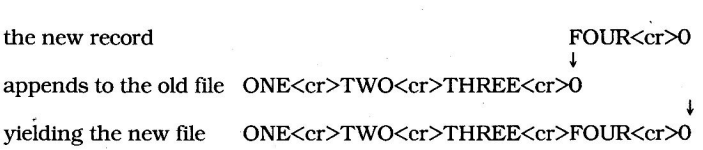


Figure 7. *To save existing records, append new material to the end of the file.*



Listing continued.

```
10490 X = X3
10500 YY = Y1
10510 Y = Y2
10520  GOTO 10910
10530  REM ** SUB-STRING SEARCH **
10540 A$ =  LEFT$ (A$, LEN (A$) - 2)
10550 M =  LEN (A$)
10560 Y1 = YY
10570 Y2 = Y
10580  FOR J = 1 TO YMAX
10590 L =  LEN (A$(J,X))
10600  FOR K = 1 TO L
10610  IF  MID$ (A$(J,X),K,M) <  > A$ GOTO 10700
10620 YY = J
10630 Y = J
10640  GOSUB 6000
10650  VTAB 2: HTAB 1
10660  PRINT "RETURN TO CONTINUE, ESC TO END ";
10670  GET B$: PRINT  CHR$ (1);
10680  IF B$ =  CHR$ (27) GOTO 3100
10690  IF B$ <  >  CHR$ (13) GOTO 10670
10700  NEXT K
10710  NEXT J
10720 YY = Y1
10730 Y = Y2
10740  GOTO 10910
10750  REM ** SEARCH AND REPLACE **
10760 A$ =  LEFT$ (A$, LEN (A$) - 2)
10770  FOR I = 1 TO  LEN (A$)
10780  IF  MID$ (A$,I,1) <  > "/" GOTO 10830
10790 B$ =  LEFT$ (A$,I - 1)
10800 A$ =  MID$ (A$,I + 1,30)
10810 M =  LEN (B$)
10820  GOTO 10840
10830  NEXT I
10840  FOR I = 1 TO YMAX
10850 L =  LEN (A$(I,X))
10860  FOR K = 2 TO L
10870  IF  MID$ (A$(I,X),K - 1,M) <  > B$ GOTO 10890
10880 A$(I,X) =  MID$ (A$(I,X),1,K - 2) + A$ +  MID$ (
     A$(I,X),K + M - 1,100)
10890  NEXT K
10900  NEXT I
10910  FOR I = 1 TO 2000: NEXT
10920  GOSUB 6000
10930  GOTO 3160
11000  REM
```

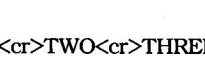
Listing continued.



If you write a new record "FOUR" to the file,

```
 5  D$ = CHR$(4)
10  PRINT D$;"OPEN XXX"
20  PRINT D$;"WRITE XXX"
30  PRINT "FOUR"
40  PRINT D$;"CLOSE"
```

line 10 places the file pointer, used to mark where the computer is in the file, at the first character of the file:



Line 30 prints the new record "FOUR" to the file *beginning at the file pointer* (see **Figure 6**).

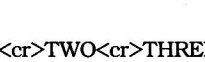
Note the following characteristics of the new file:

- The new record "FOUR" overwrites the previous records "ONE" and the "TW" of "TWO."
- The end-of-file marker (0) terminates the file after the record "FOUR." Although the previous record "THREE" still remains coded on the disk, when you try to read the file "XXX," the computer will stop at the end-of-file marker. Thus, the only record now available is the record "FOUR."

If, instead of *opening* the file, you *append* the file,

```
 5  D$ = CHR$(4)
10  OPEN D$;"APPEND XXX"
20  OPEN D$;"WRITE XXX"
30  PRINT "FOUR"
40  PRINT D$;"CLOSE"
```

line 10 moves the file pointer to the *end* of the file rather than the beginning of the file as it did in the first example.



Line 30 begins writing at the file pointer, as it did in the first example. Because the file pointer begins the writing process at the end of the file, the additional record is *appended* to the end of the previous records (see **Figure 7**).

If you read the new file, you will find four records rather than the single record in the new file created by the first example. OPEN and APPEND perform the same function except for the positioning of the file pointer. The significance of APPEND is that you can add records to a sequential text file without having to read each old record into memory in order to add the new record.■

Listing continued.

```
11010  REM ======================
11020  REM HANDLE GLOBAL COMMANDS
11030  REM ======================
11040  REM
11050  VTAB 2
11060  HTAB 1
11070  CALL  - 868
11080  INPUT "1-WIDTH 2-SAVE 3-LOAD 4-CLEAR 5-GOTO
     6-PRINT 7- DELETE 8-INSERT 9-HEADER ";A$
11090 A =  VAL (A$)
11100  IF A < 1 OR A > 9 GOTO 11050
11110  ON A GOTO 11120,12000,12370,2060,11350,14020,15
     000,15000,11620
11120  VTAB 3
11130  CALL  - 868
11140  VTAB 2
11150  CALL  - 868
11160  INPUT "WIDTH=";A$
11170 A =  VAL (A$)
11180  IF A < 3 OR A > 36 GOTO 11120
11185  IF  RIGHT$ (A$,1) = "*" THEN  FOR I = 1 TO 10:C
     W(I) = A: NEXT I
11190 CW(X) = A
11250 I = 0
11260  FOR FX = XX TO X
11270 I = I + CW(FX)
11280  NEXT FX
11290  IF I > 37 THEN XX = XX + 1: GOTO 11250
```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```
11310  GOSUB 13020
11315  GOSUB 6000
11320  REM
11340  REM -------------
11350  REM GOTO LOCATION
11360  REM -------------
11370  REM
11380  GOSUB 11400
11390  GOTO 3100
11400  GOSUB 13020
11410  VTAB 2
11420  HTAB 1
11430  INPUT "GO TO PAGE
     LOCATION: ";A$
11440  GOSUB 11550
11450  IF X1 + Y1 = 0 THEN
     RETURN
11460  X= X1
11470  XX= X1
11480  Y= Y1
11490  YY= Y1
11500  GOSUB 6000
11510  INVERSE
11520  GOSUB 7010
11530  NORMAL
11540  RETURN
11550  L= LEN (A$)
11560  IF L< 2 OR L> 3 THEN
     X1= 0: Y1= 0: RETURN
11570  X1= ASC (LEFT$ (A$,1))
     - 64
11580  IF X1< 1 OR X1> 10
     THEN X1= 10: RETURN
11590  Y1= VAL (RIGHT$
     (A$,L- 1))
11600  IF Y1< 1 OR Y1> 70
     THEN Y1= 70
11610  RETURN
11620  REM
11630  REM ------
11640  REM HEADER
11650  REM ------
11660  REM
11670  VTAB 3: CALL -868
11680  VTAB 2: CALL -868
11690  INPUT "HEADER-";A$
11700  H$(X)= CHR$ (64+ X) +
     "." + A$
11710  GOSUB 6000
11720  GOTO 3100
12000  REM
12010  REM ========
12020  REM DISK I/O
12030  REM ========
```

Listing continued.

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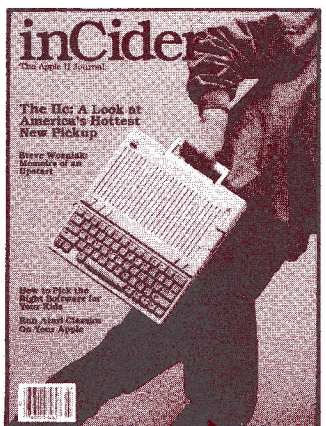

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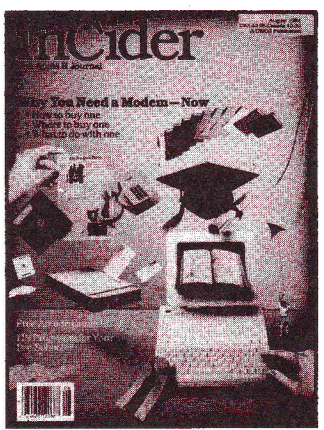

Listing continued.

```
12040  REM
12050  REM  --------
12060  REM  FILE OUT
12070  REM  --------
12080  REM
12090  GOSUB 13020
12100  VTAB 2
12110  HTAB 1
12120  CALL  - 868
12130  PRINT "SAVE FILE TO DISK"
12140  INPUT "FILENAME: ";A$
12150  IF A$ = "" THEN  GOSUB 13020: GOTO 3100
12160  VTAB 1
12170  HTAB 1
12180  PRINT
12190  PRINT D$"OPEN"A$
12200  PRINT D$"DELETE"A$
12210  PRINT D$"OPEN"A$
12220  PRINT D$"WRITE"A$
12230  PRINT XMAX
12240  PRINT YMAX
12250  FOR X = 1 TO XMAX
12260  PRINT H$(X)
12270  PRINT CW(X)
12280  FOR Y = 1 TO YMAX
12290  PRINT A$(Y,X)
12300  NEXT Y
12310  NEXT X
12320  PRINT D$"CLOSE"
12330 Y = 1
12340 X = 1
12350  GOSUB 13020
12360  GOTO 14260
12370  REM
12380  REM  -------
12390  REM  FILE IN
12400  REM  -------
12410  REM
12420  HOME
12430  PRINT D$"CATALOG"
12440  FOR I = 1 TO 23
12450  VTAB I
12460  PRINT  TAB( 7)" "
12470  NEXT I
12480  VTAB 2
12490  HTAB 1
12500  PRINT "READ FILE FROM DISK"
12510  PRINT "FILENAME: ";: CALL  - 868
12520  INPUT "";A$
12530  HOME
12540  VTAB 1
12550  HTAB 25
12560  FLASH
12570  PRINT "LOADING"
12580  NORMAL
12590  PRINT D$"OPEN"A$
12600  PRINT D$"READ"A$
12610  INPUT XMAX
12620  INPUT YMAX
12630  FOR X = 1 TO XMAX
12640  INPUT H$(X)
12650  INPUT CW(X)
12660  FOR Y = 1 TO YMAX
12670 A$(Y,X) = ""
12680  GET A$
12690  IF A$ =  CHR$ (13) GOTO 12720
12700 A$(Y,X) = A$(Y,X) + A$
12710  GOTO 12680
12720  NEXT Y
12730  NEXT X
12740  PRINT  CHR$ (1) CHR$ (13);"CLOSE"
12750  GOSUB 13020
12760 X = 1
12770 Y = 1
12780  GOTO 3050
```

Listing continued.

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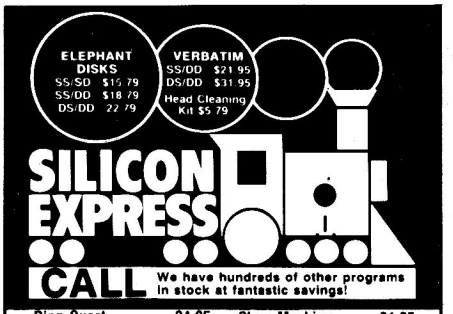

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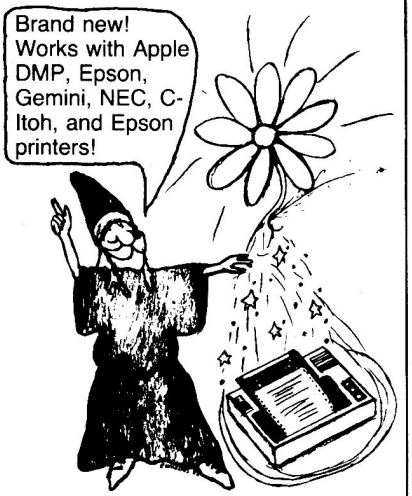

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Listing continued.

```
13000  REM
13010  REM  ============
13020  REM  CLEAR HEADER
13030  REM  ============
13040  REM
13050  VTAB 1
13060  HTAB 1
13070  CALL  - 868
13080  VTAB 2
13090  CALL  - 868
13100  VTAB 3
13110  CALL  - 868
13120  RETURN
14000  REM
14010  REM  =========
14020  REM  PRINT OUT
14030  REM  =========
14040  REM
14050  GOSUB 13020
14060  VTAB 2
14070  HTAB 1
14080  INPUT "UPPER/LEFT CORNER: ";A$
14090  GOSUB 11550
14100 X3 = X1
14110 Y3 = Y1
14120  VTAB 2
14130  HTAB 1
14140  INPUT "LOWER/RIGHT CORNER: ";A$
14150  GOSUB 11550
14160 X4 = X1
14170 Y4 = Y1
14180  PRINT D$"PR#1"
14190  FOR Y1 = Y3 TO Y4
14200  FOR X1 = X3 TO X4
14210  PRINT  LEFT$ (A$(Y1,X1) + BL$,CW(X1));
14220  NEXT X1
14230  PRINT
14240  NEXT Y1
14250  PRINT D$"PR#0"
14260 X1 = 1
14270 Y1 = 1
14280  GOSUB 11460
14290  GOTO 3100
15000  REM
15010  REM  =============
15020  REM  DELETE/INSERT
15030  REM  =============
15040  REM
15050  GOSUB 13020
15060  VTAB 2
15070  IF A = 7 THEN  PRINT "DELETE"
15080  IF A = 8 THEN  PRINT "INSERT"
15090  VTAB 3
15100  INPUT "1-ROW 2-COLUMN ";A$
15110 B =  VAL (A$)
15120  IF B < 1 OR B > 2 GOTO 15090
15130  VTAB 3
15140  CALL  - 868
15150  IF A = 8 THEN  PRINT "AFTER ";
15160  IF B = 1 THEN  INPUT "ROW ";A$:C =  VAL (A$): IF
     C < 1 OR C > YMAX GOTO 15130
15170  IF B = 2 THEN  INPUT "COLUMN ";A$:C =  ASC (A$)
     - 64: IF C < 1 OR C > XMAX GOTO 15130
15180 FX = X1
15190  IF A = 8 GOTO 15420
15200  REM
15210  REM  ------
15220  REM  DELETE
15230  REM  ------
15240  REM
15250  IF B = 2 GOTO 15330
15260  FOR I = 1 TO XMAX
15270  FOR J = C TO YMAX
```

Listing continued.

Listing continued.

```
15280 A$(J,I) = A$(J + 1,I)
15290  NEXT J: NEXT I
15300 YMAX = YMAX - 1
15305 Y = Y - 1
15310  IF Y = 0 THEN Y = 1
15320  GOTO 15710
15330  FOR I = C TO XMAX
15340  FOR J = 1 TO YMAX
15350 A$(J,I) = A$(J,I + 1)
15360  NEXT J: NEXT I
15370 XMAX = XMAX - 1
15380 X = X - 1
15390  GOTO 15710
15400  REM
15410  REM  ------
15420  REM  INSERT
15430  REM  ------
15440  REM
15450  IF B = 2 GOTO 15550
15460 YMAX = YMAX + 1
15470  IF YMAX > 70 GOTO 15640
15480 Y = Y + 1
15490  FOR I = 1 TO XMAX
15500  FOR J = YMAX TO C + 2 STEP  - 1
15510 A$(J,I) = A$(J - 1,I)
15520  IF J = C + 2 THEN A$(C + 1,I) = ""
15530  NEXT J: NEXT I
15540  GOTO 15710
15550 XMAX = XMAX + 1
15560  IF XMAX > 10 GOTO 15640
15570 X = X + 1
15580  FOR I = XMAX TO C + 2 STEP  - 1
15590  FOR J = 1 TO YMAX
15600 A$(J,I) = A$(J,I - 1)
15610  IF I = C + 2 THEN A$(J,C + 1) = ""
15620  NEXT J: NEXT I
15630  GOTO 15710
15640  VTAB 1
15650  HTAB 23
15660  FLASH
15670  PRINT "RANGE ERROR"
15680  NORMAL
15690  FOR I = 1 TO 1000
15700  NEXT I
15710  GOSUB 13020
15720  GOSUB 6000
15730  INVERSE
15740  NORMAL
15750  GOTO 3100
17000  REM
17010  REM  ====
17020  REM  HELP
17030  REM  ====
17040  REM
17050  HOME
17060  PRINT  TAB( 12)"VISI-DATA HELP"
17070  PRINT
17080  PRINT
17090  PRINT "/    = GLOBAL COMMAND MENU"
17100  PRINT "@    = CLEAR DATA CELL"
17110  PRINT "!    = SORT ON CURRENT COLUMN
17120  PRINT "&    = COLUMN SEARCH (EXCEPT /G)
17130  PRINT
17140  PRINT "   /S = SUBSTRING MATCH"
17150  PRINT "   /G = GLOBAL SEARCH (ALL DATA)"
17160  PRINT "   NO SUFFIX = EXACT MATCH"
17170  PRINT "   XXX/YYY/R = REPLACE 'XXX' WITH 'YYY'"
17180  VTAB 23
17190  PRINT "PRESS ANY KEY ";
17200  CALL  - 756
17210  HOME
17220  GOSUB 6000
17230  GOTO 3100
```

Listing continued.

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Input Hello

by Mark Jeske

When a program reads strings from a file using the INPUT statement, leading blanks are discarded. For example, if you save " hello" to a file, INPUT will read back "hello".

The solution is simple. If the first character in a string is a blank, change it to a character that won't appear in the file. When reading strings back into memory, simply check each first character and replace it with a blank if necessary.

The **Program listing** demonstrates this idea. If lines 45 and 105 are removed, then A$ will equal "HELLO". While this problem may not occur often, you should probably check all strings before saving them to a file, just to make sure.■

Write to Mark Jeske at 1221 E. Davenport, Iowa City, IA 52240.

Program listing. *Input Hello.*

```
10 D$=CHR$(4)
20 A$="  HELLO"
30 PRINT D$"OPEN TRIAL"
40 PRINT D$"WRITE TRIAL"
45 IF LEFT$(A$,1)=" " THEN A$="%"+MID$(A$,2)
50 PRINT A$
60 PRINT D$"CLOSE TRIAL"
70 A$=""
80 PRINT D$"OPEN TRIAL"
90 PRINT D$"READ TRIAL"
100 INPUT A$
105 IF LEFT$(A$,1)="%" THEN A$=" "+MID$(A$,2)
110 PRINT D$"CLOSE TRIAL"
120 PRINT A$
130 END
```

Memory Search

by Michael Phillips

inCider ("Byte Seeking," March 1984) carried a program called MLSEEK similar to one I was working on. My version had some bugs, so I typed in MLSEEK to see if they appeared there too. They did. It turns out to be one bug with several different faces.

When MLSEEK finds a match for the first byte, it moves the location pointer to the next location. Here comes the bug. After looking at this location the pointer is moved again. Now MLSEEK has gone past a byte that may be the first byte of the seek sequence and cannot go back to look again. For example, suppose three consecutive memory locations contain 11 11 22 and you want to find the sequence 11 22. MLSEEK matches the first 11, moves the location pointer, and looks for 22. At the next location it finds 11. It says no match, moves the location pointer and starts looking for 11 again, missing the 11,22 sequence.

The solution is to set the location pointer back to the first match address plus one. I rewrote mine to accept the same entry locations and to output in the same manner as MLSEEK, but with the necessary corrections.

Write to Michael Phillips at 3079½ St. Clair Avenue, Clearwater, FL 33519.

Listing 1. *MEMORY SEARCH assembly listing.*

```
                        17            ORG   $300
                        18   *
                        19   *
                        20   *
                        21   STADHI    EQU   $CE
                        22   STADLO    EQU   $CF
                        23   ADDPTR    EQU   $F9
                        24   BYTOT     EQU   $FB
                        25   VAL1      EQU   $FC
                        26   VAL2      EQU   $FD
                        27   VAL3      EQU   $FE
                        28   GPB       EQU   $FF
                        29   PRBYTE    EQU   $FDDA
                        30   COUT      EQU   $FDED
                        31   *
                        32   *
                        33   *
0300: A5 F9             34            LDA   ADDPTR
0302: 85 CE             35            STA   STADHI      ; Store start hibyte in STADHI
0304: A5 FA             36            LDA   ADDPTR+1
0306: 85 CF             37            STA   STADLO      ; Store start lobyte in STADLO
0308: 85 F9             38            STA   ADDPTR      ; Swap lobyte and hibyte
030A: A5 CE             39            LDA   STADHI      ;   in address pointers
030C: 85 FA             40            STA   ADDPTR+1
030E: A0 00             41            LDY   #$00
0310: A5 FC             42            LDA   VAL1
0312: 85 FF             43            STA   GPB         ; Store first value in GPB
0314: A6 FB             44            LDX   BYTOT
0316: B1 F9             45   GETVAL   LDA   (ADDPTR),Y ; Get value from memory loc
0318: C5 FF             46            CMP   GPB
031A: D0 37             47            BNE   NOMAT       ; Do I have a match
031C: E4 FB             48            CPX   BYTOT       ; Yes, is this the first?
031E: D0 06             49            BNE   SKPST       ; No, then skip the stack
0320: A5 F9             50            LDA   ADDPTR      ; Yes, store address
0322: 48                51            PHA
0323: A5 FA             52            LDA   ADDPTR+1
0325: 48                53            PHA
0326: CA                54   SKPST    DEX
0327: F0 3D             55            BEQ   PRNT        ; Is this sequence end?
0329: A5 FD             56            LDA   VAL2        ; No, get VAL2
032B: 85 FF             57            STA   GPB
032D: A5 FB             58            LDA   BYTOT
032F: C9 03             59            CMP   #$03        ; Is sequence 3 bytes?
0331: D0 08             60            BNE   GETADD
0333: E0 01             61            CPX   #$01        ; Yes, is this the third?
0335: D0 04             62            BNE   GETADD      ; No
0337: A5 FE             63            LDA   VAL3        ; Yes then get VAL3
0339: 85 FF             64            STA   GPB
033B: E6 F9             65   GETADD   INC   ADDPTR      ; Add 1 to address pointer
033D: D0 D7             66            BNE   GETVAL      ; Did I jump to a new page?
033F: E6 FA             67            INC   ADDPTR+1    ; Yes, then add 1 to hibyte
0341: A5 FA             68            LDA   ADDPTR+1
0343: D0 03             69            BNE   CONT        ; Is this end of memory?
0345: 4C 80 03          70            JMP   END
0348: C9 C0             71   CONT     CMP   #$C0        ; No, am I in $C000 range?
034A: D0 CA             72            BNE   GETVAL
034C: A9 D0             73            LDA   #$D0        ; Yes, put pointer to $D000
034E: 85 FA             74            STA   ADDPTR+1
0350: 4C 16 03          75            JMP   GETVAL
0353: E4 FB             76   NOMAT    CPX   BYTOT       ; Is something in the stack?
0355: F0 E4             77            BEQ   GETADD
0357: A6 FB             78            LDX   BYTOT       ; Yes, then clear stack
0359: 68                79            PLA
035A: 85 FA             80            STA   ADDPTR+1    ; Reset hibyte pointer
035C: 68                81            PLA
035D: 85 F9             82            STA   ADDPTR      ; Reset lobyte pointer
035F: A5 FC             83            LDA   VAL1        ; Reset sequence
0361: 85 FF             84            STA   GPB
0363: 4C 3B 03          85            JMP   GETADD
0366: 68                86   PRNT     PLA               ; Matched sequence
0367: 85 FA             87            STA   ADDPTR+1    ;   print address and
0369: 20 DA FD          88            JSR   PRBYTE      ;   reset address
036C: 68                89            PLA               ;   pointers
036D: 85 F9             90            STA   ADDPTR
036F: 20 DA FD          91            JSR   PRBYTE
0372: A9 A0             92            LDA   #$A0
0374: 20 ED FD          93            JSR   COUT
0377: A6 FC             94            LDX   VAL1
0379: 86 FF             95            STX   GPB
037B: A6 FB             96            LDX   BYTOT
037D: 4C 3B 03          97            JMP   GETADD
0380: A5 CE             98   END      LDA   STADHI      ; Get hibyte and
0382: 85 F9             99            STA   ADDPTR      ;   store in address pointer
0384: A5 CF             100           LDA   STADLO      ; Get lobyte and
0386: 85 FA             101           STA   ADDPTR+1    ;   store in address pointer+1
0388: 60                102           RTS

--End assembly--
```

To use MEMORY SEARCH, BLOAD MEMORY SEARCH, then enter the monitor by typing CALL -151. Put the high byte of the starting address of the search at $F9, and the low byte at $FA. Then put the length of the sequence that you're looking for into $FB. Put the first byte of the sequence into $FC, the second byte into $FD, and the third into $FE. Run MEMORY SEARCH from the monitor by typing 300G.■

Listing 2. *MEMORY SEARCH monitor disassembly listing.*

```
0300-   A5 F9        LDA   $F9
0302-   85 CE        STA   $CE
0304-   A5 FA        LDA   $FA
0306-   85 CF        STA   $CF
0308-   85 F9        STA   $F9
030A-   A5 CE        LDA   $CE
030C-   85 FA        STA   $FA
030E-   A0 00        LDY   #$00
0310-   A5 FC        LDA   $FC
0312-   85 FF        STA   $FF
0314-   A6 FB        LDX   $FB
0316-   B1 F9        LDA   ($F9),Y
0318-   C5 FF        CMP   $FF
031A-   D0 37        BNE   $0353
031C-   E4 FB        CPX   $FB
031E-   D0 06        BNE   $0326
0320-   A5 F9        LDA   $F9
0322-   48           PHA
0323-   A5 FA        LDA   $FA
0325-   48           PHA
0326-   CA           DEX
0327-   F0 3D        BEQ   $0366
0329-   A5 FD        LDA   $FD
032B-   85 FF        STA   $FF
032D-   A5 FB        LDA   $FB
032F-   C9 03        CMP   #$03
0331-   D0 08        BNE   $033B
0333-   E0 01        CPX   #$01
0335-   D0 04        BNE   $033B
0337-   A5 FE        LDA   $FE
0339-   85 FF        STA   $FF
033B-   E6 F9        INC   $F9
033D-   D0 D7        BNE   $0316
033F-   E6 FA        INC   $FA
0341-   A5 FA        LDA   $FA
0343-   D0 03        BNE   $0348
0345-   4C 80 03     JMP   $0380
0348-   C9 C0        CMP   #$C0
034A-   D0 CA        BNE   $0316
034C-   A9 D0        LDA   #$D0
034E-   85 FA        STA   $FA
0350-   4C 16 03     JMP   $0316
0353-   E4 FB        CPX   $FB
0355-   F0 E4        BEQ   $033B
0357-   A6 FB        LDX   $FB
0359-   68           PLA
035A-   85 FA        STA   $FA
035C-   68           PLA
035D-   85 F9        STA   $F9
035F-   A5 FC        LDA   $FC
0361-   85 FF        STA   $FF
0363-   4C 3B 03     JMP   $033B
0366-   68           PLA
0367-   85 FA        STA   $FA
0369-   20 DA FD     JSR   $FDDA
036C-   68           PLA
036D-   85 F9        STA   $F9
036F-   20 DA FD     JSR   $FDDA
0372-   A9 A0        LDA   #$A0
0374-   20 ED FD     JSR   $FDED
0377-   A6 FC        LDX   $FC
0379-   86 FF        STX   $FF
037B-   A6 FB        LDX   $FB
037D-   4C 3B 03     JMP   $033B
0380-   A5 CE        LDA   $CE
0382-   85 F9        STA   $F9
0384-   A5 CF        LDA   $CF
0386-   85 FA        STA   $FA
0388-   60           RTS
```

Decisions II and Random Numbers

Last month I introduced the IF...THEN...ELSE statement—BASIC's construct for making decisions. In this month's column I will deal further with decisions and introduce a very useful function that instructs the computer to come up with a random number. The ability to generate random numbers is essential to any game or simulation program and adds variety to many others. Finally, I have transformed the childhood guessing game of "I'm thinking of a number..." into a computer program I develop through three stages.

MORE ON DECISIONS

The basis for any decision process in a computer must be a simple comparison that has either a "true" or a "false" result. Examples of BASIC decision statements are:

```
IF A = 15 THEN ...
IF A<C THEN ...
IF R< >22.5 THEN ...
```

In each of these, two items are compared using one of BASIC's relational operators: "equal to," "less than," or "not equal to." Other valid operators include "greater than" (>), "less than or equal to" (<=), and "greater than or equal to" (>=).

The general form of the BASIC decision statement can be written:

```
IF <comparison> THEN ...
                ELSE ...
```

where the three dots correspond to either a single BASIC statement (such as PRINT X, INPUT Y, or GO TO 2040), or a series of statements separated by colons (such as PRINT X : INPUT Y: GOTO 2040).

Although most BASIC's allow the inclusion of ELSE in the decision statement, Applesoft BASIC does not. Without the ELSE, the command structure must be interpreted a little differently. The form starts out like this:

```
IF <comparison> THEN ....
```

If the comparison is found to be true, the statements that follow the word THEN are executed and the program continues on to the next program line. If the comparison is found to be false, the computer ignores the rest of that program line after the word THEN and simply goes to the next line in the program and continues from there.

As you can see, the program line following the comparison is executed in either situation, so at first glance there doesn't appear to be any way to handle an ELSE situation—that is, a series of statements to be executed only if the comparison is false. This problem is solved, however, by using a GOTO at the end of the comparison line to jump over the subsequent lines that contain instructions to be carried out if the comparison is false. The structure (with sample line numbers) then takes the following form:

```
100 IF <comparison> THEN ... :
    GOTO 120
110 ... :REM INSTRUCTIONS FOR
    THE ELSE CASE
120 ... :REM PROGRAM CONTINUES
    HERE.
```

Again, the ellipses (...) correspond to any valid BASIC instruction(s).

If more than two or three simple statements are needed in either line 100 or line 110, you should make each instruction set a subroutine to keep your program structure simple and easy to follow. The decision structure will now look like this:

```
100 IF <comparison> THEN GOSUB
    1200: GOTO 120
110 GOSUB 1250: REM INSTRUCTIONS
    FOR THE ELSE CASE
120 ... :REM PROGRAM CONTINUES
    HERE.
```

All three listings in this article use this form of the decision command, and the figures illustrate how to deal with an IF...THEN...ELSE command structure in a flowchart.

Defining "Equal"

Care *must* be taken when setting up the comparison part of the statement. Remember that computers are completely literal, so the equality is taken to mean *exact* equality. For example, if A has a value of 36 and B has a value of 35.99999, A = B will

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by Dan Bishop

be determined to be false. This situation might occur if the value of B has been obtained through mathematical operations, because computers, by their nature, often generate round-off errors.

A similar situation may come up in a tutorial program where the student is to calculate an answer to a problem and enter it into the computer. The computer may have calculated the correct response to be 3.8275163, but the student may enter 3.8275. As a teacher, in most cases you would accept the student's answer as correct. The computer, however, would not find the two numbers equal and would count the student's answer incorrect if the program uses a simple equality for the comparison.

To get around these problems, whenever your program is to compare two numbers for equality when a similar insignificant inequality could exist, an operation of the following type should be employed:

```
IF ABS(A - B) < .001 THEN . . .
```

When solving this comparison, the computer first subtracts the value of B from the value of A. Since the result may be either positive or negative, the *absolute value* function is then applied to remove the sign so the value will always appear positive. This result, the absolute value of the difference between A and B, is then checked to determine if it is less than some predetermined "tolerance limit" (in this case .001). If so, the original comparison stands as true. Both of the previously described situations would be determined to be true using this form of the comparison.

String Comparisons

Comparing strings is also possible, if you remember that strings must be compared with strings. A frequent error is a line that looks correct but is interpreted by the computer as an attempt to compare a string variable with a numeric variable. For example:

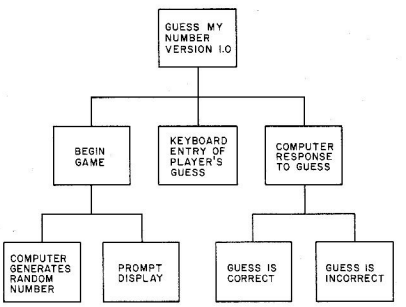
```
100 INPUT "CONTINUE (YES/NO). . ."
    ;R$
110 IF R$ = YES THEN GOTO 1000
120 IF R$ < > NO THEN GOTO 100
130 END
```

Recall that string literals must be enclosed in quotation marks. But in lines 110 and 120, the words YES and NO are not. The computer interprets these as numeric variable names, YE and NO. But, according to the dollar sign suffix, R$ is clearly a string variable. The computer cannot compare a string with a numeric, so the program crashes. These lines can be corrected as follows:

```
100 INPUT "CONTINUE (YES/NO). . ."
    ;R$
110 IF R$ = "YES" THEN GOTO 1000
120 IF R$ < > "NO" THEN GOTO 100
130 END
```

String comparisons can also make use of the other relational operators, if you keep in mind that one string is considered to be "less than" another string if it would be alphabetized ahead of the second string. Thus "APPLE" is less than "ORANGE".

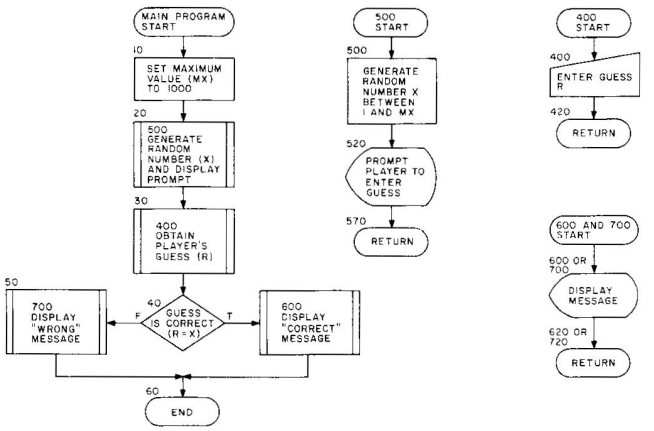
Figure 1. *The hierarchy diagram for the first version of Guess My Number. Note that the hierarchy diagram used here forms the basis for each of the more complex diagrams in Figures 3 and 5.*



Listing 1. *Guess My Number, version 1.*

