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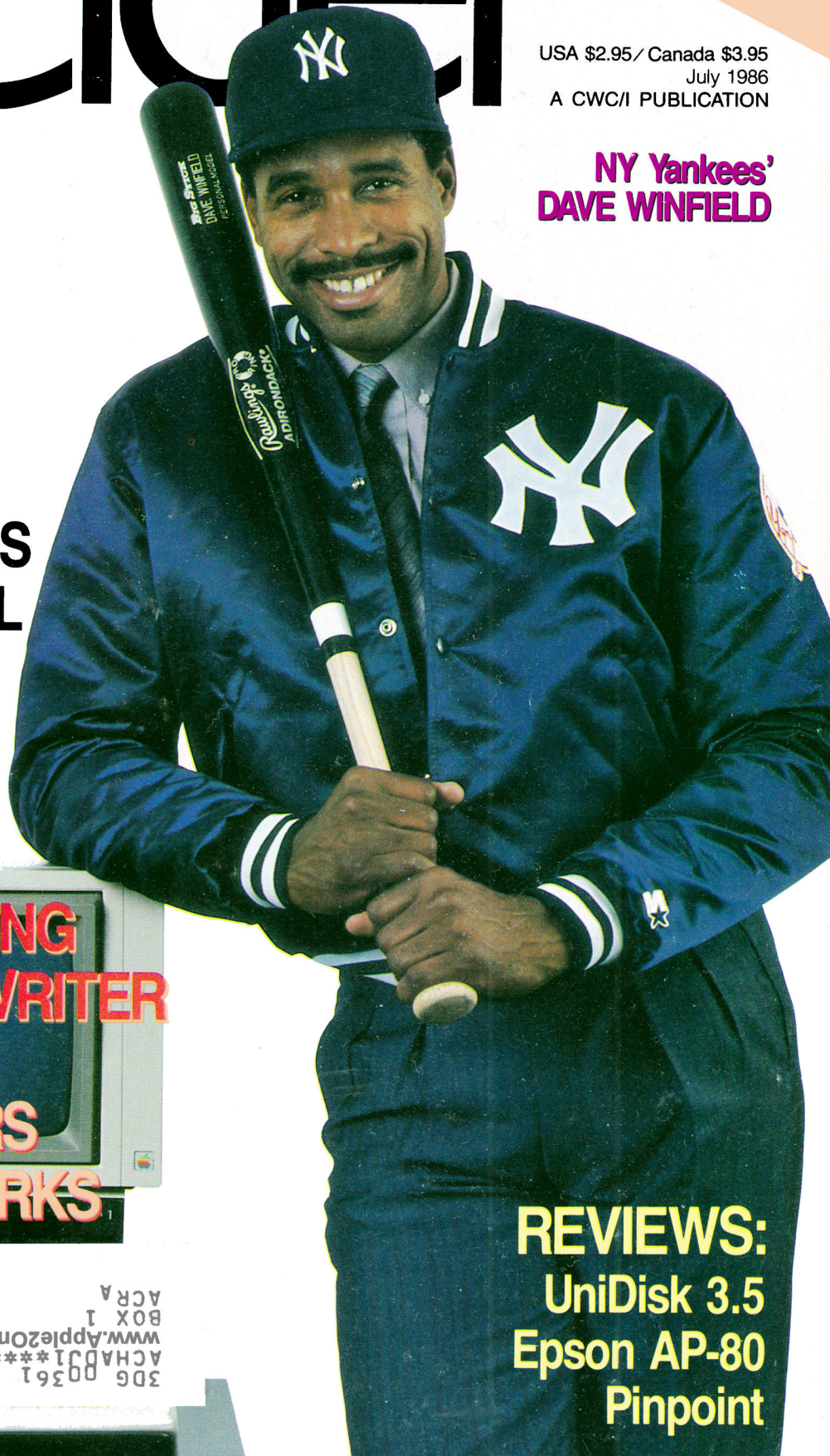
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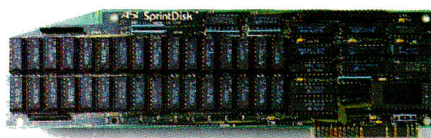
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Expand your System

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Orange Micro has already helped to expand over 350,000 Apple II systems with the revolutionary Grappler+ printer interface series. This summer, we are launching the **Rebate Bonanza**. Teamed with leading manufacturers, we'll provide you with over \$500 worth of valuable coupons good for cash rebates and free merchandise on the most popular software and accessories for your Apple II. Exciting products from BPI, Broderbund, Data Transforms, Kensington, Koala, Orange Micro, Manzanita, Megahaus, Pinpoint, Quark, Roger Wagner and Sir-tech. All this, just for expanding your system with the most popular line of Apple enhancements in history.

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advanced graphics, the Grappler C is the most powerful IIc parallel interface available.

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The Time is Now!

Orange Micro's **Rebate Bonanza** is on for a limited time only, so don't delay. Look for the specially marked packages or ask your Orange Micro dealer for details. Orange Micro products plus a \$500 **Rebate Bonanza** to help expand your system. There's never been a better time to make the best choice in printer interfacing... **ORANGE MICRO.**



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Inc.

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INCIDER'S VIEW

A Tribute to the Renegade User



"In the mind of the Apple II user, obstacles are made to be leaped."

by Deborah de Peyster

How do you react when someone tells you, "I'm sorry, it just can't be done"? Does your heart start to speed up, your mind begin to whirl, and your body respond as if you'd just been challenged to a race? Or do you say, "Okay," and walk away?

Well, if you're Bill O'Brien, Tom Pasant, Jim Munro, Steve Wozniak, or most Apple II users, the words "can't be done" trigger an adrenaline rush equal to that felt by a hurdler springing from the blocks. In the mind of the Apple II user, obstacles are made to be leaped.

Without such dedicated users, the Apple II would never have continued to be a useful machine. Its current viability still surprises even the most optimistic of market researchers. It certainly continues to surprise Apple Computer Inc., which had written it off several times as outmoded, old-fashioned, or just plain boring. Those groups are surprised because they forgot to count on the ingenuity and determination of the Apple user—that breed of person who takes the words "it can't be done" as a personal challenge to succeed.

One such user is Bill O'Brien. He writes often for *inCider* and certainly has had more than his share of "it can't be done" responses from vendors, computer dealers, and even supposed industry gurus. When he hears those deadening words, he shifts into gear. "There's nothing that can't be done," he declares.

With that attitude, Bill linked the Apple II to the LaserWriter printer when even Apple told him it couldn't be done (see "Apple LaserWriter: The Best Text Going" in this issue, p. 65). He used a 2400-baud modem with an Apple when he was told the Apple couldn't run that fast (see "More Baud for the Buck," May 1986, p. 70). He used an Apple II as an analog/digital device for motor control when no one thought the II could do it. (He also saved the company he was working for \$8000 in the process.)

"It's just a matter of knowing that the II can do anything you want it to," Bill says simply.

Tom Pasant is another of my favorite "renegade" Apple II users. He believed in the power of the Apple II when no one else did—and he staked his job on it. Pas-

ant networked 25 Apple II's to process life-insurance policies in one regional office of a major firm (see "...And They Said It Couldn't Be Done" in this issue, p. 50). His company's data-processing people thought he was crazy. That was no way to get the job done, they said.

"So many people said it couldn't be done that I chose to take the risk alone," he recalls. "For the first seven months I paid all the bills myself. I didn't want to get the home office involved and then have my plan fail."

But his plan didn't fail. Now the company, Jackson National Life Insurance, plans to duplicate Pasant's success in its nine regional offices.

And then there's Jim Munro, who needed a portable computer to take to China on business. He looked at systems from Radio Shack, Zenith, Data General, and other manufacturers. None really suited him. And everyone told him the Apple IIc wasn't really portable. So in true renegade style, he made the IIc into a portable by adding a special small screen, lightweight printer, battery pack, and more memory. And the entire system weighed in at only about 22 pounds (watch for our August issue for complete details).

"Buying this system wasn't easy. Dealers tried to steer me toward an IBM or compatible because my application was business," Jim says. "But the fact is, the Apple IIc is the most affordable system for businesspeople who need a heavy-duty portable computer."

And finally, no tribute to the renegade Apple II user would be complete without mention of Steve Wozniak, father of the Apple II. In the late 1970's, Steve took his idea for a personal computer to the management at Hewlett-Packard. "It can't be done," they said. "And even if it could, who would want it?" Steve didn't quit. He took his designs, beliefs, and determination, and with Steve Jobs started Apple Computer.

So what more need be said? Three cheers for the renegade user, without whom we wouldn't be here today. For as Bill O'Brien says, "If this were the 1800's, the Apple II people would be the folks driving the wagons westward." ■

Interlude II

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Money Magazine: "Sometimes it's easier to tell a computer what you want than it is to tell your partner."

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Girls' Turn

The article in News Line titled "Girls Only" (January 1986, p. 14) attracted my attention. I've been interested in the phenomenal absence of girls in computer clubs ever since my daughter brought home a yearbook picture of the all-boys computer club at her high school.

It wasn't long before I discovered that's a common phenomenon. All the high schools for which I have responsibility have a shortage of girls in computer clubs, although they all show a serious effort to recruit them.

Unfortunately, it's not true that cultural factors alone cause this problem. Nor is it true from my experience as a practicing psychologist in Jamaica and the United Kingdom that things are different there.

Most intelligent girls can become highly competent in any aspect of computer technology. But whereas 30 percent of them may stumble across an interest in computers, in very much the same way 70 percent of the boys may, it's important that all girls receive more than a cursory exposure to computers in high school. They should be encouraged to spend enough individual time with computers to develop an individual style of programming.

When a typical family purchases a computer, there's a tendency for the males of the household to monopolize it. Father does a certain amount of business on it, and son plays games on it. Mother may use it for odd chores, and daughter may well ignore it. What a marvelous opportunity this is for mother and daughter to create short programs together and share in constructive games.

If we're serious about developing the interests of our young women in mathematics and computer science, it's important for them to have computer time. Boys must not be allowed to monopolize computers at home or at school.

A. MacKenzie Elliot
P.O. Box 69
Kanagan Mission, B.C.
Canada V0H 1S0

hotCider Advice

I hope you can help me. I'd like to know if I can get some or all of the program listings from past issues of *inCider*. I just want to put them on my computer and write to the authors. Someday I may write one for *inCider* myself.

Ken Deike
1914 55th Street
Kenosha, WI 53140

You can get some of the listings from previous issues of *inCider* on *hotCider*, a compilation of programs on disk complete with documentation. New volumes of *hotCider* are released periodically.

The latest edition contains more than two dozen utilities from our *Hints/Techniques* column, including *Ditto*, an Apple Writer Word Processing Language program that lets you automatically print multiple copies of your documents, and *Multiprogrammer*, which lets you have three BASIC programs in memory at the same time.

You can order *hotCider* by calling (800) 258-5473 (603-924-9471 within New Hampshire), or by writing to: *hotCider*, 80 Pine Street, Peterborough, NH 03458. The current edition is priced at \$29.97. —eds.

Only One

The article "Customer Mailing Labels with AppleWorks" (AppleWorks in Action, March 1986, p. 54) has been very helpful in creating labels, but I haven't been able to print more than one label across. I've produced a list of labels, but what do I do with the two extra labels I have next to each of the printed ones? I'd appreciate your advice.

Roser Salavert
31 Harvard Avenue
Shrewsbury, MA 01545

Ruth Witkin, our AppleWorks in Action columnist, informs us that AppleWorks can print only one label across. She advises you not to use the labels that come three across. She adds that a few readers wrote her to say they followed her mailing-

list instructions, but couldn't get the labels to print properly.

If you run into a snag, check the printer settings on your AppleWorks program disk. From the main menu, bring up the Change a Printer screen. The keystrokes to get you there are **5, Return, 7, Return**, your printer number, and **Return** again.

Be sure that item 3, Stops at end of each page, is set at No (the AppleWorks standard). Next, look at item 2, Accepts top-of-page commands. The typical setting for most printers is Yes (another AppleWorks standard). Your printer may need something different. Change Yes to No, and try printing the labels again. If this doesn't work, your printer manual may give you a clue about what to do next. —eds.

Speak My Language

As a subscriber to your magazine, I've found your product reviews extremely enlightening. I recently purchased a newly developed language called PROMAL (Programmer's Micro Application Language). Simply put, it's by far the finest language I've seen for Apple II computers.

You can run programs written in this language on an Apple IIe or IIc, and the Commodore 64. Its editor works better than almost any word processor I've used, and its programs are faster than Turbo Pascal. Having been an Apple Pascal programmer for the past couple of years, I was especially happy to see changes in syntax (in which indentation plays a key role) and the vast increase in compiling speed.

Are you aware of this language? You'd do your readers a great service to look into it. Perhaps you might include it in one of your upcoming review sections.

Gary F. Davenport
909 Reed Drive
Claremont, CA 91711

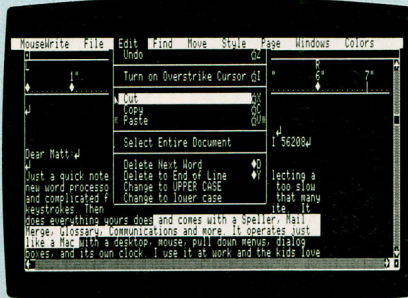
Look for a review of PROMAL in the June 1986 issue (p. 98). —eds.

There Are a Lot of Great Reasons to Own MouseWrite...

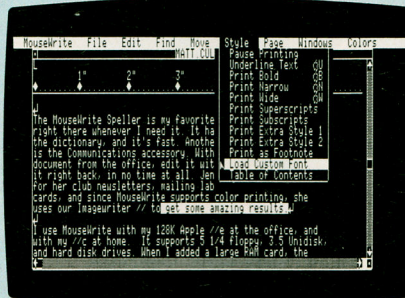
Reasons like being able to quickly correct any mistakes with MouseWrite Speller. It's built-in so it's there whenever you need it. Want form letters, labels, or 1000 individually addressed envelopes? MouseWrite's Mail Merge and Glossary get the job done for you.

Put pizzazz in your printouts by selecting anything from Color to Custom Fonts. Save time with Print While You Work. Get in touch with the world with MouseWrite Communications. 12 more great reasons are the 12 documents you can open at once on the Expanded Desktop.

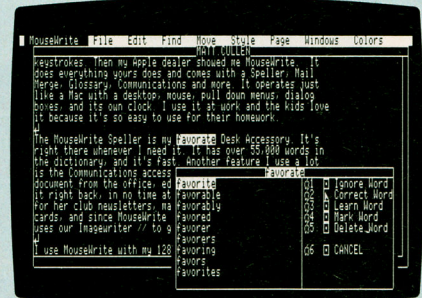
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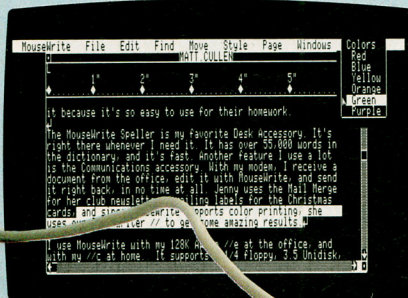
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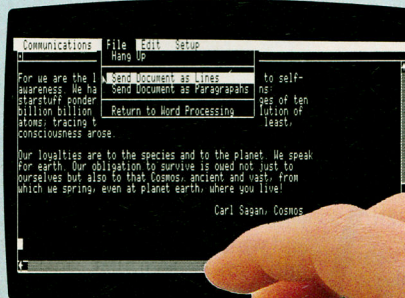
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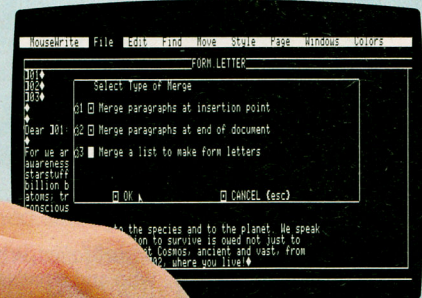
"Make a splash by adding color with ImageWriter II and others"



"Send and receive files with built-in Communications"



"Form letters in a flash with Mail Merge"



MouseWrite will also load AppleWorks documents directly, or even your old DOS 3.3 Text files. It works with your 5-1/4" disk, Unidisk 3.5, hard disk, or Extended RAM card.

Suggested Retail Price: \$149.95

Ask your local dealer, or get all the details in the fact-filled MouseWrite brochure by calling:

800-421-6526 IN CA 619-562-3670

MouseWrite requires an Apple IIc or 128k Enhanced Apple IIe / Apple, Appleworks, ImageWriter are trademarks of Apple.

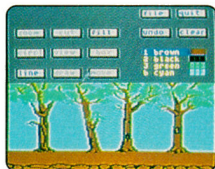


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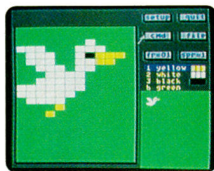
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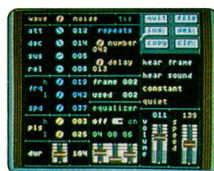
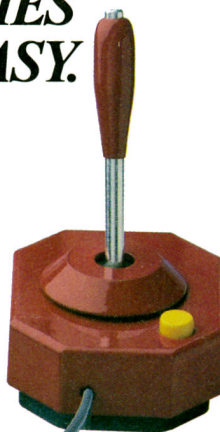
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LETTERS

A Dirty Job

Thank you for the excellent feature on computer maintenance ("An Ounce of Prevention," January 1986, p. 19). One item the article doesn't completely cover is the seemingly insignificant load button. This device is a little plastic widget with a felt pad that pushes the rotating disk into contact with the read/write head. On the "back" side of the disk, the felt eventually becomes contaminated and worn and may start to score the disk surface. This wouldn't be so bad, except that many programs are written on both sides, and many people use both sides for data storage. The dirt from one side of the contaminated load button then gets into the read/write head.

At \$3.50, the load button is probably the least expensive part of the computer. I'd like to share my instructions for replacing load buttons with others. Readers can reach me at (914) 226-4044, or by mail.

Keep up the good work with your fine, comprehensive magazine.

Roy Smart
RR 1, Box 100
Hopewell Junction, NY 12533

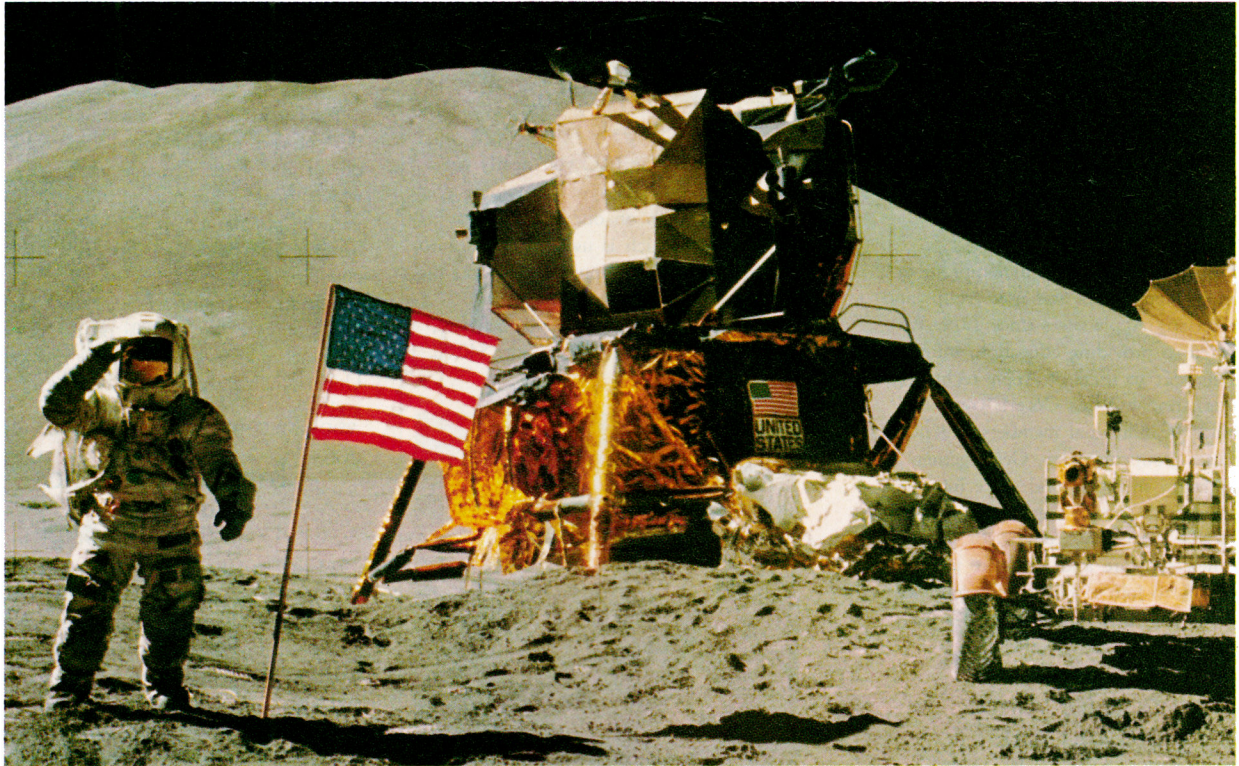
Apple Scheduling

I'm the office manager of a tax and legal-filing company. Recently, we purchased an Apple IIe with 128K of RAM, a ProFile 10-megabyte hard disk, and the Peachtree series 40 Accounts Receivable, General Ledger, and Inventory Control, along with, of course, a subscription to your interesting magazine.

Let me give you a little background on my question. We schedule our employees to file and update various tax and legal documents in and around the Los Angeles area. We have about 200 accounts and 25 employees. Now I'm ready to hand over the chore of scheduling to our beloved computer.

We need a program with an option for a master schedule to create and update monthly calendars and individual calendars for distribution to each employee. I haven't been able to find anything to fit our needs. I've toyed with data bases, spreadsheets, and word processors, none of which seem to do it right. I have a fair amount of programming experience, but not the time it takes to tackle such a task. Do you know of any software (preferably

THE AMERICAN WAY TO THE TOP



This July 4th, we at Applied Engineering hope that all Americans will take time out to ponder who and what we are.

It is hoped that we can remind ourselves what it means to be an American.

We invented the telephone, the electric light, the phonograph, and the airplane. Americans invented the first vacuum tube, transistor and the integrated circuit, without which the personal computer would have been impossible. Over 95% of the world's new inventions are invented by Americans. We lead the world in all phases of technology; electronics, physics, chemistry, health science, space and robotics. We've sent men to the moon, landed a robot on Mars, and sent our probes out across the galaxy! Americans by their very nature are inventors, thinkers, winners and doers.

America is a country where two young men started a company in their garage and three years later Apple Computer is the industry leader. Applied Engineering started much the same way and we became the leading Apple peripheral manufacturer, with no outside sales force, no marketing strategy,

and no commissioned sales people.