```
1  REM  NUMBER GUESSING GAME V.1
10 MX = 1000
20  GOSUB 500: REM  OBTAIN RANDOM NUMBER
30  GOSUB 400: REM  OBTAIN GUESS
40  IF R = X THEN  GOSUB 600: GOTO 60: REM  RESPONSE F
     OR CORRECT GUESS
50  GOSUB 700: REM  RESPONSE FOR INCORRECT GUESS
60  END
397  REM
398  REM  ******************************
399  REM  SUBROUTINE FOR GUESS ENTRY
400  INPUT "ENTER YOUR GUESS...";R
410  PRINT
420  RETURN
497  REM
498  REM  ******************************
499  REM  SUBROUTINE TO BEGIN GAME
500 X =  INT ( RND (1) * MX + 1)
510  HOME
520  PRINT "I AM THINKING OF A NUMBER"
530  PRINT "FROM 1 THROUGH "MX" ."
540  PRINT
550  PRINT "CAN YOU GUESS WHAT IT IS?"
560  PRINT
570  RETURN
597  REM
598  REM  ******************************
599  REM  SUBROUTINE FOR CORRECT GUESS
600  PRINT "GOOD WORK.  THAT'S IT!"
610  PRINT
620  RETURN
698  REM
699  REM  SUBROUTINE FOR INCORRECT GUESS
700  PRINT "WRONG!"
710  PRINT "THE NUMBER WAS "X" ."
720  PRINT
730  RETURN
```

Figure 2. *Flowcharts for Guess My Number, version 1.*



Listing 2. *Guess My Number, version 2.*

```
1  REM   NUMBER GUESSING GAME V.2
10  GOSUB 1000: REM  SET UPPER LIMIT
20  GOSUB 500: REM  OBTAIN RANDOM NUMBER
30  GOSUB 400: REM  OBTAIN GUESS
40  IF R = X THEN  GOSUB 600: GOTO 60: REM  RESPONSE F
     OR CORRECT GUESS
50  GOSUB 700: REM  RESPONSE FOR INCORRECT GUESS
55  GOTO 30
60  END
397  REM
398  REM  *******************************
399  REM  SUBROUTINE FOR GUESS ENTRY
400  INPUT "ENTER YOUR GUESS...";R
410  PRINT
420  RETURN
497  REM
498  REM  *******************************
499  REM  SUBROUTINE TO BEGIN GAME
500 X =  INT ( RND (1) * MX + 1)
510  HOME
520  PRINT "I AM THINKING OF A NUMBER"
530  PRINT "FROM 1 THROUGH "MX" ."
540  PRINT
550  PRINT "CAN YOU GUESS WHAT IT IS?"
560  PRINT
570  RETURN
597  REM
598  REM  *******************************
599  REM  SUBROUTINE FOR CORRECT GUESS
600  PRINT "GOOD WORK.  THAT'S IT!"
610  PRINT
620  RETURN
698  REM
699  REM  SUBROUTINE FOR INCORRECT GUESS
700  IF R > X THEN  PRINT "GUESS LOWER!": GOTO 720
710  PRINT "GUESS HIGHER!"
720  PRINT
730  RETURN
997  REM
998  REM  ***************************
999  REM  SUBROUTINE TO SET UPPER LIMIT TO GAME
1000  HOME
1010  PRINT "ENTER THE LARGEST NUMBER YOU WANT"
1020  PRINT "TO WORK WITH..."
1030  INPUT MX
1040  HOME
1050  RETURN
```

The "alphabetical" ordering of strings goes beyond the 26 alphabetic characters, and the determination of order is based on the ASCII code for the characters. A blank space, with an ASCII code of 32, precedes all other printable characters. The letter A has an ASCII code of 65. So " ORANGE" is less than "APPLE" when the space is included before the O.

Numbers, entered as string characters, also precede the alphabet. Zero has an ASCII code of 48, 1 has a code of 49, and so on. So, strings beginning with numbers will precede strings that begin with alphabetic characters.

Keep these considerations in mind when entering data into applications programs that sort the entries into alphabetic order. If you accidentally type a space before the name "ZELKOWITZ", the computer will alphabetize it at the beginning of the list and the only time you may ever see the name again is if you repeat the mistake later on.

Avoiding Redundancy

I often encounter programs that contain useless decision statements. For example, you may want to add 12 to the variable A if C has a value greater than 20, and add only 5 to A if C is less than or equal to 20. The temptation is to cover all bases by writing:

```
100 IF C > 20 THEN A = A + 12
110 IF C < = 20 THEN A = A + 5
120 . . .
```

The redundancy in line 110 is both unnecessary and time-consuming. (In fact, the IF . . . THEN command is one of the slowest commands for BASIC to execute.) Unnecessary decision statements should, therefore, be avoided. The following lines accomplish the same result more efficiently:

```
100 IF C > 20 THEN A = A + 12: GOTO 120
110 A = A + 5
120 . . .
```

You can avoid another type of redundancy by using the logic operators AND and OR. For example:

```
100 IF A = B THEN IF A > 1000 THEN
    GOSUB 1500:GOTO 120
110 GOSUB 1600
120 . . .
```

Line 100 directs the program to execute the subroutine at line 1500 if A=B and A>1000. Using the AND operator, you could rewrite line 100 as:

```
100 IF A=B AND A>1000 THEN
    GOSUB 1500: GOTO 120
```

A third type of redundancy takes the following form:

```
100 IF A > 100 THEN GOSUB 1800:
    GOTO 140
110 IF A < 10 THEN GOSUB 1800:
    GOTO 140
120 IF F$ = "M" THEN GOSUB 1800:
    GOTO 140
130 GOSUB 2000 : REM SUBROUTINE
    FOR ELSE
140 . . . :REM PROGRAM CONTINUES
    HERE.
```

Notice that this program directs the computer to execute the subroutine at line 1800 and then jump to line 140 if A>100, A<10, or F$="M". Rewriting lines 100–120 with the OR operator results in:

```
100 IF A>100 OR A<10 OR F$="M"
    THEN GOSUB 1800:GOTO 120
110 GOSUB 2000:REM SUBROUTINE
    FOR ELSE
120 . . . :REM PROGRAM CONTINUES
    HERE.
```

Notice one other thing about line 100. Two comparisons are made using the variable A. Both must be written out completely. The computer would indicate a syntax error in line 100 if you had written: 100 IF A>100 OR <10 OR F$="M" THEN GOSUB 1800:GOTO 120.

RANDOM NUMBERS

BASIC has a function, RND(1), that instructs the computer to pick a random number. When the computer is given the command X = RND(1), it assigns a decimal value between 0 and 1 to X. If the program later uses the same command, then a different value between 0 and 1 will be assigned to X. These values are randomly selected (almost) and will be numbers like 0.01398257 and 0.86328841.

Of course, most of the time you want random numbers that are integers ranging between two specific values. For example, you may want a random number between 1 and 10 inclusively (meaning that 1 and 10 may be chosen). To get the computer to do this, you must use the following algorithm:

```
X=INT(RND(1)*10+1)
```

This statement directs the computer to generate a random decimal fraction between 0 and 1 and multiply the result by 10, yielding a number in the range 0.000000001 to 9.999999999. Now 1 is added to this product, producing a number between 1.000000001 and 10.99999999. Then the integer function chops off the decimal frac-

Listing 3. *Guess My Number, version 3.*

```
1  REM    NUMBER GUESSING GAME V.3
10  GOSUB 1000: REM  SET UPPER LIMIT
20 CT = 0: GOSUB 500: REM  OBTAIN RANDOM NUMBER
30 CT = CT + 1: GOSUB 400: REM  OBTAIN GUESS
40  IF R = X THEN  GOSUB 600: GOTO 60: REM  RESPONSE F
     OR CORRECT GUESS
50  GOSUB 700: REM  RESPONSE FOR INCORRECT GUESS
55  GOTO 30
60  GOSUB 1100: REM  SCOREBOARD DISPLAY
70  INPUT "ENTER  YES  TO PLAY AGAIN...";R$
80  IF R$ = "YES" THEN  GOTO 20
90  END
397  REM
398  REM  ******************************
399  REM  SUBROUTINE FOR GUESS ENTRY
400  INPUT "ENTER YOUR GUESS...";R
410  PRINT
420  RETURN
497  REM
498  REM  ******************************
499  REM  SUBROUTINE TO BEGIN GAME
500 X =  INT ( RND (1) * MX + 1)
510  HOME
520  PRINT "I AM THINKING OF A NUMBER"
530  PRINT "FROM 1 THROUGH "MX" ."
540  PRINT
550  PRINT "CAN YOU GUESS WHAT IT IS?"
560  PRINT
570  RETURN
597  REM
598  REM  ******************************
599  REM  SUBROUTINE FOR CORRECT GUESS
600  PRINT "GOOD WORK.  THAT'S IT!"
610  PRINT
620  RETURN
698  REM
699  REM  SUBROUTINE FOR INCORRECT GUESS
700  IF R > X THEN  PRINT "GUESS LOWER!": GOTO 720
710  PRINT "GUESS HIGHER!"
720  PRINT
730  RETURN
997  REM
998  REM  ***************************
999  REM  SUBROUTINE TO SET UPPER LIMIT TO GAME
1000  HOME
1010  PRINT "ENTER THE LARGEST NUMBER YOU WANT"
1020  PRINT "TO WORK WITH..."
1030  INPUT MX
1040  HOME
1050  RETURN
1097  REM
1098  REM  *********************************
1099  REM  SUBROUTINE FOR SCOREBOARD
1100  PRINT
1110  PRINT "YOU GOT THE CORRECT NUMBER AFTER"
1120  PRINT CT" GUESSES."
1130  PRINT
1140  RETURN
```

Figure 3. *The hierarchy diagram for the second version of Guess My Number. Note that, although significant changes were made in the program, the flowchart for the main program in this version is not very different from the flowchart used in the first version (Figure 1).*

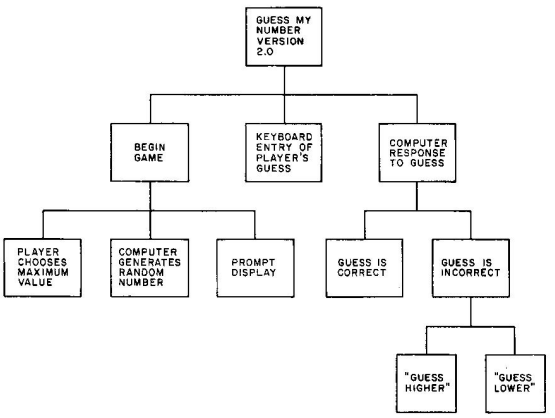


Figure 4. *Flowcharts for Guess My Number, version 2. For subroutines 400, 500, and 600 refer to Figure 2.*

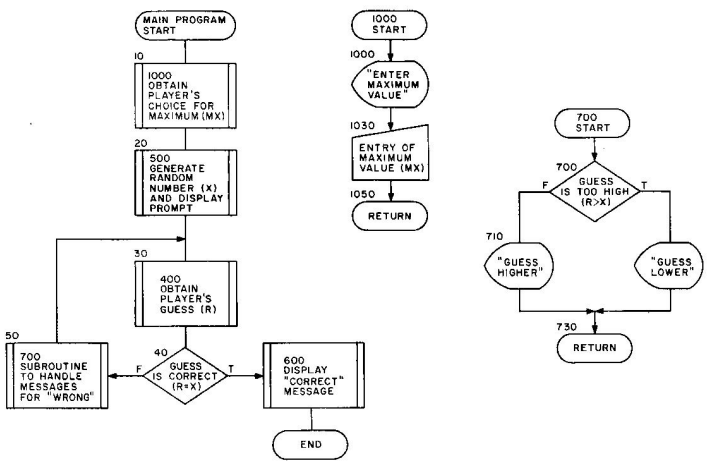
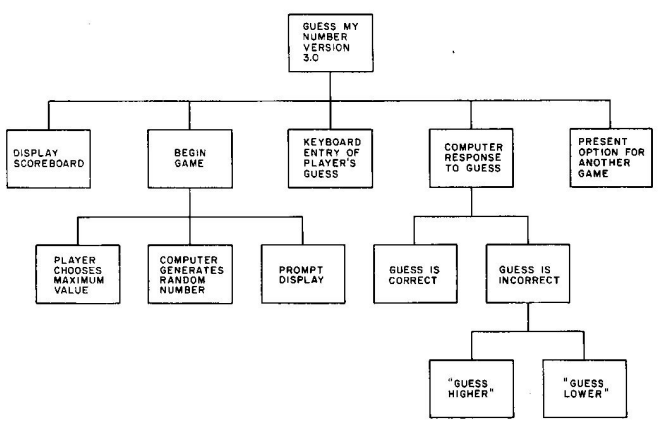


Figure 5. *The hierarchy diagram for version 3 of Guess My Number. Compare this diagram with those for the earlier versions to see the developmental stages that led up to this version.*



tion, leaving an integer that lies between 1 and 10 inclusively.

The same algorithm can be used to generate a random number within any range. If the number is to be a positive integer between 1 and MX, where MX has been previously assigned the value of the maximum integer allowed, the formula will be:

X = INT(RND(1)*MX + 1).

If you want a random number between −100 and +100 (a total of 201 possible numbers, counting 0), then use the above algorithm to generate a number between 1 and 201, and subtract 101 from the result:

MX = 201
X = INT(RND(1)*MX + 1) − 101

Of course, as long as the computer, as a machine, follows exactly the same course of action each time the program is run, the sequence of random numbers produced will always be the same. Various techniques, that aren't really appropriate to discuss here, are built in to rectify this situation.

DEVELOPING A GAME

Many programs, especially games, originate with a rather simple idea. Then, when the early version of the program is running properly, additional functions are added. Often this process goes on forever, with the program becoming more and more complicated. To illustrate this process through three successive stages, I will use a program called "Guess My Number."

As a first step, you might design the program to generate a random number between 1 and 1000 to try to guess. The hierarchy diagram and flowcharts in **Figures 1** and **2**, respectively, illustrate the simplicity of this program, which is reproduced as **Listing 1**.

After playing this game for a while, you would probably tire of seldom (if ever) guessing the correct number, so you might alter the subroutine that handles the computer's response to give a hint as to whether the guess is too low or too high. This can be done with a new line at 55. It is executed only if the guess is wrong, and cycles the computer back to line 30 to prompt for another guess.

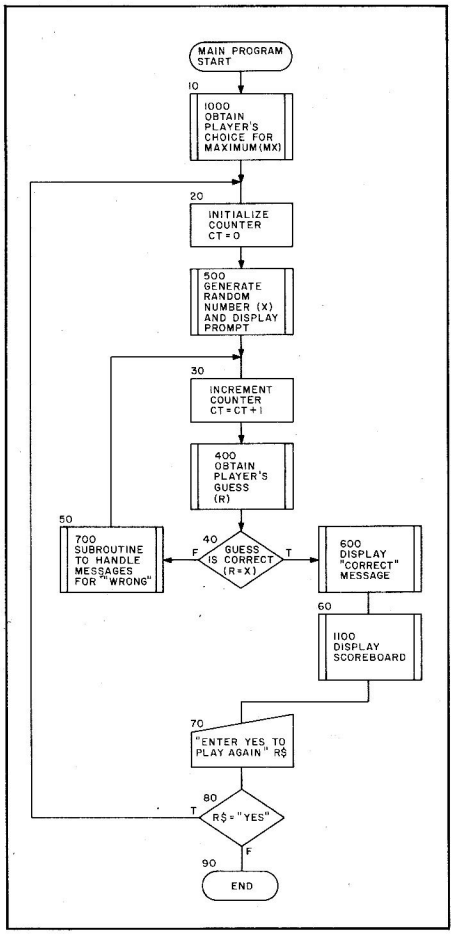


Figure 6.
Flowchart for the main program of Guess My Number, version 3. Compare this flowchart with those for the earlier versions to see the developmental stages that led to this version. Refer to Figure 2 for subroutines 400, 500, and 600. Refer to Figure 4 for subroutines 700 and 1000. Subroutine 1100 is similar to subroutine 600.

Then you could add a new subroutine to allow you to designate the range of possible numbers at the beginning of play. This subroutine would be executed only at the beginning of the program. The revised hierarchy diagram is shown in **Figure 3**, and the flowcharts for the portions of the program that have been changed in **Figure 4**. The resulting program appears in **Listing 2**.

Finally, you might want to make two more changes to the program. The first would count (in variable CT) the number of guesses you make before answering correctly, with the results displayed at the end of the game (subroutine 1100). The second change, in lines 60–90 of the main program, lets you choose whether to play another game or quit. This option keeps the sequence of random numbers from repeating itself by being forced to restart at the beginning of each game. **Figures 5** and **6** show the hierarchy diagram and additional flowchart for the final version of the program in **Listing 3**.

Conclusion

From this simple example, I hope you can begin to appreciate the advantage of using both hierarchy diagrams and flowcharts to modularize your program design and organize the program's command sequence. With modularized design, changes can be made easily without having to rewrite a whole program, because many of the subroutines will remain the same.

Next month I'll begin a discussion of another major processing function of computers, loop processing. In addition, I'll describe a common error that truly identifies a programmer as a novice, and how you can avoid falling into the trap.■

Circle 69 on Reader Service card.

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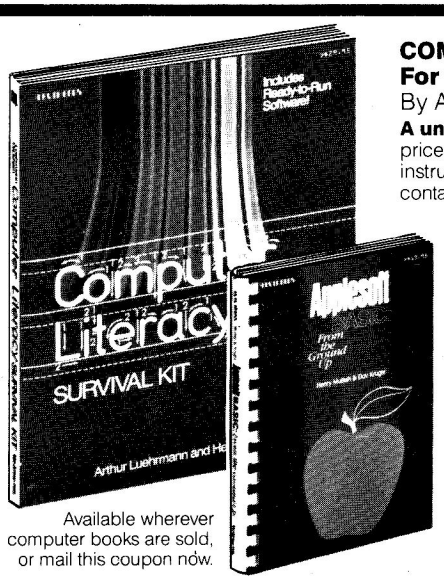

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•80-Column Noise
•Epson Underlining
•Good Drive Specs

Q I own a Franklin ACE 1000 with a Viewmax-80 80-column card. When I scroll in inverse video in the 80-column mode, I see a lot of interference on the screen in the form of one-inch horizontal lines that seem to be flying all over the place. This interference is also present when I'm not using inverse video, but is not as noticeable. The funny thing about it is that the flashing lines only appear when characters are being printed to the screen.

I wrote to Micromax (the manufacturer of the card) and they sent me another Viewmax-80 that they said didn't make any "noise." The new card did not solve the problem.

Will Diversi-DOS automatically load into the upper 16K of my computer? If not, how can I get it to do this?

J. Friedman
Needham, MA

A Elimination of as many variables as possible is the key to most repair problems, this one included. You need to find another Franklin ACE 1000 and try the 80-column card in it. If you can't find a friend with an ACE 1000, contact a dealer and try the card on one of his machines.

It seems unlikely that two Viewmax-80 cards in a row would be defective. My guess is that one of the video chips on the Franklin main logic board is weak. In position C14 the 74LS32 video blanking chip might be a good place to start. Your dealer can point out other possibilities, or you might convince a friend to let you chip-swap with his known good Franklin. Naturally you will want to return the Viewmax-80 card for a third one if the one you have now doesn't work in another Franklin.

Diversi-DOS is an excellent enhanced disk operating system. In addition to vastly increased speed of data transfer (most programs load and save in 30 percent of the time needed for normal Apple DOS) and other features too numerous to mention here, Diversi-DOS will automatically relocate itself into the RAM memory above 48K. This feature of automatic relocation is available as part of version C.4, released in November 1983. Older versions can be relocated manually by BRUNing DDMOVER from the master disk.

Diversi-DOS can be added to your existing disk without damaging any of the programs or data already on them. All of the relocation information is placed on normally unused sectors of track 2.

If your version is pre-version C.4 you can send $5 with your user support number (you did buy the program, right?) to Bill Basham at Diversified Software Research, Inc., 5848 Crampton Court, Rockford, IL 61111, and he will send you an updated version on his disk. Not a bad deal, huh?

One final note—Diversi-DOS is not copy protected; in fact, buyers are encouraged to make copies for friends. A message in the software informs users that if they like the product and they don't have an original paid-for copy, they should send $30 to Diversified Software for an original copy and a user support number. When many of the software producers around us are losing their heads about software protection, it is most refreshing to encounter such an open reasonable policy.

Q I am having trouble getting my Apple II Plus to underline when using my Epson MX-80 F/T printer and the Apple Writer II word processor. When referring to the section on underlining, page 33 of the Apple Writer operating manual, and placing the reverse slash before and after the word "underline", here are the results I get.

When I press escape and type shift, control-P, I get _u_n_d_e_r_l_i_n_e. When I type control-K, then shift, control-P, I get _U_N_D_E_R_L_I_N_E.

If you or any of your readers have any suggestions on how I can get

Earle Hancock directs the microcomputing project at Minuteman Regional Vocational School, Lexington, MA. He has served as an advisor to the Massachusetts Association of Vocational Administrators, and belongs to a number of computer organizations. Write to him c/o inCider, *80 Pine Street, Peterborough, NH 03458.*

by Earle Hancock

this program to underline for me it will be a great help. Apple, Epson, and my Apple dealer have been no help at all.

J. Chumley
Ormand Beach, FL

A I can think of many frustrating, infuriating situations forced on computer users by lack of industry standards, but the kind of incompatibilities found in printer interfacing takes the cake. The most obvious reason for the kind of trouble you are having is the timing of your printer *purchase*.

The technology of everything is changing so rapidly that, just as manufacturers introduce a product, that product requires an update. It's all a jumble, a mad race to be first. We suffer and we benefit from this money saving "rush to market." Imagine the cost if the products we purchased were fully tested before being sold. The big issue for manufacturers in a maturing market is when is the consumer going to rebel against unwanted buyer testing. Hackers (I use this word in its best meaning) will always be willing to search through the wilderness for the elusive fix to computer bugs. But what about the rest of the end users? How much longer will people put up with this kind of foolishness?

To get at the cause of your problem you must first determine the kind of graphics ROM chips your printer has. Open the case and look if you don't know already. The directions for removing the top of the printer case are in the manual that comes with the printer.

Basically they say to turn the printer over on a soft surface and remove the four or five Phillips screws from the bottom. Turn the printer back over, right side up. Remove the roller knob by pulling straight back away from the side of the printer. Gently lift the top up one or two inches before tipping it to the right (roller knob side down) until it stands on its side just to the right of the bottom half. Leave the wires to the control panel connected.

Look inside at the main circuit board and identify the three large 24-pin ROM (read only memory) sockets labeled 1B, 2B, and 3B which sit side by side near the back of the board. If two of the sockets are empty then you will not be able to do underlining without adding the graphics ROMs.

"May I recommend the generic word processor—the pencil."

If all three sockets have chips then look closely to find their identifying codes. The designation H1, H2, and H3 on the chips indicates the Graftrax Plus factory installed graphics option. The letters GP-80 and colored dots on the chips indicate owner-installed Graftrax Plus ROMs. Other markings indicate the Graftrax-80 option.

With Graftrax-80 you will be able, under software control, to simulate (computers are good for simulations, right?) underlining by printing each letter, backspacing one space, and printing an underline character. The method for this knee-jerk operation is as follows: from within Apple Writer II, type control-V, control-H (where the control-V is Apple Writer's flag for "printer code coming" and control-H is the backspace). Next type control-V, escape, minus sign to print the underline character. Do this for every letter you wish to underline. If this is your option, may I recommend the generic word processor—the pencil.

The Graftrax Plus ROMs allow automatic underlining. For Apple Writer II, embed an escape-1 to start and an escape-0 to stop underlining. The command looks like this: control-V escape-1 to start underlining, and control-V escape-0 to end underlining.

Depending on what you find inside the printer and how much you need underlining, you may wish to upgrade your printer with the Graftrax Plus option available from your Apple or Epson dealer.

Q I have just purchased an Apple //e and would like to buy a second drive. I could buy a second Apple Drive for $400, but I see a lot of "Apple compatible" drives advertised for approximately $200—a good savings and, for all I know, a better drive. I would like to know what the specs should be for a good drive and where I can get literature on specs and requirements of a good design.

C. Wall
Central, UT

A All the Apple compatible after-market drives I've seen work just fine when using the normal Apple disk operating system (DOS). The manufacturer's specifications mostly have to do with timing, rates of data flow, and other measures that are not significant to us unless we want to design a new disk system.

One specification, however, is important to note. The Apple disk drive read/write head positioning motor (stepper motor) is capable of positioning the W/R head to within 1/96 inch. That is 96 tracks per inch. Apple DOS uses every other position, yielding a track density of 48 tpi. We get to use only 35 of the tracks because the W/R window on the disk is approximately 3/4 inch wide.

Some copy-protection schemes modify DOS to use some of the in-between positions, or half tracks as they have come to be called. To be fully compatible, disk drives must be able to handle these copy protection schemes. That is, they must be capable of a track density of 96 tpi.

I have had excellent success with two makes of after-market drives. The Rana Elite 1 and the Vista Solo have been working for me for over a year without trouble. This is not to say that all the other makers' drives are bad. I simply have not used their products and have nothing on which to base an opinion.

One issue about after-market disk systems is a potential source of trouble. Even with improved "updated" versions, I have had some difficulty with non-Apple disk controller interface cards. Some programs cannot be read, or in one case a language,

Trans Forth-79, could not be read by several controller cards. If you stay with the Apple controller or the Rana controller you will be in good shape.

Perhaps the most important issue about any after-market product is the level of service provided by the seller. A $400 product that does work and that can be repaired locally is much better than a $50 product that doesn't or can't.

Q In reference to your article in the February 1984 issue, the loss of control and the flickering power lamp may indeed be connected. I experienced a similar problem a year ago in my Apple II Plus.

The power lamp would flicker and then remain slightly dim. Eventually the lamp would be extinguished part of the time. Whenever the lamp was flickering, dimmer than normal, or extinguished, the control and shift keys became inoperable. Only those two keys were affected, but they are used for a lot of functions.

The computer, which has a System Saver II attached, was in and out of the shop for three months. The first time, the affected key switches were replaced. The second time, the encoder board was replaced. The third time, I was told it was my imagination. Another dealer cleaned some contacts and pronounced it fixed. A week later I again demonstrated the problem and showed that a rap on the case directly in front of the power lamp would restore both the proper intensity of the power lamp (for a few minutes) and the function of the shift and control keys. This dealer solved the problem by replacing the encoder board (again) and the keyboard. He still says the two occurrences can't be related. Neither has reoccured.

E. Shively
Albany, NY

A The power-on light and all of the key switches require +5 volts DC to operate correctly. They get the electricity from the keyboard circuitry.

From the description of your problem it is reasonable to assume that the power light, the shift and control keys are physically tied to a common +5-volt source on the keyboard. Due to a tiny break in that circuit, you were getting an intermittent brownout or complete loss of power. Replacing the keyboard was the key to resolving the problem. A very related problem it was, too!

The flickering power-on light you mention from the February "Apple Clinic" was different from your problem in one very significant way. No other keys or computer operation were affected by the light being out. The trouble was confined to the power light and its immediate connection to the keyboard.

Your letter points out the need for persistence in problem solving. Thanks for sharing.

Guru Repair Guide

What follows is a tongue-in-cheek guide for the repair of electronic equipment. The use of this guide will reduce tension and cure even the most serious flip-flop. Read only as directed, once every other day. As with all written directions, keep out of the reach of technicians.

Step 1. Approach the ailing instrument in a confident manner. This will give the instrument the mistaken idea that you know something. It will also impress anyone who happens to be looking, and if the instrument should suddenly start working, you will be credited with its repair.

Step 2. Wave the service manual at the instrument. This will make it assume that you are at least familiar with the source of knowledge.

Step 3. Forcefully recite Ohm's Law to the instrument (Caution: Before taking this step, refer to some reliable handbook to be sure of your knowledge of Ohm's Law). This will prove to the instrument, beyond a shadow of a doubt, that you know something.

Step 4. Jar the instrument slightly. This reminds the equipment that the Force will be with *you*, not it.

Step 5. Brandish a large screwdriver in a menacing manner. This will frighten the instrument and demonstrate your knowledge of the deadly "short circuit" technique.

Step 6. Add a tube, even if the instrument is solid state. This will confuse the instrument and increase your advantage.

Step 7. In the unlikely event that all else has failed and the instrument continues to malfunction, mutter something about the way things used to be built (just loud enough for the instrument to hear you) and casually toss it into the spare parts bin.

The Mail Bag

In case you haven't noticed, this column is devoted to your hardware, firmware, and sometimes software problems. We cannot answer your questions unless you ask them—so ask. You don't have to be fancy; just a note will do. If you have the solution to a sticky problem, send it along and The Apple Clinic readers will benefit from your experience. Address all mail to: The Apple Clinic, *inCider*, 80 Pine Street, Peterborough, NH 03458.■

Circle 532 on Reader Service card.

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Disk $24.95

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Listing 1. *CAD.PAINT.*

```
Ø  POKE  - 16302,Ø: REM CAD.PAINT
1  ONERR  GOTO 63990
2 HC = 3: ROT= Ø: SCALE= 1:C = 3: HCOLOR= 3: POKE 230,32: CALL 6
     2450:S = 1
3 GZ = 1: GOSUB 9800
10 D$ =  CHR$ (4): PRINT D$"BLOADPAINT": POKE 232,Ø: POKE 233,8
15  PRINT D$"BLOADALLCHAR,A2560"
20  GOTO 600
40  GOSUB 62000: RETURN
90  PRINT "": TEXT : HOME : PRINT "MOVE CURSOR TO UPPER LEFT COR
     NER OF THE ERASE BLOCK & HIT SPACE.  THEN MOVE THE CURSOR T
     O THE LOWER RIGHT CORNER OF THE ERASE BLOCK & HIT SPACE.": GOSUB
     63000: POKE  - 16304,Ø: POKE  - 16297,Ø
91 X% = 1.094 *  PDL (Ø):Y% = .749 *  PDL (1): XDRAW 2 AT X%,Y%:
     FOR QW = 1 TO 50: NEXT : XDRAW 2 AT X%,Y%
92 PK =  PEEK ( - 16384): IF PK > 127 THEN  POKE  - 16368,Ø: PRINT
    "": GOTO 100
95 OO =  PEEK ( - 16336): GOTO 91
100 PX% = 1.094 *  PDL (Ø):PY% = .749 *  PDL (1): XDRAW 2 AT PX%
    ,PY%: FOR QW = 1 TO 50: NEXT : XDRAW 2 AT PX%,PY%
102 PK =  PEEK ( - 16384): IF PK > 127 THEN  POKE  - 16368,Ø: PRINT
    "": GOTO 110
105 OO =  PEEK ( - 16336): GOTO 100
110  HCOLOR= Ø:O8 = PX%:O1 = PY%:OØ = X%:O9 = Y%: FOR OO = OØ TO
    O8: HPLOT OO,O9 TO OO,O1: NEXT : HCOLOR= C: RETURN
220  IF  LEN (A$) = Ø AND A$ <  > " " THEN  RETURN
222  HCOLOR= 3
225 AA =  ASC (A$) - 31: IF AA =  - 4 THEN UP =  NOT UP: GOTO 37
    Ø
228  IF UP = Ø AND AA > 33 AND AA < 60 THEN J = AA + 32: GOTO 23
    1
230 J = AA: GOTO 359
231  IF AA < 1 OR AA > 96 THEN 40
359  IF FX = Ø THEN  DRAW J AT X,Y: HCOLOR= C: RETURN
360  XDRAW J AT X,Y: HCOLOR= C: RETURN
370  IF FV = 1 THEN Y = Y - 7: RETURN
380 X = X - 7: RETURN
600  TEXT : HOME : VTAB 2: INVERSE : HTAB 11: PRINT "MENU FOR CA
    D.PAINT": NORMAL : PRINT : POKE 232,Ø: POKE 233,8
605  HCOLOR= C: ROT= 64: SCALE= S: CALL 54915:FF = 1:FX = Ø:FV =
    Ø
606  ONERR  GOTO 63990
609  PRINT "(Ø) QUIT"
610  PRINT "(1) PAINT PICTURE"
611  PRINT "(2) DELETE PICTURE"
612  PRINT "(3) PRINT OUT PICTURE ON PRINTER"
613  PRINT "(4) SEE DISK CATALOG"
614  PRINT "(5) INSERT EXTRA LABELS"
615  PRINT "(6) SAVE PICTURE TO DISK"
616  PRINT "(7) GET STORED PICTURE FROM DISK"
617  PRINT "(8) ERASE & GIVE BACKGROUND COLOR": PRINT "(9) VIEW
    SCREEN"
619  PRINT : INVERSE : PRINT "C";: NORMAL : PRINT " = SEE COMMAN
    DS": PRINT
620  FLASH : PRINT "(Ø-9 OR C):";: NORMAL : GET AN$: IF  LEN (AN
    $) = Ø THEN 600
622  PRINT  CHR$ (13): CALL 1002
624  IF  ASC (AN$) = 67 THEN GZ = 1: GOSUB 9800
625 Q =  VAL (AN$): IF AN$ = "Ø" THEN  END
626  IF Q < 1 OR Q > 9 THEN 600
630  ON Q GOTO 1000,900,13000,17000,30000,31000,33000,37000,3200
    Ø
640  GOTO 600
900  PRINT : INVERSE : PRINT "HIT RETURN TO ABORT": NORMAL
902  PRINT : INPUT "FILE NAME TO DELETE: ";F$: IF  LEN (F$) = Ø THEN
    600
930 D$ =  CHR$ (4): PRINT D$"DELETE";F$: GOTO 600
1000  POKE  - 16304,Ø: POKE  - 16297,Ø:D = 2
1010 X% = 1.094 *  PDL (Ø):Y% = .749 *  PDL (1)
1015  XDRAW D AT X%,Y%:PK =  PEEK ( - 16384): IF PK > 127 THEN  POKE
     - 16368,Ø: XDRAW D AT X%,Y%: GOSUB 9000: GOTO 1010
1025  IF  PEEK ( - 16287) > 127 THEN  XDRAW D AT X%,Y%: GOSUB 10
    40: GOTO 1010
1030  XDRAW D AT X%,Y%: GOTO 1010
1040  IF DR = Ø THEN 1060
1050  XDRAW D AT X%,Y%:OX% = X%:OY% = Y%: RETURN
1060  DRAW D AT X%,Y%:OX% = X%:OY% = Y%: RETURN
9000 C = HC: IF PK = 141 THEN  POP : GOTO 600
9001  IF PK = 192 THEN 90
9002  IF PK = 155 THEN 9100
9004  IF PK = 174 THEN D = 2: GOTO 9200
9005  IF PK = 173 THEN D = 2: GOTO 9300
9006  IF PK = 186 THEN 9030
9007  IF PK = 187 THEN D = 2: GOTO 9700
9008  IF PK > 175 AND PK < 184 THEN 9400
9009  IF PK < 193 THEN  RETURN
9010 D = PK - 192: IF PK > 192 THEN  RETURN
9020  GOSUB 62000: RETURN
9030  HOME : POKE  - 16303,Ø: POKE  - 16298,Ø:DR =  NOT DR:X$ =
    " DRAW": IF DR = 1 THEN X$ = "XDRAW"
```

Listing 1 continued.

Table. *Apple hi-res colors.*

Group 1		Group 2	
Input	**Color**	**Input**	**Color**
0	Black1	4	Black2
1	Green	5	Orange
2	Violet	6	Blue
3	White1	7	White2

Continued from page 21.

then run the routine. (It's best to save your screen as a picture first.)

When you choose option 5, INSERT EXTRA LABELS, first you'll be asked whether you want a horizontal or vertical label. Then, after you input the label text and hit return, instructions for inserting your text into the picture will appear.

As you insert your label, be aware that the escape key is an upper/lowercase toggle. (Be sure to keep the caps lock depressed on a //c or a //e.) You begin in lowercase (the default condition). Then, when you hit escape, you will be entering capital letters that appear in inverse mode. Hit escape again and you're back to lowercase. To change your label, return to the menu with a control-C. (A good exercise for BASIC programmers would be to change the routines beginning at lines 30000 and 220 so the shift key is the upper/lowercase toggle. Keep in mind that the shape numbers in my ALLCHAR table are the character's ASCII value minus 31.)

For option 8, ERASE AND GIVE BACKGROUND COLOR, you'll need a chart to determine which key to press for which color. Look in the **Table** in this column, or on page 89 of your *Applesoft Manual.* My table is correct. If the chart in your manual has errors in colors 2, 5, and 6, please fix it.

Incidentally, when using Apple colors don't place group 1 colors horizontally adjacent to group 2 colors or you may get Apple's famous color clash. Also, after setting the screen to a non-black group 1 color, drawing in group 2 colors may not work very well. Changing the color in which you draw requires only a touch of a number key, 0–7.

See you next time!■

Listing 2. *PAINT, A2048, L502.*

```
0800- 1A 00 36 00 38 00 3B 00
0808- 41 00 4A 00 58 00 6B 00
0810- 85 00 89 00 8D 00 93 00
0818- 99 00 A0 00 AD 00 C9 00
0820- CF 00 D9 00 E7 00 F3 00
0828- FF 00 27 01 64 01 72 01
0830- 84 01 99 01 B0 01 04 00
0838- 25 3F 00 3C 36 2D 24 04
0840- 00 65 3F 37 36 25 35 25
0848- 24 00 25 3F 36 2D 25 24
0850- 3F 3F 36 36 2D 2D 05 00
0858- 25 3F 36 2D 25 24 3F 3F
0860- 36 36 2D 2D 25 24 24 3F
0868- 3F 3F 00 25 3F 36 2D 25
0870- 24 3F 3F 36 36 2D 2D 25
0878- 24 24 3F 3F 3F 36 36 36
0880- 2D 2D 2D 05 00 2D 2D 05
0888- 00 24 24 04 00 0C 0C 0C
0890- 0C 0C 00 1C 1C 1C 1C 1C
0898- 00 25 27 37 37 35 2D 00
08A0- 25 3F 36 2E 2C 2E 20 E4
08A8- 3F 17 36 06 00 2D 25 27
08B0- 27 3F 37 37 37 36 35 35
08B8- 2D 25 25 25 3F 3E 3E 3C
08C0- 3C 2C 2C 2C 0E F7 2E 05
08C8- 00 21 1C F7 76 2D 00 09
08D0- E4 3F 1E 36 0E 2D 0C 04
08D8- 00 49 E4 1C 3F F7 1E 36
08E0- 76 0E 2D 65 0C 24 00 38
08E8- 3F 36 2E 2D 2D 2D 24 3C
08F0- 3F 07 00 21 24 3F 37 36
08F8- 36 36 2D 25 24 04 00 04
0900- 08 DC DF 1A 16 4E FA 1B
0908- 04 C0 04 40 4D B1 0A 4D
0910- 49 D6 D6 DE FB 1B DF D8
0918- 04 18 20 80 80 0C 80 80
0920- 4D 09 4D 51 4D 2A 00 35
0928- E7 2C 55 D6 DF E0 60 69
0930- 8D 16 D6 1F 18 1F 04 18
0938- 04 60 69 69 95 15 16 D7
0940- 1E 1F F0 07 F0 1F E0 38
0948- 80 80 60 60 09 4D 69 09
0950- 8E 31 8E B1 F3 3A DE FA
0958- FB 1B 4C DF 1B 1C 18 04
0960- 80 80 04 00 95 DF DC 04
0968- 08 4C 4D 8E 95 BA 1B DF
0970- 3B 00 35 3F 24 2D 0E 95
0978- DF 1F 20 60 4C 8D DF DB
0980- B3 56 06 00 4D 69 09 8D
0988- DF FB 1B 9F 4D 69 09 55
0990- DF FB 1B 9F 4D 69 09 05
0998- 00 2D 0D 2D 0D 2D 5E 1F
09A0- 3F 1F 3F 1F 2E 6D 2D 0D
09A8- 2D FE 3F 1F 3F 1F 07 00
09B0- 29 48 A9 12 97 1B DF FB
09B8- 18 18 04 18 18 18 DF F3
09C0- D3 1A 4E 09 8E FA DB 8E
09C8- 51 11 4D 01 08 08 96 0A
09D0- 4D 08 08 8D 51 05 08 80
09D8- 80 68 8A 61 80 80 20 80
09E0- 80 C0 04 80 80 18 DF 1B
09E8- 18 DF 9A 23 C0 1B DF DB
09F0- DF D3 9A 31 00 E0 64 00
09F8- 50 58 25 D0 31 2E 30 39
```

Listing 3. *ALLCHAR, A4096, L1272.*

```
1000- 7E 00 FE 00 00 01 06 01
1008- 0C 01 1D 01 2B 01 37 01
1010- 44 01 48 01 50 01 58 01
1018- 66 01 6E 01 75 01 7A 01
1020- 7F 01 87 01 96 01 9E 01
1028- A9 01 B4 01 C1 01 CE 01
1030- DB 01 E4 01 F2 01 00 02
1038- 05 02 0C 02 15 02 1D 02
1040- 26 02 2F 02 3D 02 4C 02
1048- 5A 02 66 02 72 02 7F 02
1050- 8A 02 96 02 A2 02 AB 02
1058- B4 02 C1 02 C8 02 D5 02
1060- E3 02 EF 02 FB 02 08 03
1068- 17 03 24 03 2C 03 36 03
```

Listing 3 continued.

Listing 1 continued.

```
9040  VTAB 9: PRINT "YOU'RE NOW IN ";: FLASH : PRINT X$: NORMAL
     : PRINT " MODE.": GOSUB 63000: POKE  - 16304,0: POKE  - 162
     97,0: RETURN
9100  TEXT : GOTO 9800
9200  HPLOT X%,Y%:OX% = X%:OY% = Y%: RETURN
9300  HCOLOR= C: HPLOT OX%,OY% TO X%,Y%
9310  IF  ABS (OX% - X%) <  ABS (OY% - Y%) THEN  IF C <  > 3 AND
     C <  > 7 THEN  HPLOT OX% + 1,OY% TO X% + 1,Y%
9320 OY% = Y%:OX% = X%: HCOLOR= HC: RETURN
9400 HC = PK - 176:C = HC: HCOLOR= HC: RETURN
9700  IF  ABS (Y% - OY%) >  ABS (X% - OX%) THEN 9750
9705 OY = OY%:YI = (Y% - OY%) / (( ABS (OX% - X%) / 3) + ( ABS (
     OX% - X%) = 0))
9710  HCOLOR= C: FOR OX = OX% TO X% STEP 3 * (X% > OX%) - 3 * (X
     % <  = OX%): HPLOT OX,OY:OY = OY + YI: NEXT
9720 OY% = Y%:OX% = X%: RETURN
9750 OX = OX%:XI = (X% - OX%) / (( ABS (OY% - Y%) / 3) + ( ABS (
     OY% - Y%) = 0))
9760  HCOLOR= C: FOR OY = OY% TO Y% STEP 3 * (Y% > OY%) - 3 * (Y
     % <  = OY%): HPLOT OX,OY:OX = OX + XI: NEXT : GOTO 9720
9800  HOME : INVERSE : HTAB 10: PRINT "COMMANDS": NORMAL : PRINT
     "- = LINE FROM LAST POINT PLOTTED": PRINT
9805  PRINT "; = DOTTED LINE FROM LAST POINT PLOTTED": PRINT : PRINT
     ". = BEGIN LINE HERE OR DRAW DOT": PRINT
9810  PRINT "@ = AREA ERASE": PRINT : PRINT ": = DRAW/XDRAW TOGG
     LE SWITCH": PRINT : PRINT "0-7 = CHOOSE COLOR": PRINT : PRINT
     "ESC = SEE COMMANDS": PRINT : PRINT "RETURN = BACK TO PROGR
     AM MENU": PRINT
9820  PRINT "BUTTON #0 = PAINT WITH SHAPE": PRINT : PRINT "KNOB
     #0 = HORIZONTAL COORDINATE": PRINT : PRINT "KNOB #1 = VERTI
     CAL COORDINATE"
9830  GOSUB 63000
9900  TEXT : HOME : PRINT "A = DOT": PRINT "B = 2X2 SQUARE   C =
      3X3 SQUARE": PRINT "D = 4X4 SQUARE   E = 5X5 SQUARE": PRINT
     "F = 6X6 SQUARE   G = 7X7 SQUARE"
9910  PRINT "H = HORIZONTAL LINE": PRINT "I = VERTICAL LINE": PRINT
     "J = N.E. DIAGONAL": PRINT "K = N.W. DIAGONAL": PRINT "L =
     BALL (4 WIDE)": PRINT "M = BALL (5 WIDE)": PRINT "N = BALL
     (8 WIDE)": PRINT "O = CIRCLE (4 WIDE)"
9920  PRINT "P = CIRCLE (5 WIDE)": PRINT "Q = CIRCLE (8 WIDE)": PRINT
     "R = HORIZONTAL RECTANGLE": PRINT "S = VERTICAL RECTANGLE":
      PRINT "T = LARGE PAINTBRUSH": PRINT "U = LARGE TIPPED PAIN
     TBRUSH"
9930  PRINT "V = SMALL PAINTBRUSH": PRINT "W = SMALL TIPPED PAIN
     TBRUSH": PRINT "X = DARKER PATTERN": PRINT "Y = LIGHTER PAT
     TERN": PRINT "Z = VERY LARGE SCATTERBRUSH"
9998  GOSUB 63010: IF GZ = 1 THEN GZ = 0: RETURN
9999  GOTO 1000
13000  HOME : VTAB 1: PRINT "NOW TYPE THE CTRL CHARACTERS YOU NE
     ED TOGET YOUR PRINTER TO PRINT OUT HI-RES    PAGE 1 AS A GR
     APHICS PICTURE. MAKE SURE YOU HIT RETURN AFTER YOU'RE DONE
     TYPING ALL THE CTRL CHARACTERS:": PRINT :A9 = 0
13005  FLASH : PRINT "DON'T FORGET TO TURN ON YOUR PRINTER!": NORMAL
     : PRINT
13010 A9 = A9 + 1
13020  GET CR$(A9): IF  ASC (CR$(A9)) <  > 13 THEN 13010
13021  PRINT  CHR$ (13): CALL 1002
13022  PRINT  CHR$ (4);"PR#1"
13025  FOR QW = 1 TO A9: PRINT CR$(QW);: NEXT
13028  PRINT  CHR$ (4);"PR#0"
13030  GOTO 600
17000  PRINT : PRINT  CHR$ (4);"CATALOG": GOSUB 63000: HOME : GOTO
     600
30000  GOSUB 36000:FZ = 0
30001 AN$ = "":Z$ = "": PRINT "LABEL: ";
30002  GET Z$:AN$ = AN$ + Z$: IF  ASC (Z$) = 13 THEN AN$ =  LEFT$
     (AN$, LEN (AN$) - 1): PRINT  CHR$ (13): CALL 1002: GOTO 300
     07
30003  IF  ASC (Z$) = 8 THEN AN$ =  LEFT$ (AN$, LEN (AN$) - 1): IF
      LEN (AN$) > 0 THEN AN$ =  LEFT$ (AN$, LEN (AN$) - 1)
30004  IF  ASC (Z$) = 27 THEN FZ =  NOT FZ: GOTO 30002
30005  IF FZ = 1 THEN  INVERSE
30006  PRINT Z$;: NORMAL : GOTO 30002
30007  POKE 232,0: POKE 233,10: NORMAL
30010  HOME : VTAB 2: PRINT "USE PADDLES TO POSITION LABEL; PRES
     S ANYKEY TO PRINT LABEL.  USE ESC FOR UPPER  AND LOWER CASE
      SWITCH.": GOSUB 63000
30020  POKE  - 16304,0: POKE  - 16297,0: HCOLOR= 3:UP = 0
30021  IF FV = 1 THEN  ROT= 16
30022 FX = 1: GOTO 30030
30024  IF FV = 1 THEN X = P0:Y = P1: FOR Q = 1 TO  LEN (AN$):A$ =
      MID$ (AN$,Q,1): GOSUB 35000: GOSUB 220:Y = Y + 7: NEXT :X =
     P0:Y = P1:UP = 0: FOR Q = 1 TO  LEN (AN$):A$ =  MID$ (AN$,Q
     ,1): GOSUB 35000: GOSUB 220:Y = Y + 7: NEXT : GOTO 30030
30025 X = P0:Y = P1: FOR Q = 1 TO  LEN (AN$):A$ =  MID$ (AN$,Q,1
     ): GOSUB 35000: GOSUB 220:X = X + 7: NEXT :X = P0:Y = P1:UP
      = 0: FOR Q = 1 TO  LEN (AN$):A$ =  MID$ (AN$,Q,1): GOSUB 3
     5000: GOSUB 220:X = X + 7: NEXT
30030 P0 = 1.094 *  PDL (0):P1 = .749 *  PDL (1)
30031 UP = 0
30035 PP =  PEEK ( - 16384): IF PP > 127 THEN  POKE  - 16368,0: GOTO
     30128
30040  GOTO 30024
```

Listing 1 continued.

Listing 1 continued.

```
30128  IF FV = Ø THEN X = PØ:Y = Pl: FOR Q = l TO  LEN (AN$):A$ =
     MID$ (AN$,Q,1): GOSUB 35ØØØ: GOSUB 22Ø:X = X + 7: NEXT : GOSUB
     63Ø1Ø: GOTO 6ØØ
30129 X = PØ:Y = Pl: FOR Q = l TO  LEN (AN$):A$ =  MID$ (AN$,Q,1
     ): GOSUB 35ØØØ: GOSUB 22Ø:Y = Y + 7: NEXT : GOSUB 63Ø1Ø: GOTO
     6ØØ
31ØØØ  HOME : VTAB 1: INVERSE : IF F$ = "" THEN F$ = "NONE"
31ØØ2  PRINT "CURRENT FILE NAME: "F$: NORMAL : PRINT
31ØØ5  PRINT : INVERSE : PRINT "HIT RETURN TO ABORT. DO NOT TRY
    TO SAVE PICTURES ON THE PROGRAM DISK.": NORMAL : PRINT
31Ø1Ø  INPUT "PICTURE NAME: ";F$: IF  LEN (F$) = Ø THEN 6ØØ
31Ø4Ø  PRINT  CHR$ (4);"BSAVE";F$;",A8192,L8192": GOTO 6ØØ
32ØØØ  POKE  - 16304,Ø: POKE  - 16297,Ø: GOSUB 63Ø1Ø: GOTO 6ØØ
33ØØØ  PRINT : INVERSE : PRINT "HIT RETURN TO ABORT.": NORMAL : PRINT
33Ø1Ø  INPUT "PICTURE NAME: ";F$: IF  LEN (F$) = Ø THEN 6ØØ
33Ø4Ø  PRINT  CHR$ (4);"BLOAD";F$;",A8192": POKE  - 16304,Ø: POKE
     - 16297,Ø: GOSUB 63Ø1Ø: GOTO 6ØØ
35ØØØ  IF X > 273 THEN X = 273
35ØØ5  IF Y > 184 THEN Y = 184
35Ø1Ø  RETURN
36ØØØ  HOME : VTAB 1: INVERSE : PRINT "HIT RETURN TO ABORT"
36ØØ1  NORMAL
36ØØ2  PRINT "HORIZONTAL OR VERTICAL LABEL? (H/V): ";: GET AZ$: PRINT
    AZ$: PRINT  CHR$ (13): CALL 1ØØ2
36ØØ4  IF  ASC (AZ$) = 13 THEN  POP : GOTO 6ØØ
36ØØ5  IF  ASC (AZ$) <  > 86 AND  ASC (AZ$) <  > 72 THEN 36ØØØ
36Ø1Ø  IF  ASC (AZ$) = 86 THEN FV = 1
36Ø2Ø  RETURN
37ØØØ  HOME : VTAB 8: FLASH : PRINT "DANGER: THIS WILL ERASE ENT
    IRE SCREEN!": PRINT : PRINT : INVERSE : PRINT "HIT RETURN T
    O ABORT:": PRINT "SURE YOU WANT TO ERASE? (Y/N): ";: NORMAL
    : GET AN$
37ØØ5  PRINT AN$: PRINT  CHR$ (13)
37Ø1Ø  IF  ASC (AN$) <  > 89 THEN 6ØØ
37Ø2Ø  PRINT : PRINT "GIVE COLOR (Ø-7): ";: GET Q$:AQ =  VAL (Q$
    ): IF AQ > 7 OR AQ < Ø THEN 37Ø2Ø
37Ø3Ø  PRINT Q$: PRINT  CHR$ (13): HGR : POKE  - 16302,Ø: HCOLOR=
    AQ: HPLOT Ø,Ø: CALL 62454: HCOLOR= HC: GOTO 6ØØ
62ØØØ  FOR WQ = 1 TO 15:PK =  PEEK ( - 16336): NEXT : RETURN
63ØØØ  PRINT : PRINT "(PRESS SPACE TO CONTINUE):";
63Ø1Ø PH =  PEEK ( - 16384): IF PH > 127 THEN  POKE  - 16368,Ø: PRINT
     CHR$ (13): RETURN
63Ø2Ø  GOTO 63Ø1Ø
63990  POKE 216,Ø:PQ =  PEEK (222): PRINT "": PRINT "": PRINT ""

63991  ONERR  GOTO 6399Ø
63992  IF PQ = 254 THEN  RESUME
63994  IF PQ = 6 OR PQ = 5 THEN  PRINT : PRINT "FILE NOT FOUND!
    TRY AGAIN...": GOSUB 63ØØØ
63999 C = 3: SCALE= 1: ROT= 64: GOTO 6ØØ
```

Listing 3 continued.