Our business plan at Applied Engineering is simple. BE THE BEST. That means producing tomorrow's peripherals today, it means hard work, high quality, total dedication to Apple Computer and good service at competitive prices.

While some other guys are losing the ball game... we're adding to our roster. In the past few months, we've added 4 new products to our line up for a total of 26 and we're working on more. We've added more order lines and more knowledgeable people to serve you.

While others look to the Orient for solutions to their engineering and manufacturing problems, we at Applied Engineering feel differently because we know America's inventive past and her inventive future and we're excited.

To quote Dr. Robert Goddard in a letter to H. G. Wells, "There can be no thought of finishing, for 'aiming at the stars,' both literally and figuratively, is a problem to occupy generations, so that no matter how much progress one makes, there is always the thrill of just beginning."



APPLIED ENGINEERING
The Apple enhancement experts

What you should know about the International Apple Core.

If you're like most Apple users, you don't realize the many benefits of an IAC membership. Or what it can do for you and your computer.

So what's an IAC?

International Apple Core™ is a non-profit organization of Apple users and user groups and has been serving Apple users since 1979. We are dedicated to providing education, information and support to users of Apple technology.

The International Apple Core is comprised of thousands of individual members and hundreds of user group members. Get together with your fellow members and share information on new applications, keep up on Apple events, receive specialized training, or learn the latest on new software and hardware products.

If you'd like to join a local users group we can help you find one. Want to start a users group in your area? IAC can help.

Support for your Apple and you.

Understand your computer better with such books as *Beneath Apple DOS*, *Beneath Apple PRO-DOS*, and *Universal File Conversion*, all discounted to members.

Interested in computer insurance to protect your hardware, software, and even your data? IAC can help you obtain coverage through "Data Security Insurance".

Discounts on hundreds of public domain software programs, as well as selected commercial software products.

Information, please.

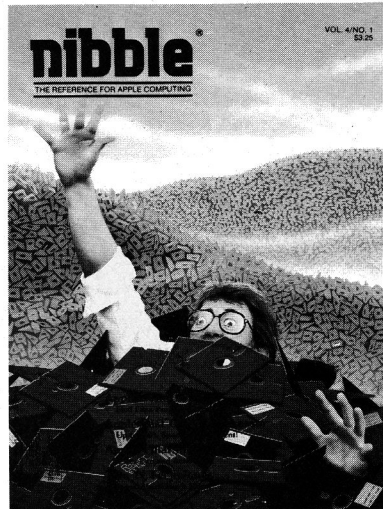
IAC provides many sources of information. Your \$30 yearly membership fee brings you IAC's newsletter "IAC Express", discounts on our many products, access to IAC's BBSs and a 12-issue subscription to *Nibble* magazine devoted to Apple systems and compatibles. *Nibble* magazine features more than \$50 dollars worth of ready to run Apple programs in each issue. The programs focus on home, business, education and entertainment. *Nibble* also features new products, reviews, tips and techniques for learning more about your Apple and having fun doing it!

As a member, you may subscribe to our Disk of the Month (DOM); \$60 will bring you a one year subscription. The DOM is a disk of public domain software which is mailed directly to your home each month with themes such as utilities, education, games, or a potpourri of different programs.

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As a member of the IAC you nearly get paid with what you will save. By joining you will save almost 20% on our AppleWorks Mailing Program which is used to create automated form letters from your AppleWorks database and word processing files.

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Educational books are available to members at discounts of up to 20% off the cover price, with such titles as *Understanding the Apple II*, *Understanding the Apple II/e*, *Bag of Tricks* and more.

Invite your friends and save.

IAC offers user groups a special package. For \$90 your group receives a full year IAC membership, IAC Express, all members of your group will have access to our BBSs, a subscription to *Nibble* for your group's library, and also a subscription to our DOM (disk of the month). Your group will be listed among the other hundreds of IAC user groups so that other local IAC members and Apple users will be able to locate you easily.

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LETTERS

CP/M or ProDOS) that would be of any use here? If not, can you refer me to any company that could help? Thank you very much.

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Appointimetemp (\$38 from Spreadsoft, P.O. Box 192, Clinton, MD 20735, 301-856-1180) or the Appointment Calendar (\$99.95 from CMA Micro Computer, 55722 Santa Fe Trail, Yucca Valley, CA 92284, 619-365-9718) may suit your needs. Check any of the major software directories (The Book of Apple Software or The Apple Software Directory, for example) for detailed descriptions of the various scheduling-software packages available. —eds.

The Mighty Mouse

Last month, I purchased a mouse for my Apple IIc. After some delay, I was able to secure a copy of the October 1984 issue of *inCider*, which contained your excellent article, "*inCider's Guide to Mouse Software*."

I found this article most useful. As far as I'm aware, it's the only listing anywhere of Apple II mouse software. It would be great if *inCider* could run a similar compilation annually.

John M. Spangler
P.O. Box 575
Versailles, KY 40383

Indexing

I'm interested in obtaining an index of *inCider* magazine articles. Can you help me with this?

Robert Barrett
920 Mark Avenue
Hamilton, OH 45013

In every January issue, we publish an index to the preceding 12 issues. You can also find a comprehensive index to the magazine on the inCider BBS. To reach the BBS, use your modem to call (603) 924-9801. —eds.

inCider welcomes readers' comments regarding articles, letters, or other topics of interest. We reserve the right to edit letters for clarity, style, and space. Please address your correspondence to Letters, inCider, 80 Pine Street, Peterborough, NH 03458.

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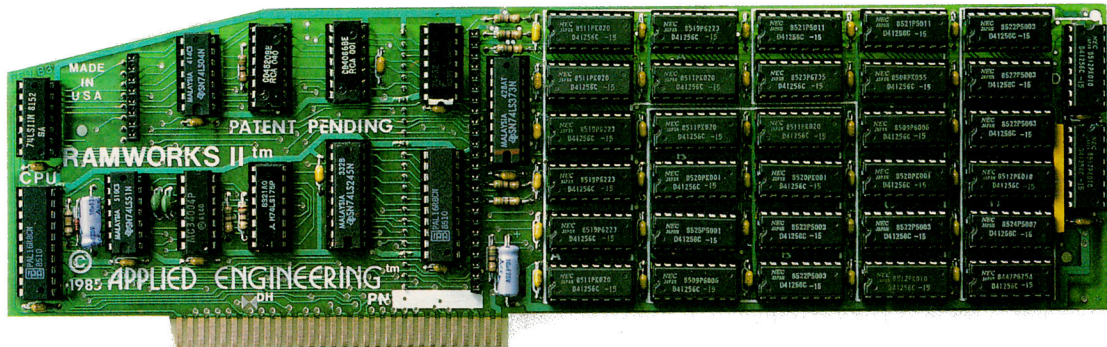


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While RamWorks II is recognized by all memory intensive programs, NO other expansion card comes close to offering the multitude of enhancements to AppleWorks that RamWorks II does. Naturally, you'd expect RamWorks II to expand the available desktop, after all Applied Engineering was a year ahead of everyone else *including Apple* in offering more than 55K, and we still provide the largest AppleWorks desktops available. But a larger desktop is just part of the story. Look at all the AppleWorks enhancements that even Apple's own card does not provide and *only* RamWorks II does. With a 256K or larger RamWorks II, *all* of AppleWorks (including printer routines) will automatically load itself into RAM dramatically increasing speed by eliminating the time required to access the program disk drive. Switch from word processing to spreadsheet to database at the speed of light with no wear on disk drives.

Only RamWorks II eliminates AppleWorks' internal memory limits, increasing the maximum number of records available from 1,350 to over 15,000. *Only* RamWorks II increases the number of lines permitted in the word processing mode from 2,250 to over 15,000. And *only* RamWorks II (256K or larger) offers a built-in printer buffer, so you won't have to wait for your printer to stop before returning to AppleWorks. Ram-

Works II even expands the clipboard. And auto segments large files so they can be saved on two or more disks.

RamWorks II, nothing comes close to enhancing AppleWorks so much.

The Most Friendly, Most Compatible Card Available.

Using RamWorks II couldn't be easier because it's compatible with more off-the-shelf software than any other RAM card. Popular programs like AppleWorks, Pinpoint, Catalyst, MouseDesk, Howard-Soft, FlashCalc, The Spread Sheet, Managing Your Money, SuperCalc 3a, and MagiCalc to name a few (and *all* hardware add on's like ProFile and Sider hard disks). RamWorks II is even compatible with software written for Apple cards. But unlike other cards, RamWorks II plugs into the IIe auxiliary slot providing our super sharp 80 column text in a completely integrated system while leaving expansion slots 1 through 7 available for other peripheral cards.

Highest Memory Expansion.

Applied Engineering has always offered the largest memory for the IIe and RamWorks II continues that tradition by expanding to 1 full MEG on the main card using standard RAMs, more than most will ever need (1 meg is about 500 pages of text)...but if you do ever need more than 1 MEG, RamWorks II has the widest selection of expander cards available. Additional 512K, 2 MEG, or 16 MEG cards just snap directly onto RamWorks II by plugging into the

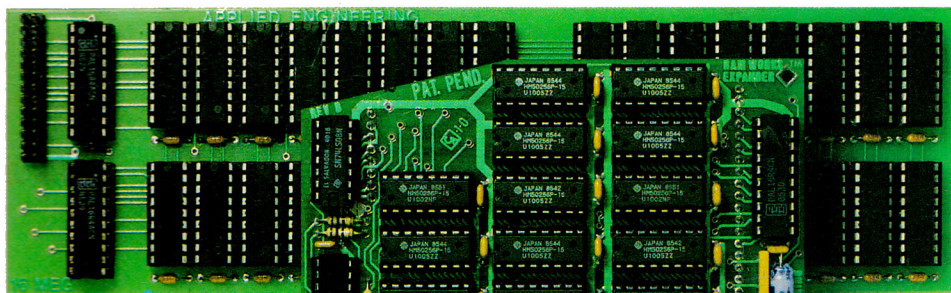
industry's only low profile (no slot 1 interference) fully decoded memory expansion connector. You can also choose non-volatile, power independent expanders allowing permanent storage for over 20 years.

It Even Corrects Mistakes.

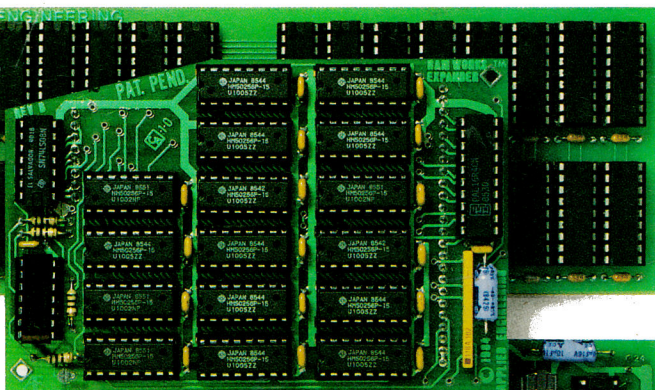
If you've got some other RAM card that's not being recognized by your programs, and you want RamWorks II, you're in luck. Because all you have to do is plug the memory chips from your current card into the expansion sockets on RamWorks II to recapture most of your investment!

The Ultimate in RGB Color.

RGB color is an option on RamWorks II and with good reason. Some others combine RGB output with their memory cards, but that's unfair for those who don't need RGB *and* for those that do. Because if you don't need RGB Applied Engineering doesn't make you buy it, but if you want RGB output you're in for a nice surprise because the RamWorks II RGB option offers better color graphics plus a more readable 80 column text (that blows away any composite color monitor). For only \$129 it can be added to RamWorks II, giving you a razor sharp, vivid brilliance that most claim is the best they have ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks II RGB option is more than just the ultimate in color output because unlike others, it's fully



16 MEG Expander



512K Expander

compatible with all the Apple standards for RGB output control, making it more compatible with off-the-shelf software. With its FCC certified design, you can use almost any RGB monitor because only the new RamWorks II RGB option provides both Apple standard and IBM standard RGB outputs (cables included). The RGB option plugs into the back of RamWorks II with no slot 1 interference (works on the original RamWorks, too) and remember you can order the RGB option with your RamWorks II or add it on at a later date.

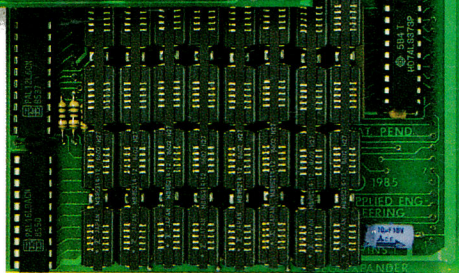
True 65C816 16 Bit Power.

RamWorks II has a built-in 65C816 CPU port for direct connection to our optional 65C816 card. The only one capable of linearly addressing more than 1 meg of memory for power applications like running the Lotus 1-2-3™ compatible program, VIP Professional. Our 65C816 card does not use another slot but replaces the 65C02 yet maintains full 8 bit compatibility.

Endorsed by the Experts.

Steve Wozniak, creator of the Apple Computer said "I wanted a memory card for my Apple that was fast, easy to use, and very compatible; so I bought RamWorks." A+ magazine said "Applied Engineering's RamWorks is a boon to those who must use large files with AppleWorks...I like the product so much that I am buying one for my own system." inCider magazine said "RamWorks II is the most powerful auxiliary slot memory card available for your IIE, and I rate it four stars...For my money, Applied Engineering's RamWorks II is king of the hill."

Apple experts everywhere are impressed by RamWorks II's expandability, versatility, ease of use, and the sheer power and speed that it adds to any IIE. With a RamWorks II in your Apple, you'll make IBM PC's and AT's look like slowpokes.

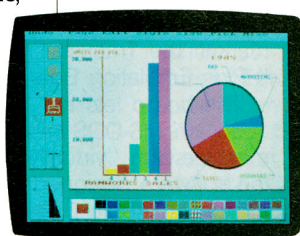
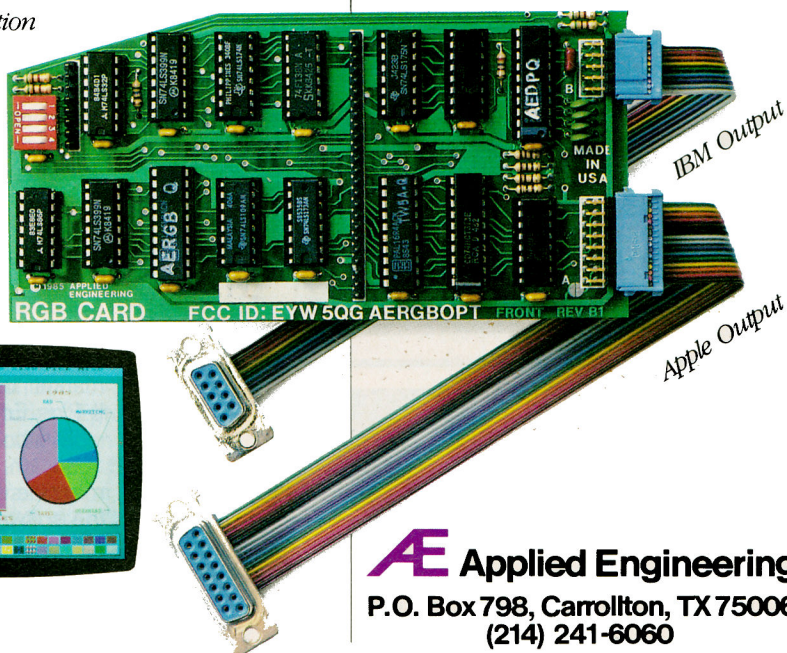


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edited by *inCider* staff

Industry Skeptics Look at "Little Blue"

Despite its developers' expectations, the coprocessor board dubbed "Little Blue," which transforms the 8-bit Apple IIe into an IBM clone, is getting only a lukewarm reception from the industry.

Marketing director Dave Larson of The Engineering Department, in Sunnyvale, California, which developed the 80286-based board, is hopeful that Apple will regard it as a "strategic" product in defense of its dominant position in the educational market. According to Larson, IBM is launching an aggressive campaign to convince school officials that children need early preparation for the IBM-dominated business world.

A persistent rumor supporting Larson's position is that IBM's low-cost "JX" machine now sold overseas will soon be marketed domestically to break Apple's stronghold in education.

Industry observers, though, discount both the possibility of IBM's overtaking Apple in the educational market and the value of Little Blue as a means of defense. For example, LeRoy Finkel of the San Mateo County Office of Education in Redwood City, California, points out that the IBM argument of preparing kids for the MS-DOS world simply doesn't hold water.

"More and more, teachers are using computers to teach, not to teach technology," Finkel notes. "That's because only about three percent of the jobs out there require technical expertise. Even if a young person does

have to change from the Apple environment to IBM upon entering the work world, so what? Kids have no problem changing from one system to another."

Analyst John Victor of Talmis Research in New York also holds a dim view of an IBM coup in the K-12 market. Schools aren't anxious to let another computer system push Apple out, Victor says, because "educators like continuity." He also points to the "enormous inertia" of the educational system and its deep commitment to Apple.

Both Finkel and Victor doubt that the PC-compatible board will make a significant splash in the K-12 market, unless, as Victor says, "it gives teachers one more excuse to hold onto their Apples." But both men are skeptical of the board as a means of accessing a new software environment and are wary of higher rates of software failure. And as Finkel points out, most of the significant IBM software has already been transported to the Apple environment.

"When I heard about Little Blue, the question I asked myself was 'Why?' " Finkel concludes. "I see no advantage."

Educator's Alternative

Tandy Corporation has discovered a direct route into the lucrative education market: the Trackstar Apple II Plus Emulation Board.

The board lets the Tandy 1000, an MS-DOS-based machine, run "virtually all the software designed to run on an Apple II Plus computer," according to Fred Holland, of Tandy's

Educational Division in Fort Worth, Texas.

Tandy is aware that the strength of the Apple II in schools lies in the mass of available software, and that most of the Apple II educational packages are II Plus programs. The company, which makes the TRS-80 series of microcomputers and the 1000 series, has been working its way into the education market since 1979.

This spring Tandy offered a shortcut into the MS-DOS world for teachers with Apples who wanted to buy Tandy computers: \$200 in trade for any Apple computer swapped for a Tandy. The promotion showed Tandy, though, that Apple-computer users in education really don't want to give up the wealth of Apple software for MS-DOS.

"We did extensive research among teachers using all kinds of computers and discovered two things—that Tandy users wanted to run all the Apple software, but that Apple users couldn't care less about MS-DOS," Holland says.

Tandy then began looking for another approach to the market and acquired the Trackstar board from Diamond Computer Systems of Fremont, California. Diamond makes a similar board, also called Trackstar, for the IBM PC series.

Holland says Trackstar is "a fairly good compromise, a bridge, between the school—Apple software—and business—MS-DOS software."

The same gap might be spanned by the "Little Blue" board, an MS-DOS coprocessor for the Apple II series, manufactured, but not marketed, by The Engineering Department (see accompanying story). Hol-



Courtesy of Tandy Corp.



Courtesy of Taurus Photos/B. Ullmann



Courtesy of Taurus Photos/Alec Duncan

land isn't worried about competition from that corner: No one is selling the Little Blue board, and, with Apple expected to make 16-bit changes soon in the II, no one is hurrying to market it.

Holland cites three of Little Blue's concrete failings: It requires that the II have an IBM keyboard (or fake it), complete with function keys; RGB output, an expensive option for the II;

and an IBM disk drive. The Tandy's built-in disk drives, on the other hand, can read most Apple software that isn't "sector copy-protected," and the Tandy 1000 has an IBM keyboard and RGB output.

Waiting for Apple

The expected 16-bit Apple IIx with custom color and sound chips may be a while in coming. The delay seems to stem from the software community. Developers are behind in upgrading existing II software and developing new "blockbuster" applications.

Apple still hopes to "expand the Apple II family at both ends," with cheaper and more powerful Apple II's in the near future, according to Guy Kawasaki, Apple's Manager of Software-Project Management.

But the near future may not be until Christmas. Sources within Apple report that the expected September roll-out will be postponed until December at the earliest. Software for the new machine has proven harder to write than expected. One third-party developer, for instance, says that no telecommunications software, from Apple or any other company, is compatible with the IIx.

But Apple may not wait for complete upward compatibility to the new machine—a major change of policy. "There's no way we can say that current products will be completely upgradable to future ones," says Randy Battat, Hardware Product Manager at Apple. Apple can't do as much with the new product if it has to be completely compatible with all the old Apple II systems, he explains.

The good news came from Kawasaki: "Everything you think Apple should be doing with the II—a bigger address space, better color, stereo sound—we're probably doing." He stopped short of a product announcement, grinned, and added, "Now I'm not saying *when* we'll do it."

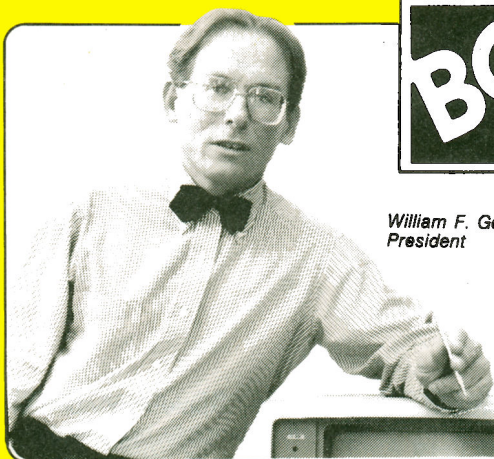
We're always looking for news of the Apple world. If you're making news, send your press releases and photographs to News Line, inCider, 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025.

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APPLE CLINIC

by Jim Sather and Paul Statt

Apple Clinic is a forum for discussing Apple II hardware, software, and related subjects. If you have questions or answers, or want to make a statement, write to Apple Clinic, inCider, Elm Street, Peterborough, NH 03458.

ImageWriter Subscripts

The coincidence of the MINI-CATALOG program (*inCider*, March 1985, p. 49) and your discussion of sub- and superscripting (also in March 1985, p. 56) recently caught my attention. I have an Apple IIe and an Epson printer, and found that they work well with MINI-CATALOG. It's an entirely different story, though, when the IIe is connected to my Apple ImageWriter.

I've searched in vain to discover the secret of making the ImageWriter print subscripts. The ImageWriter's documentation is no help at all. Phone calls to the dealer have been equally negative. Can I print subscripts with a BASIC program using the ImageWriter?

Robert V. McNeill
Rockwall, TX

Sub- and superscript capability isn't built into the ImageWriter as it is in Epson-compatible printers. But you can print them by using the custom script set included on the ImageWriter Tool Kit disk that comes with the ImageWriter. The ImageWriter User's Manual, Part II: Guide to Apple II explains how to download the script set to ImageWriter RAM. Basically, you just boot the disk and select the **DOWNLOAD SUPER/SUBSET FONTS** option.