```
1Ø7Ø- 4Ø Ø3 4C Ø3 58 Ø3 64 Ø3
1Ø78- 6F Ø3 7C Ø3 83 Ø3 9Ø Ø3
1Ø8Ø- 98 Ø3 9F Ø3 A4 Ø3 AF Ø3
1Ø88- BA Ø3 C4 Ø3 Dl Ø3 DC Ø3
1Ø9Ø- E5 Ø3 F2 Ø3 FD Ø3 Ø5 Ø4
1Ø98- ØD Ø4 17 Ø4 1F Ø4 2A Ø4
1ØA0- 36 Ø4 4Ø Ø4 4C Ø4 59 Ø4
1ØA8- 64 Ø4 7Ø Ø4 77 Ø4 7F Ø4
1ØB0- 88 Ø4 92 Ø4 9D Ø4 A9 Ø4
1ØB8- B4 Ø4 BF Ø4 C8 Ø4 D2 Ø4
1ØC0- D9 Ø4 2D 25 2D 25 2D 2D
1ØC8- 14 65 2B 27 FD ØE 22 E7
1ØD0- 24 1E ED 1E 2A 75 12 1C
1ØD8- 6D ØE 6B ØE 6B E6 12 E7
1ØE0- 24 3F 22 66 6B 65 45 1C
1ØE8- 24 1E 2A ØC 12 2E 12 ØE
1ØF0- 14 E7 24 1E 24 1E 24 1E
1ØF8- 6A 1C Ø7 75 ØA ØØ Ø1 ØØ
11ØØ- 49 36 36 16 Ø6 ØØ Ø9 36
1108- ØD 24 Ø4 ØØ Ø9 36 36 36
1110- ØD 24 24 24 8D 13 16 1F
1118- Ø4 F8 16 Ø6 ØØ 49 2E B5
112Ø- F2 37 1C 67 61 3F 1C ØC
1128- ØE Ø5 ØØ 31 25 4D F2 1E
1130- 1E 1E 4E 29 3C Ø7 ØØ Ø9
1138- ØE F6 ØE ØD 1E ØE 1F E7
1140- 24 2Ø Ø4 ØØ 49 36 Ø6 ØØ
1148- 49 1E 1E 36 ØE ØE Ø5 ØØ
1150- 49 ØE ØE 36 1E 1E 1E ØØ
1158- 49 36 36 36 ØD E0 Ø4 6Ø
116Ø- DF 73 16 1E 1E ØØ 49 32
1168- 36 2E 4Ø FF 3F ØØ 49 92
117Ø- 12 F6 Ø6 ØØ 2D 91 2A 2D
1178- 2D ØØ 49 92 92 Ø6 ØØ 91
118Ø- 92 ØC ØC ØC ØC Ø5 ØØ Ø9
1188- 2D ØE 36 36 1E 3F 1C 24
119Ø- 24 4E Fl 1E Ø6 ØØ 49 1E
1198- 35 36 76 3F Ø7 ØØ 11 ØC
11AØ- 2D ØE F6 F7 1E 2E 2D 2D
11A8- ØØ 29 2D 35 1E 1E 75 F6
11BØ- 3F 1C Ø4 ØØ 49 31 36 ØE
11B8- 37 3E 8Ø 8Ø 3F 64 ØC Ø4
11CØ- ØØ 29 2D B5 3B 3F B4 49
11C8- 31 F6 3F 1C Ø4 ØØ 49 Ø9
11DØ- 3F 1E 1E 36 76 2D ØC E4
11D8- 3F Ø7 ØØ 29 2D 35 1E 1E
11EØ- 1E 36 Ø6 ØØ Ø9 2D ØE F6
11E8- 3F 1E 76 2D ØC 24 D8 1B
11FØ- 24 ØØ Ø9 2D ØE 36 F6 1E
11F8- 3F Ø4 4Ø 2D DC 23 Ø4 ØØ
12ØØ- 49 12 16 Ø6 ØØ 49 92 16
1208- F6 Ø6 ØØ 49 49 F1 1E 1E
121Ø- ØE ØE ØE Ø5 ØØ 91 2D 2D
1218- 16 3F 3F Ø7 ØØ Ø9 ØE ØE
122Ø- ØE 1E 1E 1E Ø7 ØØ 11 ØC
1228- 2D ØE 1E 1E B6 Ø6 ØØ Ø9
123Ø- 2D ØE 36 96 3F E7 24 24
1238- 8D 36 25 Ø4 ØØ 91 36 36
1240- 4D 21 3C 3F Ø4 8Ø 8Ø ØC
1248- ØE ØE 36 ØØ 29 2D ØE F6
125Ø- 3F Ø4 18 36 36 2E 2D ØC
1258- 24 ØØ 49 89 1C 3F 1E 36
126Ø- 36 ØE 2D ØC Ø4 ØØ 29 2D
1268- ØE 36 36 1E 3F 27 24 24
127Ø- Ø4 ØØ 29 2D B5 1A 3F Ø4
1278- 18 36 36 2E 2D 2D ØØ 29
128Ø- 2D B5 1A 3F Ø4 18 36 36
1288- 36 ØØ Ø9 2D F5 DB 36 36
129Ø- ØE 2D 25 3C Ø7 ØØ 31 36
1298- 36 6E Ø9 24 3C 3F 4C 21
12AØ- 24 ØØ Ø9 2D 1E 36 36 ØE
12A8- 3F Ø7 ØØ 49 Ø9 36 36 F6
12BØ- 3F 1C Ø4 ØØ 31 36 36 6E
12B8- Ø9 1C 1C 1C ØC ØC ØC ØC
12CØ- ØØ 31 36 36 2E 2D 2D ØØ
12C8- 31 36 36 6E Ø9 24 24 24
12DØ- 1E 1E 1C Ø4 ØØ 31 36 36
12D8- 6E Ø9 24 24 24 9F 13 ØE
12EØ- ØE Ø6 ØØ Ø9 2D ØE 36 36
12E8- 1E 3F 1C 24 24 Ø4 ØØ 31
12FØ- 36 36 2E 8Ø 8Ø 28 65 E4
12F8- 3F Ø4 ØØ Ø9 2D ØE 36 FE
13ØØ- ØE ØE 1F E7 24 24 Ø4 ØØ
1308- 29 2D ØE F6 3F Ø4 18 36
131Ø- 36 6E Ø9 1C 1C Ø5 ØØ Ø9
1318- 2D ØE DF 33 ØE 2D ØE F6
132Ø- 3F 1C Ø4 ØØ 29 2D F5 33
1328- 36 36 Ø6 ØØ 31 36 36 ØE
133Ø- 2D ØC 24 24 24 ØØ 31 36
1338- 76 ØE ØC ØC 24 24 Ø4 ØØ
134Ø- 31 36 36 66 ØC AC 72 24
1348- 24 24 Ø4 ØØ 31 ØE 16 1E
135Ø- 6E Ø9 E4 1C ØC ØC 24 ØØ
1358- 31 ØE ØE 36 2E 8Ø 8Ø 8Ø
136Ø- 8Ø ØC 24 ØØ 29 2D 35 1E
1368- 1E 1E 1E 2E 2D 2D ØØ 31
137Ø- 36 36 2E 2D E5 1B 24 24
1378- 2C 2D Ø5 ØØ 11 ØE ØE ØE
138Ø- ØE Ø5 ØØ 29 2D 35 36 36
1388- 3E 3F 67 Ø9 24 24 Ø7 ØØ
139Ø- 91 12 ØC ØC ØE ØE Ø5 ØØ
1398- 91 92 12 2D 2D Ø5 ØØ Ø9
13AØ- ØE ØE Ø6 ØØ 91 29 35 36
13A8- 2E DE 38 1C ØC 2D ØØ 31
13BØ- 36 36 2E 7Ø 65 24 1C F7
13B8- Ø6 ØØ 91 49 39 3F 1E 36
13CØ- ØE 2D 2D ØØ 49 Ø9 36 36
13C8- 36 1C 1E E7 24 ØC 75 Ø6
13DØ- ØØ 91 29 75 3E 3F 1C 36
13D8- ØE 2D Ø5 ØØ 49 75 DF F6
13EØ- 2D 1E 36 Ø6 ØØ 91 29 ØD
13E8- 1E F5 35 F6 3F Ø4 Ø8 E7
13FØ- 24 ØØ 31 36 36 2E 8Ø 8Ø
13F8- 6Ø 75 36 36 ØØ 49 16 77
14ØØ- 36 1E 2D Ø5 ØØ 49 16 77
1408- 36 F6 1C Ø4 ØØ 31 36 36
141Ø- 6E E1 1C ØC ØC Ø4 ØØ Ø9
1418- 35 36 36 1E 2D Ø5 ØØ 91
142Ø- 36 36 ØD 24 E4 ØD ØE 36
1428- 36 ØØ 91 36 36 ØD 18 8Ø
143Ø- 8Ø ØC 75 36 36 ØØ 91 29
1438- 75 36 1E 3F 1C 24 Ø4 ØØ
144Ø- 91 36 36 2E 8Ø 8Ø 2D ØC
1448- E4 3F Ø7 ØØ 91 29 35 36
145Ø- 36 F5 Ø3 8Ø 8Ø 38 1C 24
1458- ØØ 91 36 36 ØD 18 8Ø 8Ø
146Ø- ØC 75 Ø6 ØØ 49 89 3A 3F
1468- 1E ØE 2D ØE 1E 3F 3F ØØ
147Ø- 49 F6 2D 1E 36 36 ØØ 91
1478- 36 76 2D ØC 24 24 ØØ 91
148Ø- 36 ØE ØE ØC ØC 24 Ø4 ØØ
1488- 91 36 76 ØC 24 95 62 24
149Ø- 24 ØØ 91 ØE 16 1E 4D E1
1498- 1C ØC ØC ØC ØØ 91 36 ØE
14AØ- 2D 25 24 95 D2 1E 3F Ø7
14A8- ØØ 91 2D 2D 1E 1E 1E 1E
14BØ- 2D 2D Ø5 ØØ 49 2D DE 73
14B8- 1E 77 F1 ØE 2D Ø5 ØØ Ø9
14CØ- ØE ØE ØE 1E 1E 1E 1E ØØ
14C8- 29 75 1E ØE F5 73 1E 3F
14DØ- Ø7 ØØ 11 ØC ØE ØE ØC Ø5
14D8- ØØ 29 2D 2D 35 3F 3F 3F
14EØ- 2E 2D 2D 35 3F 3F 3F 2E
14E8- 2D 2D 35 3F 3F 3F 2E 2D
14FØ- 2D 35 3F 3F 3F Ø7 ØØ ØØ
14F8- ØØ ØØ ØØ ØØ ØØ ØØ ØØ ØØ
```

SOFTWARE REVIEWS



inCider's Ratings

★★★★ Superlative
★★★ Above average
★★ Good
★ Not recommended
Stay away

Simply Perfect

LJK, Inc.
7852 Big Bend Boulevard
St. Louis, MO 63119

Integrated software
$189.95
★★★★

The marketing method of bundling several programs into one package promises the user greater convenience, lower prices, and sometimes a better product. Simply Perfect fulfills each promise. Designed by LJK, Inc., Simply Perfect combines updated versions of existing programs (Letter Perfect [$104.95], Data Perfect [$129.95], and Spell Perfect [$89.95]) to provide fully integrated word processing, data processing, and spelling checking for $189.95. Simply Perfect comes with two copyable disks (program and dictionary), two reference cards, and a superb 252-page manual which includes five tutorials. It is intended for an Apple //c or //e with extended 80-column card and at least one disk drive.

At the main menu, you have the following options: Load, Edit, Verify, Save, File, Update, Print, Change System, Data Base, and Quit. Load returns you to the file directory, Edit sends you to the Letter Perfect Editor, and Verify sends any document currently in the Editor to the 30,000-word Spell Perfect dictionary, which is expandable to 7.9 million words.

Your document speeds through a three-line window at the bottom of the screen, and any unlisted words are highlighted one by one in context. You may leave the word as is or change it; if you leave it alone, Spell Perfect will ignore subsequent occurrences of the same word. If you're not sure how to spell a highlighted word, you can match it against a list of words that sound like yours. Afterward, you are returned to the file directory and given the chance to save your revisions to disk, an option you can also exercise by hitting Save while on the main menu.

Simply Perfect performs the popular text editing and formatting functions including search, search and replace, global replace, continuous (variable speed) scroll, single and continuous insert, various delete functions, a 17-page copy buffer, super- and subscripts, boldface, underlining, centering, headers, footers, text markers, CHR$ functions, forced and conditional page breaks, and the capability to halt the printer from within a document.

Add a simple format command and you can indent, change line spacing and line width, have negative indents (an outline form where the first line of a paragraph is aligned with the left margin, for example, and the remaining copy is indented a specified number of spaces), readjust top, bottom, and left margins, control justification, adjust header and footer spacing, alter page length and numbering, and change the four available fonts. There is very little that Simply Perfect cannot do as a word processor.

Flexibility, speed, and power characterize Simply Perfect as a data processor. You can create new records and edit existing ones, perform global updates and deletions, calculate totals and averages for specific number fields, and correlate them mathematically. The program includes an impressive report generator, and you can do sorts using up to five search parameters at once.

Simply Perfect's documentation is a model of clarity and organization. Important information is repeated at various points—a feature which speeds learning and enables you to use the manual as a reference without worrying that you've missed something crucial.

My criticisms are minor: You cannot leave the Editor without clearing the copy buffer (control-G followed by C and shift-3). The manual states this is a safety measure, but I found it a bother. Text moved to the copy buffer does not overwrite stored material. Instead, it is stacked consecutively. This can be an advantage, but the entire buffer is reproduced whenever you move or copy text from it. I would have liked the option to omit page numbers from the first page of text, as well as use the blinking cursor during document searches.

The only real flaw occurs in the section dealing with formatting disks for use with Letter Perfect. The

manual says to insert a blank disk into the backup drive (Drive 2 in a two drive system). Unfortunately, drive 1 begins spinning when you press return. Unless the procedure is aborted, the disk (containing the program or text files) will be erased and re-formatted. Placing the disk to be formatted in drive 1 solves the problem, but it means swapping disks—precisely what a two drive system is supposed to eliminate.

Simply Perfect, however, is an outstanding program that offers flexibility, full integration, ease of use, and excellent documentation for anyone who does a lot of word and data processing. Simply Perfect is available from LJK, Inc., 7852 Big Bend Boulevard, St. Louis, MO 63119.■

Wayne J. Sassano
Wethersfield, CT

Certified Personal Accountant

Sundex Software
3000 Pearl Street
Boulder, CO 80301

Home accounting
$99.95
★★

The Certified Personal Accountant (CPA) is a powerful menu-driven system that tracks your personal financial information in an easy and understandable way. CPA cuts down on the obvious time investment required for budgeting and tracking your cash as it leaves your checking accounts, and keeps accurate records as well. If you're willing to make the effort to enter data on a regular basis, the Certified Personal Accountant will be valuable to you.

CPA runs on any Apple II, with one or two disk drives, and requires 64K of memory. One or two drives each allow about 1200 transactions—approximately a year's worth—so your files require updating during the course of a year. Designed for the Apple //e, CPA accesses and uses its 80-column card. With an older Apple II Plus, you get only a 40-character display even if you have an 80-column card plugged into your Apple.

CPA prints checks (if you ask it to) and compares actual expenses to budgeted amounts. For handwritten checks, you can enter just their data into your files. The 232-page manual's tutorial lets you add data to the sample information already on disk. It also has a quick-start section and good reference information.

CPA combines minor categories into major areas, letting you easily see your cash flow. You can also divide individual transactions into a maximum of four categories. The program automatically checks that no two accounts have the same name and doesn't let you eliminate any account with a balance. However, the system allows overdrafts, so you can write checks for an amount greater than an account contains.

CPA is a double-entry system: when you pay a bill you deduct the amount from your checking account and apply the payment to another account. CPA also provides for recurring accounts in which you receive a fixed income or make a customary payment on a regular basis.

The CPA system notifies you in advance of payments and automatically updates the account to the next due date once you make the payment. CPA also tracks your stocks, assets and liabilities; calculates your net worth; and even helps you balance your checking accounts.

The Certified Personal Accountant is a powerful package with only minor weak spots. It involves excessive loading and contains difficult computerese and ambiguous instructions that should be explained on the screen, preferably in larger type. In all, however, the program is workable and easy to use as it stands. Certified Personal Accountant is available for $99.95 from Sundex Software, 3000 Pearl Street, Boulder, CO 80301.■

Gregory R. Glau
Prescott, AZ

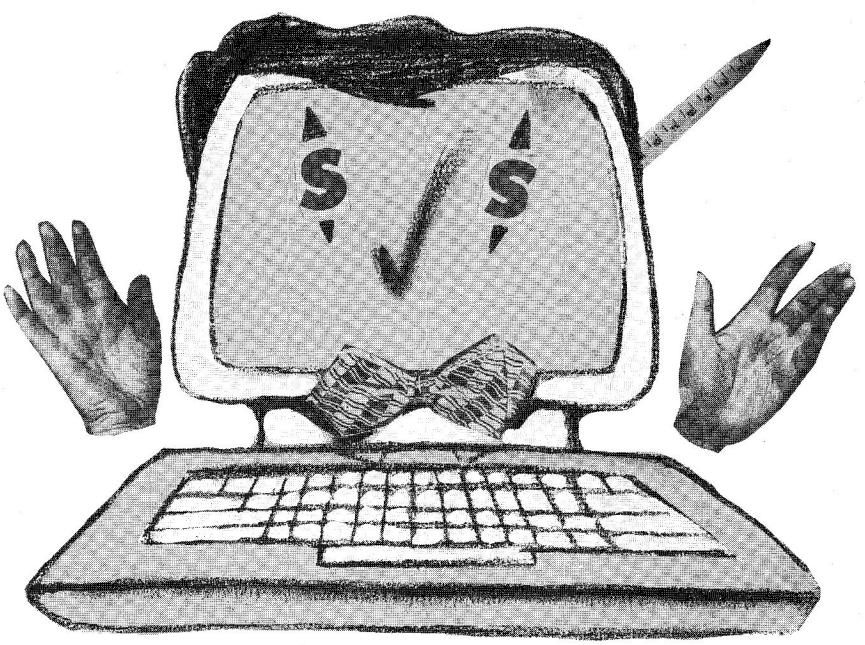
PractiCalc II

PractiCorp
44 Oak Street
Newton Upper Falls, MA 02164

Enhanced spreadsheet
$69
★★★

PractiCalc II, manufactured by PractiCorp, 44 Oak Street, Newton Upper Falls, MA 02164, is a full-feature electronic spreadsheet program. At $69 retail, PractiCalc II is priced well below most of its competitors. According to the manufacturer, the program is capable of data base functions and word processing.

Numbers, starting from zero, signify individual columns while letters identify rows. Most spreadsheets do the opposite, using letters for columns and numbers for rows. Also, PractiCalc II displays the column



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numbers at the bottom of the screen rather than at the top.

PractiCalc II offers variable column widths and allows for an 80-column display. There is no way to specify the latter as a default; the program always starts in a 40-column, uppercase-only mode and must be changed manually.

Compared to the original VisiCalc, PractiCalc II presents a slightly smaller work area, but causes no inconvenience. There is still plenty of room for almost any project. The program did not recognize or use the extra memory found on my extended 80-column card. PractiCalc II does have a definite speed advantage over VisiCalc: By my calculations, PractiCalc II processes a worksheet in about half the time.

Math functions such as square root, integer value, logarithm, and trigonometric calculations are provided. PractiCalc II also includes an IF . . . THEN routine that tests a specified condition and responds accordingly.

Worksheets can be combined by storing them to disk and recalling them while another is in memory. This function easily processes a group of reports into one weekly (or monthly) summary. VisiCalc requires an involved process which is not always worth the trouble. This feature is one of the most powerful parts of PractiCalc II.

Another interesting feature, an offset-load function, re-loads a worksheet several rows or columns away from its original location. A given section of a spreadsheet can be loaded, if desired. Unfortunately, there is no provision to read files created by other spreadsheets, nor does the manual mention how to access PractiCalc II's files from other programs. The Apple //c version reads both formulas and DIF files created by VisiCalc, and uses its extra memory capacity.

Use the print options to define page length, line width, printer slot, and margins. In addition, a set-up string can be stored on the disk and sent to your printer at the start of each print. This activates special printer functions such as compressed print mode or italics, automatically.

Any column (or section of column) within the worksheet can be sorted alphabetically or numerically in either ascending or descending order. The entire row changes according to the contents of the sorted column. An additional column may be used as a secondary sort field as well.

"PractiCalc II is a competitive package."

With a search function, PractiCalc II locates an entry which meets specification. You could search for an exact match, an entry that begins with, ends with, or contains a certain character sequence, or perhaps one that is greater or less than a selected number.

Search and sort commands are called data base-type functions by PractiCorp in much the same way text entry and display commands are called word processing capabilities. These features do make PractiCalc II better at spreadsheet operations than it would be without them. Text, especially complicated titles and notations, is easier to enter than with other packages. The sorting and searching make the package more flexible than a typical electronic spreadsheet.

The program is nicely boxed, and comes with a well-produced, spiral-bound manual and a supplement describing last minute additions to the system. PractiCorp will provide registered users with a backup copy of the program for $5.

PractiCalc II is quite good as spreadsheet programs go, but calling it a data base or word processor is stretching it a bit too far. If you view these features for what they are—useful enhancements for a basic spreadsheet design—then PractiCalc II comes across as a real value.

Despite its limitations and quirks (such as its tendency to beep even when you've done nothing wrong), PractiCalc II is a competitive package. It is priced right—less than half the cost of similar programs—and possesses the features you need for household or limited business use. ■

Chuck Doherty
S. Dartmouth, MA

Stock-Folio

Micro Program Designs
5440 Crestline Road
Wilmington, DE 19808

Investment analysis
$79.50

★★



Stock-Folio isn't a program for professional investors who must know what a certain stock did a moment ago. Designed for the personal investor who doesn't need automatic quotes, its stock-charting mode can quickly plot high, low, close, and volume charts on up to 48 stocks per disk, while its portfolio mode maintains records on current and closed positions.

Stocks must be on a master list accessed through the Stock List program before you can review, modify, delete, or change an issue.

Once you acquire a master list of stocks, you can update them through the Stock Data Entry program. There is no provision for automatic price retrieval by modem from remote data bases, so prices must be entered manually in decimal form, either daily or weekly. You can store up to 248 sets of data per stock. The program automatically purges old data when a file is full in order to make room for new data.

The Graphic Monitor program plots bar charts of stock prices above a volume histogram. Printed below the graphs are the stock name, the last date, the last close, and the choice of exiting or plotting a moving average. The number of units in the moving average must be between one and the number of data sets available. Up to three moving averages can be overlayed on the stock chart. Charts can be saved on a separate initialized disk, but there is no graphics routine included with Stock-Folio, so you can't print them out. The manufacturer suggests a separate program such as Zoom Grafix for screen dump graphics.

The Stock Strength program plots relative strength charts if you have a market average such as the Dow Jones Industrials in your Stock List. These charts help determine whether a stock's price movement is stronger or weaker than the general market. Only the closing price of the market average is used. This program also plots Trend Momentum which shows a stock's price minus a moving average (or a short-term moving average minus a long-term moving average) using closing prices. Plots identify when momentum changes direction—usually followed by a change in the price trend.

Stock-Folio portfolio data is maintained on a separate data disk. The Portfolio Data Entry option records buys, sells, short sales, short covering, and dividends under Stock Transactions, and credit, debit, or interest information under Cash Account.

You have a choice of four Portfolio Account Reviews including the status of current holdings, summary of closed positions, review of dividends earned, and cash account review. All review reports are displayed on screen, and printed in 40 or 80 columns

Packaged with a copy-protected program disk and a copyable sample data disk, Stock-Folio is guaranteed for 90 days. Afterward, you can pur-

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chase a back-up disk for $5. StockFolio requires an Apple II, //e, with 48K Applesoft, and one disk drive. A second drive and printer are optional. Price is $79.50. Contact Micro Program Designs, 5440 Crestline Road, Wilmington, DE 19808.■

Richard M. Fuccillo
Groton, MA

Winning on Wall Street

Summa Software
P.O. Box 2046
Beaverton, OR 97075

Investment analysis
$700

★★★★

Winning on Wall Street is a decision support system for stock market traders and investors, marketed by Summa Software, P.O. Box 2046, Beaverton, OR 97075. The system consists of three modules: Trader's Data Manager, Trader's Forecaster, and Trader's Accountant.

Trader's Data Manager

The Trader's Data Manager module creates and maintains a data base of stocks for graphical analysis and reports. It also handles corporate and foreign bonds, mutual funds, and U.S. Treasury notes. Data is updated manually or down loaded from Dow Jones News Retrieval, one of the least expensive commercial data bases. Winning on Wall Street comes with a data disk and sample stocks to use with the tutorial.

To start a data base, create a file for each stock that you're interested in. A code identifies each file, and it's suggested you use the official ticker symbols for interfacing with Dow Jones.

Let the system know which "attributes" you want to record for each stock: high, low, close, and volume. Also, tell the system which format to store the data in (decimals, fractions, ×100), and how to convert data. (See **Figure 1**.)

Unless otherwise instructed, data is stored in a daily format. But to generate weekly, monthly, quarterly, or yearly reports and graphs, you have to convert the stock code. The conversion procedure is also used to delete old data from a file to make room for new data when a disk is full.

Trader's Data Manager lets you store up to 1,000 data points for each attribute, in any combination of daily, weekly, monthly, quarterly, or annual data. This works out to 10 stocks per disk with two years of daily data, based on four attributes each.

The data base generates three reports: individual stock attribute comparisons, several stocks and attribute comparisons, and a summary of the stocks with attributes, conversions, and storage types.

Trader's Data Manager produces four graphs. These are high-low-close-volume, attribute versus volume, attribute comparison, and single attribute. A maximum of 90 data points can be graphed to display your report's selected date range.

Trader's Forecaster

The Trader's Forecaster module is a technical analysis graphics package that charts historical data from the Trader's Data Manager to identify trends and buy and sell decisions. It offers classical, technical analysis forecasting techniques and includes a Matrix Projection Formula. This formula predicts the next near term high and low, based on historical data, to aid in timing decisions.

Trader's Forecaster has four forecasting techniques: moving averages, exponential smoothing, adaptive filtering, and least squares fit. The program also includes technical analysis "tools" including mid-channel support/resistance lines, one-third/two-thirds speed resistance lines, trading bands, and volume indicators. (See **Figure 2**.)

Graph point and figure charts for unit and point reversal. Point and figure charts analyze volatility. (See **Figure 3**.) Plots are vertical, with X's representing an uptrend, and square boxes representing a downtrend. The plot stays in the same column until the trend changes significantly. These charts disregard time. One column could take a day or a month to complete before a new column starts. Thus, the X axis only de-

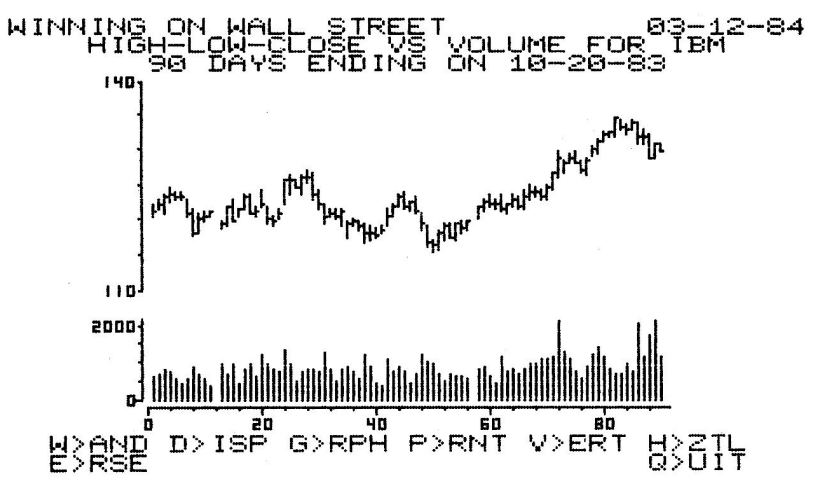
Figure 1. *Stock Data Report.*

DAILY STOCK DATA REPORT 03-12-84

INT BUSINESS MACHINES PAGE 1
IBM

DATE	HIGH	LOW	CLOSE	VOLUME (1000'S)
01-03-83	97.00	92.50	93.00	761
01-04-83	95.62	92.37	95.62	915
01-05-83	96.75	95.00	96.00	951
01-06-83	98.50	95.50	97.62	1024
01-07-83	98.37	96.50	96.62	1061
01-10-83	99.25	96.00	98.00	1114
01-11-83	98.37	97.00	98.00	851
01-12-83	100.12	98.00	98.12	1526
01-13-83	99.25	98.12	98.62	735
01-14-83	99.87	98.50	99.12	874
01-17-83	100.75	99.25	99.25	1145
01-18-83	100.37	98.50	99.62	1015
01-19-83	100.25	97.00	98.50	969
01-20-83	98.75	96.75	97.87	628
01-21-83	97.50	94.00	94.62	1785
01-24-83	94.12	92.25	93.87	1478
01-25-83	96.25	94.37	96.00	1134
01-26-83	96.12	94.87	95.12	843
01-27-83	98.00	95.75	97.62	793
01-28-83	98.50	97.12	97.37	634
01-31-83	98.87	96.75	98.87	574
02-01-83	99.25	97.00	97.00	660
02-02-83	97.25	95.25	96.00	1122
02-03-83	96.00	95.12	95.50	816
02-04-83	97.50	95.37	97.37	835
02-07-83	98.37	96.62	97.12	563
02-08-83	97.37	95.00	95.12	644
02-09-83	95.50	93.87	94.50	913
02-10-83	96.87	95.12	96.37	771
02-11-83	97.75	96.00	96.37	791
02-14-83	99.50	97.00	99.00	1145
02-15-83	100.50	98.75	98.87	1353
02-16-83	100.25	98.25	98.37	940
02-17-83	99.00	97.00	98.37	1117
02-18-83	99.50	98.25	98.62	672
02-21-83				
02-22-83	99.50	97.00	97.12	746
02-23-83	98.75	97.12	98.75	640
02-24-83	101.50	99.25	100.87	1366
02-25-83	101.25	100.00	100.37	1052
02-28-83	100.50	99.00	99.00	911

Figure 2. *Mid-channel support/resistance lines.*



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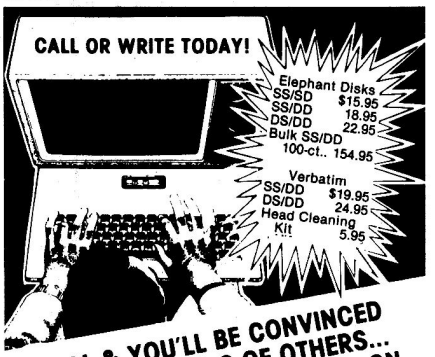

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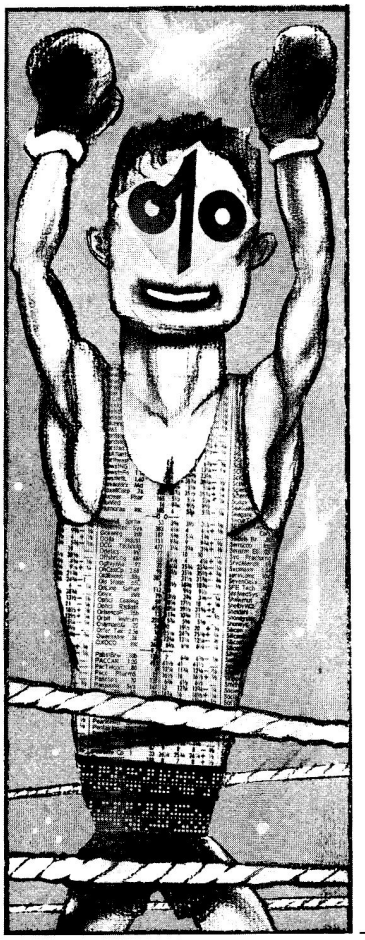


pends on the stock price fluctuation.

This point and figure feature is the first I've come across in a charting program, and it's quite impressive. The only drawback is the time involved to create a chart, which takes three to five minutes.

The proprietary Matrix Projection Formula predicts the next high and low on a short-term basis, calculated from historical highs and lows. Although it is the most accurate forecasting method in the module, it doesn't account for extraordinary events or outside influences under fundamental analysis.

Trader's Accountant

Trader's Accountant is the portfolio management module of the system. After entering transactions, the program automatically calculates realized and unrealized profit and loss, short- and long-term capital gains, commissions, margin costs, and cash balances. Portfolios are updated manually, from the Trader's Data Manager data base or Dow Jones News Retrieval.

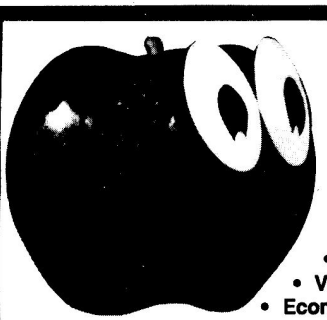
Trader's Accountant also allows you to play "what if," regarding buy/sell decisions without affecting your records. It shows the impact of your decisions on both your portfolio and cash positions. Up to 999 separate portfolios can be managed, with five portfolios per disk, identified by a three digit code between 001 and 999.

The Winning on Wall Street manual is detailed, with screen illustrations. Each module has its own tutorial, reference guide, glossary, and index. Included with the software is a laminated reference card with program key conventions and interactive graphic key commands.

The system works on an Apple II, II Plus and //e with 64K and two drives. If a printer is used, a Grappler Plus (or compatible) interface is needed for graphics. To download data from Dow Jones News Retrieval, a Hayes Micromodem is required.

Modules can be purchased separately, but remember, the Trader's Forecaster is dependent on the Trader's Data Manager for its data base. The complete Winning on Wall

Circle 204 on Reader Service card.



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The DS-65 Digisector® opens up a whole new world for your Apple II. Your computer can now be a part of the action, taking pictures to amuse your friends, watching your house while you're away, taking computer portraits . . . the applications abound! The DS-65 is a random access video digitizer. It converts a TV camera's output into digital information your computer can process. The DS-65 features:

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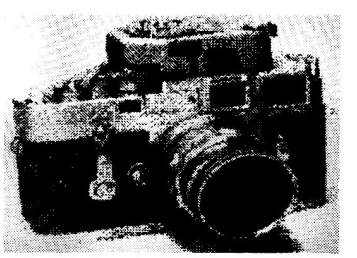
- **Precision** — 64 levels of grey scale
- **Versatility** — Accepts either NTSC or industrial video input
- **Economy** — A professional tool priced for the hobbyist



HI-RES PICTURE USING THE DS-65 AND PICTURE SCANNER SOFTWARE

The DS-65 is an intelligent peripheral card with on-board software in 2708 EPROM. Check these software features:

- Full screen scans directly to Apple Hi-Res screen
- Easy random access digitizing by Basic programs
- Line-scan digitizing for reading charts or tracking objects
- Utility functions for clearing and copying the Hi-Res screen

Use the DS-65 for precision security systems; computer portraiture; robotics; fast to slow scan conversion; moving target indicators; reading UPC codes, musical scores and paper tape and more! **GIVE YOUR APPLE THE GIFT OF SIGHT!** DS-65 Price: $349.95 RCA 1500 Series Camera w/6:1 zoom lens Price: $399.90/Combination Price: $729.95

ADDITIONAL SOFTWARE FOR THE DS-65

— Picture Scanner: An applications tool for processing video images for display on the Hi-Res screen. A variety of dithering algorithms are provided, for compressing the digitized image into the Hi-Res screen and simulating grey scales. Price: $39.95

— Superscan: Enables you to enhance the DS-65's Hi-Res pictures with colors! Choose from 21 different colors and assign them to grey scale values, modify pictures, zoom, enhance contrast, etc. Includes print routines for Anadex 9500 or 9501; Epson MX-80GFT and MX-100; and IDS 460 Paper Tiger*. Written for The Micro Works by Magna Soft. Price: $79.95

*Paper Tiger is a trademark of Integral Data Systems, Inc.

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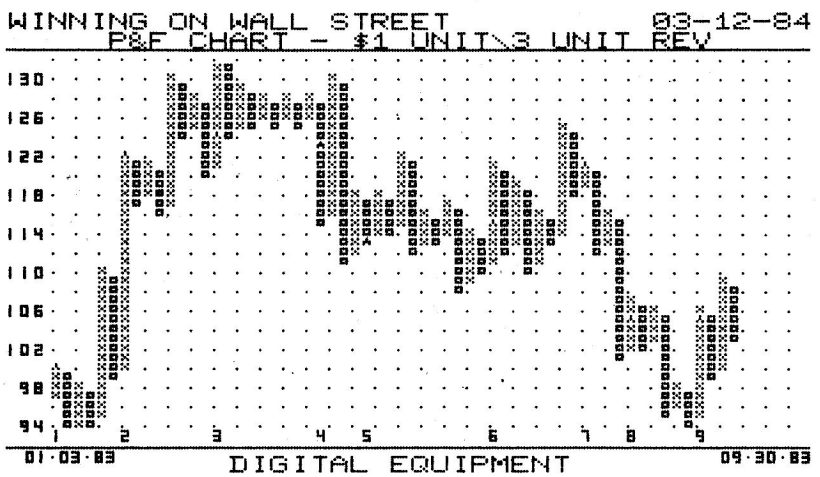