Once you download the script set, scripts are turned on by **ESC ' and off by ESC \$**. When scripts are enabled, lowercase letters and numbers print as subscripts, and uppercase letters and various special characters print as superscripts. This puts a real crunch on the idea of using MINI-CATALOG with the custom script set, since letters in the catalog will print as subscripts and numbers as subscripts.

I can think of a couple of ways to

make the custom scripts work with MINI-CATALOG. One way is to write an assembly-language program that hooks into the DOS character-output switch (\$AA53/\$AA54 in DOS 3.3, \$BE30/\$BE31 in ProDOS). Such a program will translate incoming CATALOG ASCII to values required by the custom script set for uniform superscript output, then jump to the ImageWriter character-output routine.

A second solution is to modify a backup of the Tool Kit disk's custom script set to print uniform superscript from incoming CATALOG ASCII.

With either solution, the following line substitutions should be made to MINI-CATALOG so that ImageWriter control codes are used:

the modem response with PEEK (49320).

I believe I've tried all the PEEKs and POKEs there are, except the one that works. I suspect the Super Serial Card itself, but it works fine in terminal mode. I'm sure there's a simple way to do what I want. I've checked all my local dealers and user groups, and looked through three years worth of back copies of *inCider*. If you can't help me directly, perhaps you can point me to someone who can.

James E. Hardin
Lancaster, PA

I don't have a simple answer, because programming the Super Serial

Table 1. AppleWorks/ImageWriter control codes for printing sub- and superscripts.

Function	Code
Superscript on	ESC "T08" ESC "r" CTRL-J
Superscript off	ESC "T" CTRL-J ESC "A"
Subscript on	ESC "T08" CTRL-J
Subscript off	ESC "T32" ESC "r" CTRL-J ESC "A" ESC "T" CTRL-J

```
415 PRINT CHR$(27) " " CHR$(27) "Q"
      : REM SUPER, CONDENSED
420 PRINT CHR$(27) "T14" : REM
      14/144" LINE FEED
445 PRINT CHR$(27) "$" CHR$(27) "N"
      CHR$(27) "A" : REM INIT
```

Analysis of the AppleWorks SEG.PR file reveals another method of sub-/superscripting that makes use of the ImageWriter's reverse line-feed capability. AppleWorks simply feeds one-third of a normal line feed forward or backward and prints full-height characters. This method won't help users of MINI-CATALOG, but it does provide a way to print sub- and superscripts that's equivalent to the way you'd do it on a typewriter. The control codes for this are listed in **Table 1**. —J.S.

ACIA Programming

I'm writing a simple BBS (bulletin-board server) in Applesoft because programs I've tried don't suit my needs. The problem is with the Super Serial Card in slot 2 of my Apple II Plus. I can write to the modem via POKE 49320 (\$C0A8), but can't read

Card isn't simple. The SSC is built around a 6551 ACIA communication-control chip, just like the Apple IIc's serial ports. In fact, slot 2 SSC programming is identical to IIc serial port 2 programming at this level. (See **Table 2** for a brief summary on port 2 addressing.)

Transferring data at 300 baud or faster is unwieldy for BASIC, so I suggest you write assembly-language data-transfer routines, and call them from your Applesoft BBS. A basic technique for reading modem data is to set up the ACIA command and control registers (\$C0AA and \$C0AB), specifying baud rate, data-word length, parity operation, and interrupt operation.

When you read data without using interrupts, you poll bit 3 of the status register (LDA \$C0A9, AND #\$08) to see if the read data register is full. When bit 3 is set you can read a data word (LDA \$C0A8). Reading the receive data register automatically clears bit 3 of the status word.

Table 2. Super Serial Card and Apple //c port 2 control addresses.

Address	Read Function	Write Function
\$C0A8	Read receive data	Write transmit data
\$C0A9	Read status	Programmed reset
\$C0AA	Read command	Write command
\$C0AB	Read control	Write control

This information is necessarily brief and incomplete. I suggest you study the serial-port portions of the firmware listings in the Apple //c Technical Ref-

erence Manual to learn how to program the port 2 ACIA. This manual also contains descriptions of the //c ports, and describes the differences

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between SSC and Apple //c serial-port firmware.

Another good source of information is Aaron Filler's Apple Thesaurus. The "Serial Signals" and "Modems" chapters of this book will prove useful to any Apple owner struggling with serial-interface problems. This book includes a partial data sheet of a 6551 ACIA, the first thing you'll need for directly programming an SSC or //c port.

I've mentioned Apple Thesaurus in this column before, but I didn't give it the attention it deserves. It's one of the most valuable books ever written about Apple II computers. It's an 895-page general treatment of Apple II hardware, devoting large portions to Apple peripherals. I dig into it when I need to firm up my own knowledge of Apple hardware to answer Apple Clinic questions.

Your bookstore probably won't have Apple Thesaurus, but can order it for you from Datamost. I recommend it to owners of Apple II, //e, and //c computers seeking general or mildly technical information. —J.S.

ProDOS Apple Writer

I'm unable to print Apple Writer files with ProDOS Apple Writer (version 2.0), but I can print them with the DOS 3.3 version. I have a Gemini 10X printer with Apple Dumping-GX interface card in my Apple //e. Can you help me?

David L. Desper
Kendallville, IN

According to the documentation accompanying MinuteWare's Apple Writer glossary disk, certain interface cards have problems accepting escape codes from Apple Writer 2.0. This could be your problem. Ask your Apple dealer or write Apple directly for a copy of the Update Utility for Apple Writer version 2.1. If you can't obtain the disk from them, MinuteWare will send you one for a \$5 handling fee. —J.S.

80N

When using AppleWorks I run into an annoying problem. Every printout starts with "80N" as the first word. This happens with the word processor, data-base, and spreadsheet outputs.

Dick Ward
Meriden, CT

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Everything I send to my printer from AppleWorks prints an "80N" at the beginning of the document. The only way I've been able to get rid of it is to allow enough spaces at the top to make the "80N" print on the bottom of the preceding page.

Wayne Stonemark
Green River, WY

Wayne, you've found a solution worthy of the Department of Defense, but probably not one that appeals to Dick. We've seen hundreds of letters

on the pesky "80N"—it used to bug me, too. A simpler, more economical solution is to go to your Apple dealer and get AppleWorks version 1.2. Set the interface-card control as needed by your printer-computer interface. That should do the trick. —P.S.

Goin' with Her

I was intrigued by the way Judy Collins (March 1986, p. 18) uses the AppleWorks program and a Tandy 200. I have an Apple IIe and

AppleWorks, and am very interested in a portable system I can use at the office and while traveling. How does Ms. Collins use the Tandy 200?

Mario Angel
Visalia, CA

Lots of readers thought Judy Collins' traveling notebook was a nice addition to AppleWorks. Judy uses only the word processor on the road, so the switch is a bit easier for her than it might be for a power user. She simply has a modem and communications software for each machine. Away from home, she transmits files over the phone to her assistant's IIc; back at the ranch she saves phone costs by using a null-modem cable to simulate a phone line. —P.S.

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RAM Wars

I think Apple users are about to enter the not-so-wonderful world of war-rig utility programs. Pinpoint, the memory-resident desktop accessory, is activated by pressing closed apple-P. Beagle Bros' MacroWorks also uses closed-apple key combinations to add macro commands to AppleWorks. If I configure my system with both accessories, what happens when I use closed apple-P?

Tom Smith
Portland, OR

I'm glad you're going to check that out, Tom, not me. (Hide under the table during your experiment. . . .) But both Pinpoint and Beagle Bros admit that their AppleWorks accessories are jealous programs and won't stand for competition in your Apple's RAM. Memory-resident programs all hang out in more or less the same memory space. Sorry, Tom. Have you seen Program Writer from The Software Touch (Editors' Choice, June 1986, p. 120)? —P.S.

Turning ProDOS

I've had an Apple II Plus with 64K of RAM and two disk drives for about three years now, and I've been very satisfied with it. But now I find that all the new programs for the IIe use ProDOS, and I can't run them. Is there a way I can run ProDOS on my Apple II Plus?

John P. Shioli
APO New York

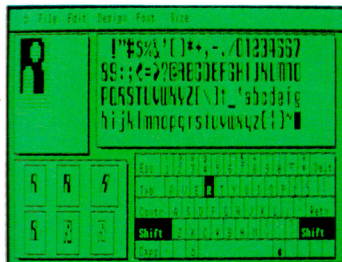
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Have you been talking to your dealer again, John? All you need to run ProDOS is an Apple II with 64K and Applesoft BASIC in ROM. (It helps to have 128K, but that's still possible on a II Plus.) —P.S.

Bulletin-Board Update

I'm writing to inquire about inCider's bulletin board. Every time I call, it's different.

Janet Balas
Greensburg, PA

Janet, you get the apology I owe to hundreds of unhappy BBS users. The board has been down for an extended period, as a result of changes in personnel and moving our offices. I hope that by the time you read this the board will be up and running again at (603) 924-9801. Call to check—if the board's down it won't cost you a penny. ■ —P.S.

This month Paul Statt, inCider's technical editor, joins Jim in answering your Apple Clinic questions.

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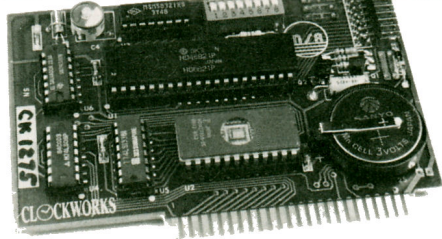
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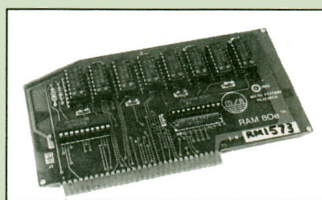
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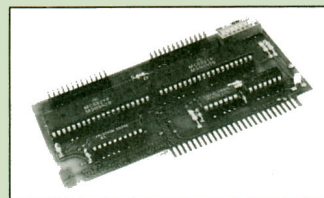
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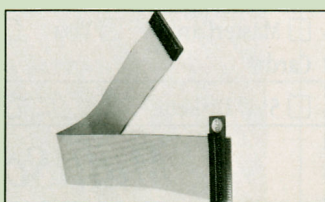
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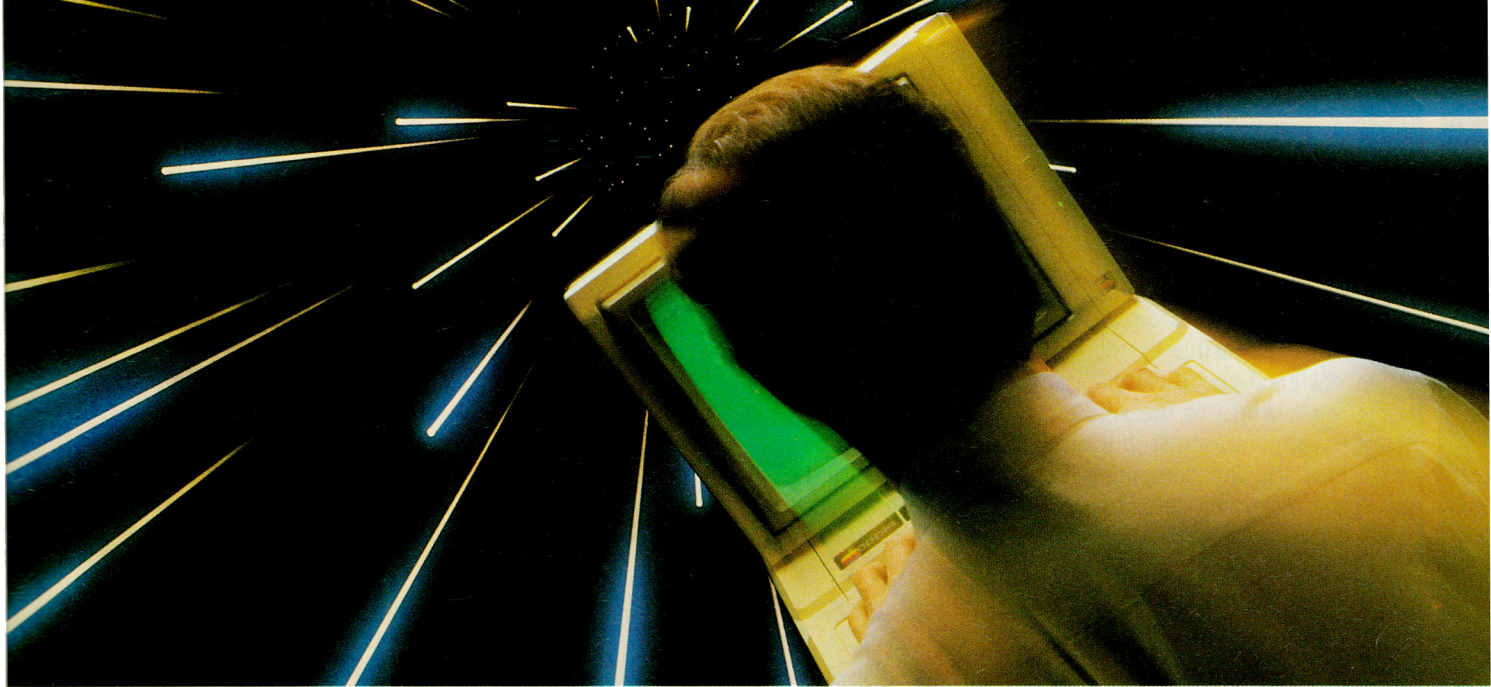


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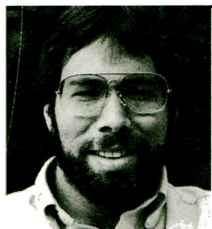


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The New Generation Spreadsheet For The New Generation Apple //e & //c

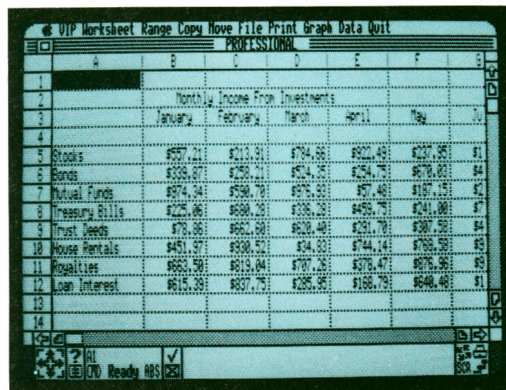
There's an all new Apple //, an Apple // with almost unlimited memory and almost unlimited power—even a new sixteen-bit CPU.* And a *REAL* Macintosh-style interface is no longer just a dream. It's a mouse click away!

VIP Professional is an all-new program made possible by the new //, and designed specifically for it. Professional brings to the Apple // the most popular, most powerful spreadsheet for any computer—Lotus 1-2-3™ version 1A. But to the integrated spreadsheet, database and graphics of 1-2-3, Professional adds a full-blown Mac-style interface.

Beyond Lotus Compatibility

VIP Professional not only has the same commands and features as 1-2-3, you can also type the same keys to do the same things. Lotus files can be read and written, and all functions can be used, including the powerful macros.

But Professional goes beyond Lotus, making it oh so easy to use—and even more powerful. Pull-down menus, dialogue boxes, mouse ranging, scads of icons, scroll bars, column "grabbers", grids—everything you need for ease of use, everything Lotus lacks. Plus, Professional adds things that were left out of Lotus, like a giant 8192 row by 256 column spreadsheet, and the ability to use up to four megabytes of memory.



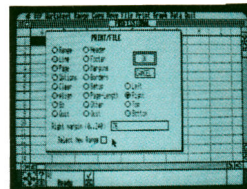
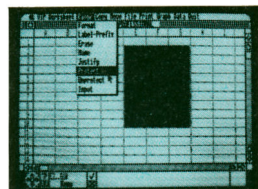
Professional Power

Don't be fooled by the pretty face. Professional packs a tremendous punch. Like its ability to address up to four megabytes of data; Or its 50-plus built-in financial and mathematical functions; Or its database with up to 8192 records, each with up to 256 fields; Or its five different types of graphs with tens of options; And its Lotus 1-2-3 macro programming language that

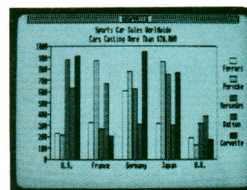
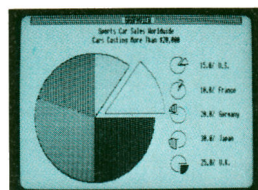
lets you automate your spreadsheet for specific tasks such as classroom exercises, experiments, or business applications such as accounting.

Of course you get variable column width, split screens, frozen titles, sorting, data query, file combine and extract, copy, move, range naming, justification for doing word processing, statistical analysis, a full range of numerical formatting, engineering graphics precision, local and global protection of cells, header and footer control. In short,

Professional matches the power of any spreadsheet for any computer!



Do your finances, keep your inventory, graph your sales and a whole lot more.



Just Minutes to Learn

Professional comes with a user-sensitive tutorial for the newcomer. And help is built right into the program. With the handy tutorial you will be able to create your first worksheets in just minutes.

VIP Technologies Corporation

(805) 968-9567

132 Aero Camino, Santa Barbara, CA 93117

No Other Spreadsheet Compares

Feature	VIP	SuperCalc3a	Mouse Calc	AppleWorks
Sheet Size	256x8192	63x256	63x254	153x999
Memory	4 Meg	500K	42K	61K
Lotus Spreadsheet	Yes	No	No	No
Lotus Database	Yes	No	No	No
Lotus Graphs	Yes	No	No	No
Lotus Macros	Yes	No	No	No
Uses Lotus Files	Yes	No	No	No
Uses Mouse	Yes	No	Yes	No
Uses Icons	Yes	No	No	No
Fast Natural Recalc	Yes	No	No	No
Speed	Fast	Fast	Slow	Fast
Supports 16-Bit	Yes	No	No	No

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Get the Power of 1-2-3 for only



\$199.95



If Your Dealer is Out of Stock, Order Direct

Send your check or money order, together with \$3 for shipping and handling. California residents add 6% sales tax. COD's and purchase orders are not accepted. Orders by personal check are held three weeks for the check to clear. All prices are subject to change without notice.

SYSTEM REQUIREMENTS: Compatible with Lotus 1-2-3 version 1A. Requires Apple //e or //c with at least 256K; Mouse recommended but not required. Works with MultiRam and RamWorksII memory cards; Works with most popular printers. Reads AppleWorks files. Consult your Apple dealer for specific information.

*Works with Checkmate and Applied Engineering 16-bit boards.

REVIEWS

UniDisk 3.5, Cauzin Softstrip System, EduCalc, The Information Connection, Note Card Maker, ProFiler, Pinpoint, Brown Bag Data Base/Word Processor, Epson AP-80

Compact and Convenient

UNIDISK 3.5

Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014

Microfloppy-disk drive; Apple //e with disk-controller card, //c with motherboard upgrade \$499

Ease of setup	■ ■ ■ ■ ■
Ease of use	■ ■ ■ ■ ■
Documentation	■ ■
Support	■ ■ ■ ■ ■
Overall	■ ■ ■ ■ ■

Apple's new UniDisk 3.5 scores high marks in most categories. Compared to its 5¼-inch counterpart, the UniDisk 3.5 drive shines—it's faster, holds more data, and is more compact. The system is easy to install and use, although the documentation is lacking in some areas.

The 800K UniDisk 3.5 comes with an installation and operations manual, and a 3½-inch ProDOS System Utilities disk with accompanying manual. I had the drive up and running in less than three minutes.

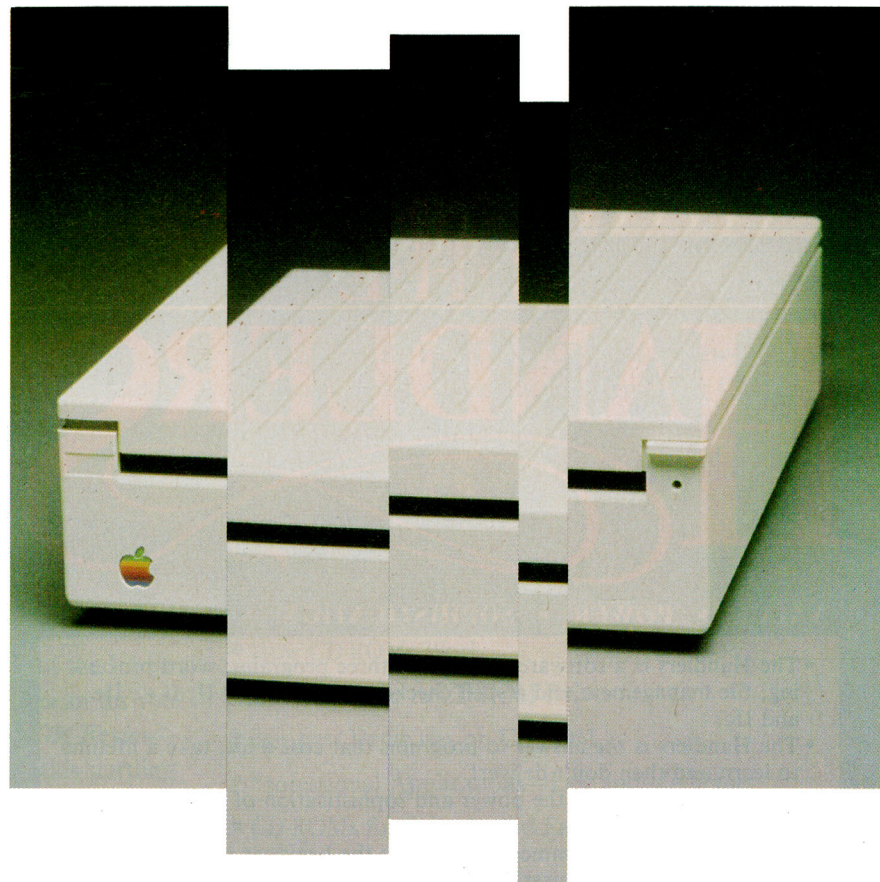
Formidable Floppies

One of the UniDisk's most attractive features is the sealed 3½-inch disk it uses. These formidable microfloppies come enclosed in a hard plastic shell, making them very durable.

You'll need the latest motherboard to run a //c with the UniDisk 3.5. (According to my Apple dealer, the //c motherboard upgrade is free when you purchase a UniDisk.) If you try to access the UniDisk from a //c with the old motherboard, you'll get the error message "No device connected."

Apple //e fans will have to buy a \$69 disk-controller card to use the UniDisk 3.5. This board isn't like the familiar 5¼-inch disk-controller card supplied with most Apples—it lets you connect only one UniDisk 3.5 to your computer. If you want to connect two UniDisks, you can "daisy-chain" them via the connector on the drive's rear panel.

I tested the UniDisk 3.5 on a 128K //e and a //c. A quick-disconnect plug



makes switching the drive between computers easy. My //e had two 5¼-inch drives installed in slot 6, so I installed the UniDisk 3.5 in slot 7. Testing the UniDisk 3.5 with ProDOS, I found that it saved and loaded faster than the standard Apple 5¼-inch disk system, and it ran more smoothly and quietly.