Street system costs $700. Separately, the Trader's Data Manager sells for $200, the Trader's Forecaster is $250, and the Trader's Accountant is $350. Program disks are guaranteed for 90 days. Replacements cost $30. Registered owners will be notified of program updates.■

Richard Fuccillo
Groton, MA

Figure 3. *Point and figure chart to analyze volatility.*



Dow Jones Spreadsheet Link

Dow Jones & Company, Inc.
P.O. Box 300
Princeton, NJ 08540

Telecommunications
$249

★★★

Everyone has heard of Dow Jones. It was one of the first large companies to recognize that microcomputers were going to take homes and offices in this country by storm. Dow Jones developed communications programs for the man in the street, giving him access to information previously available only to specialists in the investment business. And now Dow Jones meets another trend with a superb program for the investor, designed for sophisticated management and judgemental use of stock market data.

With an auto-dial modem, the Dow Jones Spreadsheet Link allows

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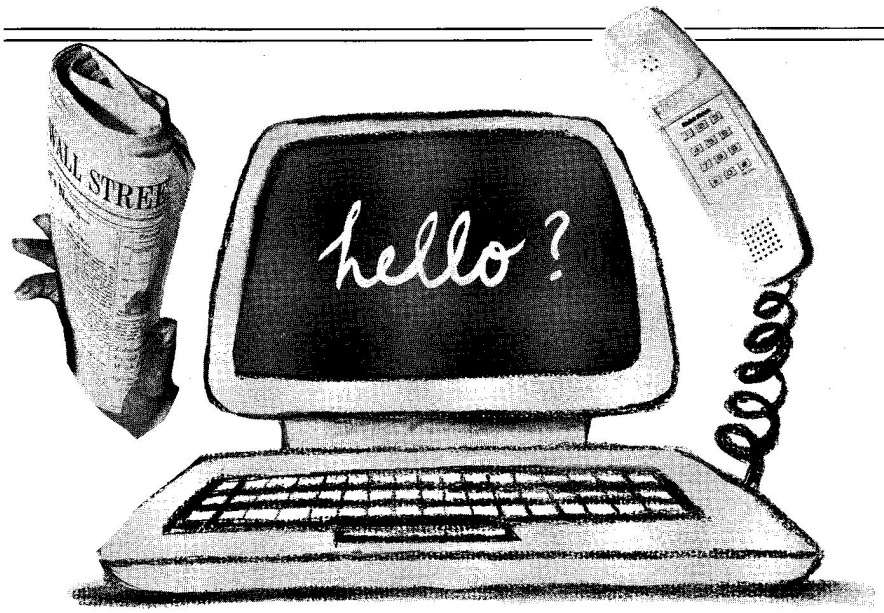

a user to have a microcomputer dial up the Dow Jones data base, automatically retrieve data on a selected stock or list of stocks, write it to a file pre-formatted for the user's own spreadsheet program and arranged to match his pre-designed template, log off, and hang up the phone. The program supports VisiCalc or Multiplan on the IBM PC and Lotus 1-2-3.

The Dow Jones Spreadsheet Link manual is a joy. Not only is the information clear and easy to find, but it has been written with the user in mind. For instance, after the usual "making a backup copy" section, the book dives right into the Link experience with a starter session.

The manual's only fault is that it jumps back and forth between instructions for the VisiCalc owner and the Multiplan owner, spoiling the flow of learning. A separate section for each would have been better.

The program retrieves information from most of the Dow Jones data bases including current quotes, historical quotes, general media, corporate earnings estimator, and Disclosure II.

You can monitor a comprehensive list of investment vehicles: stocks, warrants, bonds, mutual funds, options, and U.S. Treasury bonds. You can capture information such as price information, historical data, and volume. (See **Figure 4.**)

Included in the price of the program is access to the news wire supplied by Dow Jones from *The Wall Street Journal*, *Barron's*, and regular DJ News Service. Many services are available but they include, on a lighter note, the Cinema Movie Reviews, weather reports, access to Comp-U-Store (an electronic shopping service), and MCI Mail.

Data retrieval takes three steps. First, the program must be told through your spreadsheet program what information you want about the stocks concerned. Second, the program is told to retrieve the data. Third, the data must be integrated into the template prepared to receive it.

Telling the program what you want is easy. Once the template is designed, the special codes are inserted to tell Dow Jones Spreadsheet Link the information you want brought back and where in the matrix you want it placed.

Now you are ready to retrieve. If you have run through the very easy set-up procedures, simply re-load the Spreadsheet Link program and select menu option 1 (Retrieve Information for Spreadsheet).

Right before your very eyes you will see Spreadsheet Link check your DIF or SYLK file, re-format the desired headings for the fastest retrieval (it cuts down on the connect time), call the local access phone number, log on to the service with your password, and access the correct files at the main frame contain-

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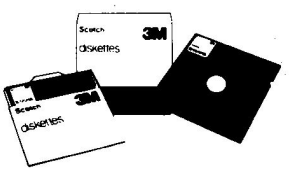

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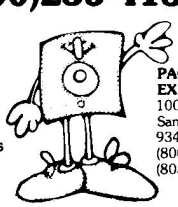

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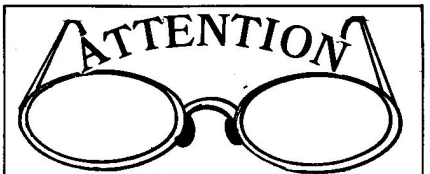

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"Dow Jones meets another trend with a superb program for the investor."

ing the data you want. When finished, it logs you off, hangs up the phone, and gives you back the main menu.

Fund managers and serious home investors will welcome this program. As a stock planning tool, the Spreadsheet Link enables you to recall and manipulate a lot of data without keying it all in. It also makes various forecasting methods, such as charting, easier to implement.

The Spreadsheet Link is manufactured by Dow Jones and Company, Inc., P.O. Box 300, Princeton, NJ 08540. It sells for $249.■

Archie Mason
Stamford, CT

Figure 4. *The spreadsheet test model with downloaded data.*

	A	B	C	D	E	F
1						
2			V-HIGH-12V-VOLUME-V-VOLUME-V-VOLUME-V-VOLUME-			
3	STOCK	YEAR END	FRI VOL	FRI VOL	FRI VOL	FRI VOL
4		PRICE	Ø1/Ø6/84	Ø1/13/84	Ø1/2Ø/84	Ø1/27/84
5						
6	TECHNOLOGY					
7						
8	V-IBM	NA	9459	17613	27851	15364
9	V-DJ	NA	299	89	326	26Ø
1Ø	V-TAN	NA	1Ø773	5943	3973	3Ø94
11	V-AAPL	NA	7522	5435	631Ø	8665
12	V-DEC	NA	4367	1Ø197	51Ø8	4833
13						
14						
15	AUTOMOBILE					
16						
17	V-C	NA	5869	6442	4361	4824
18	V-F	NA	7197	8544	3Ø24	3838
19	V-GM	NA	9840	4547	4914	8Ø91

This is the full text label that was entered into the top row:

In Column B	In Column C
V-HIGH-12/31/82	V-VOLUME-Ø1/Ø6/84

Report Card

Sensible Software, Inc.
24011 Seneca
Oak Park, MI 48237

School data base
$59.95

★★★

When calculators appeared on the scene, teachers found that they could easily set tests and exams since it was easy to calculate percentages. Then computers came along. When I got my computer I used VisiCalc to set up a grade book and it served me well. However, for those teachers who are not computer oriented or who have no desire to fork out the money for a spreadsheet, there is a better answer. Marc Ringuette understands what teachers require and produced an easy to use program package called Report Card.

Report Card stores up to 300 students' names from 12 classes along with their grades on a single disk. If you handle more students than this, you can use a second disk.

The 48-page manual introduces the program concept and describes the hardware requirements, then takes you through a 16-page tutorial. The remainder of the documentation explains each phase of the program and includes a section for experienced programmers. Information on printer codes, loading data,

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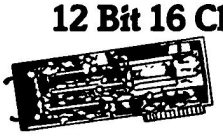

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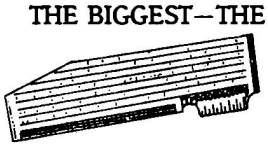

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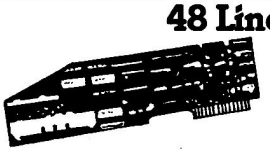

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AMPERGRAPH

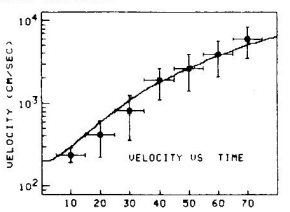
AMPERGRAPH is a powerful, easy-to-use relocatable graphics utility for the Apple II +/e/c. AMPERGRAPH adds twenty-two Applesoft commands that allow effortless generation of professional-looking plots of scientific or financial data. All of the necessary scaling and screen formatting is accomplished with 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 + T12:NEXT T
35 FOR T = 10 TO 70 STEP 10
40 &CLOSED SQUARE, T,
   (150 + T12)*(.8 + .4*RND(3) )
45 &ERROR BARS, 5, T12/2
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
* Adjustable horizontal tab
* Compatible with AMPERGRAPH
* Fast
* Easy to use
* 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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"Report Card is a welcome addition to a teacher's software library."

calculating percentages, and the menu structure is covered in the appendices.

Report Card is a welcome addition to a teacher's software library. Once the teacher sets assignments and marks them, a brief assignment outline is entered along with the possible grade. Students' marks are then entered. Therefore, if Freddy misses the work, his grade can be left empty and no penalty accrues toward his cumulative grade. If the work is made up, it is easy to add the mark.

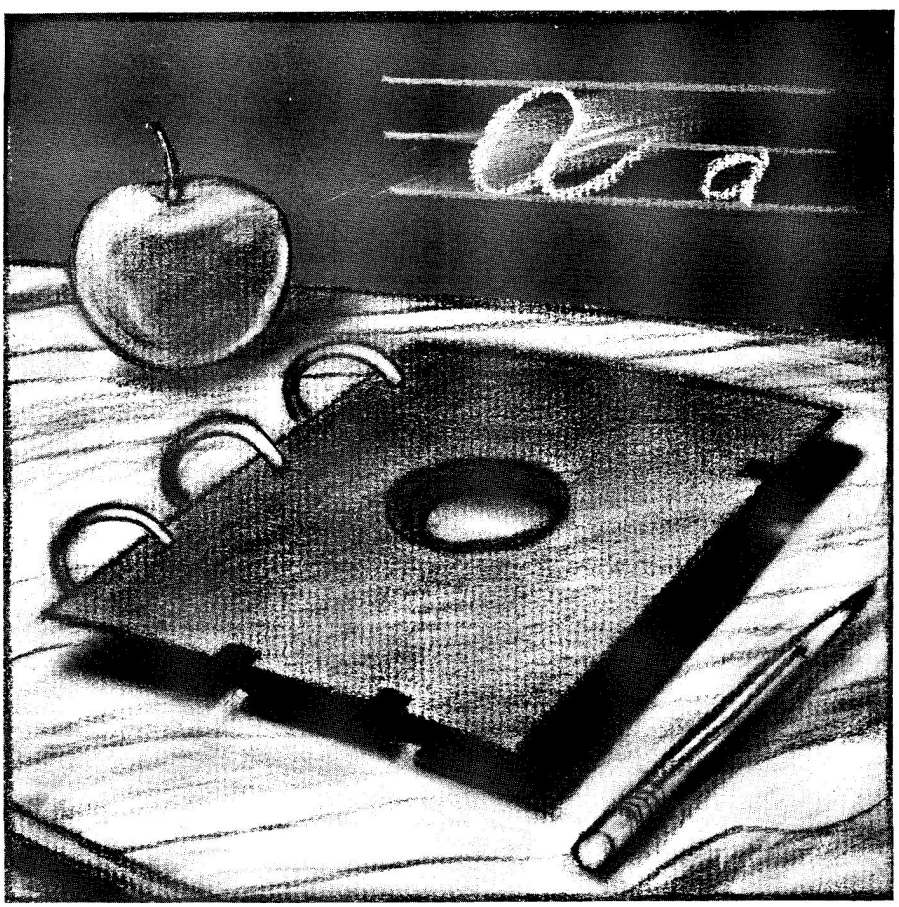
As far as marking concepts go, this program highlights weighting procedures. If you think a quiz should be worth more than homework, but less than a test, and that exams should be worth much more, you can enter a weighting factor when it is time to calculate the grades. This is where the computer takes away the tediousness and makes life easier.

Classes can be sorted by name (first or last) or by average mark. So if Jenny Adams comes into the class late in the year, you can still have alphabetical class lists printed out. Final grades can be printed out in the order you decide. There are a wide range of printout formats from which to choose. You can even decide that marks should be given as a letter grade (pass or fail, as well). Naturally, you determine the categories.

This program is easy to use, and does enough for any teacher to give thanks. Report Card enables you to use a wider range of marking schemes without getting bogged down in arithmetic. Anyone, whether experienced in computers or not, will find this program user friendly.

Report Card is manufactured by Sensible Software, Inc., 24011 Seneca, Oak Park, MI 48237. It sells for $59.95.■

Peter Walpole
Minesing, Ontario



The Heist

Micro Lab
2699 Skokie Valley Road
Highland Park, IL 60035

Arcade game
$40

★★★★

The museum is empty except for a stealthy figure in the darkness heisting the precious works of art. No ordinary thief, the furtive figure is none other than Graham Crackers, super hero extraordinaire. His mission: find the microdot containing vital information.

This task is formidable, even for such an experienced do-gooder. He needs help so insert the disk into drive 1, turn on your Apple (48K), and join in Micro Lab's The Heist.

Though in the same vein as Miner 2049'er's and Donkey Kong's climbing/running/jumping game, The Heist has charm all its own. It is not a rehash of these past successes. The Heist is a first class offering which stands on its own merits.

You control Graham Crackers via keyboard or joystick commands. Because of the split second timing required to execute most of the maneuvers, the joystick is the better choice. Moving the stick left or right guides our hero in the same direction. Pulling it toward you makes him crawl in the designated direction. Depressing the fire button makes him jump straight up, forward, or backward depending on the stick's position.

Board lifts (not elevators) by pointing the controller in the desired heading and simultaneously depressing the action button. Ride escalators by locating the joystick at the 11 o'clock or one o'clock position, depending on the layout of the particular room or floor. Using elevators is a snap in this tri-level, hi-res offering. Just walk up to one and press the correct floor number on the keyboard for transportation.

An unusual mode of travel is the moving platform found on scaffolding. Similar to a conveyor belt, it is activated by pressing the space bar. Hitting the fire button reactivates Graham Crackers and stops the platform.

Moving past a piece of art collects it. Though you can't tell, Graham Cracker's pockets are quite large; there is no limit to what he can carry.

The screen scrolls horizontally as Crackers closes in on the edge. A slight delay occurs as the disk is accessed for each room. Though this slows the action down somewhat, the rewards are worth the wait. Each room is lavishly reproduced in colorful visuals. The displays are works of art themselves. It makes you think the microdot might be encoded in the program, The Heist looks that good.

Besides the conveyances and treasures, doors, walls, desks, and other objects are scattered about the repository. Some are not welcome by any means. Two such annoyances are the alarms and robot guards. Alarms, some of which are mobile, kill Graham Crackers on contact. Be wary as they come in many shapes and sizes. The other nemesis, the robot security force, can be deactivated for points. A well-timed leap, when Graham Crackers possesses a key, turns the trick.

The keys also unlock doors. Without them it is possible to become trapped with no hope of return. Not only does this put a major crimp in playing the game, it means the end of the current Cracker once the time clock winds down. (Level one has a two minute timer, while levels two and three clock 60 seconds. This deadline allots time between collecting art or keys.)

Once all the art is taken, Graham is lifted to the next, more advanced level of play. While the animation is extremely realistic, the audio is limited by the Apple. The audio, however, doesn't detract from The Heist's game play.

Micro Lab pulls off The Heist at 2699 Skokie Road, Highland Park, IL 60035. It sells for $40.■

Ted Salamone
Bridgeport, CT

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★★★

CodeWriter takes a unique approach to information management by writing separate programs in BASIC to store information and to produce a report in a designed format. These independent programs will run without the CodeWriter master disks. It is as if you hired a professional to write a data management program for your specific needs. The most surprising aspect of CodeWriter is that it requires no programming knowledge and is actually simpler to use than most of its competitors.

Both the data entry and report programs are easy to produce and list clear instructions within the program. The data entry screen is designed by typing the name of a field (name, address, test score, or cost) as you want it to appear on the screen, along with the maximum space it will use. Once the fields are typed in, you can rearrange or alter them. After the screen is laid out, you specify whether the field will be entered from the keyboard or calculated from other information.

For example, you might enter the field "item cost" from the keyboard and have the field "tax" automatically calculated by the program from a provided formula. You then have the option of deciding what information the program will accept in each field: You can specify that a given field must have an entry, or that the entry must be a three digit number, or that it must contain a certain set of letters. If the person entering the information does not follow the rules of entry you set up, the program will print an error message and wait until the rules are followed. After the fields are defined, the program is written to a separate disk. (A data entry program containing nine fields in each record took me about an hour to design and CodeWriter ten minutes to produce. It contained about 600 lines of BASIC code and was 73 sectors long.)

The report-generating programs section of CodeWriter is also simple to use. It gives you the option of defining the number of records across the page and the number of lines for each record. The occupied page portion is shown on the screen, and the report form can then be specified just as with the data entry program. Pagination and column headings can be produced, and every report may be divided into sections, each of which has a different search criterion. For instance, the first section might contain all records containing zip codes between 43210 and 43085, and the second might contain all records with names beginning with *A*. At the end of each section, the report can include a summary of any or all of the numeric fields including aver-

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Our 8 channel signal conditioner is designed for use with both our A/D converters. This board incorporates 8 F.E.T. op-amps, which allow almost any gain or offset. For example: an input signal that varies from 2.00 to 2.15 volts or a signal that varies from 0 to 50 mV can easily be converted to 0-10V output for the A/D.

The signal conditioner's outputs are a high quality 16 pin gold I.C. socket that matches the one on the A/D's so a simple ribbon cable connects the two. The signal conditioner can be powered by your Apple or from an external supply.

FEATURES

- 4.5" square for standard card cage and 4 mounting holes for standard mounting. The signal conditioner does not plug into the Apple, it can be located up to ½ mile away from the A/D.
- 22 pin .156 spacing edge card input connector (extra connectors are easily available i.e. Radio Shack).
- Large bread board area.
- Full detailed schematic included.

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The SUPER INPUT/OUTPUT board manual includes many programs for inputs and outputs. A detailed schematic is included.

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ages, totals, and maximum and minimum values.

A similar summary may be printed for the entire report as well. Before a report is produced, you may sort any single field, in either ascending or descending numerical order or alphabetical order. Report programs may take about 30 minutes to design, and three minutes for CodeWriter to write. A typical report program may occupy 50 to 60 sectors. Thus, a single disk should hold the data entry program and five or six report programs. These programs are made even easier by CodeWriter's menu which allows the user to run these, or any other, programs with a single keystroke.

When running the data entry program, a menu gives you the option of entering, updating, searching, or deleting a record. After typing in the information, the program asks for verification and writes the record to disk. If a mistake occurs, the record can be recalled and corrected. If an error exists in a given field, it can be altered without retyping the entire record. The report program is essentially automatic. The only option is the choice of fields to sort.

Once the programs are written, the user has very few choices available. This practically eliminates creative errors and should make the programs easy for an inexperienced person to work with.

Certain program limitations might affect a given user. In the data entry program, each record must be contained on a single screen (about 1700 characters), and a field may be no longer than 79 characters. In addition, every record has the same storage space allocated on the disk, regardless of the amount of information it contains. This decreases the maximum number of files stored on a disk. The report programs are limited since they can only use data entered through the data entry programs (although the storage files are readily accessible), and can sort only one field at a time. Also, each record must be read from the disk before it is printed. This can take a long time for large reports.

In spite of these potential drawbacks, the CodeWriter system's advantage is that the data management programs are written in well-annotated BASIC code which can be modified by the knowledgeable user. Programs available from other sources can modify the DOS for faster file handling and compile the programs for quicker searching and sorting.

CodeWriter runs on any 48K Apple or Franklin with one disk drive and 80-column and lowercase capabilities. When you register the program, you receive two backup disks, a toll-free telephone number for technical questions, and free disk updates. CodeWriter retails for $199. It is now available in separate modules as FileWriter, ReportWriter, and MenuWriter from CodeWriter Corporation, 7847 N. Caldwell Avenue, Niles, IL 60648. ■

Richard Fertel
Columbus, OH

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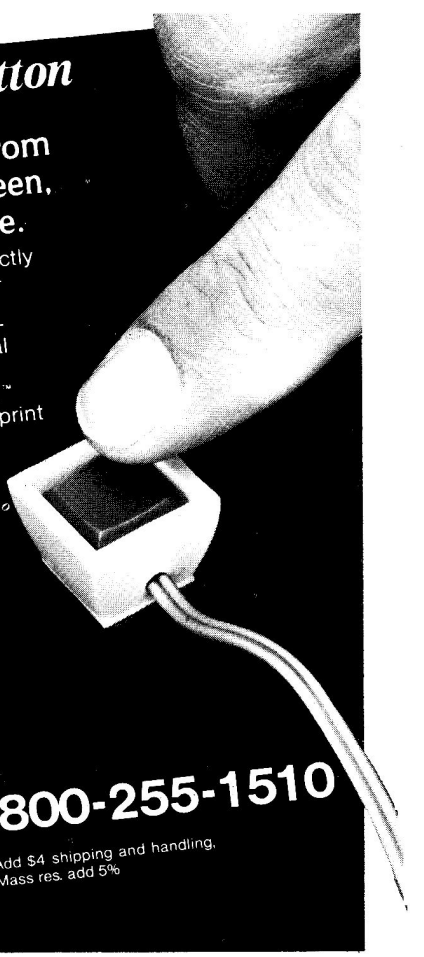

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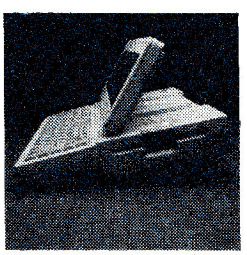

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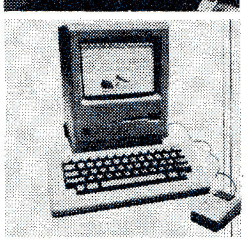

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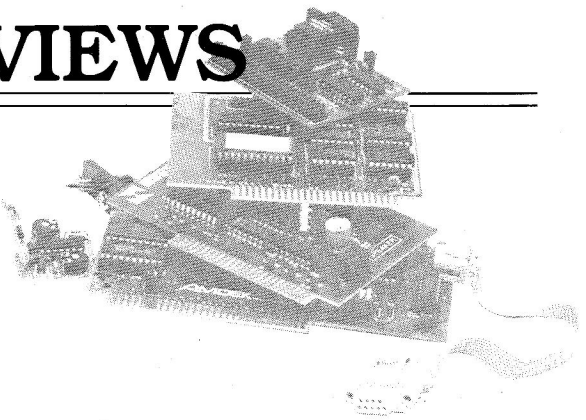


inCider's Ratings

★★★★ Superlative
★★★ Above average
★★ Good
★ Not recommended
Stay away

CP/M Gold Card

Digital Research
P.O. Box 579
Pacific Grove, CA 93950

CP/M for the Apple
$350

★★★★

Since Digital Research is one of the leading software and operating system suppliers in this country, it is no surprise to find, upon opening the shipping container, two binders full of documentation, each almost two inches thick, along with five disks of programs and utilities. Seemingly as an afterthought, at the bottom of the carton, lies the company's first hardware product, the CP/M Gold Card, along with two cables. The card is a complete Z-80B processor, with a built-in video (80-column) card and either 64K of unbanked or 192K of banked memory, depending on the version you buy. (My review copy had 192K.) All you need is a raw Apple II, II Plus, or //e, 48K of memory, and two disk drives to install the Gold Card and run CP/M.

How Much Gold Do You Get?

Since the five-minute installation is no problem, the question is how well does the Gold Card work? My Apple II Plus was already equipped with the Microsoft Premium Softcard running CP/M 2.2, and I decided to see how the Gold Card and the CP/M 3.0 stacked up against this popular package.

Test number one was to try some regular Applesoft, Apple DOS, and Apple games just to see if these worked normally with the Gold Card in place. The answer is yes. The presence of the Gold Card made no difference, and the video switch built into the Gold Card routed the normal Apple video directly to the monitor.

Perhaps the most popular reason for running CP/M on an Apple is to use WordStar, so this was my second test run. The results of the this test were interesting. The combination of Gold Card and WordStar works, and works significantly faster than with the Microsoft package, but for an unexpected reason. The banked memory version (192K) of the Gold Card stores files from disk as they are called. In the case of WordStar, as you call each of the five auxiliary menus (J/Help, K/Block, Q/Quick, P/Print, and O/Onscreen), the contents of their functions are stored in the memory. Therefore, each additional time you call for a function from one of these menus, the information is already in memory and there is no wait for a disk access. While the program does not seem to save any time in composing under WordStar, it saves a great deal of time in using the various menus for formatting, file transfer, and editing.

For a really functional comparison, I ran time checks on the Gold Card using two of the dBase II programs I wrote for keeping my short wave radio station log. The resulting files were sent only to the screen, since the slow operation of my printer would have masked any speed differences between the Gold Card and the Softcard.

The results of this test appear in **Table 1**. I was impressed. While my dBase II programs still won't set any speed records, they did run markedly faster on the Gold Card.

More Goodies in the Bag

Most of your old favorite 2.2 commands remain in CP/M 3.0, as well as a few new ones that parallel IBM PC-DOS. It would take more space than this review permits to describe all of the differences in CP/M 3.0. Suffice it to say that the latest advances in CP/M are covered extensively in the 1000 or so pages of system documentation supplied with the Gold Card.

For those who are professional assembly language programmers, or

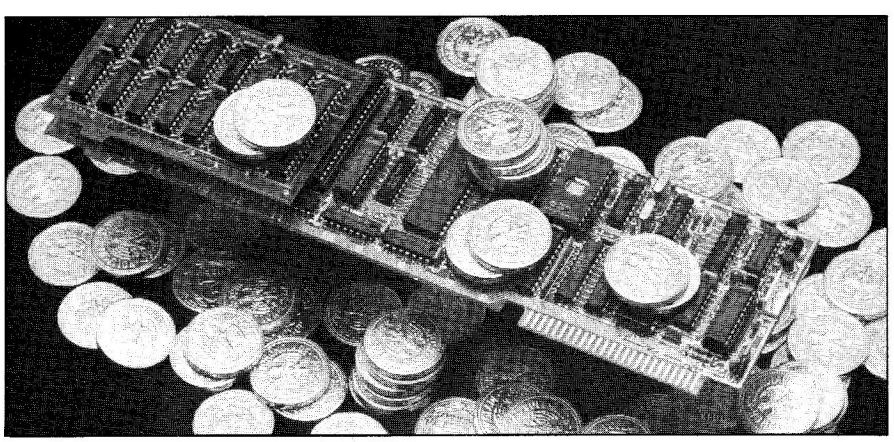


Table 1. *dBase II test results.*

Test 1: .DO LF (125 seconds, 2 sorts, 1 print)

Program Activity	Time Elapsed (seconds)		Time Ratio
	CP/M 2.X	Gold Card (3.0)	
Initialization, create two temporary files	70	41	1.7
Display one file on monitor	72	70	1.02
Clean up, erase temporary files	55	21	2.6

Test 2: .DO RTTY (125 records, 2 sorts, 1 print)

Program Activity	Time Elapsed (seconds)		Time Ratio
	CP/M 2.X	Gold Card (3.0)	
Initialization, create two temporary files	87	73	1.19
Display one file on monitor	117	114	1.02
Clean up, erase temporary files	51	25	2.04

have aspirations in that direction, a complete set of tools, including both 8080/8085 and Z-80 assemblers and debuggers, with relocation and macro capability, comes documented in the package for immediate use. Also included are some novel examples of synthesizing completely new machines, with nonexistent microprocessors and languages, using the macro capability.

A Little Tarnish on the Gold

There are a few little problems with the Gold Card package, and perhaps one big problem. First of all, the card seems to run much warmer than the two or three cards it replaces, and the video character generator produces a large margin on the top of the monitor that might require you to reduce the vertical size of the display to avoid losing the last line. Digital Research says this problem results from a compromise to allow use with many monitors, but in any case the slightly reduced character size does not seem important.

If you want to run 80 columns in Applesoft or Apple Pascal, you still need a Videx 80-column board or its equivalent, and its installation may turn out to be incompatible with the Gold Card without manually plugging and unplugging boards and chips whenever you change system operation.

The largest problem seems to be the result of a little competition between Digital Research and its licensee, Microsoft. MBASIC, the CP/M version of BASIC, is a Microsoft product, and its use on the Gold Card without code conversion does not seem possible. You will not be able to run MBASIC programs on the Gold Card with the version of MBASIC.COM that came with your CP/M 2.X system.

There are two possible ways to get around this problem. One rather distasteful alternative is manual conversion of each program to the compiled BASIC (CBASIC) supplied with the Gold Card. The other is to use one of the code translators, made by independent software houses, specifically designed to make old MBASIC compatible with CBASIC systems. In any case, you will no longer be able to just type in a few MBASIC statements and RUN to get a result. Unfortunately, this incompatibility appears to extend to other Microsoft products such as MultiPlan as well, so caution is advised.

What You Get for Your Gold

You get speed in many applications. The CP/M 3.0 operating system is better than older versions, and some commands such as PUT and GET add to its UNIX-type capabilities. The hardware quality is undeniably good, and the assembly language package is of professional quality. Such features as a HELP menu that you can add to and a READ.ME file with the latest corrections to the manuals augment the ease and convenience of using the package. An Apple II computer with a Gold Card installed is as powerful and useful a business computer as any MS-DOS or PC-DOS machine. ■

Paul M. Danzer
Norwalk, CT

Ricoh RP1200N Daisy-Wheel Printer

Ricoh of America, Inc.
5 Dedrick Place
West Caldwell, NJ 07006
Daisy wheel printer
$895
★★★

The Ricoh daisy-wheel printer (RP1200N) produces excellent letter-quality text at about 18 to 20 characters per second.

A notable feature, its "double" daisy wheel, prints more than the usual number of characters. The wheel has two characters on 60 of its 64 spokes. The bonus characters vary with the particular daisy wheel. The one I used included various accented letters, a dagger (†), trademark and copyright symbols, the fractions ¼, ½, and ¾, paragraph and section symbols, and double underscoring. (Of course, some word processors cannot send the character codes that print these special characters.)

Convenient, touch-sensitive front-panel controls lie along a flat strip:

- Pause places the printer on-line and off-line.
- Error clears certain error conditions.
- Space selects 10, 12, or 15 characters per inch or proportional spacing.
- TOF (Top of Form) advances the paper to the next page.
- Line Feed advances the paper by 1/48 of an inch, or continuously if held down.
- Reverse Line Feed reverses the paper in the same way.

Two levers near the right platen knob control the platen's grip on the paper and move the paper bail in or out, so you can feed paper through without opening the cover to lift the bail. Pin- or tractor-feed mechanisms are optional. Single sheets are easy to start and feed reliably.

The power switch is on the back panel. DIP switches for setting baud rate and protocol for the built-in serial interface are recessed, but easily accessible. A slide switch initiates self-testing.

Under the cover are two other controls: a three-position lever for strike intensity and a four-position lever for various paper thicknesses. You can replace the ribbon cartridge and the daisy wheel here easily and quickly.

In operation, the RP1200N is an able performer. For a daisy-wheel printer, its speed—about twice as fast as the slowest, but less than half the speed of some faster models—is quite tolerable. Its 512-character buffer frees up your computer for other work about a half minute before printing is done.

The printer's programmable features are fairly standard. You can program line spacing by increments of $1/48$ of an inch and character spacing by $1/120$ of an inch. Commands for forward and reverse half-line feeds are convenient for subscripting and superscripting.

Other codes control automatic underlining, bold printing, and shadow printing (two strikes $1/120$-inch apart). You can set form length (lines per page) and left and right margins, and send codes to initiate the self-test and reset all options to their initial settings. You can even program strike intensity, proportional character spacing, and ribbon feed for each character on the print wheel.

The documentation serves as a reference or technical guide, but not as a novice user's guide. The 70-page manual is nicely printed and illustrated with professional photographs, drawings, and charts. The first sections on installation basics are complete, but later sections organize information in tables and unexplained definitions. These sections are helpful if you already know about serial protocols, control codes, and the like, but if you don't, you'll find them cryptic, intimidating, and unhelpful.

The Ricoh RP1200N performs as you would expect a daisy-wheel printer to perform. It's rugged but not especially quiet. The extra characters on its print wheels give it an edge over other printers if you need to print foreign languages or special symbols. I recommend it as an exceptionally versatile, medium-speed, letter-quality printer. It sells for $895, and is manufactured by Ricoh of America, Inc., 5 Dedrick Place, West Caldwell, NJ 07006. ■

Jon Voskuil
Milford, NH

FingerPrint

Precision Software, Inc.
4747 N.W. 72nd Avenue
Miami, FL 33166

Printer interface card
$149

★★★★

The FingerPrint Parallel Printer Interface isn't just another expansion device for the Apple II, II Plus, and //e: This plug-in card works even when the software you're using doesn't support output to a printer.

Compatible with Apple dot-matrix, Imagewriter, C.Itoh, Spirit MT-80, Epson, Okidata, Quadjet, IDS, and Canon and Radio Shack color ink-jet printers, FingerPrint also supports the Prisma printer, with a special cable, or modification of the one supplied. All hardware configurations (printer and type of Apple II) are DIP-switch selectable.

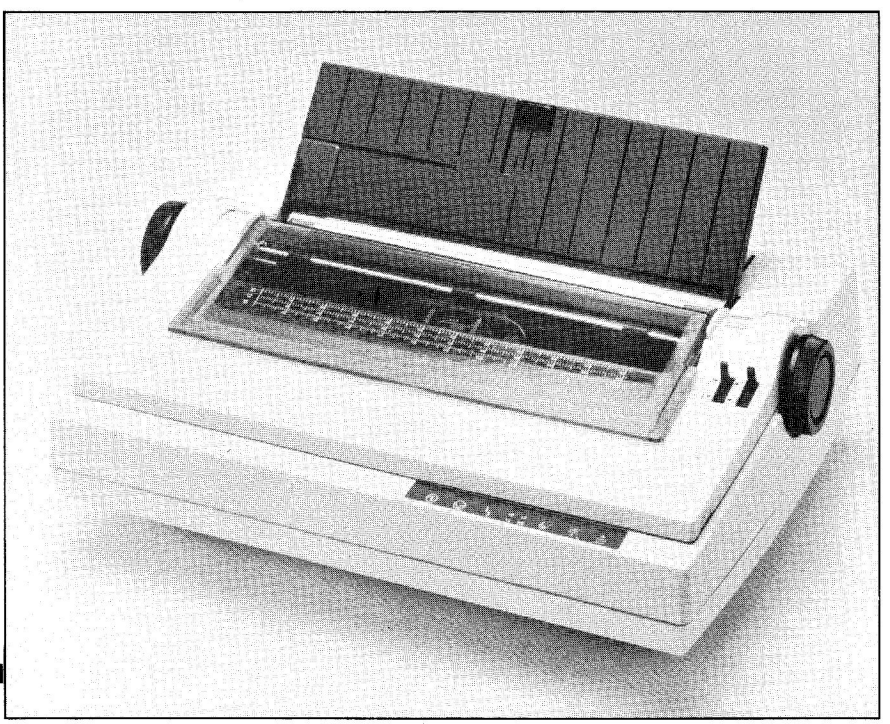
Installation is a matter of setting the switches, plugging the card into a slot, connecting the cable, and mounting the action button on the casing's exterior—all in about 15 to 20 minutes.

Depressing the action button freezes the current program and provides new functions for keys zero through 9, making them the immediate-mode heart and soul of FingerPrint (see **Table 2**).

The quick, one-way trip to the Apple monitor via key 6 (see **Table 2**) is useful for debugging programs at crash sites, since you can't resume the program directly through FingerPrint commands.

FingerPrint has a 2K RAM chip for custom applications. For maximum customization, you can replace the 2K ROM with an additional 2K RAM chip, but then you must program all housekeeping routines independently.

Using the card's full potential, you can make many changes during a heavy work session. Resetting individual parameters to their pristine



conditions would be a tedious task, but pressing key 8 returns you automatically to the default settings.

You can change background and foreground colors to black, orange, green, yellow, violet, magenta, cyan, or white; inverse and adjacent modes are available for graphic dumps. Line-feed, margin, linewidth, page-length, and automatic pagination parameters can be set.

The 28-page manual covers installation, operation, control command summary, and an overview of the programs included in the package. One section covers using RAM memory for tailor-made operations such as pre-boot programs for the user-written software. The appendices include a brief troubleshooting segment, a wiring diagram defining pin use of the FingerPrint connector, and command and numeric key summaries.

The installation instructions are well written and illustrated. The only problem is that the directions, easy to understand separately, are not organized coherently and require three or four readings.

FingerPrint's capabilities make it a great tool for producing enhanced business reports, presentations, or documents that need a professional appearance.

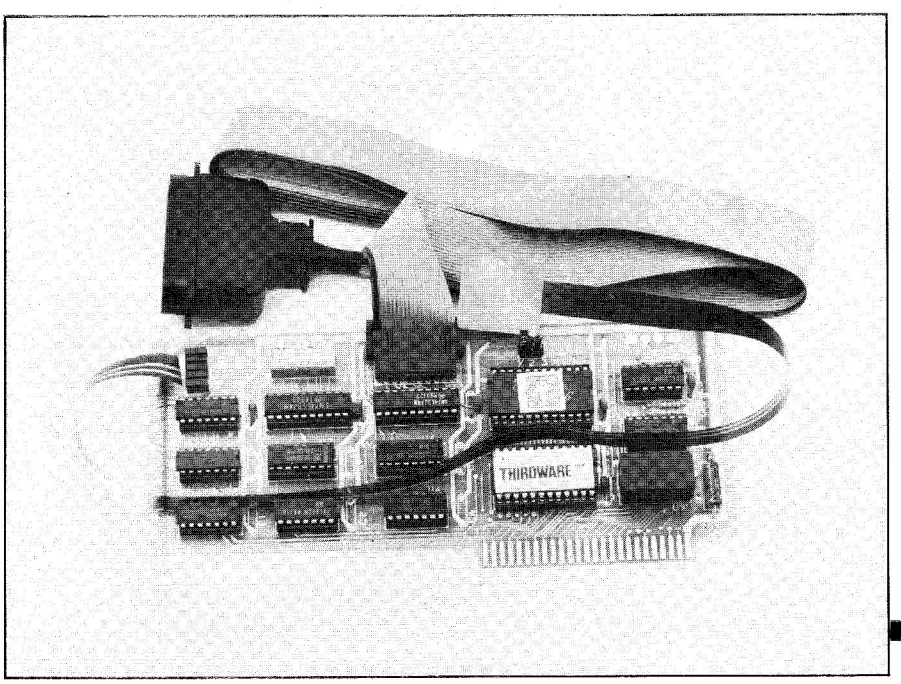
Don't overlook its gaming potential, either. Whether for text or arcade-style entertainment, FingerPrint can freeze the action, and produce hard copy at any stage. For the text-only or illustrated-text adventures lacking a print function, FingerPrint provides an invaluable record of events, actions, and reactions. It also is a tremendous aid in mapping mazes, dungeons, and towers.

Easy to use and covered by a two year warranty, the FingerPrint Parallel Printer Interface is a value at the suggested retail price of $149. The unit is manufactured by the Thirdware Computer Products Division of Precision Software, 4747 N.W. 72nd Avenue, Miami, FL 33166.■

Ted Salamone
Bridgeport, CT

Table 2. *All FingerPrint's special functions work within programs as well as in the direct mode invoked by pressing the 5 key.*

Key	Function
0	Resumes the active program
1	Sends entire 40-column text area to printer
2	Sends entire 80-column text area to printer
3	Dumps hi-res graphics (page one); also handles lo-res mode with special keystroke command sequence
4	Dumps hi-res graphics (page two)
5	Accesses printer directly (to label previously printed charts, graphs, and other illustrations)
6	Goes to the monitor
7	Accesses FingerPrint's 2K RAM chip
8	Returns automatically to default settings
9	Prints double hi-res graphics



Drum-Key

PVI
1 Great Valley Parkway E.
Malvern, PA 19335

Sound synthesizer
$139.95
★★★

Think about all you are able to do by combining the 26 letters of the English alphabet. You will then be in a good frame of mind to think about what you can do with the 28 digitally-recorded percussion sounds of Drum-Key. The percussion set includes cymbals (crash, ride, various hi-hats), finger snaps, cow bell, tambourine, rimshot snare, claves, and six electronic sounds. Also included are two types each of hand claps, tom-tom, conga, snare, and bass drum. You can compose simple rhythm patterns or arrangements far too complicated for any real solo drummer to play. You'll hear how it sounds, though, because Drum-Key will play anything you create.

The Drum-Key package consists of the system disk, a card to install in your Apple II, II Plus, or //e, and an operating manual. You are expected to have a stereo and an audio cable for connecting it to the card's jack. By "stereo" the company means does your system accept an external signal, amplify it, and feed it to a speaker.

Booting the disk makes the utility menu appear. The first choice takes you to the main program of Drum-Key and your screen exhibits the Score Display. If you are in a hurry to hear all 28 sounds, press the escape key and your screen switches to the Keys Display. You can instantly see which key creates the sound you want. When you press the key, the sound is heard and the key's screen image flashes.

Judging sounds is very subjective, so I turned to a professional drummer for his opinion of Drum-Key. While refusing to comment on the six electronic sounds, he declared all the others to be "the real thing." He explained that no two drummers sound exactly alike because of slight differences in equipment and tech-

nique, but that the sounds of Drum-Key were definitely "representative."

After hearing the individual sounds, listen to some rhythmic patterns. Such patterns are typically several measures of Drum-Key's sounds. A pattern library of 40 pre-recorded professional patterns can be extended as you invent and save your own patterns.

As you listen to patterns you can familiarize yourself with the Score Display. Sixteen horizontal staff lines appear, each labeled with its sounds and keyboard locations. On these lines, percussion event markers form a pattern. A cursor moves steadily from left to right; as it lines up with each event marker the appropriate sound occurs. In a lower corner a bright square acting like a metronome moves back and forth. The selected pattern repeats until you stop it. While the pattern is playing, you can use the keyboard to make accompanying sounds.

A number of control functions await your command. You can regulate the tempo, since the metronome rate is adjustable. If you pick a pattern from the library and enter the edit mode, you may add or delete anything you want and then save this personalized version. The big advantage of the edit mode is that every move you make is at your own pace. You can take all the time you want to decide on the next step, or back up and change something that occurred earlier.

The recording mode is more demanding. As each measure flows by, you must hit the key for each sound at the right moment. This would be practically impossible if Drum-Key didn't have the control functions. By turning the tempo down, you can operate in "slow motion." The timing would still be ragged if it weren't for the quantization function—a timing window of adjustable size. If your entry is anywhere within it, the event marker is placed automatically at exactly the right spot. But this exactness leads to patterns that sound too precise, too mechanical. This is compensated by the adjustable swing function which affects the emphasis on each beat to give the pattern a truer effect. Since the pattern will loop around until you stop it, you can build it up slowly and add more on each cycle. A wide range of time signatures is available.

With 28 sounds and only 16 lines, the Score Display is handicapped due to duplication and ambiguity. An event marker on line 10, for example, could represent one of the conga drums or one of the electronic sounds, and you can't tell which until the cursor reaches that marker. While this limits how well you can read ahead on an unfamiliar score, it is less serious in constructing or modifying your own patterns. In edit mode, for instance, you can temporarily advance the cursor to hear the sound of any questionable marker.

Creating songs involves developing patterns that follow one another with certain ones repeating at intervals. Short songs can be parts of a larger song. The whole process is facilitated by choosing Song Creation Or Editing from the utility menu.

There is also a song library with labels A to Z. Song S is about 30 measures in which patterns one through six are nicely woven together.

Song G can hardly be called a song. It plays every entry in the pattern library in succession and then repeats. This sequence illustrates how some patterns smoothly follow each other while others sound out of place. Try song G. In under three minutes you will have heard every one of the pre-recorded patterns and gained an impression of what Drum-Key can do.

An advertisement lists a number to call to hear Drum-Key in action. The tape is too brief and its quality is reduced over the telephone lines. I called PVI, the manufacturer of Drum-Key, and learned there is a 30-day money back guarantee, no questions asked. If you think Drum-Key might be to your liking, I recommend you try it.

Drum-Key is a product of PVI, Great Valley Parkway, Malvern, PA 19335. The cost is $139.95.■

Dan Dempsey
Orchard Park, NY

Circle 127 on Reader Service card.

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APPLE EXTRACT

A reprise of the reviews that have appeared in inCider *in the last six months. Prices subject to change without notice.*

★★★★	Superlative
★★★	Above average
★★	Good
★	Not recommended
	Stay away

Software

Access II
★★★
Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014
Communications, August '84.
A sophisticated yet easy to use terminal package. Pro-DOS based. $75.

Accounts Receivable
★★★
BPI Systems, 3423 Guadalupe, Austin, TX 78705
Business, June '84.
Get a handle on your business. This package does what an AR package should. $395.

Alphabet Beasts and Company
★★
Reader's Digest Software, Microcomputer Software Division, Pleasantville, NY 10570
Education, July '84.
Beautiful graphics help youngsters learn how to draw numbers, letters, and strange creatures. $34.95.

Apple Logo II
★★★
Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014
Language, September '84.
More powerful and complete than its predecessor. Requires a //c or a 128K //e. $100.

AppleWorks
★★★★
Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014
Business, July '84.
A superb integrated package featuring a word processor, a spreadsheet, and a data base manager. An excellent value. $249.

BASIC Tutor
★★
Supersoft, Inc., 1713 S. Neil Street, Champaign, IL 61820
Education, August '84.
A solid instructional package for people interested in learning Applesoft BASIC. Schools can take advantage of a multiple copy policy. $99.95.

Break the Bank Blackjack
★★
Gentry Software, 9411 Winnetka Avenue, Chatsworth, CA 91311
Entertainment, July '84.
This program teaches you how to count cards when playing blackjack. $24.95.

Carrier Force
★★★
Strategic Simulations, Inc., 883 Stierlin Road, Building A-200, Mountain View, CA 94043
Strategy game, August '84.
A war game that simulates a number of famous air-sea battles of the Pacific Theater in World War II. A super challenge. $59.95.

Caverns of Callisto
★★
Origin Systems, Inc., P.O. Box 58009, Houston, TX 77258
Arcade game, June '84.
It's a long walk (400 million miles) back to Earth if you don't find the parts stolen from your spaceship. $34.95.

Chivalry
★★★
Weekly Reader Software, 245 Long Hill Road, Middletown, CT 06457
Arcade game, June '84.
Beautiful graphics enhance this game set in days of yore. A great game for kids. $49.95.

Circascript
★★★
Circadian Software, Inc., Box 1208, Melbourne, FL 32902
Word processor, May '84.
A low cost WP with a lot of professional features. Ideal for students and small businesses. $39.95.

The Coveted Mirror
★★
Penguin Software, 830 4th Avenue, Geneva, IL 60134
Adventure game, August '84.
An adventure game with some arcade features included. Be careful—King Voar is watching! $34.95.

Create-A-Test
★★
Create-A-Test Company, 80 Tilley Drive, Scarborough, Ontario, Canada M1C 2G4
Education, September '84.
Teachers can save a lot of time with this test authoring system. Question disks are also available. $89.95.

Cubit
★★
Micromax, 6868 Nancy Ridge Drive, San Diego, CA 92121
Arcade game, May '84.
An Apple clone of Q-Bert. Explore the mysteries of pyramid power. $39.95.

Cut & Paste
★★
Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403
Word processor, May '84.
A lot of features for a little money. A good value for computer novices. $49.95.

Death in the Caribbean
★★
Micro Fun, 2699 Skokie Valley Road, Highland Park, IL 60053
Adventure game, April '84.
Danger lurks everywhere in this hi-res adventure. After playing this, snow won't seem so awful after all. $35.

Disk Quick
★★★
Beagle Bros, Inc., 4315 Sierra Vista, San Diego, CA 92103
Utility, June '84.
Turn the extended 80-column card in your //e into a RAM disk. $29.50.

The Eating Machine
★★★
Muse Software, 347 North Charles Street, Baltimore, MD 21201
Home, July '84.
A cut above the average self-improvement program. The Eating Machine helps you plan a healthy diet. $49.95.

Edu-Ware Fractions
★★★
Edu-Ware Services, Inc., P.O. Box 22222, Agoura Hills, CA 91301
Education, September '84.
Everything you always wanted to know about fractions and decimals. $49.

Electronic Playground
★★
Software Entertainment Company, 537 Willamette Street, Eugene, OR 97401
Education, August '84.
Games for three- to eight-year-olds, including a kaleidoscope, a matching game, and a drawing program. $24.95.

The Factory
★ ★
Sunburst Communications, Inc., 39 Washington Avenue, Pleasantville, NY 10570
Education, July '84.
Designed for fourth through ninth graders, The Factory teaches real problem solving skills in a challenging way. $24.95.

Fraction Factory
★ ★ ★
Counterpoint Software, 7807 Creekridge Circle, Minneapolis, MN 55435
Education, September '84.
An excellent introduction to fractions for young learners. $29.95.

Fraction Fever
★
Spinnaker Software, 1 Kendall Square, Cambridge, MA 02139
Education, September '84.
An arcade game that teaches fraction equivalents. Poor documentation limits the usefulness of the software. $34.95.

Fractions
★ ★ ★ ★
Quality Educational Designs, P.O. Box 12486, Portland, OR 97212
Education, September '84.
A package containing six disks that makes learning about fractions fun. An excellent buy for schools. $175.

The Graphics Magician
★ ★ ★
Penguin Software, P.O. Box 311, Geneva, IL 60134
Graphics, June '84.
A great graphics utility for the Apple. No wonder so many professional game designers use it. $59.95.

Gruds in Space
★ ★
Sirius Software, Inc., 10364 Rockingham Drive, Sacramento, CA 95827
Adventure game, June '84.
Saving the universe can be a chore. A game where all is not what it seems. $39.95.

Gutenburg Jr.
★ ★
Micromation Limited, 1 Yorkdale Road, STE 406, Toronto, Ontario, Canada M6A 3A1
Word processor, June '84.
A powerful and inexpensive program for combining text and graphics. Limited in the hardware it supports. $85.

Homeword
★ ★
Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614
Word processor, July '84.
The use of icons makes this inexpensive package easy for beginners to understand. $69.95.

In Search of the Most Amazing Thing
★ ★ ★
Spinnaker Software, 1 Kendall Square Cambridge, MA 02139
Education, June '84.
An adventure game for children that helps develop reasoning skills and which deemphasizes violence. $39.95.

In-The-Mail
★ ★
el Dorado Software, 350 7th Avenue, Suite 324, San Francisco, CA 94118
Business, July '84.
In-The-Mail gives you 99 different letters for all those times when you can't think of what to write. From sympathy notes to letters of resignation, this package has them all. $60.

IQ Baseball
★ ★
Davka Corporation, 845 North Michigan Avenue, Chicago, IL 60611
Strategy game, May '84.
Baseball trivia fans will eat this one up. So who was the only pitcher to appear in 1000 games? $24.95.

Jeepers Creatures
★ ★
Kangaroo, Inc., 332 S. Michigan Avenue, Suite 700, Chicago, IL 60604
Education, July '84.
A program for preschoolers that lets kids be creative while practicing word recognition and association. $34.95.

Jenny of the Prairie
★ ★
Addison-Wesley Publishing Company, Jacob Way, Reading, MA 01867
Adventure game, August '84.
You take the part of the "plucky pioneer girl" and try to survive the harsh prairie winter. $39.95.

Kids on Keys
★ ★
Spinnaker Software, 1 Kendall Square, Cambridge, MA 02139
Education, September '84.
A game for young children that teaches how to use the Apple keyboard. $29.95.

Kidwriter
★ ★ ★
Spinnaker Software, 1 Kendall Square, Cambridge, MA 02139
Education, July '84.
A good reason why Spinnaker has a reputation for excellence. This program lets young kids create pictures and then write short stories to accompany them. $34.95.

Kinder Koncepts
★ ★
Midwest Software, Box 214, Farmington, MI 48024
Education, September '84.
Six disks containing 30 programs that teach math and reading skills to young children. $175 or $39.50 per disk.

Lancaster
★ ★
Silicon Valley Systems, 1625 El Camino Real, Belmont, CA 94002
Arcade game, April '84.
Bubble blowing space bugs threaten the Earth!!! You are humanity's only hope!!! Oh well, better luck next time. $29.95.

Letters and Words
★ ★
Learning Well/Methods and Solutions, Inc., 200 S. Service Road, Roslyn Heights, NY 11577
Education, July '84.
Games for preschoolers that teach alphabet sequencing, upper/lowercase association, and word/object association. $49.95.

Lode Runner
★ ★ ★
Broderbund Software, 17 Paul Drive, San Rafael, CA 94903
Arcade game, April '84.
You hated them in Star Blazer, you loathed them in Choplifter. Well, the Bunglings are back! Apple Panic was never this much fun. $34.95.

Magicalc
★ ★ ★
Artsci, Inc., 5547 Satsumi Avenue, North Hollywood, CA 91601
Spreadsheet, September '84.
Powerful, flexible, and economical, this spreadsheet is the answer to a VisiCalc user's dreams. $149.

Magic Memory
★ ★
Artsci, Inc., 5547 Satsuma Avenue, North Hollywood, CA 91601
Data base, June '84.
Put your address book on your computer with this easy to use package. Although not very powerful, it does its job well. $99.95.

Masquerade
★ ★ ★
Phoenix Software, Inc., 64 Lake Zurich Drive, Lake Zurich, IL 60047
Adventure game, July '84.
This hi-res game features a wonderful collection of characters and a bewildering array of puzzles that you must solve before you can unmask that arch-criminal, Mr. Topp. $34.95.

Mastering the SAT
★ ★
CBS Software, One Fawcett Place, Greenwich, CT 06836
Education, September '84.
A good preparation for the Scholastic Aptitude Test. $150.

Micro-Math
★ ★
Hayden Software, 600 Suffolk Street, Lowell, MA 01853
Education, April '84.
Four basic math packages for ages four to ten. Good graphics and color. $29.95.

Microzine
★★
Scholastic Wizware, 730 Broadway, New York, NY 10003
Education, June '84.
A disk magazine from the publishers of *Scholastic*. More fun than flipping pages. $39.95.

Murder by the Dozen
★★★
CBS Software, One Fawcett Place, Greenwich, CT 06836
Strategy game, August '84.
A great game for Agatha Christie fans and anyone else who likes a tough problem to crack. $34.95.

Number Commander
★★
ComputerEase, Inc., 1312 W. Cedar Street, Appleton, WI 54914
Statistics, August '84.
A good package for those who store and manipulate a lot of numeric data. $125.

One-on-One
★★★
Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403
Game, July '84.
The best sports game available for the Apple. When Larry Bird and Julius Erving go one-on-one, it's almost as much fun as a Celtics-Sixers playoff game at the Garden. If only they had included a parquet floor. $40.

OPVAL
★★
Calcshop, Inc., Box 1231, West Caldwell, NJ 07007
Personal finance, May '84.
Make a killing in the market with this option analysis program. $250.

Paper Graphics
★★★
Penguin Software, P.O. Box 311, Geneva, IL 60134
Graphics, July '84.
This package lets you print the contents of the Apple hi-res screens. As an added bonus, you can edit the pictures before you print them. $49.95.

Pen-Pal
★★
Howard W. Sams and Company, 4300 W. 62nd Street, Indianapolis, IN 46202
Word processor, April '84.
Inexpensive, and designed for basic letter writing. Easy to learn but not too powerful. $59.95.

Pentapus
★★
Turning Point Software, 11A Main Street, Watertown, MA 02172
Arcade game, April '84.
If you're sick and tired of being kicked around by multi-appendaged aliens, then this game is for you. $29.95.

PFS:Write
★★★
Software Publishing Corporation, 2021 Landings Drive, Mountain View, CA 94043
Word processor, April '84.
Easy to use, and with most of the functions a word processor needs. A great value. $125.

Planetfall
★★
Infocom, Inc., 55 Wheeler Street, Cambridge, MA 02138
Adventure game, August '84.
With Floyd as your boon companion, you'll set out to unravel the mysteries of the lost civilization. Success depends upon your wits and imagination. $49.95.

Plato Fractions
★★
Control Data Publishing, 4455 Eastgate Mall, San Diego, CA 92121
Education, September '84.
A dart game with a difference. This one teaches youngsters about fractions. $49.95.

Plato Whole Numbers
★★
Control Data Publishing, 4455 Easgate Mall, San Diego, CA 92121
Education, September '84.
An arithmetic drill that takes the form of a pinball game. $49.95.

Portfolio
★★
Flexible Software, 134-10 Ivy Drive, Charlottesville, VA 22901
Strategy game, May '84.
So you don't have the money to invest in the market? The thrill of investing without the risk. $64.95.

The Print Shop
★★
Broderbund Software, 17 Paul Drive, San Rafael, CA 94903
Graphics, September '84.
The Print Shop lets you combine graphics and text and print the results on a dot-matrix printer. An excellent program and a lot of fun. $49.95.

Sargon III
★★★
Hayden Software, 600 Suffolk Street, Lowell, MA 01853
Strategy game, August '84.
A worthy successor to Sargon II. Its enhanced features make it a great buy. $49.95.

Speed Reader II
★★
Davidson & Associates, 6069 Groveoak Place, #12, Rancho Palos Verdes, CA 90274
Education, June '84.
Increased productivity is the goal of this software. A good alternative to expensive speed reading courses. $69.95.

Stellar 7
★★★
Software Entertainment Co., 537 Willamette, Eugene, OR 97401
Arcade game, April '84.
Beautiful 3-D graphics and plenty of action make this hunt for the evil emperor Gir Draxon an instant classic. $34.95.

Stickybear Opposites
★★
Weekly Reader Family Software, 245 Long Hill Road, Middletown, CT 06457
Education, August '84.
Colorful graphics teach kids word opposites. For three- to six-year-olds. $39.95.

Term Exec 1.2
★★★
Exec Software, 201 Waltham Street, Lexington, MA 02173
Communications, June '84.
A sophisticated yet low cost communications package for the Apple. Sometimes hard to use, but worth the bother. $79.95.

Think Tank
★★★
Living Videotext, Palo Alto, CA 94306
Idea processor, April '84.
Not just a word processor, this program will help keep your thoughts straight. $150.

Tournament Golf
★★★
Microcomputer Games, Inc., 4517 Hartford Road, Baltimore, MD 21214
Simulation game, August '84.
An excellent sports simulation. Have fun making chip shots with your computer! $30.

Tycoon
★★
Blue Chip Software, 6744 Eton Avenue, Canoga Park, CA 91303
Strategy game, April '84.
A realistic commodity market simulation game. Money doesn't grow on trees, but in soybean fields. $59.95.

VODAC—The Alpine Encounter
★★
Ibidinc, 179 Allyn Street, Suite 607, Hartford, CT 06103
Adventure game, July '84.
A hi-res game of intrigue set in the Swiss Alps. Robert Ludlum would love this game. $39.95.

Word Blaster
★★
Random House, 201 East 50th Street, New York, NY 10022
Education, July '84.
Students in grades two through six will enjoy this reading and comprehension program. You don't have to tell them they can learn from it. $150.

Work Force II
★ ★
Core Concepts, P.O. Box 24157, Tempe, AZ 85282
Home, June '84.
Six programs that help you manage your budget. Includes a checkbook program, a loan analyzer, and a savings analyzer. $29.95.

The Writer
★ ★
Hayden Software, 600 Suffolk Street, Lowell, MA 01853
Word processor, July '84.
A solid, low-cost word processor, The Writer is a scaled down version of the popular Pie Writer by Hayden. $49.95.

Hardware

Amdisk-I Microfloppy
★ ★ ★
Amdek Corporation, 2201 Lively Boulevard, Elk Grove Village, IL 60007
Disk drive, May '84.
An excellent second drive for the Apple. It won't take up a lot of room on your desk. $299.

AppleModem 300/1200
★ ★ ★
Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014
Modem, August '84.
An external modem that provides 300 and 1200 baud operation. Lots of nice features. $495.

Color Plotter
★ ★
Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014
Plotter, May '84.
A four-pen plotter for making charts and graphs. Hampered by a lack of software support. $799.

EXP 500
★ ★
Silver-Reed America, Inc., 19600 S. Vermont Avenue, Torrance, CA 90502
Printer, June '84.
A daisy-wheel printer with 12 cps and a low price. Free yourself from dot-matrix. $599.

Graphics Tablet
★ ★
Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014
Graphics, September '84.
A sophisticated input device for producing high-quality graphics on the Apple II. Not for the casual user. $795.

Juki 6100
★ ★ ★
Juki Industries of America, Inc., 299 Market Street, Saddle Brook, NJ 07662
Printer, June '84.
A low-cost daisy-wheel printer that features 18 cps operation. $699.

Koala Pad
★ ★
Koala Technologies, 4962 El Camino Real, Suite 125, Los Altos, CA 94022
Graphics, May '84.
A low cost alternative to expensive graphics tablets. Comes with software to help you create your own graphics wonders. $125.

L-1000
★ ★
Smith-Corona Consumer Products, 65 Locust Street, New Canaan, CT 06840
Printer, June '84.
Letter quality can be within your budget. This inexpensive daisy wheel printer features 12 cps operation. $595.

Password Modem
★ ★ ★
U.S. Robotics, Inc., 1123 W. Washington Boulevard, Chicago, IL 60607
Modem, August '84.
A 300/1200 baud external modem that is suited especially for advanced home and business communications. $449.

PowerPad and Leonardo's Library
★ ★
Chalkboard, Inc., 3772 Pleasantdale Road, Atlanta, GA 30340
Education, September '84.
A combination hardware and software product that eliminates the need for keyboard input. Ideal for young learners. Pad—$149.95; software—$39.95 per package.

Riteman Printer
★ ★
Inforunner, 1621 Stanford Street, Santa Monica, CA 90404
Printer, May '84.
A low-cost dot-matrix printer. It doesn't have all of the features of a more expensive printer, but it doesn't have a huge price tag, either. $399.

V1200
★ ★
Vista Computer, 1317 Edinger, Santa Ana, CA 92705
Disk drive, April '84.
Up to 6 megabytes of on-line storage for DOS, CP/M, and Pascal. No great speed improvement over standard floppies, but back-up is easier than with hard disks. $1500.

Voice-Based Learning System
★ ★
Scott Instruments Corporation, 1111 Willow Springs Drive, Denton, TX 76205
Education, June '84.
A hardware-software package. It lets you create interactive tutorials that recognize speech input. A system with a lot of potential. $895.