I also used the UniDisk 3.5 with WordTalk, a word processor from Computer Aids, of Fort Wayne, Indiana, with equally positive results. You can take advantage of directories, subdirectories, and sub-subdirectories with impunity.

Speed and Capacity

The UniDisk 3.5 can hold as much material as six floppies, an impressive figure. I'm a free-lance writer, and I'm very pleased with this giant storage capacity. I'd been looking for a low-priced drive that could hold an entire novel-sized project on a single disk, and I found it in the UniDisk 3.5 system.

The UniDisk's access speed is also impressive. It's about 60 percent faster than the standard Apple 5¼-inch drive. I booted my system from slot 6 with a 5¼-inch disk, and it took about 17 seconds to arrive at the main menu of my application program. I transferred it to a 3½-inch disk and booted the same program on the UniDisk 3.5. It took less than 11 seconds to arrive at the same menu.

The UniDisk 3.5 is compatible with ProDOS, Pascal, and DOS 3.3. (If you're using DOS, though, you'll need a patch to turn the UniDisk into two 400K drives.)

inCider's Ratings

Excellent	■ ■ ■ ■ ■
Above average	■ ■ ■ ■
Good enough	■ ■
Not up to standards	■
The empty set	□

All in all, the UniDisk 3.5 is an efficient, well-built drive. It's easily interfaced with either a //e or //c, and quickly interchangeable. Sealed 3½-inch disks are far superior to 5¼-inch floppies. The only drawback is that when you're making backups with one UniDisk 3.5, you'll have to make so many disk swaps your head will spin. If your pocketbook permits, get two UniDisks to make backups more efficient.

At \$500 a crack, a pair of UniDisks

costs as much as a bare-bones //c. But with two UniDisks interfaced to your system, you'll have enough storage capacity to rival almost any personal or business computer. For some applications, a pair of UniDisks might even be better than a hard-disk drive, because the storage medium is replaceable.

When all is said and done, the UniDisk 3.5 makes a valuable, efficient addition to any Apple system. ■

Joseph J. Lazzaro
Revere, MA



Move Over, Floppies

CAUZIN SOFTSTRIP SYSTEM

Cauzin Systems, 835 South Main Street,
Waterbury, CT 06706

Data-input system; any Apple II
\$199.95

Ease of setup	■ ■ ■ ■
Ease of use	■ ■ ■ ■
Documentation	■ ■ ■ ■
Support	■ ■ ■ ■
Overall	■ ■ ■ ■

The Cauzin Softstrip System is new and unique—and it's a very reliable approach to microcomputer-software and -data distribution. With this new technology, Cauzin Systems is hoping to revolutionize the software-publishing industry by replacing the floppy disk with ordinary paper.

Data strips, as Cauzin calls them, resemble the bar code your supermarket's cash register uses to identify your favorite jar of peanut butter. Data strips are actually bit codes containing up to 5500 bytes each. About 45,000 bytes can fit on a single 8½-by-11-inch sheet of paper. Using this technology, a program the size of AppleWorks could be printed on about six magazine pages.

A data strip can store any data that can be digitally encoded. Program listings, financial data, and so on are all candidates for strip conversion.

A Breeze to Install

Installing the Cauzin Reader is quite simple. Plug it into the cassette tape-recorder ports on the back of your computer. (Apple //c users attach the reader to one of the serial interface ports.) Connect a separate power cord and the transformer, and you're finished. The installation process described in the Cauzin owner's manual

THE HANDLERS

VALUE • POWER • SOPHISTICATION • SIMPLICITY

- The Handlers is a software package of three programs; word processing, file management and a spell checker for the Apple II, II+, IIe and IIfx.
- The Handlers is *the* answer to programs that cost a lot, take a lifetime to learn and then don't deliver!
- The Handlers delivers the power and sophistication of large scale mainframe systems.
- The Handlers makes immediate sense to the beginner and the experienced computer user.
- More and more people are selecting the Handlers over Appleworks. *Why?* Because the Handlers beats Appleworks for power, ease of use and price! We took the difficulty out of the program when we engineered it so you get what you want out of the Handlers without wasting time.

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This best selling WP is surprisingly powerful and yet easy to use.

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LIST HANDLER

A truly fast & efficient file management program.

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- Sorts 3,000 records in under 45 seconds

SPELL HANDLER

The spell checker that works hand in glove with the Word Handler.

- 90,000 words on one diskette
- Add up to 2,000 of your own words
- No disk swapping
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- Professional Applications—Law and Medicine
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ICCD86

includes several clear diagrams, sample screen displays, and an explanation of how the system works.

Using the system is as easy as installing it. Cauzin supplies a Softstrip Reader Communications disk with each unit. After you load your operating system, a menu lets you specify disk location, initiate the reading sequence, or exit the program.

When a publisher produces a data strip, two alignment marks (a small dot and a short line) are printed along with the actual data strip. To read the strip, align the marks so that the dot fills the matching hole on the reader and the small line is at the side of the reader.

Place an initialized disk into your drive, select the read option from the menu, and the Cauzin Reader does the rest. In a few seconds, it reads the strip to your disk. If your material requires more than one strip, the software tells you to place the reader on the next one. After it reads in the

program, you can either read in another data strip or run the program you've just loaded.

The people at Cauzin have put as much thought into their software as they have the reader itself. The program asks your permission before it overwrites a program of the same name, and it politely tells you if you've read multiple-strip programs out of order. It even knows when you haven't properly lined up the machine and reminds you to do so. One feature the software lacks is the ability to format blank disks within the program. This is only a minor inconvenience, though, and you'll probably never notice it if you keep a few formatted disks on hand.

The reader works flawlessly. The accompanying manual contains sample programs in strip form. The system successfully read every strip into my Apple, even when I intentionally made small errors in alignment when placing the reader on the page. I

also read data strips published in Cauzin advertisements, again without a single failure.

Looking to the Future

So Cauzin has produced a technological breakthrough that makes software and data distribution much easier. What good will the system do you once you have it? For starters, several computer-magazine publishers may soon be printing their program listings in data strip form, along with conventional listings. Many of those neat programs you've never bothered to type in may soon come in data strip form. If you can't bear the thought of typing in eight pages of machine code or three pages of text to get a program, then magazine software alone might endear the Cauzin Reader to you.

Major magazines aren't the only publications that will be printing "stripware." Addison-Wesley and John Wiley and Sons, both publishers of computer-related material, say they plan to include data strips in future editions of many of their books. Pergamon Press, a publisher of academic journals, has begun encoding indices in strip form to let users easily build their own data bases.

You don't have to be a megabuck publisher to distribute information on data strips, either. Cauzin has released software that will permit anyone with an Apple ImageWriter or Epson RX-series printer to produce his or her own low-density (900 byte/strip) data strips. This program, called Stripper, retails for \$19.95 and can very affordably put this new technology into the hands of user groups, schools, and businesses.

Softstrip technology is exciting. The day may soon come when users won't have to key in programs, and businesses won't have to wonder what will happen to their fragile data disks en route to branch offices. All you'll need to duplicate copies of your current machine-readable data is a copier. Hundreds of public-domain programs could be distributed for the price of a paperback, and low-cost machine-readable books could be produced for sight-impaired people who use personal computers with speech synthesizers. Cauzin Systems has crafted a very fine product at a reasonable price. ■

Tim McDonough
Springfield, IL

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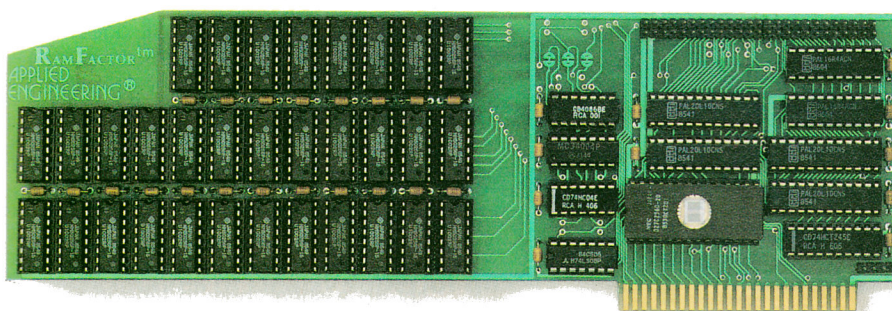
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All the Performance, Speed, and Software Compatibility of RamWorks™ in a Slot 1 through 7 Card.

That's right! Now Applied Engineering offers you a choice. While RamWorks is the clear winner for the auxiliary slot in a IIe, RamFactor is the standard for slots 1 through 7. Now anyone with an Apple II+, Franklin, or Apple IIe preferring to use slots 1 through 7 can now enjoy the speed and performance that until now was only available with RamWorks.

With RamFactor, you'll be able to instantly add another 256K, 512K, or a full 1 meg on the main board and up to 16 meg with additional piggyback card. And since virtually all software is automatically compatible with RamFactor, you'll immediately be able to load programs into RamFactor for instantaneous access to information. You'll also be able to store more data for larger word processing documents, bigger data bases, and expanded spreadsheets.



Very Compatible

All the leading software is already compatible with RamFactor. Programs like AppleWorks, Pinpoint, BPI, Managing Your Money, Dollars and Sense, SuperCalc 3A, PFS, MouseWrite, MouseDesk, MouseCalc, Sensible Speller, Applewriter IIe, Business Works, ReportWorks, Catalyst 3.0 and more. And RamFactor is fully ProDos, DOS 3.3, Pascal 1.3 and CP/M compatible. In fact, no other memory card (RamWorks excepted) is more compatible with commercial software.

AppleWorks Power

There are other slot 1-7 cards that give AppleWorks a larger desktop, but that's the end of their story. But RamFactor is the only slot 1-7 card that increases AppleWorks internal memory limits, increasing the maximum number of lines permitted in the word processor, and RamFactor is the only standard slot card that will automatically load AppleWorks into RAM dramatically increasing speed and eliminating the time required to access the program disk, it will even display the time and date on the AppleWorks screen with any ProDos clock. RamFactor will automatically segment large files so they can be saved on 5¼", 3½", and hard disks. All this performance is available to anyone with an Apple IIe or II+ with an 80 column card.

RamFactor, no other standard slot card comes close to enhancing AppleWorks so much.

True 65C816 16 Bit Power

RamFactor has a built-in 65C816 CPU port for direct connection to our IIe 65C816 card for linearly addressing up to 16 meg for the most powerful 16 bit applications. (II+ 65C816 card under development.)

Powerful Program Switcher

With RamFactor, you can organize memory into multiple work areas and switch between them. Each work area can contain different programs and even different operating systems. Now you can switch from one program to another or even switch from AppleWorks to DOS 3.3 to CP/M to Pascal to ProDos in under a second. And with our Battery back-up option, you can have permanent storage for up to 20 years.

Quality and Support of the Industry Leader

RamFactor is from Applied Engineering, the largest, most well supported manufacturer of Apple peripherals and the inventor of large RAM cards for the Apple. With our 5 year no hassle warranty and outstanding technical support, you're assured of the most trouble free product you can buy.

Features:

- Up to 16 meg total memory, 256K to 1 meg on main board. Up to 16 meg with additional memory on piggyback card
- Fully Apple II Memory Expansion compatible
- Compatible with Apple IIe, II+ and Franklin
- Battery back-up option allows you to turn on your Apple and run your favorite programs in less than 1 second!
- Automatically recognized by ProDos, DOS 3.3, Pascal and CP/M
- Built-in RamDrive™ software (a true RAM disk not disk caching)
- Systems are directly bootable from RamFactor if desired
- Built-in linear addressing 16 bit co-processor port
- Built-in self diagnostic software
- Automatic expansion with AppleWorks 1.3 or later
- Allows Apple II+ and IIe to run your AppleWorks without buying additional software
- Accelerates AppleWorks
- Displays time and date on the AppleWorks screen with any ProDos clock
- Fits any I/O slot except slot 3
- Fully socketed and user upgradeable
- Much, much more

RamFactor with 256K	\$239
RamFactor with 512K	\$289
RamFactor with 1 MEG	\$389
RamFactor with 2-16 MEG	CALL
Battery Back-up Option	\$179
65C816 16 Bit Card	\$159

Order RamFactor today . . . with 15 day money back guarantee and our "no hassle" five year warranty. Call 9 a.m. to 11 p.m., 7 days, or send check or money order to Applied Engineering. MasterCard, Visa and C.O.D. welcome. Texas residents add 5% sales tax. Add \$10.00 if outside U.S.A.

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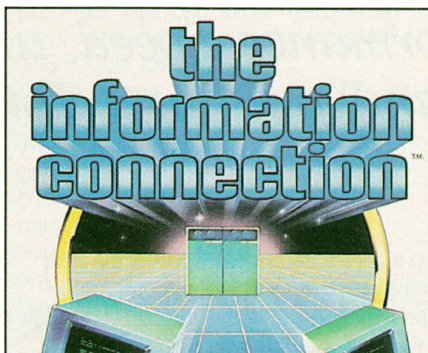
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REVIEWS



Productivity for All Ages

EDUCALC

Grolier Electronic Publishing, Sherman
Turnpike, Danbury, CT 06816

Home spreadsheet and tutorial; any 64K

Apple II

\$49.95

Ease of setup	■ ■
Ease of use	■ ■
Documentation	■ ■ ■ ■
Support	■ ■ ■ ■
Overall	■

THE INFORMATION CONNECTION

Grolier Electronic Publishing

Telecommunications program and tutorial;

Apple IIe or IIc

\$59.95

Ease of setup	■ ■
Ease of use	■ ■ ■ ■
Documentation	■ ■ ■ ■
Support	■ ■ ■ ■
Overall	■ ■

NOTE CARD MAKER

Grolier Electronic Publishing

Data-base manager and tutorial; any 64K

Apple II

\$39.95

Ease of setup	■ ■
Ease of use	■ ■
Documentation	■ ■ ■ ■
Support	■ ■ ■ ■
Overall	■

If you're a new computer user and have children, you might be interested in three home-productivity packages from Grolier. **EduCalc**, **The Information Connection**, and **Note**

Card Maker are designed to be simple enough to teach the fundamentals of spreadsheets, telecommunications, and data bases to ten-year-olds, yet sophisticated enough to be useful to an adult. The problem is that children and adults have different needs, and Grolier's programs can't satisfy them all.

Once an adult has mastered these three easily understood programs, he or she may find they're not powerful enough to be useful. And purchasing these applications for \$39.95-\$59.95 each is not as cost-effective as using more sophisticated professional-productivity tools to teach your children.

EduCalc

EduCalc offers a challenging tutorial, along with a simple spreadsheet program. The basics of what a spreadsheet is and what it does are revealed step by tiny step on screen in a hands-on tutorial. The learning steps are so minute that an adult might scream in impatience before finishing the tutorial, but a child of ten would probably find the level of hand-holding reassuring.

Your child will learn what kinds of tasks a spreadsheet handles, how to set up a sheet, how to type in numbers and text, how to access specific cells, and how to create the formulas that do the real work of a spreadsheet. Better still, this on-screen number juggling is fun—and we all know how hard it is to make math seem like fun.

After the basics, there's a practice template on the reverse side of the **EduCalc** disk and an actual spreadsheet program you can use with scratch disks to create real files.

As spreadsheets go, this one is fine for planning and preparing budgets. The program supports the four arithmetic functions: addition, subtraction, division, and multiplication. It displays figures using up to seven decimal places. You can use combination formulas to create more sophisticated analyses. Editing functions let you move columns and rows, sort entries alphabetically or numerically, and change column widths as desired. This full range of features makes **EduCalc** attractive as a home spreadsheet.

The Information Connection

The most useful of the three programs—from a home standpoint—is **The Information Connection**, which includes a tutorial on telecommunications and an actual communications



Bring your Apple II Out of the Dark Ages

Display images of clearly superior quality

View colorful images with sharp, clear definition. The Princeton HX-9 gives you super sharp 80-column text and graphics in up to 16 brilliant colors* on a fine .28mm dot pitch tube. (By comparison, the Apple Color 100 has a dot pitch of .38mm). Princeton's dark-glass, nonglare screen further enhances viewing capability.

Ergonomically designed

The small footprint and sleek, professional styling make it the monitor of choice for your workplace where space is at a premium.



Apple color modes when creating graphic displays.

Adjust the HX-9 to a comfortable viewing angle with the built-in tilt and swivel base. A built-in green/amber switch allows you to switch from color to green or amber modes. Use the IBM/Apple color switch to select IBM or

Princeton quality is built in

The Princeton HX-9 is manufactured under tough quality control standards. And backed by a full one-year warranty.

Proven market acclaim

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—*InCider*, Oct. '85

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program. Given that the program costs less than \$60, you might be tempted to use it as your regular telecommunications software without ever looking at the tutorial.

The program operates with 300-, 1200-, and 2400-bits-per-second (bps) modems, at either full- or half-duplex. It uses macros to dial and automatically log on to major utilities, such as CompuServe and The Source. You can use it to capture up to 22,000 characters of data on line. You can

also use it to upload files from your disk to a host computer. An editor lets you prepare and hold text to send to the host. A print function interfaces with your printer to create hard copy. Taking features and price into account, it's not a bad package.

As an automatic tutor, The Information Connection is just too simplistic. If your child has absolutely no idea how computers and telephones work together—in other words, if he or she has never seen *War Games*—the tuto-

rial will fill him or her in on the basic facts in about five minutes. Five minutes of watching Dad or Mom use a dial-up information utility or bulletin board, though, would probably achieve the same result and save you \$59.95.

An adult shouldn't need this kind of tutoring at all (some of you may think you do, but give yourselves a little credit). Using a modem isn't much more difficult than, well, dialing a telephone. The Information Connection, without the tutorial, keeps it simple.

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Note Card Maker

Note Card Maker is a data-base program that comes with a tutorial on making bibliographic file cards. If you've ever been forced to prepare a bibliography for a term paper, the subject is depressingly familiar. For younger students, though, it could be a valuable introduction to the kind of research needed for advanced academic work.

If you don't need the tutorial aspect of Note Card Maker, the program still works as a data base of limited capacity. You can create files of up to 200 records with four preformatted fields per record. In the note-card mode, the first field is for a numeric code, the second for a keyword, the third for a page reference, and the fourth for notes. That fourth field, where you'll store the bulk of the information, has a capacity of 12 lines of text. When a record is set up as a bibliography card, the fields are 1, code; 2, author; 3, title and publisher; and 4, library call number.

The applications of this program are severely limited. It's far too restricted for most adult applications, beyond preparation of research for term papers. Even then, a college or high-school student would probably want a more sophisticated data-base program than this one, one that could transfer text to a word-processing file.

These programs are all useful as child tutorials, especially EduCalc. As personal-productivity programs, The Information Connection is a good telecom program, and EduCalc is good for home use in a limited way. Note Card Maker is the least useful of the three programs; as a data-base manager it's too limited even for student use.

These programs strike me as an attempt by Grolier to market old ideas in a new way. Looking at these programs strictly from the point of view of an adult user, I think it's pointless, even in the home, to rely on programs that "introduce" users to data

bases, communications software, word processing, and other productivity-software categories. Real professional-productivity programs abound in every price range and aren't that difficult to learn. My advice to adult users interested in exploring these applications is to latch on to one of those professional programs and grow into it. ■

Brian J. Murphy
Fairfield, CT



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Ease of setup	■ ■
Ease of use	■ ■ ■
Documentation	■ ■
Support	■ ■ ■
Overall	■ ■ ■

Data-base systems tend to be expensive and difficult to use. ProFiler, a ProDOS data-base manager from PM Software, is an exception to this rule. At less than \$100, ProFiler weighs in at somewhat under the average price, and if you're willing to set aside an hour to learn how it works, ProFiler is easy to use.

Creating and storing files are simple tasks—in fact, a lot easier than the manual makes them seem at first glance. The trick is to cut through the way ProFiler and its manual are organized and get used to them.

Getting Started

You start by creating the forms you want to use for storing your data. Each class of file, such as recipes, addresses, customers, and so on,

may have a different form, depending on what you want to do with the information. No set form is imposed on you. To create a file category, you enter the ProDOS disk name (something like /DATA01/ or /CUSTOMERS/). This lands you in a directory of data files for the disk currently in the drive. You then select an existing file or name a new one, and go on to the main function menu.

A Design/Modify selection sends you to form creation. Here you name each field of the file you want to fill in. During the process you can also flag those fields you may want to use for sorting later on. Typical targets for flagging include parts of an address, such as zip codes, cities, and phone numbers.

Once you've created a form, you can fill the files with your data—a simple process. Just type in the information. A small set of control-key commands lets you skip back and forth between lines and pages, and insert and delete text. You can create forms that are up to eight 80-column screen pages in length. This leaves a lot of room for detailed files—such as credit histories and resumés—or just for extensive notetaking.

ProFiler will let you read the files on screen. You can see all files in a class by “leafing,” or you can home in on a specific topic with a field index. A printer driver lets you make hard copies of your fields in a variety of formats. If you choose, you can custom-create a new print format every time you use ProFiler.

Editing functions are simple and efficient. They let you add an almost unlimited number of new fields to old files, effectively giving you the power to redesign a file without losing data. You can enter any file at any time to revise the information it contains. Program parameters are equally flexible—a real plus if you prefer 40-column displays over 80, or if you're interfacing with a new printer.

Icing on the cake comes in the form of ProFiler's ability to interface directly with Apple Writer II version 2.0. This lets you merge a file of addresses generated for ProFiler right into the form letters you create with Apple Writer.

On the Dark Side

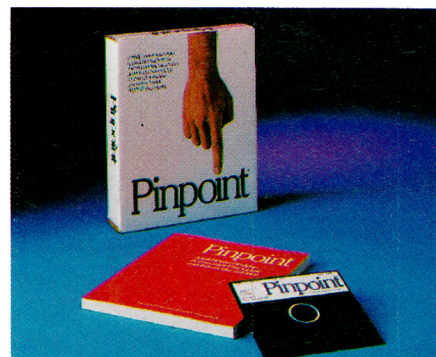
Among the negatives is the manual, which, like those of many business programs, is much too long. For those who have used data-base systems before, a reference card would

have done the trick. The sheer size of the manual will discourage some users who would otherwise give ProFiler a chance.

The other problem is that some of the functions of the program are hard to get to. You have to go through four confusing screens to get to ProDOS to format a new data disk. After a while, I found it was simpler just to use my Apple IIc System Utilities disk to format my data disk.