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0080	Adam & Eve Paddles	39.95	27.50
0560	Algebra I	39.95	27.60
0723	Algebra V & VI (2-Disk)	49.95	34.50
1142	Alien Addition (Home)	34.00	26.75
0013	Alpha Plot	39.50	27.25
2598	Alphabet Zoo	29.95	20.70
0434	Apple Cat 2 Modem	389.00	278.10
0151	Apple Mechanic	29.50	20.35
0309	Applewriter 2 Pre-Boot	24.00	16.95
0090	Appli-Card (6 MHZ)	375.00	281.30
0536	Assembly Lines (Book)	19.95	15.35
2905	Axis Assasin	35.00	26.95
0042	Bag of Tricks	39.95	27.65
0501	Bank Street Writer	69.95	48.35
0277	Battle For Normandy	39.95	27.65
0278	Beagle Bag	29.50	20.35
0126	Beagle Basic	34.95	24.20
0658	Beneath Apple DOS	19.95	13.85
0111	Book of Apple Software '84	19.95	12.80
0096	Bookends	125.00	86.40
1676	BPI General Accounting	395.00	273.45
2599	Broadsides	39.95	27.70
0545	Bufferboard-Grappler	175.00	132.55
1682	Buffered Grappler + (16K)	239.00	178.00
0448	Bumble Games	39.95	27.65
2805	Business Accountant 2/2E	255.00	196.15
0228	Castle Wolfenstein	29.95	20.70
0734	CDEX How to Use Apple IIE	59.95	41.50
0733	CDEX Visicalc Training	59.95	41.50
0656	Chart-Macintosh	125.00	86.55
0386	Chess	69.95	48.35
2612	Chivalry	49.95	34.60
0740	Compu-Math/Arith. Skills	49.95	34.50
0654	Compu-Read	29.95	20.70
0743	Compu-Spell System	29.95	20.70
0416	Compuserve Starter Kit	39.95	24.35
1138	Computer Sat (Harcourt)	79.95	62.85
1731	Copy 2 Plus	39.95	25.65
1295	Creature Creator	39.95	27.65
2862	Cubit	39.95	27.65
2910	Cut & Paste	50.00	38.50
0777	Data Capture IIE	90.00	62.35
0059	David's Mignight Magic	34.95	24.00
1265	DB Master Version 4	350.00	242.35
0052	Deadline	49.95	34.50
0189	Decathalon	29.95	20.70
0630	Delta Drawing	49.95	34.60
1143	Demolition Division (Home)	34.00	26.75
2951	Dig Dug	34.95	29.10
1722	Disk Boxes (5 Color Coded)	25.00	12.50
2866	Disk Drive Ext Cable	19.75	16.70
2833	Disk Quik	29.50	20.45
1444	Diversi-DOS	30.00	5.00
0409	Dollars & $ense	100.00	69.25
2939	Donkey Kong	34.95	29.10
0216	DOS Boss	24.00	16.60
0983	Double Take	34.95	24.15
0424	Dow Jones Market Analyzer	350.00	293.75
2877	Drol	34.95	24.20
2600	Eagles	39.95	27.70
0360	Early Games Young Children	29.95	20.75
1384	Echo 2 Speech Synthesizer	149.95	125.60
0811	Einstein Compiler	129.00	89.30
0661	Elementary Apple	14.95	10.35
0092	Elephant Disks SS/DD (10)	37.00	24.35
1337	Elephant Disks SS/SD (10)	34.00	21.15
0729	Enhancer II/Function Strip	215.00	161.30
0107	Epson MX-80 Ribbon 2-Pac	28.00	12.55
0029	Essential Data Duplicator	79.95	52.00
0039	Executive Secretary	250.00	173.10
0314	EZ Port II	34.95	24.20

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0280	Facemaker	$34.95	$24.20
0553	Flex Text	29.50	20.35
2821	Flight Simulator II	49.95	38.05
2918	Flip & File W/Lock (50)	39.95	23.85
1440	Flip-N-File (50 Disks)	29.95	18.85
2796	Fontrix	75.00	64.10
1427	Format II Enhanced	150.00	103.85
0554	Frame-Up	29.50	20.35
1127	Game Show	39.95	31.40
0046	General Manager II	229.95	158.90
0533	Geopolitique 1990	39.95	27.65
0573	Gertrude's Puzzles	44.95	31.15
2843	Global PLE/Beagle Bros	49.95	34.60
0043	Graphics Magician	59.95	41.40
0094	Grappler +	165.00	128.00
2902	Hardhat Mac	35.00	26.95
2880	Hayes Joystick Mach III	54.95	38.05
2817	Hayes Joystick Mach II	44.95	31.15
1437	Head Cleaning Kit	29.95	17.30
0197	Home Accountant	74.95	48.05
2804	Home Word	49.95	34.60
1684	How To Pgrm In Applesoft	49.95	34.60
1589	In Search Of Amazing Thing	39.95	27.60
2853	Incredible Jack	179.00	123.95
2325	Jane W/Mouse	295.00	204.25
0449	Juggles Rainbow	29.95	20.75
1442	Kindercomp	29.95	20.70
0003	Knight Of Diamonds	34.95	24.20
1693	Koala Graph Tablet—Apple	124.95	83.50
2954	Krell Logo	89.95	81.15
2972	Labels—1" White (1000)	9.95	6.75
2890	Learning Bridge Made Easy	79.95	55.35
1463	Legacy of Llylgamyn	39.95	27.65
0050	Letter Perfect	149.95	103.60
0403	Lisa 2.6	79.95	61.75
0310	List Handler	64.95	44.95
0806	Locksmith 5.0	103.50	77.20
0982	Lode Runner	34.95	24.15
0194	Magic Window 2	150.00	103.85
0192	Master Type	39.95	27.65
0089	Maxell MD1 Disks-SS/DD (10)	51.90	28.75
2901	Memorymaster 2E/64K Exp	169.00	140.85
2147	Micro Cook-Appetizers-2E	12.00	8.50
2146	Micro Cook-Soups/Salads-2E	12.00	8.50
0437	Micro Cookbook	40.00	27.65
2148	Micro Cookbook IIE	40.00	27.65
0692	Microline 92-P Printer	599.00	CALL
1509	Microline Ribbon	3.20	2.20
2958	Microline Tractor Feed	65.00	57.70
2802	Micromodem IIE W/Smartcom I	329.00	246.75
0627	Microsoft Basic-Mac	150.00	103.85
1347	Millionaire	59.95	41.50
1135	Minus Mission (Home)	34.00	26.75
1124	Mockingboard	129.00	105.50
1400	Moptown Hotel	39.95	27.65
0580	Multiplan (Apple DOS)	250.00	173.10
0655	Multiplan-Mac	195.00	135.00
2903	Music Const. Set	40.00	30.75
0101	NEC 1215 Color Monitor	399.00	333.35
0240	NEC 8023 Printer	499.00	432.90
0273	NEC 8023 Ribbon 2-Pac	19.95	17.10
0423	Nibble's Away II	69.95	53.25
0179	Old Ironsides	39.95	27.65
2908	One On One	40.00	30.75
1328	Orange (AC Surge Protect)	139.95	96.90
1531	Orca/M	149.95	103.80
2941	Pac-Man	34.95	29.10
2893	Paral' Printer Ext. Cable 6'	34.95	21.80
0635	Parallel Interface W/Cable	139.50	62.85
0616	Personal Touch	89.00	70.55
1413	PFS File IIE	125.00	85.95
1415	PFS Graph IIE	125.00	85.95
1414	PFS Report IIE	125.00	85.95
0372	PFS Solutions/Ledger 2E	20.00	13.85
2809	PFS Write IIE	140.00	96.95
0650	PI-3 12 in Amber Monitor	249.00	162.00
0495	Pie Writer 2.2 (40/80)	149.95	103.85
2907	Pinball Const. Set (E.A.)	40.00	30.75
1292	Pkaso-Universal Intrface	175.00	132.60
0659	Power of Visicalc	14.95	10.35
0584	Preschool IQ Builder 1	23.95	16.60
0461	Pronto DOS	29.95	20.35
1279	Prowriter Nylon Ribbon	13.50	4.50
1446	Q-Disk Emulator	529.00	363.10
0047	Quest	34.95	24.20
2111	Ramcard 16K (MPC)	99.00	60.25
0634	Ramcard 16K Microtek	129.00	71.55
0955	Ramcard 16K Prometheus	99.00	56.55
1386	Ramcard 16K Wizard	95.00	62.85
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0574	Rocky's Boots	49.95	34.60
0195	Sanyo 5500 Printer	995.00	728.90
0561	Sat Word Attack Skills	49.00	33.90
1303	Saturn 128K RAM Board	499.00	374.30
0133	Screenwriter II	129.95	89.00
0041	Sensible Speller IV	125.00	86.50
0400	Silicon Salad	24.95	17.25
1416	Smith Corona TP1 Ribbon	7.95	6.35
0465	Snooper Troops 1	44.95	31.15
0138	Softcard	345.00	253.00
0271	Software Automouth	124.95	86.35
0250	Spellagraph	39.95	27.65
1291	Spellicopter	39.95	27.65
0631	Spelling Bee Games	39.95	27.70
0274	Spy's Demise	29.95	20.75
2030	SSM Transend 1	89.00	67.85
2906	Standing Stones	40.00	30.75
1277	Starwriter Film Ribbon	5.50	4.50
0435	Step-By-Step	89.95	62.30
1447	Step-By-Step II	89.95	62.30
0100	Sticky Bear A B C	39.95	27.65
0099	Sticky Bear Numbers	39.95	27.65
0292	Story Machine	34.95	24.20
1374	Sup'r Mod—Universal	69.95	53.05
1445	Supertext Pro (40/80)	175.00	121.15
0001	System Saver	89.95	69.20
1259	Taxan 12 in Amber Monitor	189.00	138.65
1258	Taxan 12 in Green Monitor	179.00	131.60
1528	Taxan Color Mntr W/Audio	399.00	305.50
0236	Terrapin Logo	149.95	103.85
0137	TG Game Paddles	39.95	27.65
0136	TG Joystick W/Toggle	59.95	41.50
1330	TG Joystick W/Toggle IIE	64.95	45.00
1730	The Accountant	99.00	64.10
2597	The Accountant—VCalc Intfc	20.00	15.40
0462	Tip Disk #1	20.00	13.85
1281	Trunk Floppy Storage	29.95	21.50
0544	Typefaces	20.00	13.85
0155	Typing Tutor 2	24.95	17.30
2836	Ultima 3 (Exodus)	54.95	38.05
0559	Ultraterm	379.00	284.30
0072	Ulysses & Golden Fleece	34.95	24.00
0062	Utility City	29.50	20.35
2992	Verbatim DS/DD (10)	46.50	37.20
1721	Verbatim SS/DD Hardpack	35.00	27.60
0093	Verbatim SS/DD Softpack	34.00	26.95
0063	Versaform	389.00	263.00
0361	Versaform Inv. Template	49.95	34.60
0648	Videoterm W/SS & Inverse	319.00	247.05
2900	Viewmaster 80 Column	169.00	140.80
2152	Visible Computer-6502	49.95	46.90
0150	Visicalc (Special)	250.00	172.00
1422	Visicalc IIE (Special)	250.00	172.00
0422	Visicalc Pre-Boot	49.00	33.95
0077	Visitrend/Visiplot	300.00	225.00
1480	Wico Analog Joystick	49.95	38.40
2936	Wildcard 2	139.95	107.10
2937	Wildcard Plus	169.95	130.50
0145	Wizard & Princess	32.95	22.75
0144	Wizardry	49.95	34.60
0984	Wizplus	39.95	27.60
1532	Wizprint	24.95	17.30
0284	Word Handlers Pkg.	169.95	117.65
0342	Word Juggler IIE W/Lexicheck	189.00	157.50
0249	Z-80 Plus Board	139.00	124.75
0521	Zaxxon	39.95	27.60
0296	Zork I	39.95	27.60
0141	Zork II	39.95	27.60
0379	Zork III	39.95	27.60

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CALENDAR

October 2–4
Mini/Micro Northwest-84 Computer Conference and Exhibition
Seattle, WA
contact:
Electronic Conventions Management
8110 Airport Blvd.
Los Angeles, CA
(213) 772-2965

October 4–7
Rocky Mountain Regional Computer Show & Software Exposition
Denver, CO
Contact:
CompuShows, Inc.
P.O. Box 3315
Annapolis, MD 21403
(800) 368-2066

October 6
Computer Conference for Educators
Indianapolis, IN
contact:
Carol Vodde
ICE Conference '84
1200 South Barr Street
Fort Wayne, IN 46802
(219) 425-7602

October 9–11
Southwest Computer Conference
Tulsa, OK
contact:
E. Z. Million
Southwest Computer Conference
P.O. Box 950
Norman, OK 73070
(405) 329-3660
(918) 587-9550

October 12–14
USUS National Meeting
Toronto, Ontario
contact:
Dan Merkling
P.O. Box 11881
Salt Lake City, UT 84187
(801) 969-7041

October 12–14
Heart of Texas Computer Show
San Antonio, TX
contact:
Heart of Texas Computer Show
P.O. Box 12094
San Antonio, TX 78212
(512) 681-2248

October 12–14
Great Southern Computer Show
Orlando, FL
contact:
Chris Paul
P.O. Box 655
Jacksonville, FL 32201
(904) 743-8000

October 15
dBase II Seminar
Chicago, IL
contact:
Software Institute of America, Inc.
8 Windsor Street
Andover, MA 01810
(617) 470-3880

October 18
Introduction to Computers
Princeton, NJ
contact:
Computers in Education Seminars
01-T
Educational Testing Service
Princeton, NJ 08541
(609) 734-5607

October 25-26/27-28
Effective Utilization of Microcomputers
Atlanta, GA
contact:
Phil Harrison
Institute of Industrial Engineers
25 Technology Park/Atlanta
Norcross, GA 30092
(404) 449-0460

October 25–28
Twin Cities Computer Show & Software Exposition
Minneapolis, MN
contact:
CompuShows
P.O. Box 3315
Annapolis, MD 21403
(800) 368-2066

October 29–November 1
COMDEX/Europe
Amsterdam,
The Netherlands
contact:
Peter B. Young
The Interface Group
300 First Avenue
Needham, MA 02194
(800) 325-3330
(617) 449-6600

October 30–November 2
EDUCOM '84
Cambridge, MA
contact:
Kathy Schaible
EDUCOM
P.O. Box 364
Princeton, NJ 08540
(609) 734-1549

November 1–4
Northeast Personal and Business Computer Show
Boston, MA
contact:
Northeast Expositions
822 Boylston Street
Chestnut Hill, MA 02167
(617) 739-2000

November 2–4
Jacksonville Business and Computer Showcase
Jacksonville, FL
contact:
Chris Paul
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Jacksonville, FL 32201
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November 3
Fourth Annual Educational Computing Conference
Plymouth, NH
contact:
Peggie Riley
Computer Science Department
Plymouth State College
Plymouth, NH 03264
(603) 536-1550, ext. 533

November 4–7
Symposium on Computer Applications in Medical Care
Washington, DC
contact:
Gerald S. Cohen
SCAMC-Office of CME
George Washington University Medical Center
2300 K Street, N.W.
Washington, DC 20037
(202) 676-8928

CALENDAR (continued)

November 6–8
Great Southern Business and Computer Show
Tallahassee, FL
contact:
Chris Paul
P.O. Box 655
Jacksonville, FL 32201
(904) 743-8000

November 7–9
Datacommunications and Networking for Personal Computers
Los Angeles, CA
contact:
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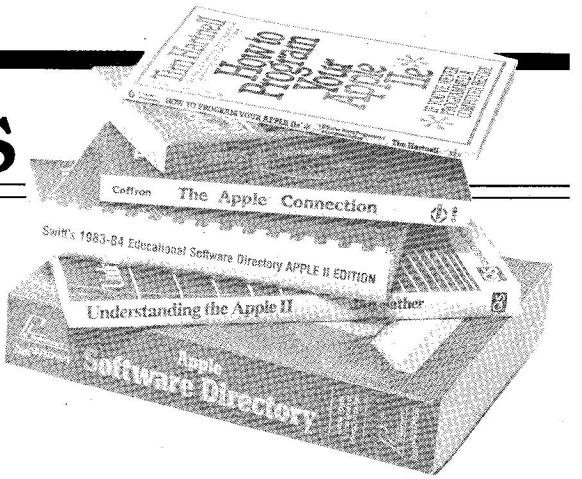

Pascal Programs for Business

by Tom Swan

Hayden Book Company
50 Essex Street
Rochelle Park, NJ 07662

Softcover, $15.95
with two disks, $59.95

This book, offered with or without disks, is an example of what book and software stores are going to offer in the future. Tom Swan provides 28 business related programs in UCSD Apple Pascal that include a simple spreadsheet, a program for computing financial ratios, a bar chart, and a series of programs that serve as an enhancement to using the UCSD editor as a word processor. All of the programs are listed in the text along with a brief introduction. The author encourages you to make modifications in the programs.

The disk version makes sense if you don't have the time to type in and experiment with the programs (once you have reviewed the supplement and made the prescribed changes in disk space). The programs operate with one disk drive, but a second drive means you won't have to keep switching disks.

This is not a book for the novice learning to run Apple Pascal. It assumes the reader understands both the Apple II and UCSD Pascal. The programs demonstrate not only the efficiencies of the Pascal system on an Apple II but also some of the limitations. For example, many of the programs require routines from a unit called XTRASTUFF.TEXT, which must be installed in the library. To make disk space for this, you are reminded to remove old files before attempting new ones and if necessary, to remove SYSTEM.EDITOR and SYSTEM.LIBRARY to make space available.

If you use your Pascal editor as a word processor, this book will give you a word processor program library. These programs are not a substitute for other specialized programs, but if you like to write your own, they offer a good foundation. Pascal is readable and easy to modify for programmers. The business executive will probably stick to the more commercial software. ■

David B. Hoffman
Marquette, MI

Executive VisiCalc for the Apple Computer

by Roger E. Clark

Addison-Wesley
Publishing Company
Reading, MA 01867

Softcover, $14.95

The primary goal of this book is to enable managers, planners, and small-business people to use their Apple computers with VisiCalc more effectively.

The author assumes that the reader has already read at least the first four lessons of the *VisiCalc User's Guide*. An appendix contains tips for beginners (some old hands could benefit from them) on how to get up to speed rapidly on VisiCalc.

After some general hints and a discussion of the limitations of Apple II in working with VisiCalc, the book gets down to the subject at hand with a short but very instructive chapter on how to construct formulas to be used in a VisiCalc model, template, or matrix. All formulas are described in plain English, for example, "If the value of D6 equals zero, then insert here a zero, otherwise. . . ."

The author proceeds to introduce a relatively simple VisiCalc model, or template: a cumulative financial statement for several loan accounts. The book also introduces the reader to the power and use of the Boolean logic capabilities of VisiCalc.

Three other powerful tools provide the reader with great versatility and instant results after introducing variables into a model. The use of *overlays*—barely mentioned in the *User's Guide*—makes it possible to load one template over another so that the two blend into one. This feature can be further enhanced by the use of *variables* and *windows* to get immediate answers on the monitor screen at the end of a report.

The chapter on the development of a simple bookkeeping system is marred by many of the coordinates and formulas given in the text not corresponding to the coordinates in the figures, or templates provided as examples. Some figures do not have row numbers, making it impossible to establish the required precise relationship between text and figure. These mismatches and omissions should be corrected in the book before wide distribution.

This defect is balanced by the excellent chapter, Manipulating the Calendar, in which the author describes in detail, with template figures, how to construct an automatic calendar model that will provide precise dates for a schedule of events with a minimal amount of required input information. In the model, all that is required is a start date, end date, and completion time for each event. The model then verifies the input dates to ensure

"Most esoteric features of VisiCalc should be easily grasped by the non-programmer."

that an unacceptable value has not been input: for example, a thirteenth month, 31 days for a 30-day month, and even whether it is a leap year. Then the model computes the start and end dates for the events that must be completed before the overall project is completed. Finally, it prints out a full schedule of events with the day of the week and the date for start and completion for each—a Milestone Chart.

Executive VisiCalc is so well written that even some of the most esoteric features of VisiCalc such as Boolean functions should be easily grasped by the non-programmer, for whom the book is intended. And the chapter on how to construct an automatic dating model or template, which can be incorporated into virtually any model either directly or by overlay, is worth the cost of the book. ■

R. A. Bowling
San Diego, CA

Using Apple Business Computers

by Kenniston W. Lord, Jr.

Van Nostrand Reinhold Company
135 West 50th Street
New York, NY 10020

Softcover, $14.50
Cloth, $20.50

This book is grossly misnamed: it should have been titled *Using Apple /// Business BASIC*. The book concentrates on using business BASIC to create programs that might prove useful for small businesses. No information about the Lisa, the Macintosh, or Apple //e is included, nor is the use of any commercial software for the Apple /// discussed. Pascal and COBOL rate a scant two sentences.

Better editing would have greatly helped this book by not permitting topics like "Is There A Computer In Your Future?" Like the book itself, several chapters are misnamed: for example, a chapter entitled "How Computers Work" is just an attempt to touch on aspects of the Apple /// operating system, SOS, before jumping into programming in BASIC.

A significant portion of the book recasts the Apple /// Business BASIC manuals, which were not without typesetting errors. Unfortunately, this book is also fraught with mistakes ranging from incorrect pathnames (/D2/ instead of .D2/ to designate the second disk drive) to punctuation errors for variable lists following INPUT statements.

An errata sheet pasted to the first page of the book informs the unsuspecting reader that listing a BASIC program to the printer is accomplished by entering]LLIST. This will not work on an Apple ///. Perhaps Mr. Lord, who has written books on other computers, became confused as to which machine he was discussing.

The author's apparent unfamiliarity with the Apple /// shows again in his claim that "the requirements of the Apple /// for printer output place the need to open and close the printer file with each line to be printed." While this will work, it is very inefficient and slow. Instead, the printer driver may be assigned a file number (OPEN #1 AS OUTPUT,".PRINTER") at the beginning of the program and all output for the printer can be routed to that driver (PRINT #1; variable list). After printing is complete, the printer driver file can then be closed (CLOSE #1).

The programs comprising a third of this book appear to be free from error, although they contain so many GOTOs and GOSUBs per page that they would give nightmares to a structured programmer. Much of the programming appears to have been adapted to the Apple /// from programs written for other computers, since they do not use some of the

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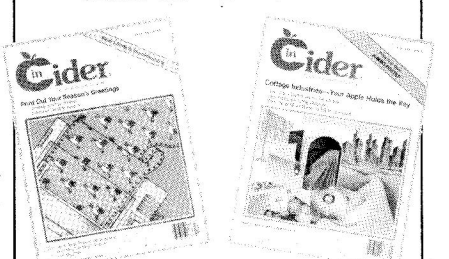

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Apple ///'s features in an efficient manner.

Sorting routines in this book are bubble sorts, with the exception of a bare bones Shell-Metzner sort given as a postscript. The author takes pride in his bubble sort taking 53 hours for a two field sort of 507 records, while the version of the Shell-Metzner sort shown took only 80 minutes. Many techniques could have reduced the sort time dramatically.

The utility of this book is questionable. Few businesses can afford to devote a valuable employee's time to typing in large programs obtained from a book. It is usually more cost effective to purchase off-the-shelf software to do the job.

The Apple /// is worthy of a good book extolling its many virtues. This offering doesn't fill the bill. ■

Justin Crom
Littleton, CO

Income from Your Home Computer

by Edward J. Lias

Reston Publishing Company
11480 Sunset Hills Road
Reston, VA 22090

Softcover, $12.95

The author of *Income from Your Home Computer* did his homework: money-making ideas freely flow throughout the book with challenging possibilities for increasing incomes.

It is estimated that two million microcomputers have been bought with no special objective in mind. The author suggests that now is the time to bring out those computers and evaluate their money-making potential.

Lias's 30 income ideas run the gamut from teaching continuing education courses at schools and colleges to selling broken machines for parts.

Income Ideas

If you have a knack for teaching, Lias's research indicates a great need for teachers to instruct microcomputer languages, computer applications, and resources. Computer tutoring is in popular demand by individuals, small groups, and by dealers for customers. Competent teachers with a knowledge of computing should have no difficulty moonlighting. Fees for these services depend upon the expertise and reputation of the teacher.

Are you technically minded? Many new system owners need an experienced computer operator to get their systems humming. School teachers need assistance in connecting their computers with peripheral devices.

Do you like selling? The markets for hardware, software, and sophisticated add-ons are booming. Lias says that next year should produce as much microcomputer business as the past seven years put together.

The software needs of computer users can be supplied from your home or through a book publishing company. Computer manufacturers are constantly looking for good programs to enhance the appeal of their hardware. Another idea would be starting a software store yourself.

Do you enjoy secretarial work? The author suggests that you provide word processing services to local businesses or students. This could be a lucrative part-time job for the trained secretary looking for work at home.

Mr. Lias gives several tips on how to get started. An appendix in the back of the book provides excellent resource material.

A pot of gold may not be hiding in your computer's microchips as the author suggests, but coupled with initiative and determination, your computer can provide more money than the cookie jar would hold. The author did forget one money option added here: reviewing books written about computers.

Income from Your Home Computer is worth reading. It is a practical book as well as an inspirational one. ■

Lisa Garland
Stockbridge, GA

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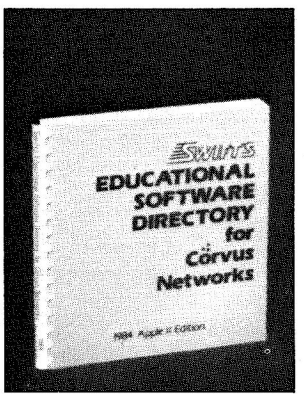
NEW PUBLICATIONS

Networking Software

The *Educational Software Directory for Corvus Networks* lists software titles, from nearly 100 educational publishers, that work with the Corvus networking system. It is available for $14.95 from Sterling Swift Publishing Company, 7901 South IH-35, Austin, TX 78744.



Meet TESS

TESS (The Educational Software Selector) is a comprehensive source of information about educational software for microcomputers. Created by the Educational Products Information Exchange Institute, it contains more than 6000 software products from 500 suppliers. *TESS* is available for $49.95 from Teachers College Press, P.O. Box 1540, Hagerstown, MD 21741.

Product descriptions contained in this section are based on information supplied to us by the respective manufacturers. These announcements are provided solely as a service to our readers and do not constitute an endorsement by inCider *of any given product.*

Librarian's Newsletter

If you are a librarian and need to know what's happening, then the *Wired Librarian's Newsletter*, Micro Libraries, 145 Marcia Drive, Freeport, IL 61032, is available to you monthly for a subscription rate of $15/year.

Micro Clearinghouse

Microcomputer Libraries and the Highsmith Co. announce the beginning of a national clearinghouse for library management applications of general purpose microcomputer software. Effective library management will be promoted by using each library's commercial spreadsheet or data base. Application templates for VisiCalc and DB Master will be available for $5 per single disk or $7.50 per double disk template. For further information, contact Microcomputer Libraries, 145 Marcia Drive, Freeport, IL 61032.

Technical Jargon Defined

The Encyclopedia of Microcomputer Terminology: A Sourcebook for Business and Professional People is a collection of more than 4000 microcomputer terms explained in layman's language. Students, hobbyists, businesspersons, and teachers will find BASIC terms, technical jargon, logic gates, schematic symbols, and more. It is available for $9.95 from Prentice-Hall, Inc., Englewood Cliffs, NJ 07632.

Which Computers Are in the Colleges?

A free directory targeted at college directors and personnel, *The College and University Computer Directory: Facilities and Personnel*, contains information about computer installations at some 1400 colleges in the United States and Canada. For further information, contact King Pound Advertising, Inc., Publishers Representatives, Suite 920, 1030 15th Street, N.W., Washington, DC 20005.

Inmac Catalog

Inmac, supplier of computer accessories, supplies and cables, announced its new 124-page catalog, which contains over 2400 computer products. For a free copy, contact Inmac, Dept. 59, 2465 Augustine Drive, Santa Clara, CA 95051.

Educators' Road Map

Educators looking for a road map to the human side of technology can find help in the *1984 Directory of Resources for Technology in Education* ($12.95 paperback), published by the Technology Learning Center, Far West Laboratory for Educational Research and Development, 1855 Folsom Street, San Francisco, CA 94103. The Directory provides information about national and state associations, resource organizations, state departments of education, computer camps, periodicals, data bases, electronic bulletin boards, hardware companies, summer institutes, conferences, degree programs and funding sources.

Index of Apple Articles

Microindex, a comprehensive index to microcomputer-oriented periodicals, includes title, author, page, length, journal, issue, reader level and rating. The full version is available on a monthly basis to large libraries for $99 yearly; the abridged version is for medium-sized libraries and small businesses ($49); and journal specific ($5–$12 yearly issue) for single users. Contact Serious Personal Computing, P.O. Box 7059, South Nashua, NH 03060, for further information.

Give Kids a Logo Start

Designed to go with the user's own Logo program, *Getting Started with Logo* teaches children basic concepts and improves their problem-solving skills. Included in the program are a training manual teaching the Logo language in 20 steps, 64 pencil and paper activities, and five posters of the Logo commands. The program costs $39 from DLM Teaching Resources Inc., P.O. Box 4000, Allen, TX 75002.

Microcomputers Explained

Career Aids Inc., 8950 Lurline Avenue, Chatsworth, CA 91311, is offering *Micro-Computer Explained*, a free catalog of more than 400 books for the novice as well as the experienced microcomputer user. This is a source of books on computers for schools, businesses, colleges, professions, and homes.

edited by Joan Witham

Critic's Guide to Software

A Critic's Guide to Software for Apple and Apple-Compatible Computers contains information on business software for managers and professionals. It is available for $12.95 from Chilton Book Company, Radnor, PA 19089.

Move Over, Webster and Roget!

The Computer Database Thesaurus & Dictionary, a 290-plus page book for anyone who works with computers, telecommunications or electronics, is available for $102 from Management Contents, 2265 Carlson Drive, Suite 5000, Northbrook, IL 60062.

Comprehensive Software Guide

Keep up on Apple software with the *datapro/McGraw-Hill Guide to Apple Software*. It provides profiles of all major non-game software. The guide is available for $19.95 from McGraw-Hill Book Company, Order Services, Princeton Road, Hightstown, NJ 08520.

Game Maps and Hints from Infocom

Players in need of help in the Infocom series of adventures (Zork, Planetfall, Deadline, etc.) can look to a series of Invisi-Clues hint books and game maps. They are available for $7.95 for each game from Infocom, P.O. Box 855, Garden City, NY 11530.

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Apple Software 1984

The Addison-Wesley Book of Apple Software 1984 ($19.95) lists and evaluates more than 600 of the most popular software packages for Apple computers. For further information, contact Addison-Wesley, General Books Division, Reading, MA 01867.

Computer Curriculum