These problems aside, once you have a working understanding of the system—a process of minutes rather than hours—it's all surprisingly easy. System prompts and ProFiler's easily accessible help screens manage to get you started on real work without much further reference to the manual. After about 15 minutes of practice, I found myself creating whole files, editing them, adding new fields to the forms, and placing indexing flags on selected fields with perfect ease. Knowing as many computer-shy business professionals as I do, I suspect this logical, self-teaching system will inspire confidence in even the most nontechnical of them. ■

Brian J. Murphy
Fairfield, CT



To the Point

PINPOINT

Pinpoint Publishing, 2823 Steinmetz Way,
Oakland, CA 94602

AppleWorks accessory; Apple IIc or 128K IIe,
AppleWorks or BusinessWorks
\$69

Ease of setup	■ ■ ■ ■
Ease of use	■ ■ ■ ■
Documentation	■ ■
Support	■ ■ ■ ■
Overall	■ ■ ■ ■

Pinpoint does for the Apple II what Sidekick does for the IBM PC. It's a

clan of eight desktop accessories—Notepad, Calculator, Appointment Calendar, Typewriter, Communications utilities, Dialer, Quicklabel, and Graphmerge—you can call up without leaving AppleWorks.

At this writing, the only other commercially available program you can enhance with Pinpoint is Manzanita Software's BusinessWorks, a small-business accounting system. About 40 third-party developers—including International Solutions, Satellite Software International, PM Software, Software Publishing, and Roger Wagner Publishing—have approached Pinpoint about the possibility of working together to broaden the number of Pinpoint-enhanced products.

Installation

Pinpoint is a cinch to install—just start up the program disk and select the Install option from the main menu. Pinpoint will hold your hand every step of the way as you enhance your AppleWorks back-up disk.

Once you've installed Pinpoint, boot AppleWorks from your drive. Pinpoint remains hidden in memory until you need it. Press solid apple-P to bring the Pinpoint accessories list to the screen. Using the arrow keys, point to the accessory you want, press the return key, and it will appear in a window superimposed on your AppleWorks document or spreadsheet.

Pinpoint is memory-resident. Its "dispatcher" looks for the accessory you want, makes room for it in memory, loads it when you need it, and stores it when you don't. This multitasking ability conserves memory.

You can store the accessories on a 5¼-inch floppy disk, a UniDisk 3.5, a hard disk, or a RAM disk. The loading time of an accessory depends on which storage device you use. Loading the Calculator from a UniDisk 3.5 takes about 12 seconds. Loading it from a RAM disk takes less than a second. For this reason, developer Brian Skiba strongly recommends that

your hardware setup allow more than 128K of RAM.

Satisfied Customers

Stuart Bernstein, marketing director for an electronics company in San Jose, California, has two 5¼-inch drives and an enhanced Apple //e with a 512K RamWorks card (from Applied Engineering, whose Z-Ram card for the //c is also compatible with Pinpoint). His two children, aged 12 and 14, use AppleWorks with Pinpoint to prepare reports for school. Daniel Garlen, an electrical engineer from New Jersey, uses an Apple system that includes two floppy drives, a UniDisk 3.5, and a Sider 10-megabyte hard-disk drive. His enhanced //e has a 1-megabyte RamWorks card. (Pinpoint also works with the MultiRam //e memory-expansion board from Checkmate Technology.)

My humble system is a 128K //c equipped with a UniDisk 3.5. Using Catalyst 3.0, I installed Pinpoint-enhanced AppleWorks and the Pinpoint accessories on one 3½-inch disk. Some accessories don't load very fast, but I haven't been annoyed or inconvenienced by my setup.

If you have a basic system like mine, don't pass up the opportunity to enjoy Pinpoint because you don't want to spend hundreds of dollars for more memory than you may need. The minimum memory Pinpoint requires is an enhanced Apple //e or a //c. And as your system grows, so will your productivity with Pinpoint.

What's Pinpoint's major strength? According to Daniel Garlen, "Pinpoint is nice for doing the things that were too simple to do with a computer before." He's convinced an Apple system configured around Pinpoint "can compete with any IBM system out there."

A Range of Accessories

As for individual features, Garlen says Quicklabel is particularly valuable. It lets you highlight an address in an AppleWorks document and position it anywhere on an on-screen envelope. Once you've inserted the real envelope in your printer, Pinpoint prints the address where you want it. In the past, Garlen had to drag out the typewriter to prepare envelopes, just like the rest of us.

Both Bernstein and Garlen are impressed with Pinpoint's telecommunications accessories. Bernstein likes the fact that ASCII files sent from a remote computer are received as

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AppleWorks files, so he can use them right away. He also likes Pinpoint's Dialer, which automatically calls any designated phone number on the screen (the number doesn't have to be in a special file). Pinpoint lets him define identification codes and log-on information, so home banking is a snap.

Skiba, at Pinpoint Publishing, says that while Pinpoint works with truly Hayes-compatible modems, some users of supposedly Hayes-compatible modems have had difficulties using the communications features. Garlen had this experience with his Rixon modem, but he likes Pinpoint so much, he's going to buy another modem. In the meantime, he borrows modems from friends so that he can use Pinpoint more effectively.

Another popular accessory is the Appointment Calendar. On screen, it's similar to a printed calendar. Pinpoint features the current month and highlights the current day. The previous month and the two upcoming months are included in smaller scale to the right of the current month.

On a wall or desk calendar, you might highlight important dates and jot down appointment times. Pinpoint's calendar shows an asterisk next to any day for which you've typed in an appointment. You can switch to Day View and see your appointments for any given day and two days hence, and easily print a schedule.

Another handy feature is the Typewriter accessory. This lets you type a message on screen and print it without leaving your AppleWorks document to clear the word processor's memory. This feature turns your printer into an electronic typewriter—convenient for taking phone messages or appending typewritten notes to AppleWorks documents and spreadsheets.

Adding Your Own

If you can think of any accessories Pinpoint doesn't have, you can design your own. The Pinpoint Toolkit is a \$49 library of development aids, including the source code for some of Pinpoint's current accessories. Pinpoint is composed of 56,000 lines of 65C02 assembler code, so you need some experience with that language to use the Toolkit. Pinpoint's author, Brian Skiba, has designed some neat programming accessories, like hex calculators and debugging windows.

Pinpoint Publishing has announced additional products, including a 60,000-

word dictionary, a joint venture with San Diego-based Software Heaven. The pop-up Spelling Checker (\$69) incorporates a technique called Key-stroke Journaling, which lets users of the Calculator cut and paste results directly into AppleWorks spreadsheets or word-processing documents.

According to Brian Skiba, other products Pinpoint expects to release this summer include a thesaurus program and Point-to-Point, a communications package that supports 2400-baud modems.

Another exciting Pinpoint project is the Information Engine, software that can retrieve up to 55 billion entries from various media—5¼-inch floppies, the 800K UniDisk 3.5, even CD ROMs—and uses graphics and sound technology to enliven data retrieval. Although this is relatively new territory, Skiba foresees consumers and small businesses using the Information Engine in cooking, gardening, travel, and reference of directories.

Pinpoint Publishing has an excellent track record for customer support. Though the company doesn't state this policy in its manual, it will give you your money back if you return Pinpoint within 90 days, and state your reason for not wanting the product. Of the 40,000 Pinpoints sold so far, only about a dozen have come back. They've been returned primarily by price-conscious consumers who encountered incompatibility problems with their hardware—mostly modems. Stuart Bernstein is quick to point out that Pinpoint Publishing offers "probably the best technical support I've ever encountered. They call you back!"

"At \$8 per program," he adds, "Pinpoint is the best bargain on the market." I think Pinpoint is one of the nicest things you can do for AppleWorks, and for yourself. ■

Cynthia E. Field
Wakefield, RI

Continued on p. 88.

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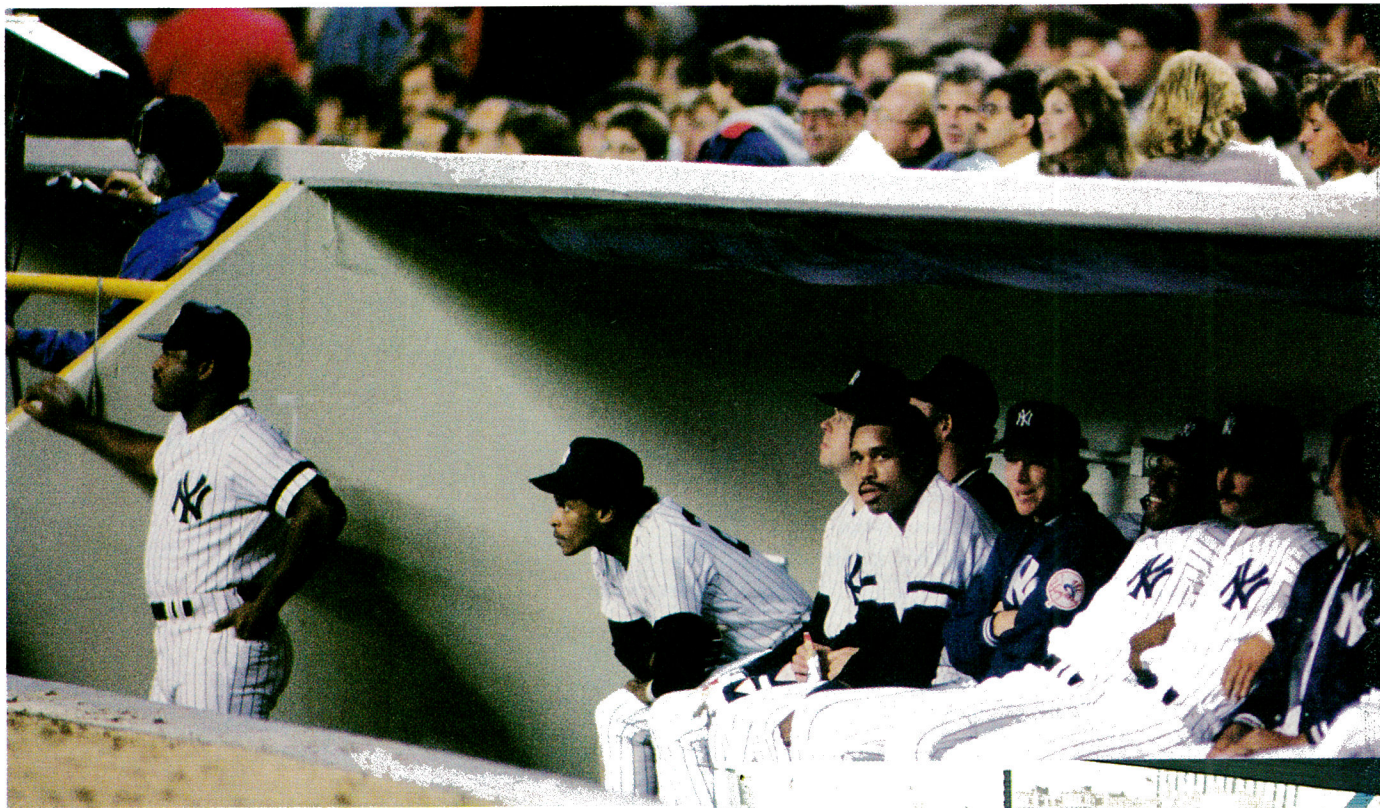
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The New York Yankees have long been the Baseball Kings of the Big Apple—and now they're using Apple //e's to help them stay on top of the heap.



THE TENTH PLAYER

by Cynthia E. Field

The next time you watch a Yankees game and hear the umpire cry, "Play ball," glance up at the press box. Among the newspaper reporters and official game watchers you'll find Mark Batchko, Director of Computer Statistics for the New York Yankees—and his Apple IIe.

You might just think of the Apple II as the team's tenth player. With the statistics it generates, Batchko can determine batter/pitcher tendencies that help the team manager strengthen the roster.

For example, at the beginning of the season, Yankee coach Lou Piniella asked Batchko for a report on which Yankee pitchers had done best against the three teams the Yankees would play in their first month: Kansas City, Milwaukee, and Cleveland. Armed with that information, Batchko says, the Yankees could plan for a strong start to the season.

But the computer's influence on the Yankees doesn't end at the major leagues. The team also uses the Apple II in the minor leagues to track statistics and in its New York corporate offices for scouting.

A Whole New Ball Game

Computers joined the Yankees almost two years ago when Doug Melvin began using the Apple IIe for compiling statistics. Melvin needed assistance and wooed Batchko—a baseball lover and former minor-league player—away from the Texas Rangers. At the time, he told Batchko,

"You don't need to know anything about computers."

What Batchko didn't know he quickly learned, and he now seems totally at ease, whether he's describing the way he enters play-by-play action into the computer during the 162 season games or the way he compiles the 200-page book the "front office" in New York needs for winter meetings, during which trades are discussed.

Batchko even refers to this yearly magnum opus as a "pamphlet," revealing the aplomb with which he handles his responsibilities. In his eyes, his job is simply "to ensure and promote the success of the Yankees ball club."

In the major leagues, Batchko says, "we put everything that happens during a game, whether it's exhibition, season, or post-season play, into the computer." The word "everything" means just about that—not just the customary game statistics like strikeouts, hits, and runs. Even before the game begins, Batchko has entered data about weather conditions (including clarity, wind direction, and humidity) and the stadium where the game is being played (home or away, artificial turf or natural grass, and so on).

Next, Batchko types in the lineup and waits for the umpire's call to begin the game. Batchko describes what happens next: "Say we're playing the White Sox, and Guillen, their shortstop, leads off [at bat]. Our pitcher

throws the first pitch. I punch in whether it was a ball or a strike. Say it was a hit. Then I put in the type of hit. If it was a ground ball to the third-baseman, I put in [the code] G5 [G for ground hit, 5 for third base]. If the third-baseman throws wild to first, then I have to credit the third-baseman with a wild throw."

The situation becomes increasingly more complicated when runners are on base and advance. The humble, but confident, Batchko says it's easy to remember the many codes (he calls them abbreviations) needed to describe the hundreds of individual events that take place during one game.

Does Batchko type fast? "Not very," he laughs. In fact, as the play happens, he plans the sequence he'll enter into the computer. Then he waits for the official scorer's word on what actually occurred during the play.

"The Book" Becomes "The Disk"

As you might guess, no ordinary software could handle stats for a major-league baseball team. Now in their third year of computerized recordkeeping, the Yankees use the EDGE 1.000 (as in "batting a thousand") program, originated by Dick Cramer and marketed by Tripos Associates of St. Louis, Missouri.

Long a baseball fan, Cramer might best be described as an expert's expert. An organic chemist by education, Cramer is a member of SABR, the Society for American Baseball Research. Like other baseball statisticians, including Pete Palmer and Craig Wright, Cramer is known as a sabermetrician (SABR plus metrician).

Cramer's EDGE 1.000 system is actually composed of two data-base programs, Playball and Scout, priced separately at \$20,000 each. Batchko uses Playball to record play-by-play action. Says Batchko, "Primarily what we like to use the computer for is to keep track of what opposing hitters have done against our pitchers and what our hitters have done against their pitchers."

Playball can generate reports showing a player's performance inning by inning or in pressure situations, such as when the opposing team is ahead by three or more runs.

The program can also demonstrate a batter's or a pitcher's tendencies. Playball's graphics can be displayed on the Apple Monitor II green-phosphor screen or dumped to a Silentyper printer. The program can show the kinds of pitches thrown (curveballs, fastballs, knuckleballs) and the results. (Cramer claims that a scaled-down version of Playball—no graphics—will be available by midsummer. It's written in UCSD Pascal and runs on any Apple II with 64K of RAM and two disk drives. Priced at about \$40, the program should be affordable for Little League, Babe Ruth League, and other amateur teams.)

The Yankees use these defensive charts to determine batter/pitcher matchups and to strengthen their roster. According to Batchko, "We picked up Rod Scurry last year. He's left-handed, and he's been pretty tough on left-handed hitters. They only average .125 against him."

According to Batchko, "Playing percentages with the computer brings out tendencies in other teams, too." He prepares "advance reports" to help the Yankees plan strategy for upcoming games.

An advance scout watches a team like the Toronto Blue Jays during the week before their game with the Yankees. He reports on which Toronto hitters are "hot" and what they did during that week against, for example, right- and left-handed pitchers. The advance scout calls in his report to Batchko, who adds relevant computer stats and types up the final report.

Strategy for any game rests with the coaches and, primarily, the manager. Batchko's computer-generated reports are helpful in demonstrating "in black and white" information that may not be acquired as easily or quickly any other way.

Yogi Berra, Yankees manager during 1984 and part of 1985, "loved the computer printouts," Batchko says. And current manager Piniella "wants to take in all the information he can—he's very open."

Apple users traditionally think about converting their index-card files to computer files. Sometimes, according to Batchko, things work better the other way around. He's working closely with Yankees coach Joe Altobelli to extract pertinent computer information and transfer it to index cards—a much more convenient medium for a coach to carry.

What do major-league players like Ron Guidry or Rickey Henderson think about the team's Apple? Apparently it doesn't intrude. According to Batchko, "A lot of players probably aren't aware of it."

But there are some drawbacks to the Apple II system. Like the date who leaves the prom with someone else, the Yankees' major-league operation is abandoning the II/e. One force behind the change is Cramer, the sabermetrician and consultant, who's switching to the MS-DOS operating system, which he claims lets him design more powerful software.

But power isn't the real complaint. The overriding problem with the Apple II/e, monitor, three floppy-disk drives, and printer is the system's lack of portability.

Batchko has been lugging around two trunks to more than 81 road games each season, setting up and breaking down the system each time. Keeping track of assorted "boxes," as Cramer calls them, isn't easy; half the Apple system was stolen in Minnesota one year.

Another problem Batchko cites is the need for 13 separate floppy disks, one for each team the Yankees play. On each disk, he keeps the opposing team's roster and as the season progresses, the stats for each game the Yankees play against that team. By the end of the season, Batchko has to remove some game files from the disk to make room.

This intermittent purging hasn't caused the Yankees to lose data, since immediately after each game, all stats are sent by modem to Tripos Associates' Microvax II minicomputer.

Cramer has recommended the transportable Panasonic Executive Partner, which he notes has built-in drives, monitor, modem, printer, and clock. The Apple II/c, with its separate power supply and single drive, just can't compete.

Root, Root, Root for the Home Team's Computer

While the major-league Yankees are in the process of moving away from Apple, the minor-league Yankees aren't. Pete Jameson, the man in charge of minor-league stats, says that when people criticize the simplicity of his system (an Apple II/e, two drives, green monitor, and Silentyper printer), he tells them, "The one I've got works perfectly fine for me."

Jameson is responsible for monitoring the progress of the 150 minor-league players who comprise the five Yankee farm teams (two in Florida, one in Ohio, and two in New York).

The Yankees subscribe to the Howe News Bureau in Boston, the official statistics keepers for minor-league baseball. Twice each week, Jameson goes on line and downloads pertinent data.

But, he adds, "that's not good enough for us. It's important for us to be on top of what's going on with our players and monitor their development on a daily basis so that we can move a player or give special instructions."

Since the Yankees want to have daily stats, Jameson enters results of each game after it's played. The minor leagues don't require the extensively detailed stats Batchko has to monitor for the majors, so data aren't entered during the game.

Instead, each night after a game is played, the coaches call Jameson's office and record information on an answering machine. The next morning, Jameson transfers the data to paper, then to his Apple with Dick Cramer's Playball software. The stats for each farm club are kept on a separate floppy disk.

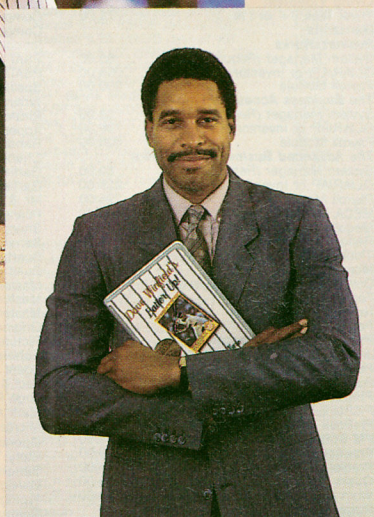
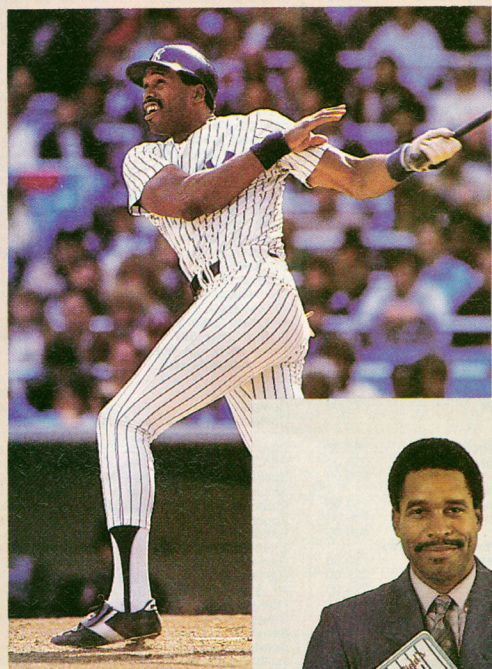
In a matter of seconds, Jameson can call up information about any player. He searches the roster by player ID number and tells the software whether or not the player is a pitcher. For a pitcher, Jameson can learn whether he

was a starter or a relief pitcher, how many innings he pitched, number of earned runs, number of saves, and whether the Yankee team won or lost the game.

Like his counterpart with the major-league team, Jameson considers the computer an aid to "supplement the manager's knowledge of the game." In fact, Jameson adds, sometimes the managers override the computer reports, with their "I know better than that" attitude. Not infrequently, they do seem to know better.

Has the Apple paid off in the minor leagues? "Unquestionably," according to Jameson. When asked what he liked least about the computer, he echoed a familiar sentiment: "Causes eyestrain."

Jameson is currently researching ways to computerize other aspects of his office. He's looking for a spreadsheet program to help him keep track of money spent on minor-league travel expenses. He anticipates using his Apple II to set up a data-base of health and medical records to help him keep track of injuries.



Winfield Goes to Bat for Computer Education

The New York Yankees' Dave Winfield is more than your typical 6-foot-6, 228-pound baseball superstar.

Although he's acknowledged as one of the American League's premier hitters, Winfield's interests extend far beyond the baseball diamond. When he's not hitting home runs or chasing down fly balls in right field, Winfield can be found in his Fort Lee, New Jersey, office overseeing the activities of the David M. Winfield Foundation—a philanthropic organization that assists underprivileged children.

"On the field, I try to execute all facets of the game well—hitting, running, fielding, throwing. . . . I try to do the same in business and in my philanthropic work," says Winfield. Through his foundation, which was established in 1977, Winfield stresses the importance of computer literacy for young people. Thousands of youngsters have been introduced to computers thanks to the Winfield Foundation's Computer Technology Training Program. In Brooklyn, for example, Eastern District High School is benefiting from 16 computers donated by the Winfield Foundation.

The organization also offers scholarships to summer computer camp. The two-week session provides a wide range of experiences for children between the ages of 10 and 14, but the primary focus is on preparing young people for the computer revolution.

In addition to his commitment to computer education, Winfield is involved in the more commercial aspects of computer technology. The Yankee star teamed up with Avant-Garde (a Novato, California-based software company) to produce Dave Winfield's Batter Up! (see our review in the September 1985 Game Reserve, p. 114). The program is designed to teach proper hitting techniques, and features Winfield's advice on grip, stance, swing, and other aspects of hitting. To further assist young—and not-so-young—aspiring baseball players, Winfield's book, *The Act of Hitting*, accompanies the program. Batter Up! runs on any Apple II with 64K. □

—Dan Muse

When Dave Winfield isn't scoring runs in Yankee Stadium, he's scoring points with young people through the David M. Winfield Foundation, a charitable organization that brings computers to underprivileged kids.

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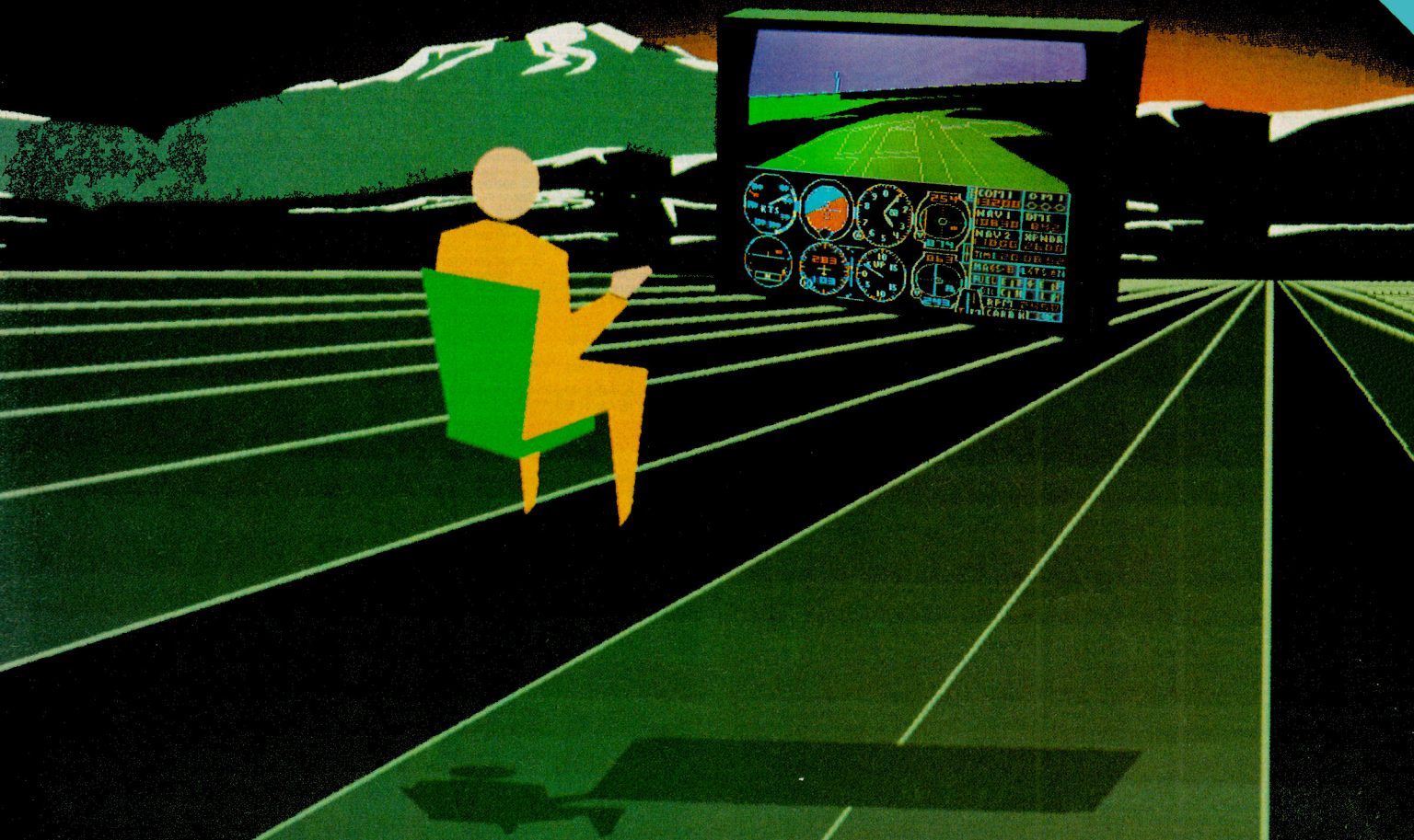
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Countdown to the Pennant:
Free Program Listing—Page 101

Someone's Watching—Besides Your Mother and Father

Both Batchko and Jameson use the Playball program. At Yankee headquarters in New York, Roy Krasik uses the second component of Cramer's EDGE 1.000 system for scouting.

Appropriately named Scout, this data-base software keeps statistics on other teams, both professional and amateur. It monitors individual players' accomplishments and generates scouting reports for consideration by Yankee management. As Batchko quips, computer searches are "a lot quicker than phone calls."

As for the major-league team, Batchko says, "We have a short right field in Yankee Stadium, so we're looking for left-handed power hitters." If a potential recruit has been successful at Yankee Stadium playing against the Yankees, New York wants to know about him.

To ferret out promising new ballplayers, the Yankees send scouts to various districts in the United States. A scout might be assigned to three adjoining states, where he talks to high-school, junior-college, and college coaches. The scout subscribes to area newspapers and attends local games to see if particular players have talent.

When the scout finds a player worth watching, he fills out a special form with preliminary information. This report is sent to New York, and Krasik enters the information into an Apple IIe. During the season, the scout sends updates on promising athletes.

According to Batchko, "When the June draft rolls around, you have to evaluate all these players in order of preference from 1 to 500, or 1 to 600, depending on which players you like. You have all this information in the computer, so you can easily look up specifics." To accommodate this vast amount of data, the New York office began with a Corvus 20-megabyte hard-disk system, which has now grown to 40 megabytes.

The Bottom Line

The Yankees have definitely gone computer. Managers, coaches, and players seem receptive. But what about George Steinbrenner, owner of the Yankees? When I asked Mark Batchko last March about Steinbrenner's attitude, Batchko would only say, "It [computerizing] hasn't paid off yet, but we have a pretty good chance of winning the world championship this year. We have an exceptional hitting club, and we're playing good baseball in spring training." Enough said. ■

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The "experts" scoffed at the thought of processing \$2 billion worth of life insurance on an Apple-Corvus local-area network, but this company proved the critics wrong.

...AND THEY SAID IT COULDN'T BE DONE

by Wendy Lea McKibbin, *inCider* staff

The MIS advisers at Jackson National Life Insurance Company expected to have a good laugh. Eschewing a traditional VAX solution and the wisdom of the firm's data-processing people, the regional manager of one of the company's largest offices chose to network 25 Apple II's to process millions of dollars worth of life insurance.

That was three years ago. Today, those data-processing gurus are gone, notes regional manager Tom Pasant of Park Ridge, Illinois. His office processed \$94 million worth of new premiums (with a face value of \$2 billion) last year on a Corvus Systems local-area network using Apple IIe computers. And now Jackson National Life Insurance—the 20th largest life-insurance company in the U.S. in terms of number of policies issued—plans to duplicate Pasant's success in its other nine regional offices.

"So many people said it couldn't be done that I chose to take the risk alone when I first tried to set up our business on microcomputers," Pasant recalls. "No one had confidence in the solution I'd chosen, and so for the first seven months I paid all the bills myself—I didn't want to get the home office involved and then have my plan fail."

Pasant, who describes himself as the second person in Illinois to buy an Apple IIe, hired a college professor and a programmer in 1983 to perfect a multiuser software solution for his busy office. The two software experts sat in Pasant's spare bedroom 10 to 12 hours a day for almost a year while they sought a way to move Pasant from a

single-user system with 12 floppies to a multiuser networking configuration with a shared hard disk. The initial network included three systems, but Pasant soon added 22 more to achieve his current solution.

No More Screaming

The Park Ridge office handles a staggering flow of traffic. At any given time, it's tracking the sales performance of 9000 listed insurance agents and the premium status of 4000 to 5000 clients. Pasant estimates that his employees process between 400 and 500 new applicants a week, or almost 18,000 new accounts per year.

Jackson National operates on a brokerage basis only; it pays agents only on the policies they sell. Every seven to ten days, Pasant's office generates a client-status report for each insurance agent with open accounts. The processing cycle for each client can last anywhere from two weeks to many months, depending on the amount of insurance the applicant is requesting and the medical data and other documents Jackson needs to collect.

Before the company installed the Apple-Corvus network, keeping track of thousands of clients in the middle of their application cycles was a knotty problem. Pasant recounts that with 50 employees in the office, a needed file could



be on anyone's desk. As the office continued to grow, locating physical pieces of paper became more and more difficult.

"There used to be a lot of screaming as people frantically looked for files while clients and agents waited on the phone," he recalls. "Throwing more people at the problem wasn't the answer," he adds. "It was clear that we needed a better way to track, monitor, and control the flow of information through the office."

Pasant approached the automation of his office one task at a time. His original stand-alone Apple II Plus with 12 floppies was a stab in the right direction. It enabled him to organize the names of his agents in a single, up-to-date format. This was relatively easy, since the agents constituted a stable, if growing, group.

The next step was to get the agents on line. Pasant's first Apple-Corvus network consisted of three Apple IIe systems and the necessary Corvus hardware and software. By the end of 1984 he had added another 22 systems and had put the entire list of clients on line, as well. Now Pasant had automated all the critical data in his office. During 1985, he perfected the system and by the start of 1986 had so won management's confidence in his solution that Jackson National has adopted it as the company-wide standard.

"We went into this thing with three questions," Pasant says. "One, can we make the network work? Two, if we can do it, will it really speed things up? Three, after we add the bells and whistles, will the Apple-Corvus solution be sufficient to handle our volume of transactions?"

Pasant also insisted that the network allow all 25 computer operators access to the data files, but only certain people the ability to add information.

The Price of Knowledge

The Apple-Corvus setup has answered Pasant's questions in the affirmative, but he hasn't won his solution without some difficult lessons, particularly when he moved from a single-user to a multiuser environment. For example, he learned that data will be damaged if two people try to edit a file at the same time. To avoid this problem and to keep the hard disk from slowing down, Pasant learned to batch-process all his "new adds" during off-hours. This schedule saved what he terms "crunch power" during peak work hours, and kept the network from bogging down.

Implementation problems aside, Pasant is sold on local-area networking. He estimates that if Jackson were to manually do the same volume of work, it would require 30 percent more personnel—an additional \$22,000 per month in manpower. As it is, his office was able to handle almost

\$50,000 worth of additional premiums in 1985, with only a slight increase in personnel—in other words, nearly double the work with almost the same manpower.

"The work one of my employees now does in one hour on the computer would translate into a day and a half's work if it had to be done manually," Pasant says. "And there are some functions that couldn't be done at all if the office weren't computerized."

For example, broker managers now call up each agent's client records while talking to him or her on the phone, Pasant explains. This lets the manager verify the insurance agent's performance. Such instant tracking would be next to impossible if the broker manager had to rummage through paper files before each conversation.

Another function Jackson's office workers couldn't manage by hand is the tremendous report generation agents require. At least twice a month, Pasant's office needs to inform them of the progress of applications. In addition to these piecemeal reports, the Park Ridge office also sends monthly recaps of the same information to the agents—all in all, a printing and reporting nightmare if done manually.

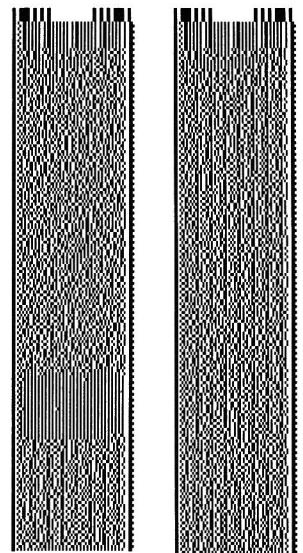
Would He Do It Again?

For the most part, Pasant has been pleased with the Apple-Corvus solution and dubs it an economical choice for high performance and power. One of the advantages of the network approach over a small VAX is that you can tailor a network to an office of any size up to 50 people, Pasant notes. It's a flexible solution that can "grow as the office grows."

Pasant warns that Apple Computer and Corvus Systems don't always work in tandem, though. On more than one occasion, he reports, he's been caught between Apple memory upgrades and enhancements Corvus hadn't duplicated. He also gives demerits to both companies for the poor quality of service they've provided. Neither of them came to Pasant's rescue during several critical episodes, such as the morning that all the computer screens in the office were frozen.

But despite learning some lessons the hard way, and the shaky customer support he received, Pasant is convinced he's found the system solution that's just right for tracking hundreds of accounts with a small group of workers. His numbers prove it, for in 1985 the Park Ridge office rose to the top of the roster at Jackson National Life in terms of total sales volume. And so far, Pasant says, 1986 looks even better. ■

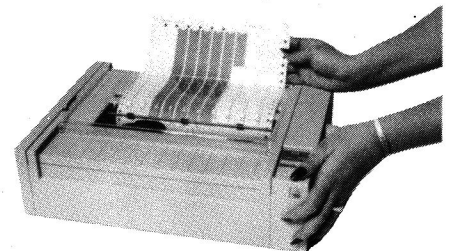
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Selling airplanes with Apples: Apple computing is the answer to one small business' recordkeeping and accounting demands.

APPLES KEEP BUSINESS SOARING

by Wendy Lea McKibbin, *inCider* staff

Airplanes have fascinated Jim Lafferty for as long as he can remember. A self-described "Air Force brat" who sold used aircraft to put himself through college, Lafferty today moves about \$11 million worth of Beechcraft, Piper, and Cessna planes per year through his San Jose, California, office. His customers range from local growers who need to drop pesticides and seeds into their fields, to small-business owners who need to fly customers, bids, parts, or construction crews to remote locations. A smaller group of pilots buy Lafferty's planes for weekend pleasure flying.

When Jim Lafferty Aircraft Sales opened its doors for business four years ago at the Reid-Hillview Airport in San Jose, Lafferty's wife Charlotte and a part-time bookkeeper were able to handle the bookkeeping alone, with occasional aid from an outside accounting firm. But soon the demands of the business forced a decision.

"It was either buy a computer or hire another full-time or part-time employee," Lafferty recalls. He decided on the former, and brought home the first computer he had touched since college.

The solution has proved satisfactory—saving him both time and money. Using canned, "off-the-shelf" software and his Apple IIe, Lafferty was able to avoid hiring an additional employee. Even though his business has since doubled, he still handles accounting with the same manpower.

Today Lafferty's office is equipped with three Apple IIe's, two 10-megabyte hard disks, a letter-quality printer, a dot-matrix printer, and a modem. The software that runs the business includes AppleWorks, Manzanita's Advanced Business Accounting, PFS:Write, File, Graph, and Report, and Quark's Catalyst. Lafferty also has several other assorted programs, such as FlashCalc, which automatically computes state and federal payroll deductions, and Gram Assist, which lets him send telex messages over his modem through Western Union.

Improving the Bottom Line

Lafferty estimates that he saves \$8000 to \$10,000 per year on bookkeeping, based on the amount an additional part-time employee and more office space would have cost. He saves another \$2500 a year on accounting costs, since the books are so much more accurate now that he needs less outside help. His payroll package cuts 25 percent off the time he used to spend on report generation for the state and federal governments. Meanwhile, Lafferty finds, his bookkeeper spends only half as much time managing the company's financial records, although the company has doubled in size.

But personal computing has done more for Jim Lafferty than simply solve Lafferty Aircraft's bookkeeping problems.

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*"I wouldn't dream
of changing the office
over to another system."*



It has also encouraged the development of newfound writing skills and supported the San Jose Jet Center, a venture he plans to launch this year.

Lafferty says he never considered himself a good writer, but word processing has so improved his skill that he's had the courage to tackle previously unthinkable tasks, such as manuals and proposals.

"Without word processing, I would have never gotten past the initial 60-page proposal to the city of San Jose for the Jet Center," Lafferty says.

He has also learned how to use AppleWorks for modeling. A model of the Jet Center he developed has been invaluable in planning the new project. It lets him portray relationships among employees, expense items, and functions.

"It's a basic analysis of what will happen before it happens. It lets us know exactly what we're going to need," Lafferty explains.

At Lafferty's urging, the nine employees in his office have all mastered word processing, and he's teaching them other computer skills, as well. By making his sales representatives responsible for their own letters and mailings, Lafferty has so far been able to avoid hiring a secretary.

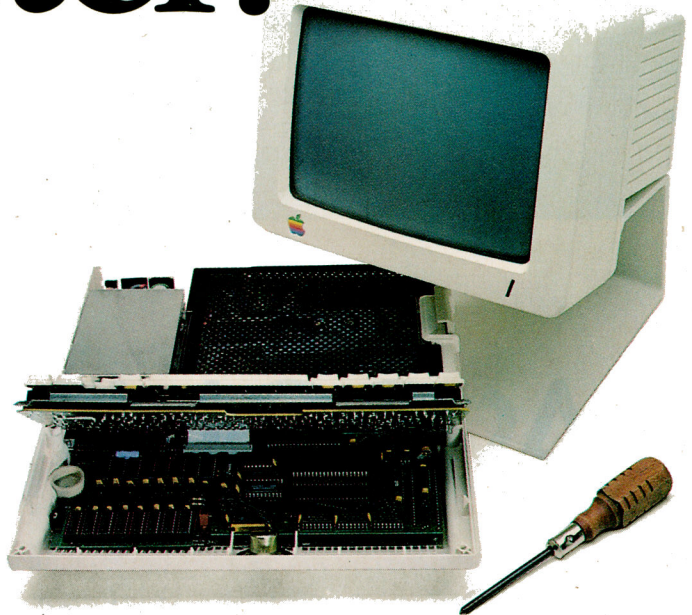
The Right Stuff

Lafferty's systems solution hasn't been problem-free—for instance, he recently had to buy an expansion board for one of the IIe's because his spreadsheet exceeded the desktop RAM—but he's satisfied that his investment has paid for itself.

That the Apple II has been on the market so long is indicative of its value to the user, Lafferty says. Although he has looked at other systems from time to time, particularly the Macintosh, Lafferty is convinced he's made the right choice for his aircraft-sales business.

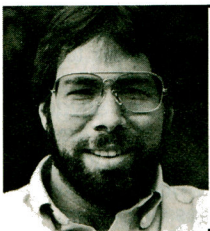
"I wouldn't dream of changing the office over to another system," he concludes. "And anyway, the Apple II is starting to look more and more like the Macintosh and can do almost the same things." ■

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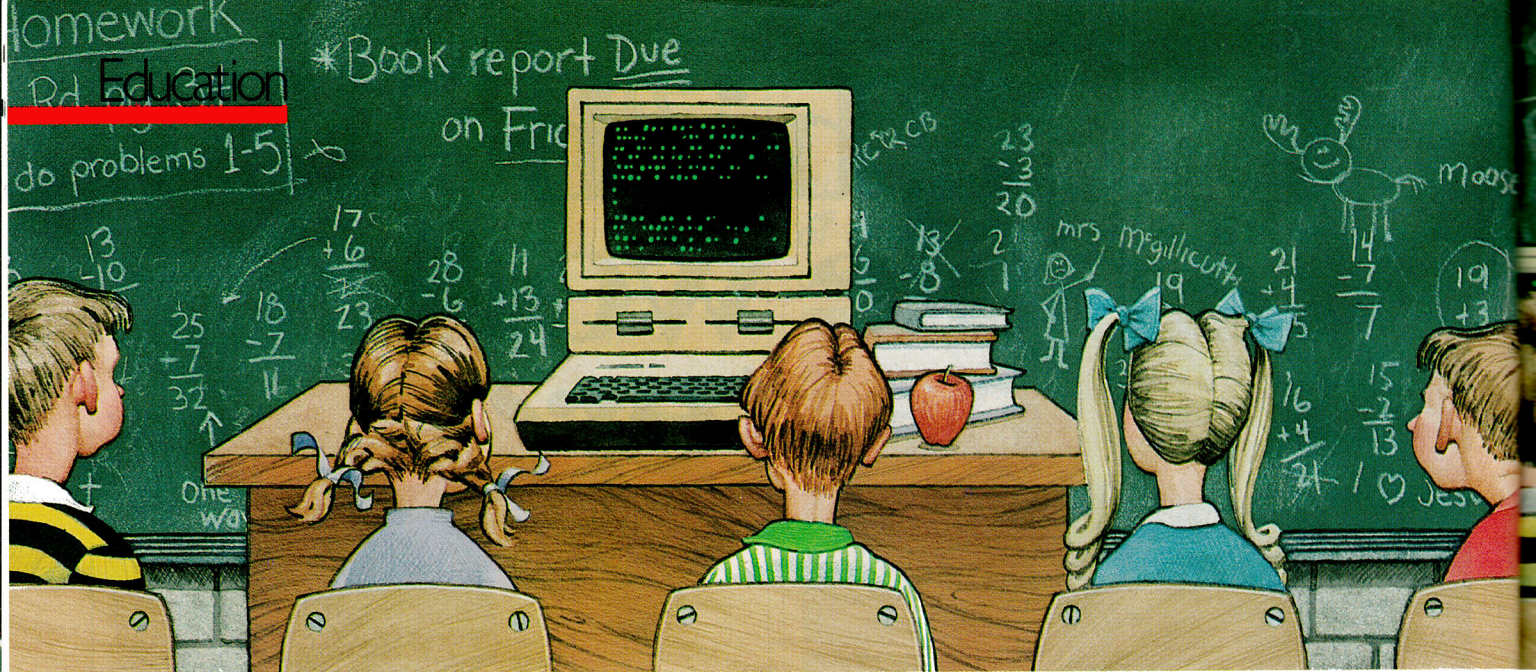
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A COMPUTER FOR

by Paul Statt, *inCider* staff

Let me tell you a joke," Brian Silverman says. "It has two punch lines." Brian is a young man with long brown hair and John Lennon glasses. He looks too young to have helped Seymour Papert develop the programming language Logo, but he did.

"At the turn of the century, scientific studies showed that the number of telephones in the United States was growing rapidly—so rapidly that the number of telephone operators in the country could never keep up. It's an N-squared problem: The number of operators needed per telephone increases exponentially. Nine out of ten people in America would need to be telephone operators in 1980.

"Well, it's 1980," Brian says. "Hardly anybody's a telephone operator, since the technology—electric telephone switching—has improved so much. That's the first punch line."

So what's the joke, Brian?

He smiles: "Everybody's a telephone operator."