Data Processing Management Association has designed a curriculum to educate seventh through twelfth grade students about computers and their business applications. Study sequences with accompanying texts are also available for community and four-year colleges. For information, contact John Riester, South-Western Publishing Co., 5101 Madison Rd., Cincinnati, OH 45227.

Minute Manuals

Minute Manuals are extensive books which present needed information to get you started at the highest possible skill level in the shortest amount of time. The *Apple Writer IIe Minute Manual* is available for $7.95 from Minuteware, P.O. Box 2392, Columbia, MD 21045.

Pascal for the Apple

This software/book package ($33) features the Apple Turtlegraphics package, 23 ready-to-run sample and explanatory programs with 200 exercises, an Apple Pascal operating system summary and Pascal procedures, iteration, decision-making and recursion. Contact Prentice-Hall Inc., Englewood Cliffs, NJ 07632, for more information on this Pascal tutorial.

Explore Your Family's Roots

RaeData, Inc. announces its new bimonthly publication, *Micro-ROOTS*, on genealogy. It is written for the micro user, at any level on any micro, who is interested in family roots and history. A subscription is available for $24.95 from Micro-ROOTS, 14208 Weeping Willow Drive, Suite 32, Wheaton, MD 20906.

Forward to the 3C's

The 1983 Microcomputers in Education Conference proceedings, *Forward to the 3C's*, is available for $20 from Arizona State University, College of Education, Payne Hall, 8203, Tempe, AZ 85287. It contains papers presented by speakers on administrative and curriculum applications, programming, computer literacy, research and staff development.

On-Line Data Bases

The Microcomputer User's Guide to Information Online, a collection of more than 100 on-line data bases for home, business, science, news, and education, also tells how to get started and how to perform a search. The guide is available for $18.95 from Hayden Book Company, 10 Mulholland Drive, Hasbrouck Heights, NJ 07604.

@*&!!%# Computers!

This newsletter prints stories of the problems that people have with their computers or software. If your story appears in print, you'll receive $25. Send all stories to Expletive Computers, P.O. Box 553, Mt. Freedom, NJ 07970. Subscriptions are $6 for ten issues.

NEW SOFTWARE

Omnis Family of Data Bases

Three powerful data bases are available that share files and upgrading policy. Omnis 1 ($95) is a file manager for simple needs. Omnis 2 ($195) offers extensive search and report options. Omnis 3 ($295) is a complete data base management system. Each program is file compatible and data compatible with the others. For more information, write Organizational Software Corp., 2655 Campus Drive, Suite 150, San Mateo, CA 94403. Mark Reader Service number 471.

HES Enters Apple Field

Human Engineered Software enters the Apple fold in a big way. Finance Manager ($100) allows you to track income, expenses, and budgets. HES Games ($35) is a sports simulation offering six Olympic events, a T-shirt, and instant replay. Keeping track of household facts and notes is easy for Memory Minder ($45). Young children learn about computer concepts in the icon-based Turtle Toyland Jr. All these and more come from HesWare, 150 North Hill Drive, Brisbane, CA 94005. Use Reader Service number 481.

Sega's Winners in Home Market

Sega has brought Apple owners two proven arcade winners from Bally Midway: Tapper and Spy Hunter. They are joined by Sega's own Up 'n' Down. All are published by Sega Consumer Products, 360 North Sepulveda Boulevard, Suite 3000, El Segundo, CA 90245. Reader Service number is 488.

From Dancing to Dragons

New entries from Epyx run the gamut. Breakdance brings the dance craze into your home. Pitstop II offers fast car competition. Summer Games features Olympic sights and sounds. A science fiction best-seller becomes a hi-res adventure in Moreta: Dragonlady of Pern. Also issued are "computer activity toys": G.I. Joe, Barbie, and Hot Wheels. For more information write Epyx, Inc., 1043 Kiel Court, Sunnyvale, CA 94089, or circle Reader Service number 480.

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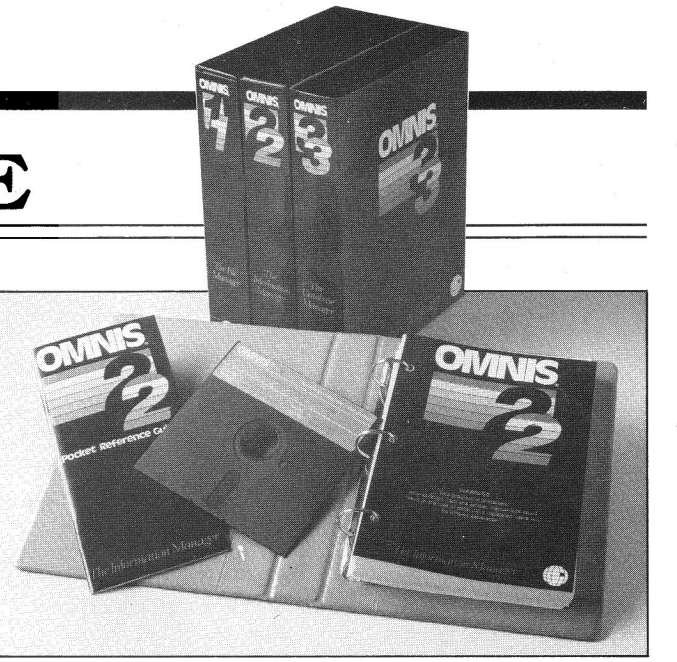
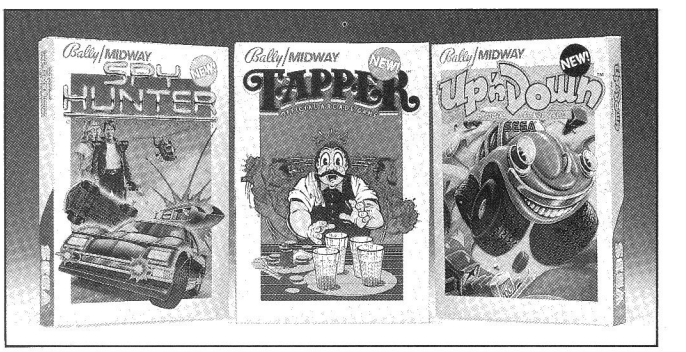


Omnis upgradable data bases.

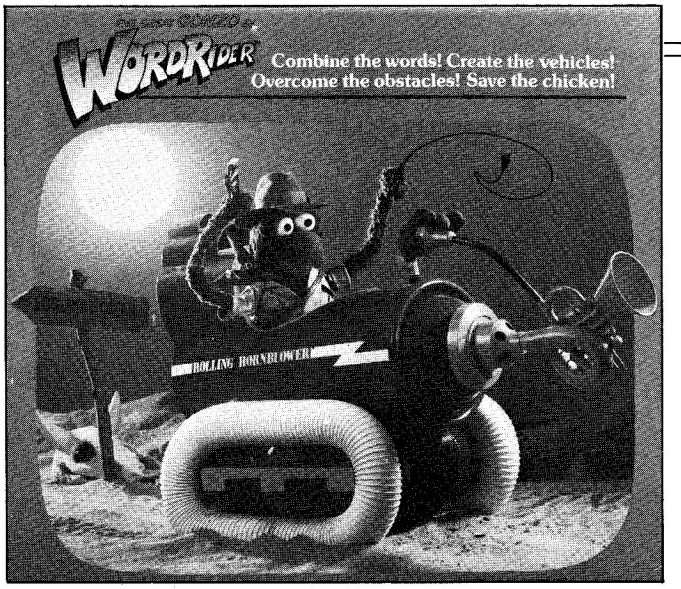


Sega's arcade hits at home.



Dancing and racing to the Epyx beat.

edited by Kerry J. Lanz



Gonzo the Great in Word Rider.

Muppet Institute of Technology

M.I.T. takes on new meaning in this educational series featuring the Muppets. In Kermit's Electronic Story Maker, the Muppets act out a child's story. Word Rider features Gonzo rescuing Camilla the Chicken. These programs retail for $40 and are just the first of many from Simon & Schuster, 1230 Avenue of the Americas, New York, NY 10020. Reader Service number is 491.

New from Broderbund

The masters at Broderbund have a full fall season. Mailer and Filer ($70 each) join the popular Bank Street series. Welcome Aboard is a cruise through computer literacy hosted by the Muppets. New arcade games include Championship Lode Runner, Mercy Birds, and Captain Goodnight. For details write Broderbund, 17 Paul Drive, San Rafael, CA 94903. Mark Reader Service number 477.

Montezuma's Revenge

The variety and choice of an adventure game and the action of an arcade game are promised by Montezuma's Revenge. Fight through 100 rooms of hazards, picking up keys and useful objects along the way. Get your revenge for $30 at Parker Brothers, 50 Dunham Road, Beverly, MA 01915. Reader Service number is 482.

Literary Classics Come Alive

You are the hero in Windham Classics. This series of hi-res adventures is drawn from famous novels and includes Wizard of Oz, Wind in the Willows, Swiss Family Robinson, Gulliver's Travels, and Treasure Island. Priced at $35, they run on the whole Apple II family. Contact Windham Classics Division, Spinnaker Software, 1 Kendall Square, Cambridge, MA 02139. Reader Service number is 493.

THE TRUTH ABOUT INCIDER

You probably already know that **inCider** is one of the fastest-growing Apple*-specific magazines on the market today.

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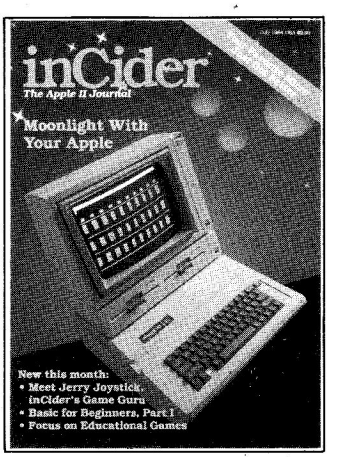


Successful Management

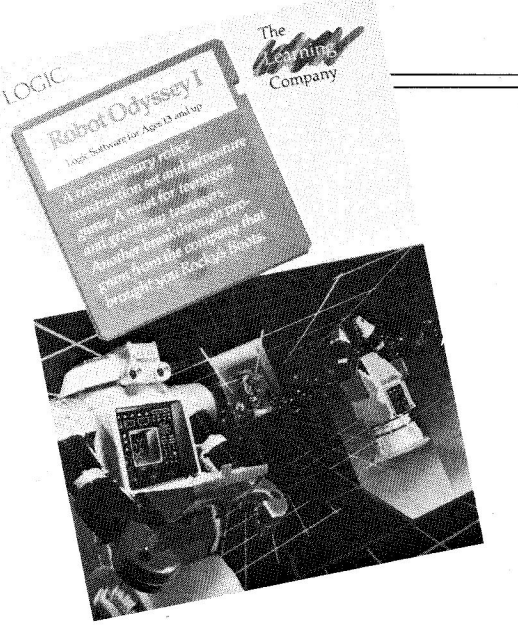
Managing for Success is a series of programs that evaluate and improve your management skills. Using graphics and simulations, each multi-disk unit ($80) helps you develop as a manager. The series is written by Thoughtware, Inc., and released through CBS Software, One Fawcett Place, Greenwich, CT 06836. Reader Service number is 484.

Financial Planning

The Get Rich series helps you with complete financial planning. Each module costs $50 and helps you plan for prosperous living. Titles include Basic Strategies, Real Estate Planning, Insurance Planning, Retirement and Estate Planning, and Home Accountant. Contact Continental Software, 11223 South Hindry Avenue, Los Angeles, CA 90045. Mark Reader Service number 490.

Trivial Apples

If you pursue trivia, get your Apple to help with Trivia Mania. There are 3500 questions with three levels of difficulty and seven categories, including science, geography, history, sports, and famous people. Extra data disks are available. The trivial price is $40 from Professional Software, Inc., 51 Fremont Street, Needham, MA 02194. Reader Service number is 470.



Robot Odyssey combines games and logic.

Robot Odyssey

Disguised as a hi-res adventure, Robot Odyssey I is a worthy successor to Rocky's Boots. By escaping from a robot factory, teenagers and young adults learn about Boolean logic, computer chip design, and robotics. Your odyssey will cost $50. Contact The Learning Company, 545 Middlefield Road, Suite 170, Menlo Park, CA 94025. Reader Service number is 475.

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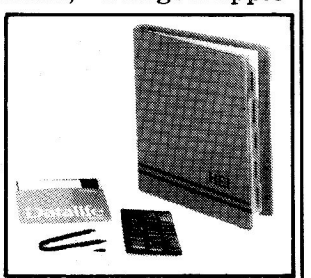
— REPAIR YOUR APPLE —
A SPARE PARTS KIT FOR THE APPLE II AND II+

The Apple II is no longer in production and the need for spare parts, diagnostic routines and service support is increasing rapidly. Included in the kit are: one of each Integrated Circuit (minus the ROM's, CPU, and Character Generator ROM); Integrated Circuit Specifications; Enlarged Apple Schematics; Diagnostic Routines for RAM, ROM and I/O Board ROM's; Disk Diagnostics and Speed Tests and Miscellaneous information.



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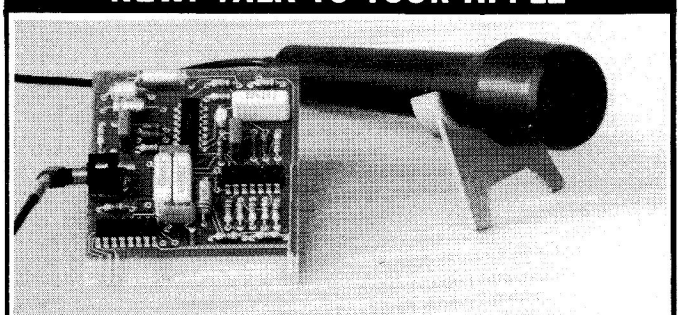
NEW! TALK TO YOUR APPLE



VOICE INPUT THAT WORKS. $199

Imagine being able to enter data and commands into your Apple by talking to it! Up until now, speech recognition peripherals were either too expensive or did not work well enough to be useful. The Microsignal SR-32 speech recognizer is changing all that. First it is priced reasonably at $199. Second, it works. Performance is equal or better to units costing thousands of dollars. Third, it is easy to use.

Your vocabulary can have up to 32 words (or short phrases) of your choice. More are possible by paging two or more vocabularies. You train the SR-32 to your voice by saying each word in the vocabulary three times. That's all. Then, by using our PARKEY program you can enter data by either talking or typing. The Apple wouldn't know the difference. Or you can add voice input to your programs —a line of BASIC is all that is needed to recognize a word. Vocabularies can be saved on disk and recalled when needed.

Use your SR-32 to enter data to your spreadsheet. Or to control your word processor. Or just for fun and games. Or you may want to experiment with robotics. And there must be many creative ways to use voice input nobody has thought of yet.

The SR-32 comes complete with hardware that plugs into a slot of your Apple II+ (48K) or IIe, microphone, diskette with software and user manual. And it has a one year warranty against manufacturing defects.

To order the SR-32 send us a check for $199. We pay shipping in the US. Foreign orders welcome, add $20 for shipping.

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NEW SOFTWARE



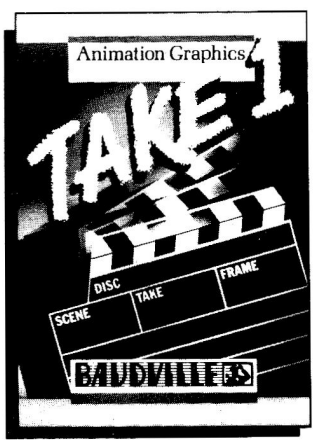
Youngsters direct Tink's Adventure.

Sprout for Young Children

The Sprout series is educational software for children four through eight. It features hi-res graphics, music, and animation to teach reading, spelling, vocabulary, and math. Titles include Tink's Adventure, Tinka's Mazes, and Tuk Goes to Town. Each costs $40 and runs on all Apple II's. They come from Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60062. Reader Service number is 485.

Graphic Innovations

Two creative programs make graphics easier. Take 1 allows you to write, produce, and direct your own computer movies for just $60. Blazing Paddles ($50) offers over 200 color combinations, a variety of brush textures, and magnified mode. It supports paddles, joysticks, pen, tablet, Koala Pad, and mouse. These programs are produced by Baudville, 1001 Medical Park Drive S.E., Grand Rapids, MI 49506. Reader Service number is 473.



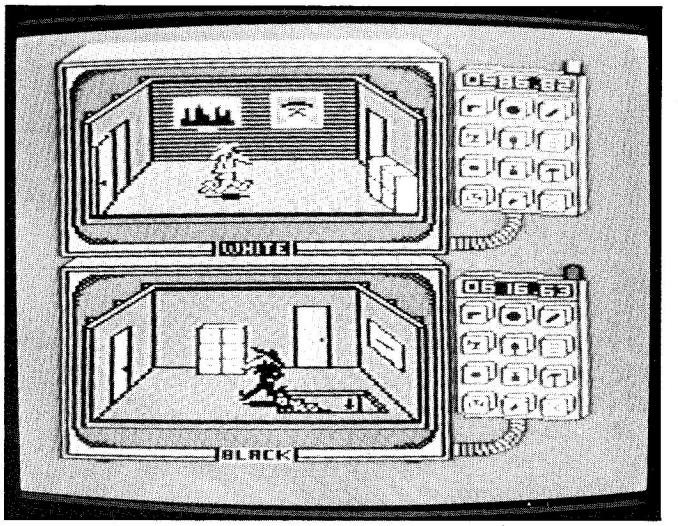
Quick animation from Take 1.

Run for It

Excellent graphics mark this new maze game. Help Orbit, the robot, escape pursuers as he climbs and jumps through 72 rooms. Control him by keyboard or joystick in his search for points and glory. Run with $40 to Weekly Reader Family Software, 245 Long Hill Road, Middletown, CT 06457, or use Reader Service number 474.

Boulder Dash

Written by First Star Software and translated by MicroLab, Boulder Dash is a hunt through the earth for precious gems. This Dig Dug style game offers 16 caves and five levels of difficulty. Dash costs $40 from MicroLab, 2699 Skokie Valley Road, Highland Park, IL 60035. Use number 486 on the Reader Service card.



First Star's Spies from Mad.

Mad Magazine's Spy vs. Spy

The *Mad* cartoon Spy vs. Spy comes to the Apple screen in a one- or two-player game priced at $40 by First Star Software. They have also released the Romper Room education series, beginning with I Love My Alphabet, at $40. For details, write First Star Software, Inc., 22 East 41st Street, New York, NY 10017, or circle number 492 on the Reader Service card.

Reading and Writing from Prentice-Hall

Prentice-Hall has new programs for home use. SkiWriter II combines word processing with telecommunications. You can write a letter and send it by modem with the same program, for $70. The Arrakis Experience is a home education series for teenagers. It combines graphics and sound to cover algebra, biology, geometry, and more. Contact Prentice-Hall Home Software, P.O. Box 819, Englewood Cliffs, NJ 07632. Reader Service number is 476.

Family Financial Watchdog

Your Personal Net Worth tracks and organizes all home money matters. It records income, manages ten checking accounts and 250 budget categories, and remembers investments, valuable documents, and collectibles. Many reports are available, including the bottom line, your net worth. This package is sold for $100 by Scarborough Systems, Inc., 25 North Broadway, Tarrytown, NY 10591. Circle number 472 on the Reader Service card.

Science Fiction Adventures

Classics from science fiction become hi-res adventures by the Trillium division of Spinnaker. Titles include Rendevous with Rama by Arthur C. Clarke, Fahrenheit 451 by Ray Bradbury, and Starman Jones by Robert Heinlein. They run on an Apple //e or //c and cost $50. Get information from Spinnaker Software, 1 Kendall Square, Cambridge, MA 02139. Use Reader Service number 483.

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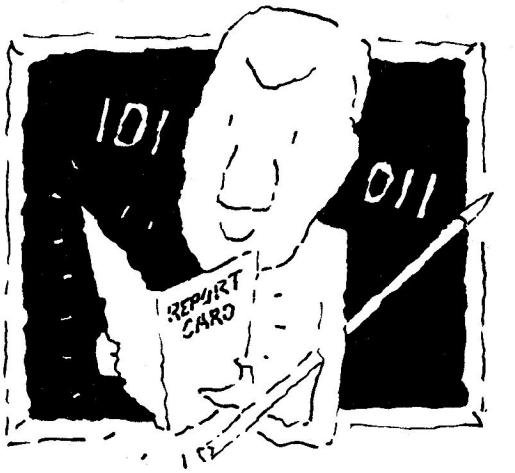

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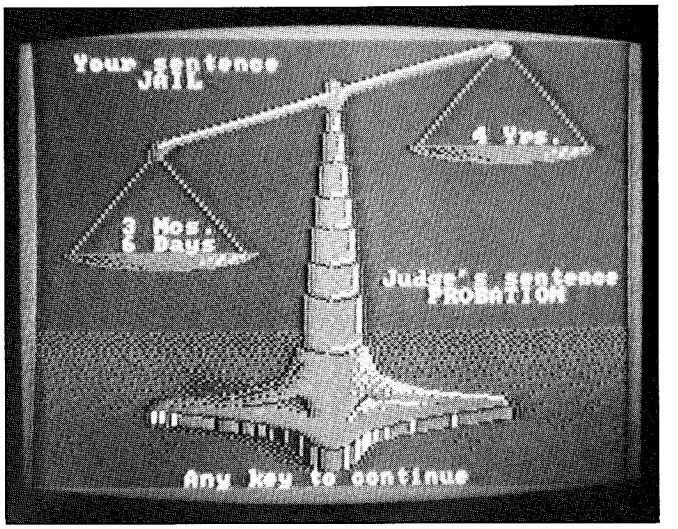


You be the judge in Crime and Punishment.

Interactive Series from Imagic

Judge for yourself in Crime and Punishment where you see all the evidence and your decision is compared to that of experts. Travel in time to join H. G. Wells in The Time Machine, and Sherlock Holmes in Another Bow. Damiano combines sorcery and fantasy in a hi-res adventure. Each costs $35 and is published by Imagic, 981 University Avenue, Los Gatos, CA 95030. Reader Service number is 489.

Archon and Skyfox from Electronics Arts

Archon II: Adept continues the strategy game Archon, with more playing pieces and magic spells. Skyfox combines flight simulation with combat. It gives you the chance to battle tanks and planes with true 3-D perspective. Both games are priced at $40 by Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. Circle Reader Service number 487.

Caveman and Wizards

The cartoon programs of Sierra On-Line expand with B.C.'s Grog's Revenge and the Wizard of Id's WizType and WizMath ($35 each). Gelfling Adventure ($50), for young adventurers, is set in the world of The Dark Crystal. King's Quest is an animated adventure with multiple solutions. Stunt Flyer is the latest flight simulator; Championship Boxing ($35) is a sports simulation. Get more details from Sierra, Inc., Coarsegold, CA 93614. Reader Service number is 479.

Arcade Games from Datasoft

Famous for arcade classics, Datasoft has released Meridian III, where you pilot a cruiser through space mines and energy globes to the Dragon Lord's fortress. Mancopter is an adventure race through sky and sea. Defend the universe with powerful lasers in Juno First, translated from the Konami hit. All are filled with sound and hi-res action, and cost $30. Datasoft is located at 19808 Nordhoff Place, Chatsworth, CA 91311. Reader Service number is 478.

NEW PRODUCTS



Learning Keys for the young at heart.

Kermit on the Keys

Muppet Learning Keys ($80) hooks into the paddle port on a //e or //c and helps children learn computer skills before they know the QWERTY keyboard. Letters are arranged as on a blackboard. Commands are pictured as items on a school desk: paint set, eraser, and arithmetic book. Muppet characters are used throughout the programs to teach, give help, and suggest practice work. Write Koala Technologies Corp., 3100 Patrick Henry Drive, Santa Clara, CA 95052, or mark Reader Service number 451.

Keyboard Is a SureStroke

The SureStroke 911 is an innovative, low profile keyboard for Apple II's. Features include ten function keys, numeric keypad, clustered cursor keys, and optional key click. Priced at $200, SureStroke has a six-foot cord that easily connects inside your Apple. Contact Titan Data Systems, Inc., 2625 South Orange Avenue, Santa Ana, CA 92707. Mark Reader Service number 464.

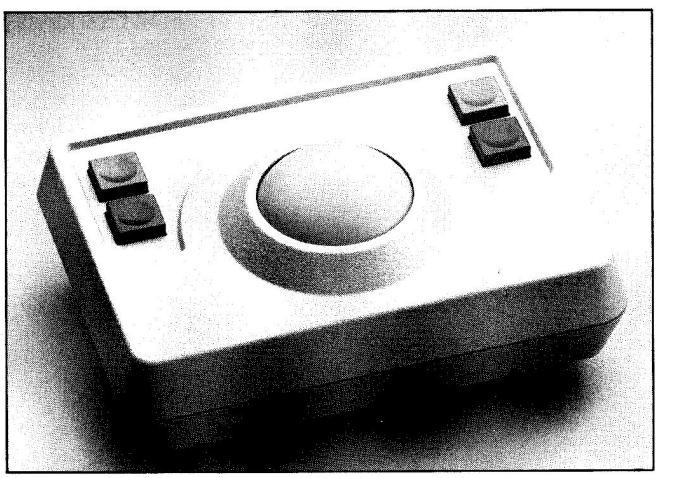
Trackball Game Controller

The new Micro-Trak Trackball is a precise and accurate cursor controller. The unit plugs into the standard controller port and offers optional auto center, rapid fire, and adjustable sensitivity. Micro-Trak, at $100, works with all current software and is produced by Hayes Products, 1558 Osage Street, San Marcos, CA 92069. Use Reader Service number 465.

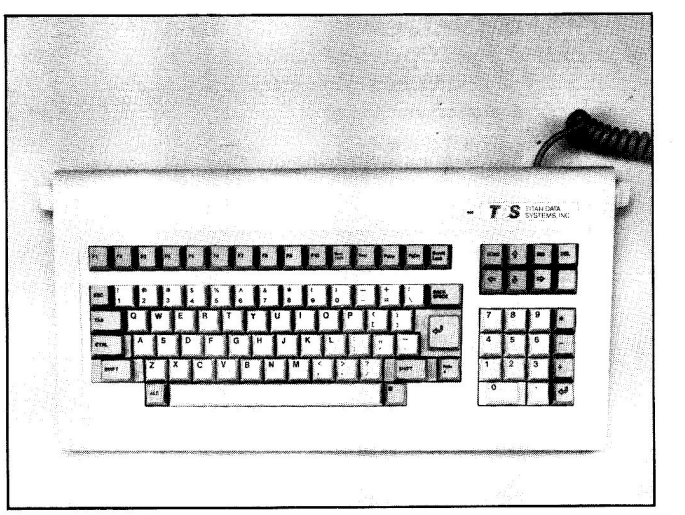
Intec 300 Modem

The Intec 300 is an auto dial/auto answer modem packaged with software, cables, and documentation. A plug-in modem card for the Apple costs $169. With this single package you have everything you need to enter telecommunications. Write Intec Corp., P.O. Box 5164, West Bloomfield, MI 48033, or mark number 458 on the Reader Service card.

Product descriptions contained in this section are based on information supplied to us by the respective manufacturers. These announcements are provided solely as a service to our readers and do not constitute an endorsement by inCider *of any given product.*

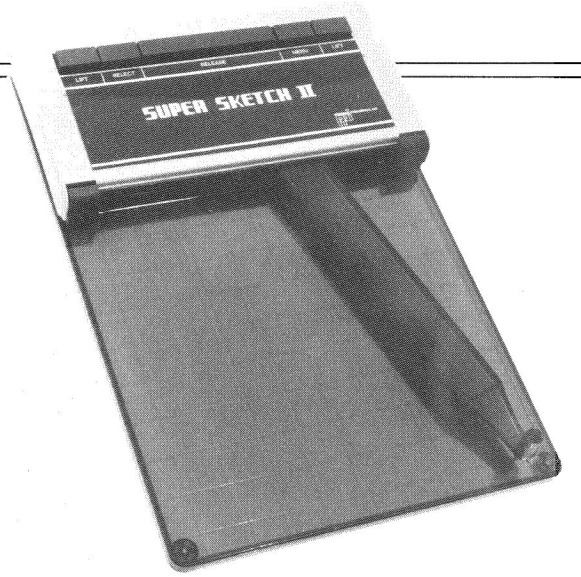


Micro-Trak game controller.



Alternative keyboard from Titan.

edited by Kerry J. Lanz



Easy graphics with Super Sketch II.

Sketch Super Graphics

Super Sketch II comes complete with software for just $80. Create originals or use the clipboard design to trace from a sketch. The icon-based menu gives control over size and color of your paint brush, and includes a character set for labelling sketches. This product is from Personal Peripherals, Inc., 930 North Beltline, Suite 120, Irving, TX 75061. Reader Service number is 461.

Peripheral Switchers

Rose Electronics has two ways to share one peripheral (such as a printer or modem) with many computers. The Caretaker handles the job automatically at $200 for the first two ports, $50 for each additional two up to eight. The Hardswitch does the work manually for $59 to $179. Get full information from Rose Electronics, P.O. Box 742571, Houston, TX 77274. Reader Service number is 462.

Tablets from Suncom

Replace your paddles, joystick, and keyboard with the Animation Station. This touch tablet comes complete with graphics program and lets you use a stylus or your finger to direct programs. At $100, this Station is worth a stop. Make reservations with Suncom, Inc., 650 East Anthony Tr., Northbrook, IL 60062. Reader Service number is 452.

Mouse for All Apples

The joystick people at Wico have introduced the SmartCard with SmartMouse ($250) or with SmartBall ($300) for the Apple II family. You can use a mouse or track ball with any program (such as a spreadsheet or word processor) that accepts keyboard commands. The card is programmable to customize controller response. For details, contact Wico Corp., 6400 West Gross Point Road, Niles, IL 60648, or use Reader Service number 450.

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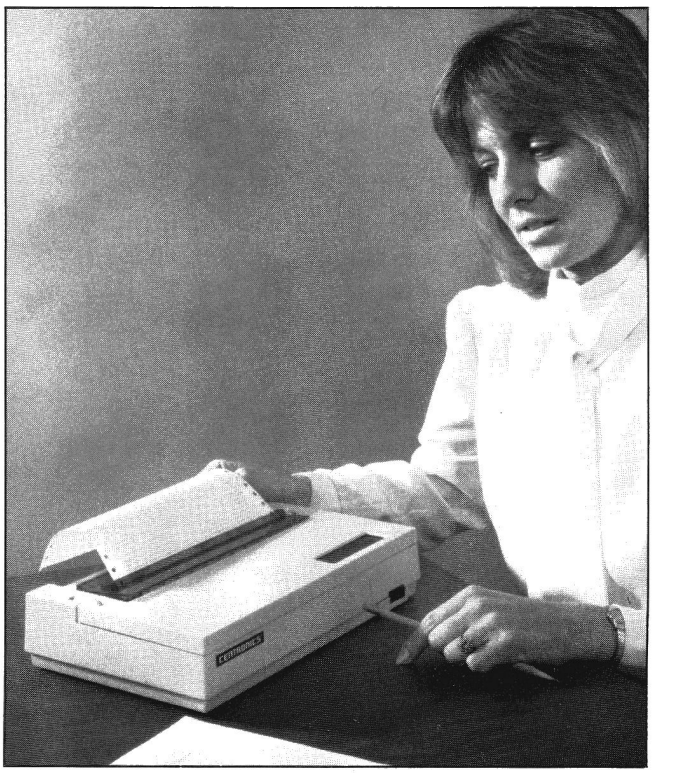
TV from Your Monitor

The Taxan Model 305 television tuner turns any brand of composite monitor with sound into a color TV for $130. Because of the great resolution of monitors, the resulting TV has a much clearer picture than most regular TV's. For more information contact Taxan Corp., 18005 Cortney Court, City of Industry, CA 91748, or circle number 469 on the Reader Service card.

Sakata RGB Board

The 80 column XB-7 board gives your Apple //e complete control of the Sakata RGB high resolution monitor. Each card includes a 24-page manual and all connectors and cables for $249. It reproduces all //e video modes and lets you choose your background and text colors. For details, contact Sakata Corp., 651 Bonnie Lane, Elk Grove Village, IL 60007. Reader Service number is 455.



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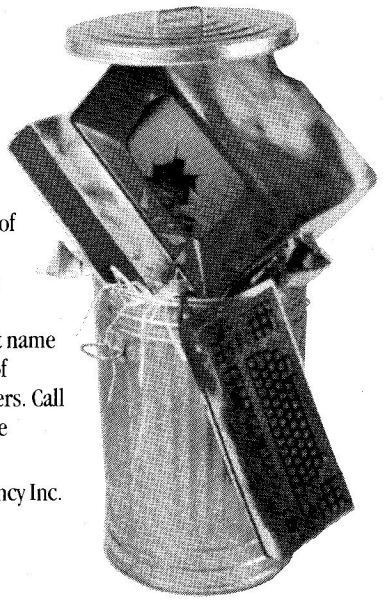

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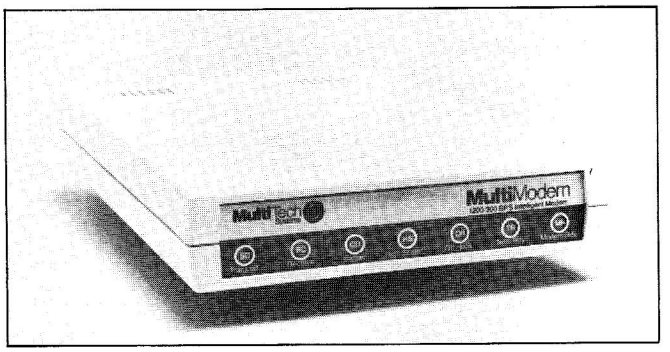

Intelligent Multi-Tech modem.

Modem Family from Multi-Tech

A new line of modems fits all needs and budgets, is Hayes compatible, and comes with time on CompuServe and NewsNet. Three models of MultiModem ($549) offer 1200/300 bps (bits per second) and auto dial/auto answer. The MultiModem IIe is a 300/110 bps modem card that fits into your Apple's expansion slot. For details, write Multi-Tech Systems, Inc., 82 Second Avenue S.E., New Brighton, MN 55112. Circle number 467 on the Reader Service card.

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Wherever temperature is a factor, the SABRE System can help. The program interprets data from eight sensors and controls nine relays. This system requires 64K and an 80-column card, and runs on the whole Apple II family through an RS232-C port. For brochure, write Temptron Systems, 1595 West Amador, Suite F, Las Cruces, NM 88005, or mark number 459 on the Reader Service card.

Apple's Mini Drive

You can now use 3.5-inch disks on your Apple II with Shamrock's SPUD. Only one-fourth



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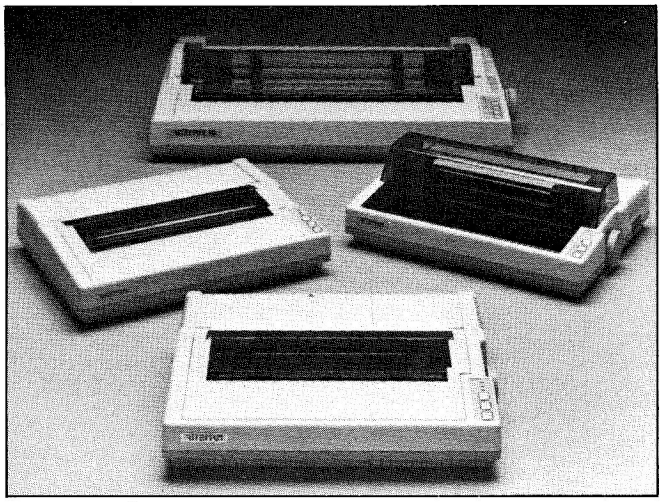

New Riteman printers for all needs.

the volume of standard drives, SPUD offers 328K of storage on 80 tracks. It comes with a utility disk to help you copy your existing software to the new format. For information, write Shamrock Computer, Inc., 89 Telson Road, Markham, Ontario, L3R 1E4, Canada. Reader Service number is 456.

Right Printers from Riteman

Four new dot matrix printers with friction and pin feed join the Riteman line this fall. They are Riteman Plus (120 cps, $400), Riteman Blue Plus (140 cps, $500), Riteman II (160 cps, $550), and the Riteman 15 Business Printer (160 cps, $800). For information on this line of products, contact Riteman Computer Printers, Airport Business Park, 431 North Oak Street, Inglewood, CA 90302. Reader Service number is 463.

Synthesizer Features New Chip

The new SSI-263 chip is the heart and vocal cords of the SynPhonix 100 that plugs directly into an Apple II slot. Priced at $125, it includes sophisticated speech pro-



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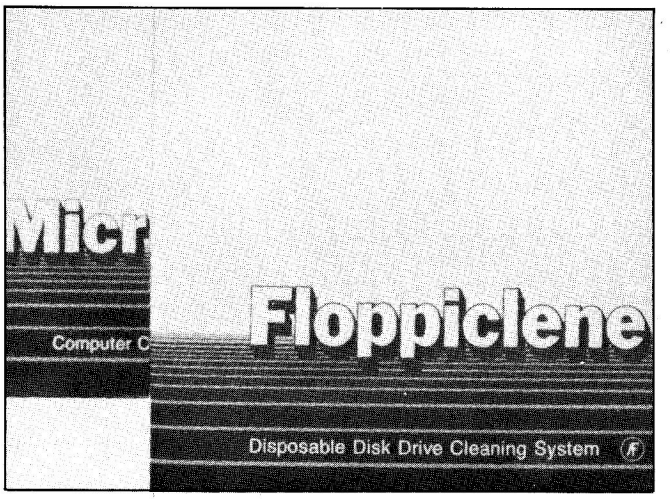

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grams on disk and a manual that shows you how to add speech and sound effects to your BASIC programs. For more information contact Artic Technologies, 2234 Star Court, Auburn Heights, MI 48057. Reader Service number is 466.

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Floppiclene is a completely disposable wet/dry disk drive cleaning system. For $35 you get 30 cleaning disks, cleaning solution, disk jackets, screen wipes, and instructions. A smaller version is available for $20. The Floppiclene system is from Automation Facilities Corp., 3916 State Street, Santa Barbara, CA 93105. Use number 468 on the Reader Service card.

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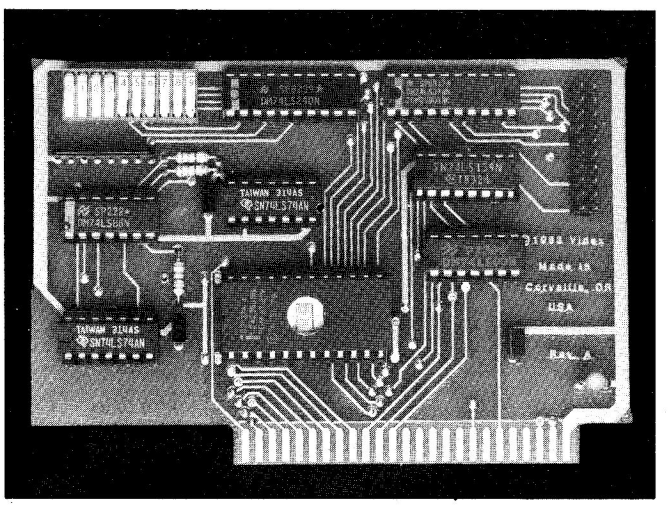

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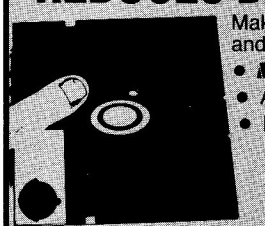

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- ☐ 3. Sales
- ☐ 4. Medical/Health
- ☐ 5. Government
- ☐ 6. Education/student
- ☐ 7. Business
- ☐ 8. Consultant
- ☐ 9. Other

B. To what extent, approximately, do you use your Apple for business-related applications?
- ☐ 1. Not at all
- ☐ 2. Up to 33%
- ☐ 3. 33%–66% of use
- ☐ 4. Almost exclusively

C. To what extent do you use your Apple for home applications, including games and home education?
- ☐ 1. Not at all
- ☐ 2. Up to 33% of use
- ☐ 3. 33%–66% of use
- ☐ 4. Almost exclusively

D. Which of the following micro-computers do you own or use?
- ☐ 1. Apple II or II+
- ☐ 2. Apple IIe
- ☐ 3. Apple IIc
- ☐ 4. Apple III
- ☐ 5. Macintosh
- ☐ 6. Apple compatible
- ☐ 7. Other
- ☐ 8. Don't own or use one

E. If you are an educator, do you use an Apple in the classroom?
- ☐ 1. Yes
- ☐ 2. No
- ☐ 3. Not an educator

F. Where is your Apple located? Check all that apply.
- ☐ 1. Home
- ☐ 2. Office
- ☐ 3. School
- ☐ 4. Other

G. Do you ever move your Apple from one location to another? Check all that apply.
- ☐ 1. Yes, transfer between home and office
- ☐ 2. Yes, transfer between home and school
- ☐ 3. Yes, transfer from room to room
- ☐ 4. No, it pretty much stays put

H. Which of the following peripherals do you own?
- ☐ 1. Printer
- ☐ 2. Modem
- ☐ 3. Plotter
- ☐ 4. Joystick
- ☐ 5. Graphics Tablet
- ☐ 6. Monitor
- ☐ 7. 6800 Board
- ☐ 8. Disk Drive(s)
- ☐ 9. Other

I. Which of the following peripherals do you plan to purchase during the next 12 months?
- ☐ 1. Printer
- ☐ 2. Modem
- ☐ 3. Plotter
- ☐ 4. Joystick
- ☐ 5. Graphics Tablet
- ☐ 6. Monitor
- ☐ 7. 6800 Board
- ☐ 8. Disk Drive(s)
- ☐ 9. Other

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- ☐ 3. Sales
- ☐ 4. Medical/Health
- ☐ 5. Government
- ☐ 6. Education/student
- ☐ 7. Business
- ☐ 8. Consultant
- ☐ 9. Other

B. To what extent, approximately, do you use your Apple for business-related applications?
- ☐ 1. Not at all
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- ☐ 3. 33%–66% of use
- ☐ 4. Almost exclusively

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- ☐ 3. Apple IIc
- ☐ 4. Apple III
- ☐ 5. Macintosh
- ☐ 6. Apple compatible
- ☐ 7. Other
- ☐ 8. Don't own or use one

E. If you are an educator, do you use an Apple in the classroom?
- ☐ 1. Yes
- ☐ 2. No
- ☐ 3. Not an educator

F. Where is your Apple located? Check all that apply.
- ☐ 1. Home
- ☐ 2. Office
- ☐ 3. School
- ☐ 4. Other

G. Do you ever move your Apple from one location to another? Check all that apply.
- ☐ 1. Yes, transfer between home and office
- ☐ 2. Yes, transfer between home and school
- ☐ 3. Yes, transfer from room to room
- ☐ 4. No, it pretty much stays put

H. Which of the following peripherals do you own?
- ☐ 1. Printer
- ☐ 2. Modem
- ☐ 3. Plotter
- ☐ 4. Joystick
- ☐ 5. Graphics Tablet
- ☐ 6. Monitor
- ☐ 7. 6800 Board
- ☐ 8. Disk Drive(s)
- ☐ 9. Other

I. Which of the following peripherals do you plan to purchase during the next 12 months?
- ☐ 1. Printer
- ☐ 2. Modem
- ☐ 3. Plotter
- ☐ 4. Joystick
- ☐ 5. Graphics Tablet
- ☐ 6. Monitor
- ☐ 7. 6800 Board
- ☐ 8. Disk Drive(s)
- ☐ 9. Other

J. Which of the following magazines do you read regularly?
- ☐ 1. inCider
- ☐ 2. A+
- ☐ 3. Softalk
- ☐ 4. Nibble
- ☐ 5. Call A.P.P.L.E.
- ☐ 6. Peelings II

K. On a scale of 1 (no interest) to 5 (great interest), please rate your interest in the following inCider columns:
- ____ 1. Fermentations
- ____ 2. The Game Reserve
- ____ 3. The Glau Report
- ____ 4. O'Brien's Journal
- ____ 5. The Learning Machine
- ____ 6. Child's Play
- ____ 7. The Applesoft Adviser
- ____ 8. The Cider Press
- ____ 9. Fudge It!
- ____10. Ask inCider
- ____11. The Apple Clinic
- ____12. Apple Extract

L. If you are not a subscriber please circle 500.

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29	34	39	44	49	179	184	189	194	199	329	334	339	344	349	479	484	489	494	499
30	35	40	45	50	180	185	190	195	200	330	335	340	345	350	480	485	490	495	500
51	56	61	66	71	201	206	211	216	221	351	356	361	366	371	501	506	511	516	521
52	57	62	67	72	202	207	212	217	222	352	357	362	367	372	502	507	512	517	522
53	58	63	68	73	203	208	213	218	223	353	358	363	368	373	503	508	513	518	523
54	59	64	69	74	204	209	214	219	224	354	359	364	369	374	504	509	514	519	524
55	60	65	70	75	205	210	215	220	225	355	360	365	370	375	505	510	515	520	525
76	81	86	91	96	226	231	236	241	246	376	381	386	391	396	526	531	536	541	546
77	82	87	92	97	227	232	237	242	247	377	382	387	392	397	527	532	537	542	547
78	83	88	93	98	228	233	238	243	248	378	383	388	393	398	528	533	538	543	548
79	84	89	94	99	229	234	239	244	249	379	384	389	394	399	529	534	539	544	549
80	85	90	95	100	230	235	240	245	250	380	385	390	395	400	530	535	540	545	550
101	106	111	116	121	251	256	261	266	271	401	406	411	416	421	551	556	561	566	571
102	107	112	117	122	252	257	262	267	272	402	407	412	417	422	552	557	562	567	572
103	108	113	118	123	253	258	263	268	273	403	408	413	418	423	553	558	563	568	573
104	109	114	119	124	254	259	264	269	274	404	409	414	419	424	554	559	564	569	574
105	110	115	120	125	255	260	265	270	275	405	410	415	420	425	555	560	565	570	575
126	131	136	141	146	276	281	286	291	296	426	431	436	441	446	576	581	586	591	596
127	132	137	142	147	277	282	287	292	297	427	432	437	442	447	577	582	587	592	597
128	133	138	143	148	278	283	288	293	298	428	433	438	443	448	578	583	588	593	598
129	134	139	144	149	279	284	289	294	299	429	434	439	444	449	579	584	589	594	599
130	135	140	145	150	280	285	290	295	300	430	435	440	445	450	580	585	590	595	600

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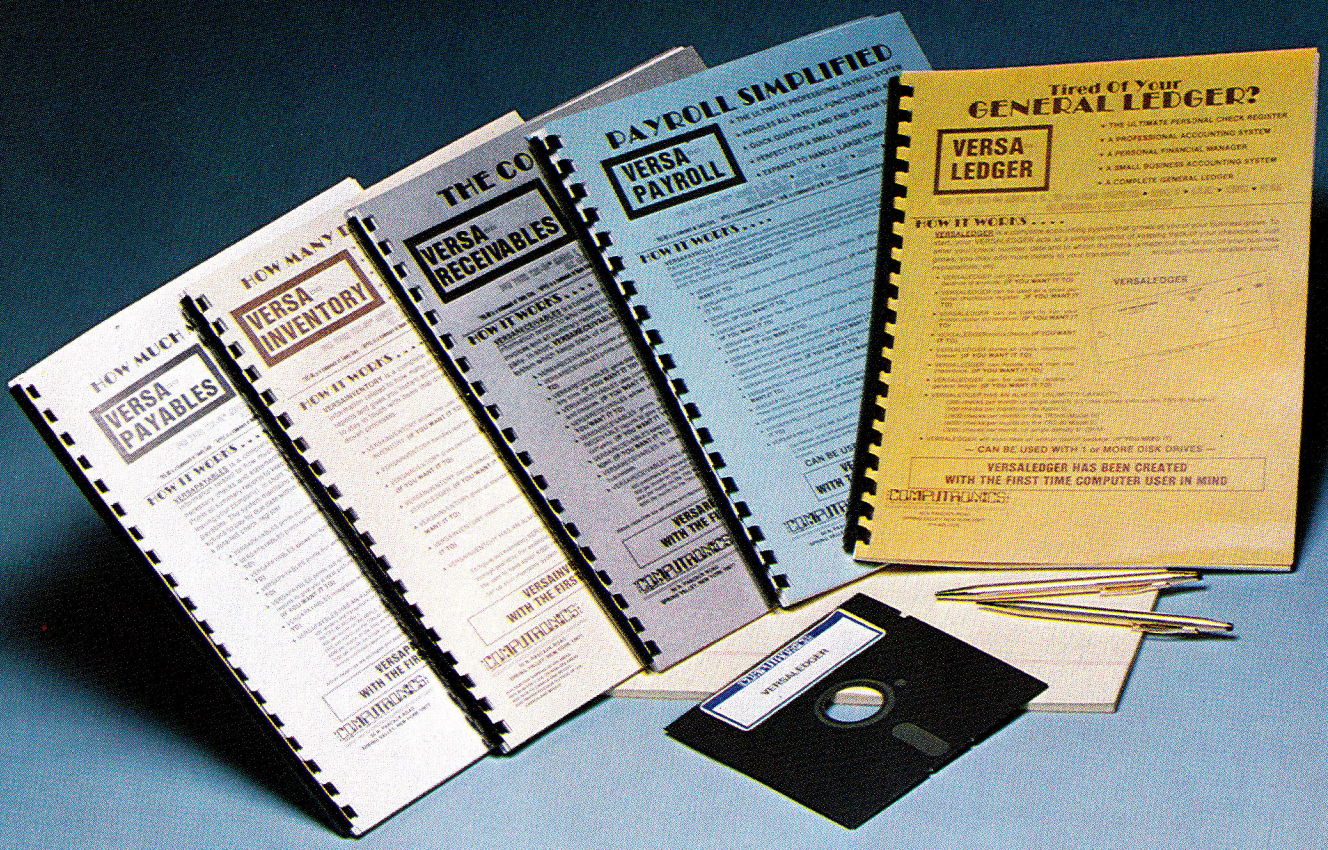

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