Today's lesson is education—computer education. Should we be rearing a race of programmers? Should everybody have his or her own computer in the classroom? Should the teacher have the only computer? Or are these just *Scheinprobleme* (illusory problems) the technol-

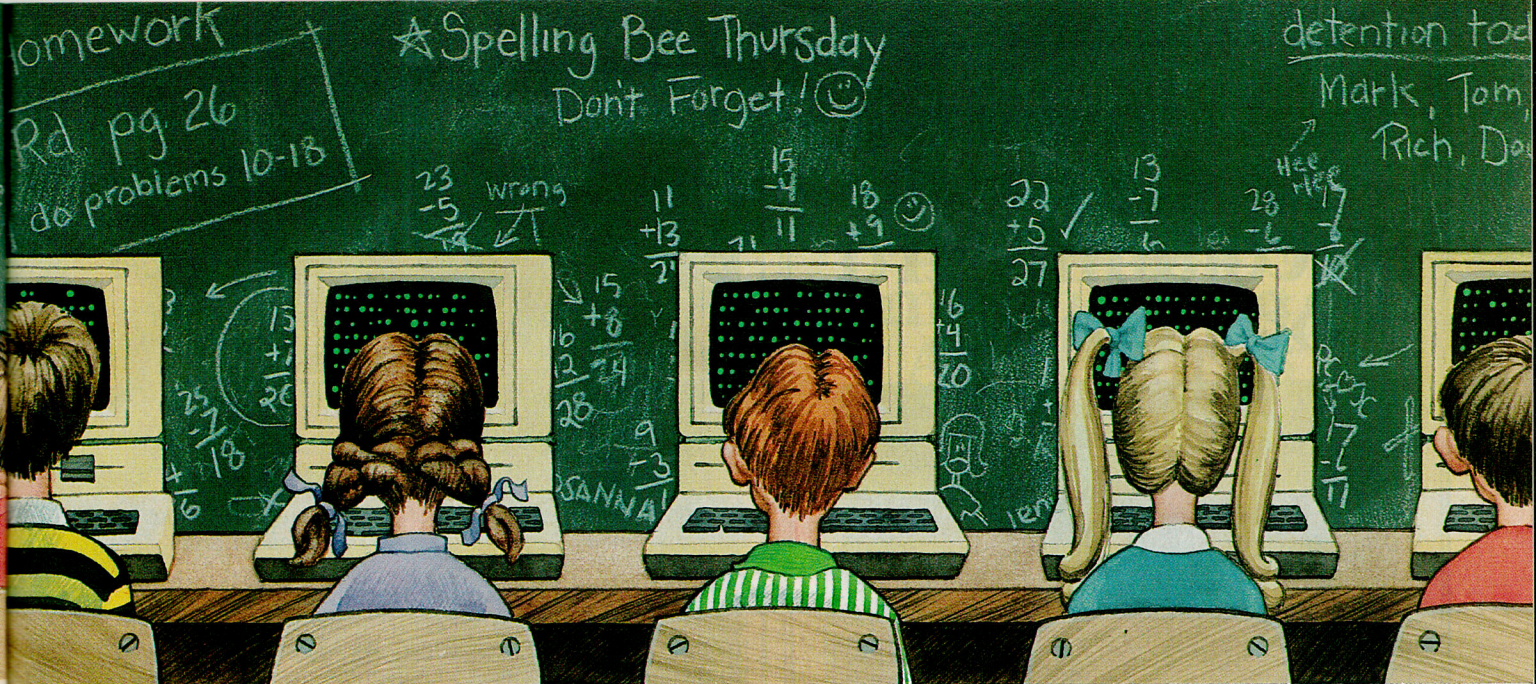
ogy will make moot, as advances in telephone switching made operators obsolete?

Pencils vs. Blackboards

The issue actually goes much deeper than programming in schools or applications in education. If you listen to some of the theorists of computers in schools—for instance, Seymour Papert, of Logo fame, and Tom Snyder, who wrote *Snooper Troops: In Search of the Most Amazing Thing* and many other simulations—you begin to hear a debate that's been going on for several decades now.

Papert, trained in mathematics and professor of computer science at Massachusetts Institute of Technology, argues that children must learn to program if they're to learn that they control the computer, that the computer doesn't rule their lives. To that end, he created Logo and, more recently (with Brian and others at Logo Computer Systems), LogoWriter. LogoWriter is a word processor for the school trade that can be programmed in Logo, somewhat as Apple Writer can be custom-fitted with Apple Computer's Word Processing Language (WPL).

Snyder began in computer education as a follower of Papert, teaching Logo at the Shady Hill School in Cambridge, Massachusetts. "But my favorite tool was the classroom simulation: 'Okay kids, let's pretend we're Chris-



EVERY STUDENT?

Are computers the key to improving public education in the U.S.? The answer may depend on who controls them in the classroom.

topher Columbus and his crew sailing for China in 1492. How do we navigate across the Atlantic? I learned that a computer made simulations a lot easier for me, the teacher, because it could take over so much of the drudge work" involved in plotting the course. (See the accompanying Product Information sidebar for a listing of developers and software mentioned in this article.)

Snyder's most widely known simulation is the Voyage of the Mimi, an interdisciplinary, multimedia project. It includes a videotape of a whale-watching expedition, interactive navigation of the mission on the classroom computer, and an old-fashioned textbook.

Another Snyder hit is The Other Side, a simulation of a world economy and its attendant politics that pits "us" against "them" in a battle that's truly won only when both sides win.

Common to most of Snyder's work, and central to what he calls his "really radical" theory of computers in the classroom, is that each game requires no more than a single computer in the classroom. It's no accident, because Tom says he firmly believes "you have to teach kids to interact with each other, too, not just with a machine."

Tom's former mentor, Seymour Papert, once told me, "As long as there's only one computer per classroom,

bad software is good software." That paradox means that sharing software is a waste of the power of a powerful machine, and leads youngsters to the perhaps dangerous conclusion that only certain types of people can run a computer. Papert has always wanted children to look upon computers as pencils, as "tools that anybody can use for any purpose—not black boxes that produce magical results at the bidding of an elite."

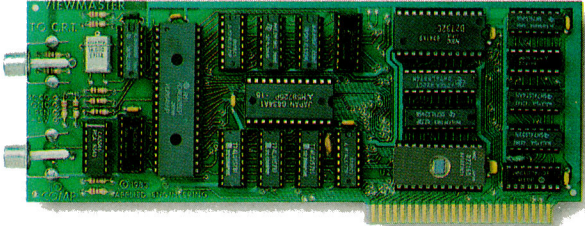
Where Papert would see a pencil, Snyder is looking for a blackboard. "The teacher should stand in front of the computer with a big stick, and if any kid comes near it without permission—Whap! on the knuckles," he insists, not totally in jest. "The classroom computer should be a tool for the teacher."

Papert wants "a computer for every child" and the mystery of programming solved for all. Snyder wants a teacher who stands before the classroom controlling the children as they play at being scientists, sailors, detectives, Henry Kissinger, or whoever. But what do teachers want?

Management Software: The Business of Teaching

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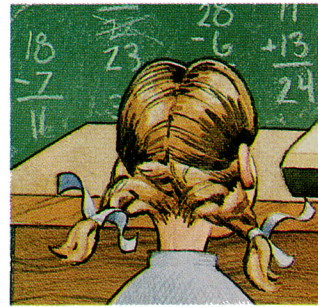
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*"The classroom
computer should
be a tool for
the teacher."
—Tom Snyder*

teaches fifth grade in Gettysburg, Ohio, puts it: "I want software that will help me manage report cards and grades."

Tom Snyder reminds us that teachers are, finally, "middle managers," working between "management" administration and student "employees." As middle managers, teachers want from their computers the same things their counterparts in other businesses demand: spreadsheets, data-base managers, and word processors, with the first two customized with templates to fit their needs.

"Why, I teach the fifth grade, and the children don't start using the computer until sixth," Mary Cameron says. The best thing a computer could do for the fifth grade in Gettysburg would be to liberate Mary Cameron from her tedious round of calculating grades.

According to Snyder, in schools in which there are no computers, the first person to have one should be the teacher, and he or she should control it. But what about schools in which the computer is already in place?

Jeff Babcock, of the Chugiak Elementary School in Wasilla, Alaska, says, "The computer makes my classroom something special here." He uses The Newsroom in his fifth-grade class not to involve kids in journalism, not to make them quasi-reporters, not to make them comfortable controlling powerful machines. "I like The Newsroom because I can use it to design tests and progress charts that catch the kids' eyes. Even my letters to parents get more attention," he says, now that he uses that popular graphics program.

"There are reasons to give every kid a computer," he admits, "but we don't have the funds here. And it would be great to teach everybody to program, I guess, but I don't even program myself."

One on One: Programming and "Real-World" Simulations

"I don't program myself, but I suppose everybody should learn," is a sentiment echoed by Linda Moriarty, of the Hennigan School in inner-city Jamaica Plain, near Boston, Massachusetts. The Hennigan School was an early test site for LogoWriter, and Linda uses the word processor-cum-programming-language with special-needs fourth-graders to create illustrations for *The Pushcart War*, a novel they've read recently.

"It's a mistake to think that every child using his or her own computer is lonely or antisocial," Linda comments. She looks over her classroom, where children are working quietly alone or in small groups. "They all help each other, they share programs once they've solved a problem, and they're very proud of themselves when they find a solution."

Linda's classroom answers Papert's prayer: "Many different styles of learning—as many different styles as there are different children—have to be addressed by the school. That's what a computer for every child allows."

Linda approves of a computer for every child. She says

Courtesy of Tom Snyder Productions



The Legend of Logo

To make learning easier—that's why Seymour Papert developed Logo at the Massachusetts Institute of Technology in the 1960s. In Logo, Papert envisioned a programming language that would bring beginners quickly into the powerful procedures of LISP—the List Processing language beloved of artificial intelligence researchers.

Although Logo is easier to learn than LISP, it's more than turtle graphics and definitely more than child's play. Logo's scope is impossible to master in one session. You can, indeed, teach your toddler how to draw colorful spiders and how to program flies into their webs—all without stopping for cookies and milk—but with Logo you can accomplish much more.

Like its parent, LISP, Logo is a list processor, a language that organizes and manipulates all types of lists—shopping lists, matrices and arrays of numbers, telephone books, or tip sheets. You aren't limited to number processing. Adaptable list processors endear themselves to AI investigators because most people think in words or images that can be expressed in words—not numbers.

A Distinct Philosophy

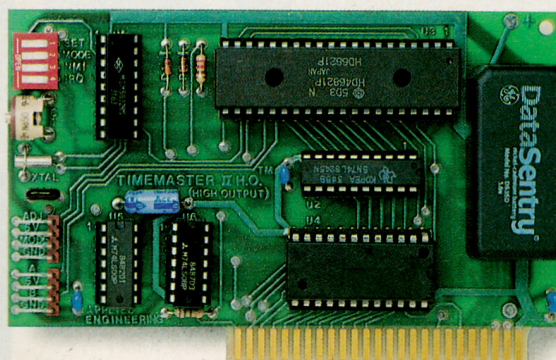
Papert outlined the philosophy behind Logo in the schools in his book *Mindstorms: Children, Computers, and Powerful Ideas*. He insists that meaningful and memorable learning proceeds from ideas spanning disciplines. Computer programming is such an idea: a "microworld" in which the child is in charge. (For a dissenting view, refer to "Logo: Where's the Pony?", March 1984, p. 86.)

Learning is gaining mastery, and Logo grants its users—grandparents as well as their grandchildren—immediate control. Logo is broad and versatile. Its method is plain, but cumulative: Define simple operations with primitive procedures, proceed to more complex functions, then continue to explain what you're doing in terms of what you've done. (See "Logo Building Blocks," January 1984, p. 110.)

The idea is old, but not many students prop themselves in front of *Euclid's Elements* and hack away at it for an hour or two. Try it with Logo. □

—P.S.

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"A computer for every child—a tool that anybody can use for any purpose."

—Seymour Papert

that if every child, as well as the teacher, has a machine, the school reaps the twin benefits of the children taking control of their education, and the teacher having more time.

Alan November, of Lexington High School, Lexington, Massachusetts, doesn't like "the idea that simulations are necessarily games." He uses data-base managers, spreadsheets, and word processors in a course called "Computers in Society" as a way for students to solve "real-world" problems.

"I looked to the private sector, to business and industry, for guidance. How were computers actually being used in the 'real world,' and what kinds of skills would students need to prosper in that world?"

From his research November distilled four skills that are crucial to successful computer problem solving: identification of problems suitable for the computer, teamwork, flexibility when stuck with limited or changing data, and knowing where to look for information.

"It doesn't hurt to be a programmer—those kids know what kinds of problems computers can tackle. But other skills, like teamwork, can't be learned at the terminal. All in all, I'd say that for their projects, it would be an advantage for each kid to have his or her own computer."

Can Computers Make Teachers Better?

"Kids have fun working with the computer. I suppose they'd have more fun if each one had his or her own, but it doesn't seem necessary, and it would be expensive." Barbara Wagner, a teacher in Edinboro, Pennsylvania, likes using the computer to help kids run simulations—the lives of the Pilgrims, for instance. She likes the convenience of keeping records with it, too. "Good teachers find ways to make lessons interesting, and teach children to think for themselves. They did that before computers, they do it today, and they'll do it when the next thing comes along."

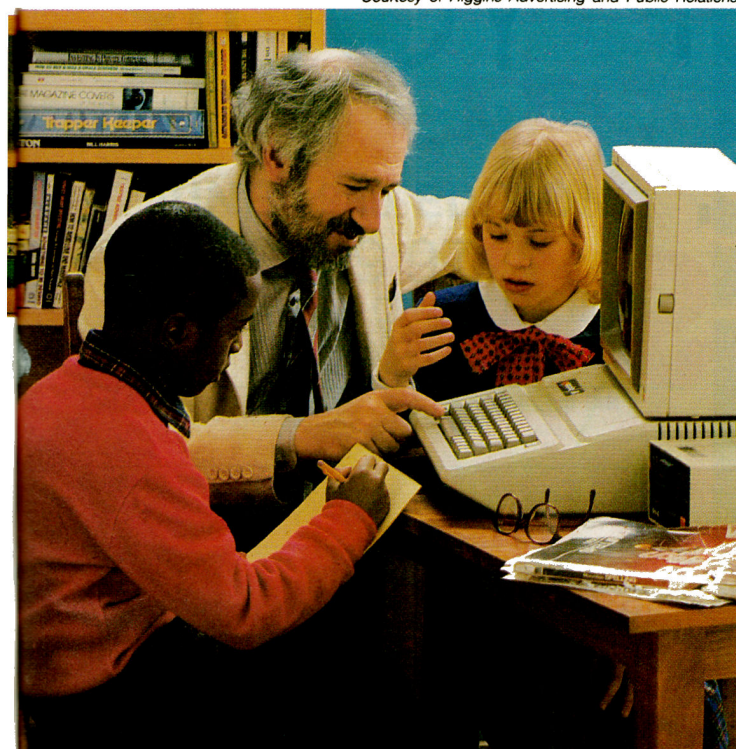
The need for "good teachers" is one element Seymour Papert and Tom Snyder agree is essential in education. They know that a good workman never blames his or her tools and never expects the tools to solve problems by themselves.

In Papert's ideal classroom, a benevolent admirer, someone like Papert himself, stands over those young computerists, and *learns*—sometimes from them, but always with them.

Controlling Tom Snyder's simulations, with the teacher at the helm of the computer, requires someone with endless energy and enthusiasm to control them. That also sounds like a good teacher.

Dennis Littky is a teacher who participates in the Coalition of Essential Schools, a group of educators who are trying to come up with ways to save public education in this country: "Every child needs certain basic skills: writing a paragraph, arithmetic, reading the newspaper—maybe programming. But one of the Coalition's foremost priorities is that teachers need *time* to be good teachers—time to plan and learn themselves. Let's hope that whatever else computers bring to the schools, they bring that time." ■

Courtesy of Higgins Advertising and Public Relations



Product Information

Simulation Software

Tom Snyder Productions
123 Mount Auburn Street
Cambridge, MA 02138
(617) 876-4433

TSP develops simulation software for such manufacturers as McGraw-Hill, Mindscape, Scholastic, and Spinnaker. A catalog of all TSP software is available on request.

Reader Service Number 300

Programming Languages

Logo Computer Systems
555 West 57th Street, #1236
New York, NY 10019
(212) 765-4780

Seymour Papert is chairman of the board of LCSi, where the original Logo language was written. LCSi also developed and markets LogoWriter, the programmable word processor that includes Logo, and sells a site license to schools for \$395.

Reader Service Number 301

Teachers' Tools

Broderbund Software
17 Paul Drive
San Rafael, CA 94903
(415) 499-8661

Reader Service Number 302

Springboard Software
7808 Creekridge Circle
Minneapolis, MN 55435
(612) 944-3915

Reader Service Number 303

Springboard publishes The Newsroom (\$49.95), and Broderbund a similar program called The Print Shop (\$49.95), which teachers can use to create classroom materials and class newspapers.

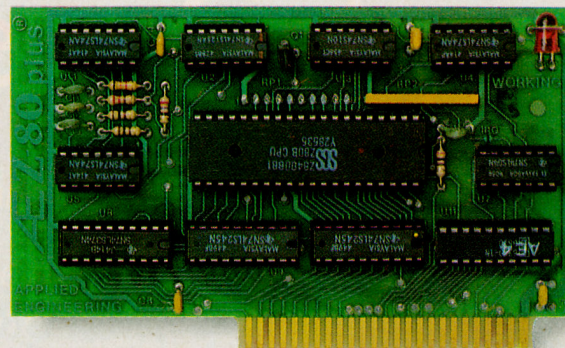
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Software Publishing
1901 Landings Drive
Mountain View, CA 94043
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Software Publishing publishes the PFS series—File, Report, Write, and Graph (\$125 each)—programs that work together in projects such as Alan November's research into computer problem-solving skills.

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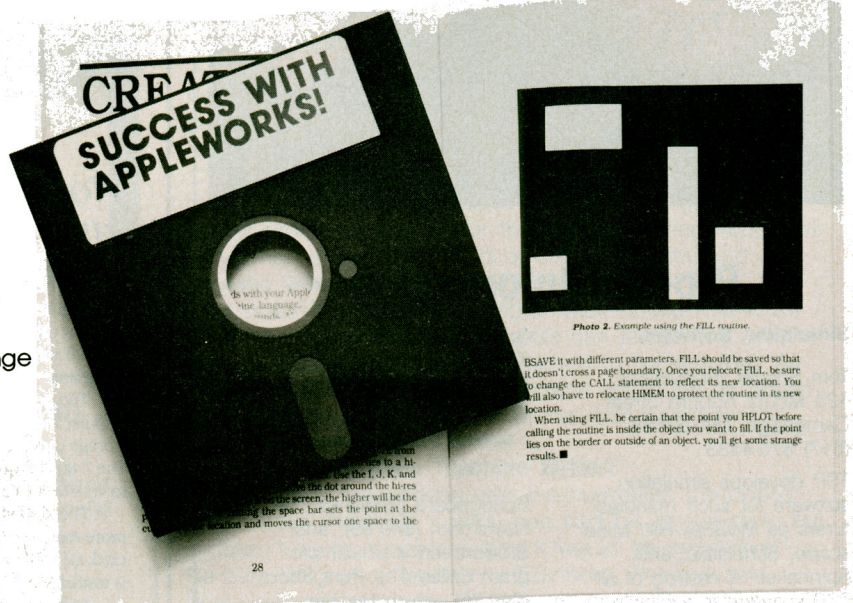
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APPLE LASERWRITER: The Best Text Going

Want to try your hand at desktop publishing? Hook up your Apple II to a LaserWriter, for typeset-quality print at your fingertips.

by Bill O'Brien

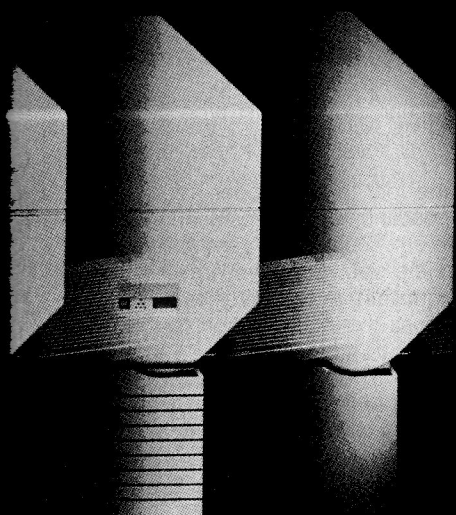
You're the president of your local computer club or the director of a social-service group, and you'd like to easily publish a monthly newsletter bringing information to your group members.

Or perhaps you're a real-estate broker, and you'd like to improve sales by keeping in touch with your customers on a regular basis. You'd like to tell them about housing trends in your area, provide them with tips on home improvement, and let them know what properties you have available. A newsletter would be perfect for this, but you use the Apple IIe, and everybody tells you that a high-quality printer like the Apple LaserWriter just doesn't work with the II.

Well, that's just not true. *Desktop publishing*—the ability to create typeset-quality originals suitable for immediate printing—is available to Apple II users with just a little bit of effort.

If you have access to a LaserWriter, all you need to do is configure your Apple's serial card for 1200-baud communication and set the LaserWriter's rear-panel rotary switch for the same. Stretch a cable between the two serial connectors, and you're halfway there.

There are two ways to typeset your material: line by line (for headlines or banners), each with a different type size and font, and batch mode, when you submit one or more pages of text for continuous typesetting, with all text having the same type size and font requirements.



*"You'll need an
Apple II with
serial interface."*

Let's start with one line at a time and pick up some of the general principles common to both methods. As I mentioned, you'll need an Apple II with serial interface. For line work, you also need a communications package such as Access II or Softerm 2. (Any communications program will work, though.) Just set it for 1200 baud, 8 data bits, no parity, and half duplex (the LaserWriter's serial settings). Once you begin the line work, the LaserWriter will slip into full duplex and echo back whatever you send.

No matter what you're doing, there are some minimal requirements. For single-line jobs, these include the text you want to typeset, its position on the page, the font you want to use, font size, and font style.

PostScript

PostScript, from Adobe Systems, is the language that controls the LaserWriter, by moving the print head from its home position at the lower left-hand corner of the page to the desired location, and placing dots of toner there. It uses a standard x-y coordinate system (x is horizontal, y is vertical).

PostScript's basic increment of movement is the *point*, a standard printer measurement it interprets as $\frac{1}{72}$ inch (a point is really $\frac{1}{72.27}$ inch). For every inch on your page, there are 72 points: An 8½-by-11-inch sheet is 612 by 792 points.

Figure 1 shows the style variations of PostScript's four basic fonts—Courier, Times-Roman, Helvetica, and Symbol. (Symbol has no italic or bold.) The LaserWriter knows them as having no particular size, just the definition needed to create them. But it will let you scale them to whatever point sizes you need.

The last thing you need to know about PostScript is that it uses reverse Polish notation (RPN) command format. That's the same format the programming language Forth uses, and PostScript looks very much like Forth. For instance, a simple Applesoft multiplication operation such as **6*3** becomes **6 3 mul**, where *mul* is the multiplication command. (The other basic arithmetic functions are *add*, *div*, and *sub*.)

Let's create a headline.

Making Headlines

Press control-T. PostScript responds with the LaserWriter's current status. If you receive any reply other than a message indicating that it's idle, press control-D, then control-T again.

Once you see the idle response, type the word "executive" in lowercase, and press the return key. PostScript will not echo the letters, but after the return you'll see a greeting that includes the current version of the language, followed by the PostScript prompt, PS>, which, like the Applesoft bracket prompt, indicates that your Apple is ready for programming.

Start by creating a definition. Type the line

```
/inch {72 mul} def
```

and press the return key. When you define a literal, you must precede it with a slash (/). Afterwards, you can use the name without the slash. Use braces ({ }) to enclose a *procedure*, one or more PostScript commands. An entire program is also a procedure, but, because it's the whole program, you don't need to enclose it in braces.

Figure 1. PostScript's four basic fonts.

Courier
Courier-Bold
Courier-Oblique
Courier-BoldOblique
Times-Roman
Times-Bold
Times-Italic
Times-BoldItalic
Helvetica
Helvetica-Bold
Helvetica-Oblique
Helvetica-BoldOblique
Σψμβολ

Place smaller programs, those you can use as subroutines once you've defined them, in braces, as you've done above in the multiplication procedure. Here, the "def" command defines the variable "inch" as a series (just one in this case) of commands in the procedure.

Now select a font. Type the command **/Times-Roman findfont**. PostScript will look down the list of fonts it knows and try to match this name. You must type the name exactly; differences in upper- or lowercase will cause an error.

Next, you should scale the font to the proper size. One inch is a good size for a headline, so tell PostScript **1 inch scalefont**. The "scalefont" command uses points to create a font of an appropriate size. Since you've already defined inch as **{72 mul}**, the above translates to **1 72 mul scalefont**. PostScript does the multiplication first, so it "sees" the line as **72 scalefont**.

For 1 inch, it's just as simple to use **72 scalefont** outright. But if you wanted a $\frac{3}{4}$ - or $\frac{5}{8}$ -inch font, you'd first need to determine that $\frac{3}{4}$ inch is 54 points or $\frac{5}{8}$ inch is 27 points. All you need is **.75 inch scalefont** for $\frac{3}{4}$ or **3 8 div inch scalefont** for $\frac{5}{8}$ (PostScript will work out the decimal representation of $\frac{5}{8}$).

Finally, PostScript's *setfont* command sets the font so that it's ready to use. So far, everything should make

Beagle Bros Apple Software Report

Ad Number 252

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Spring 1986

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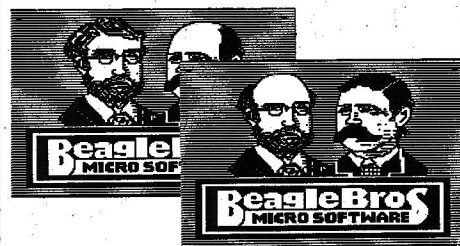
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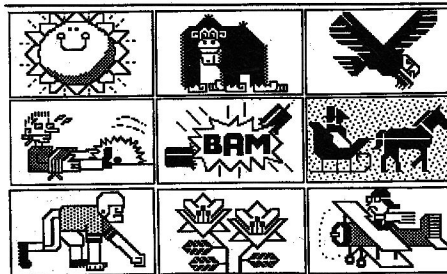
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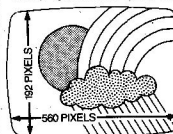
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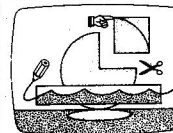
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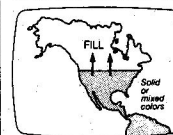
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Written by Mark Simonsen



LIST
10 HGR2: CLEAR: ONERR GOTO 10
20 P=14(P=1): POKE 49238-P,Z
30 POKE 230,32*P: POKE 28,C
40 CALL-3082: POKE 49235-P,Z
50 C=C+1: GOTO 20

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"If you want to look like an expert, combine the last three commands."

sense. If you want to look like an expert, you could combine the last three commands on a single line:

/Times-Roman findfont 1 inch scalefont setfont

Position Is Everything

Let's make the headline itself simple, as in **Figure 2**. Begin printing 1½ inches from the top of the page and 1 inch from the left side. (On an 11-inch sheet of paper, moving the print head 9½ inches vertically from the home position produces a 1½-inch margin at the top of the page.) Since you're essentially instructing PostScript to move the printing head, the command format *x-coordinate y-coordinate moveto* should come as no surprise.

Using the parameters above, the command is **1 inch 9.5 inch moveto**. Going through the mechanics, that statement becomes **1 72 mul 9.5 72 mul moveto** or **72 614 moveto**.

Next, create an image of the headline: **(laser*magic) show**. The *show* command creates an image of the text enclosed in parentheses in memory. The equivalent AppleSoft command is **PRINT "laser*magic";**.

The Applesoft semicolon prevents the automatic carriage return and leaves the printer on the same line at the next available character position, a restriction inherent in the *show* command. Also, each character (except those with

Figure 2. Headline positioned 1½ inches from the top of the page and 1 inch from the left.

laser*magic

Batch Printing

You can print to the LaserWriter from any word processor that supports serial printing to plain printing devices, whether your operating system is DOS, ProDOS, Pascal, or CP/M. The secret lies in the preparation of the text file and the inclusion of the PostScript procedures you can find in the accompanying *laser*magic* Applesoft program (see the **Program listing**).

First one general word of warning. Text used with the *show* command is enclosed in parentheses. If it weren't, PostScript would attempt to interpret it as a valid command. Balanced parentheses—that is, two of them enclosed in the parentheses that normally mark PostScript text—will be processed through the system correctly—most of the time. To avoid problems, you'll use your word processor's search and replace to find all parentheses and add a backslash (\) before each. The backslash is the PostScript escape character.

Now create the text you want to print. Don't let your word processor wrap around to a new line. Rather, just before you reach the end of a line, add a space and a backslash, then press Return. When you come to the end of a paragraph, add a space, a backslash, and "n." Write out every paragraph this way. Then use search and replace to add a backslash before each parenthesis throughout your entire document. When that's done, add a parenthesis to the beginning and end of each paragraph (but no backslash). Your document might look like this:

```
( When the red, red robin comes \
bob, bob, bobbin' along, along, there'll \
be no more sobbin' when he comes singing \
his song. \n)
( Wake up, wake up, you sleepyhead! \
Get up, get up, roll out of bed. \n)
```

Save it to disk and return to your operating system (which I'm assuming is ProDOS). Load in the Applesoft program and send a copy of lines 12010 through 13030 to disk as a text file. If you don't know how to do that, just add these lines to the beginning of the program:

```
1 GOTO 100
```

```
2 PRINT CHR$(4);"OPEN PROGRAM.TXT"
3 PRINT CHR$(4);"WRITE PROGRAM"
4 LIST 12010-13030
5 PRINT CHR$(4);"CLOSE"
6 END
```

and use the command **RUN 2** to create the text file called **PROGRAM.TXT**.

Back at your word processor, load in the text representation of those lines and delete the line numbers, **PRINT** commands, and leading and trailing quotation marks. Save it to disk, and call it **Breaklines**.

Create three more documents. The first should look like this:

```
/Times-Roman findfont 12 scalefont setfont
/yline 720 def
```

Of course, you can change the font name and size to anything you want. That holds true for the top margin, which here is assigned to the PostScript variable as 1 inch (11 inches equal 792 points, 10 inches equal 720 points). Save it to disk as **Intro**.

The second document is:

```
468
{yline 72 le
{72 yline moveto show
/yline yline 12 sub def
showpage
/yline 720 def}
{72 yline moveto show
/yline yline 12 sub def} ifelse}
BreakIntoLines
```

These are really the same instructions you can find in *laser*magic* lines 15010 through 15110, but they've been modified to omit the header and page-number information. If you want that, just follow the general pattern you'll find in *laser*magic*. Save it as **Process**.

The final document almost duplicates the second, but there's one additional instruction at the end:

```
468
{yline 72 le
{72 yline moveto show
/yline yline 12 sub def
showpage
```


descenders) begins at the horizontal position you've specified and is printed upward.

Finally, the *showpage* command places the image of your text on paper and ejects that page from the LaserWriter. Once you've entered this command, it uses up your text and resets the environment, although definitions are still active.

The command *copypage*, however, retains the text and positional commands. Effectively, it lets you see whatever portion of the page you've completed before you continue.

Adding Lines

By varying the font size, you can create a single-line headline—the logo for a newsletter, for example (see **Figure 3**):

```
/Times-Roman findfont
54 scalefont
```

```
setfont
/inch {72 mul} def
.5 inch 10.25 inch moveto
(laser*magic news) show
```

Now add a rule below it:

```
.5 inch 10 inch moveto
8 inch 10 inch lineto
stroke
```

Figure 3. Newsletter logo, showing issue, volume, and date.

laser*magic news

Volume 1, Issue 1

May 1, 1986

```
/yline 720 def}
{72 yline moveto show
/yline yline 12 sub def} ifelse}
BreakIntoLines
showpage
```

Save this as End.

Once more, clear your word processor; now you'll gather all the threads you made into a PostScript program. First load in Breaklines, then follow that with Intro. Add your specially prepared text to the end of that.

Now here's the tricky part. At the end of each paragraph of your text, load in a copy of Process. When you come to the end of your text, load in End. For the sample you saw above, it should look like this:

```
/wordbreak ( ) def
/BreakIntoLines
{/proc exch def
/linelength exch def
/textstring exch def
/breaklen wordbreak stringwidth pop
def
/curlen 0 def
/lastwordbreak 0 def
/startchar 0 def
/restoftext textstring def
{restoftext wordbreak search
{/nextword exch def pop
/restoftext exch def
/wordlen nextword stringwidth
pop def
curlen wordlen add linelength lt
{/curlen curlen wordlen add
breaklen add def}
{textstring startchar
lastwordbreak startchar sub
getinterval proc
/startchar lastwordbreak def
/curlen wordlen breaklen
add def
}ifelse
/lastwordbreak lastwordbreak
nextword length add 1 add def
}
{pop exit}
```

```
ifelse
}loop
/lastchar textstring length def
textstring startchar lastchar
startchar sub getinterval proc
}def
/Times-Roman findfont 12 scalefont setfont
/yline 720 def
( When the red, red robin comes \
bob, bob, bobbin' along, along, there'll \
be no more sobbin' when he comes singing \
his song. \n)
468
{yline 72 le
{72 yline moveto show
/yline yline 12 sub def
showpage
/yline 720 def}
{72 yline moveto show
/yline yline 12 sub def} ifelse}
BreakIntoLines
( Wake up, wake up, you sleepyhead! \
Get up, get up, roll out of bed. \n)
468
{yline 72 le
{72 yline moveto show
/yline yline 12 sub def
showpage
/yline 720 def}
{72 yline moveto show
/yline yline 12 sub def} ifelse}
BreakIntoLines
showpage
```

Admittedly, for two small paragraphs that's a lot of work. But when your documents become longer, having those PostScript procedures already available makes printing them on the LaserWriter much easier. When it's time to print, add a control-D as the first character in the file. (You can do that directly with Apple Writer, or define boldface as control-D in AppleWorks and use that.) That puts the LaserWriter into batch mode when you start to print. And that's all you'll need to do—just print it. □

—W.O'B.

*"A combination of point
and inch values
positions the text."*

Program listing. Procedures for printing prewritten ASCII text files.

```

100 R$ = CHR$(13)
110 OVER = 0
120 D$ = CHR$(4)
130 TEXT : HOME
140 INPUT "LIST WHAT TEXT FILE? ";N$
150 PRINT : PRINT : POKE 34,3
160 TYPE$ = "Times-Roman"
170 SIZE = 12
180 SPACE = SIZE * 1: REM 1=single space, 2=double, etc.
190 HEIGHT = 11
200 WIDTH = 8.5
210 LEFT = 1
220 RIGHT = 1
230 UP = 1
240 LL = 72 * (WIDTH - LEFT - RIGHT)
250 BOT = 1
260 HEADER$ = "LASER * MAGIC   by Bill O'Brien"
270 HTYPE$ = "Times-Bold"
280 HSIZE = 14
290 REM
300 REM laser*magic
305 REM Copyright 1986 by Bill O'Brien
310 REM the PostScript portions of lines
315 REM 12010 through 12360 are used with
320 REM permission of Adobe Systems, Inc.
325 REM for inclusion in this article.
330 REM
8000 GOSUB 10000
8010 ONERR GOTO 9050
8020 GOSUB 12000: GOSUB 13000
8030 EMPTY% = 0: A$ = "("
8040 RP = 0
8050 PRINT D$;"OPEN ";N$
8060 PRINT D$;"READ ";N$;"B";RP
8070 GOSUB 9000
8080 IF RIGHT$(A$,3) = ")" THEN 8100
8090 A$ = A$ + ""
8100 PRINT D$;"CLOSE",N$
8110 IF OVER = 1 THEN TEXT : HOME : END
8120 GOSUB 14000
8130 A$ = C$
8140 GOTO 8050
9000 REM read the file into a matrix
9010 GET C$: RP = RP + 1
9015 IF C$ = R$ AND A$ = "(" THEN A$ = A$ + "": C$ = "(": RETURN
9020 IF C$ = R$ THEN A$ = A$ + "": C$ = "(": RETURN
9030 A$ = A$ + C$: IF LEN(A$) = 251 THEN C$ = "": RETURN
9040 GOTO 9010
9050 REM handle error messages
9060 POKE 216,0
9070 IF PEEK(222) = 5 THEN 9130
9080 PRINT D$;"CLOSE"
9090 PRINT D$;"PR#0"
9100 PRINT D$;"PR#3"
9110 PRINT "Error in line #:"; PEEK(218) + PEEK(219) * 256
9120 END
9130 REM close the file and print the last lines
9140 PRINT D$;"CLOSE"
9150 A$ = A$ + ")"
9160 GOSUB 14000
9170 GOSUB 14070
9180 TEXT : HOME : END
10000 REM initialize the laserwriter
10010 GOSUB 11000
10020 PRINT CHR$(4)
10030 GOSUB 11010
10040 RETURN
11000 PRINT CHR$(4);"PR#1": RETURN
11010 PRINT CHR$(4);"PR#0": RETURN
12000 REM build definition file
12005 GOSUB 11000
12010 PRINT "/wordbreak ( ) def"
12020 PRINT "/BreakIntoLines"
12030 PRINT "{/proc exch def"
12040 PRINT "/linelength exch def"
12050 PRINT "/textstring exch def"

```

Listing continued.

Like *moveto*, *lineto* is a directional indicator that describes the path the LaserWriter should take to draw a rule. The *stroke* command draws the image of the rule.

A newsletter should also show the current issue, volume, and date:

```

.5 inch 10 inch 14 sub moveto
/Times-Roman findfont 14 scalefont setfont
(Volume 1, Issue 1) show
7 inch 10 inch 14 sub moveto
(May 1, 1986) show

```

A combination of point and inch values positions the text. Essentially, PostScript returns to the horizontal position at which you drew the rule, then subtracts 14 points from the vertical position. That 14 points is the font size for the text.

One thing I'd like to emphasize is that the date is flush right with the edge of the rule. That didn't happen by accident. Since an Apple II lacks the Macintosh's bit-mapped graphics, which lets you visually position text before you print it, your recourse is a ruler, paper, and pencil. You must physically draw where everything goes, then use those measurements in your program.

Finally, adjust the bottom rule to print just below the text and print the page with a *showpage* command:

```

.5 inch 10 inch 18 sub moveto
8 inch 10 inch 18 sub lineto
stroke
showpage

```

Printing Text

So much for printing a single line of text and the lines themselves. What about text files? Can you print an AppleWorks or Apple Writer II document? Certainly, but you'll need some help. Before you can process an AppleWorks file into the LaserWriter, you'll need to save it to disk as an ASCII text file. Even then, you might have some problems, since AppleWorks imbeds page breaks into ASCII text files. In this case, Apple Writer II is preferred, but any word processor that saves text in ASCII format with carriage returns at the end of each paragraph (not each line) will work.

Handling prewritten text files requires that you use PostScript in batch mode with prewritten PostScript commands (see the sidebar). Along with the PostScript programming, you'll need an Applesoft program to do some of the work (see the **Program listing**). And there are some things you should know about that program before you use it.

First, I've hardwired page and font settings in lines 100-290. If you want different settings, change the values within the program or build yourself a "front end" that inquires about the different settings available.

Error checking is at a bare minimum. The program assumes you're entering the name of a valid ASCII text file. The error handling is simply a device that monitors when the program reaches the end of the file.

Overall, the program is modular. Lines numbered 10000 initialize the LaserWriter's batch mode by sending a control-D (CHR\$(4)). Lines 11000 and 11010 assume your serial card is in slot 1.

Lines in the 12000 series are an adaptation of a line-breaking program in the "PostScript Cookbook" portion of

Listing continued.

```

12060 PRINT "/breaklen wordbreak stringwidth pop"
12070 PRINT "def"
12080 PRINT "/curlen 0 def"
12090 PRINT "/lastwordbreak 0 def"
12100 PRINT "/startchar 0 def"
12110 PRINT "/restoftext textstring def"
12120 PRINT "{restoftext wordbreak search"
12130 PRINT "{/nextword exch def pop"
12140 PRINT "/restoftext exch def"
12150 PRINT "/wordlen nextword stringwidth"
12160 PRINT "pop def"
12170 PRINT "curlen wordlen add linelength lt"
12180 PRINT "{/curlen curlen wordlen add"
12190 PRINT "breaklen add def}"
12200 PRINT "{textstring startchar"
12210 PRINT "lastwordbreak startchar sub"
12220 PRINT "getinterval proc"
12230 PRINT "/startchar lastwordbreak def"
12240 PRINT "/curlen wordlen breaklen"
12250 PRINT "add def"
12260 PRINT "ifelse"
12270 PRINT "/lastwordbreak lastwordbreak"
12280 PRINT "nextword length add 1 add def"
12290 PRINT "}"
12300 PRINT "{pop exit}"
12310 PRINT "ifelse"
12320 PRINT "}"
12330 PRINT "/lastchar textstring length def"
12340 PRINT "textstring startchar lastchar"
12350 PRINT "startchar sub getinterval proc"
12360 PRINT "def"
12365 GOSUB 11010
12370 RETURN
13000 REM initialize the first time through
13005 GOSUB 11000
13010 PRINT "/" ; HTYPE$ ; " findfont " ; HSIZE ; " scalefont setfont"
13012 PRINT LEFT * 72 ; " " ; HEIGHT * 72 - 18 ; " moveto"
13014 PRINT "(" ; HEADER$ ; ")" show"
13015 PRINT "/" ; TYPE$ ; " findfont " ; SIZE ; " scalefont setfont"
13020 PRINT "/yline " ; (HEIGHT * 72) - (72 * UP + SIZE) ; " def"
13030 PRINT "/pnum 1 def"
13035 GOSUB 11010
13040 RETURN
14000 REM start the printing
14010 GOSUB 11000
14020 PRINT A$
14030 :
14040 :
14050 IF RIGHT$(A$,1) = ")" THEN GOSUB 15000
14055 GOSUB 11010
14060 RETURN
14070 GOSUB 11000
14075 PRINT "509 36 moveto"
14080 PRINT "(Page ) show"
14090 PRINT "pnum ( ) cvs show"
14100 PRINT "showpage"
14105 GOSUB 11010
14110 RETURN
15000 REM process the lines
15005 GOSUB 11000
15010 PRINT LL
15020 PRINT "{/yline " ; BOT * 72 + SPACE ; " le"
15021 PRINT "{/LEFT * 72 ; " yline moveto show"
15022 PRINT "/yline yline " ; SPACE ; " sub def"
15030 PRINT "509 36 moveto"
15040 PRINT "(Page ) show"
15050 PRINT "pnum ( ) cvs show"
15060 PRINT "showpage"
15061 PRINT "/" ; HTYPE$ ; " findfont " ; HSIZE ; " scalefont setfont"
15062 PRINT LEFT * 72 ; " " ; HEIGHT * 72 - 18 ; " moveto"
15064 PRINT "(" ; HEADER$ ; ")" show"
15065 PRINT "/" ; TYPE$ ; " findfont " ; SIZE ; " scalefont setfont"
15070 PRINT "/pnum pnum 1 add def"
15080 PRINT "/yline " ; (HEIGHT * 72) - (72 * UP + SIZE) ; " def}"
15090 PRINT "{/LEFT * 72 ; " yline moveto show"
15100 PRINT "/yline yline " ; SPACE ; " sub def} ifelse}"
15110 PRINT "BreakIntoLines"
15120 GOSUB 11010
15160 RETURN

```

End of listing.

Inside LaserWriter (a software-development manual Apple distributes), reprinted with permission of Adobe Systems. These lines form the crux of the program and are actually a single PostScript procedure. After the program initializes the printer, it sends this procedure to the LaserWriter as a series of PRINT statements, which the LaserWriter thereafter remembers as a procedure called *BreakIntoLines*.

The program reads your ASCII file from disk one character at a time until it finds a carriage return (lines 8000–9000). It then ships the variable created (A\$) to BreakIntoLines, which dissects and rearranges it so that the printed line lengths correspond to what the LaserWriter will produce with the font and font size you've selected. Otherwise, each line would remain the length it is in the ASCII file.

BreakIntoLines requires three things to function: a PostScript procedure that actually prints the reorganized lines, the line length you want, and the text it must reorganize. Lines 14000–14070 send the text; line 15010 supplies the line length in a variable called LL; lines 15020–15100 provide the printing procedure—and it's very complex.

These last lines are essentially an IF...THEN statement that checks to see if the last line on the page has been printed. If it hasn't, the procedure cycles back into BreakIntoLines. Otherwise, the program advances the printer to the bottom of the sheet and prints the word Page and the page number (from the PostScript variable *pnum*). The program then ejects that page. Before BreakIntoLines processes any new text, it creates an image of the header in the Applesoft variable HEADER\$ at the top of the next page.

Summary

By combining the methods from the headline and text portions of this article, you can produce almost any document on the LaserWriter from your Apple II. If you're curious about PostScript and the other things you can do (including graphics, printing in designer shapes, and changing fonts), look at the PostScript documentation.

Also available are Adobe Systems' *PostScript Language Reference Manual* and *PostScript Language Cookbook* (Addison-Wesley). Together they cost about \$40, but they're well worth the price.

If you're still wondering what your print shop, user group, or office will possibly do to justify a \$7000 LaserWriter, keep in mind that more PostScript-driven printers are due. With the exception of minor differences derived from the LaserWriter's high technology, PostScript will be the same on all of them.

It's almost guaranteed that other printers will be less expensive than the LaserWriter, which was designed as a shared office device with features a single-user machine doesn't need. It wouldn't surprise me if Apple also releases a scaled-down version of the LaserWriter. After all, since the LaserWriter works with the Apple II, it's a new market Apple can attack. ■

Write to Bill O'Brien at P.O. Box 1010A, Fort Lee, NJ 07024.

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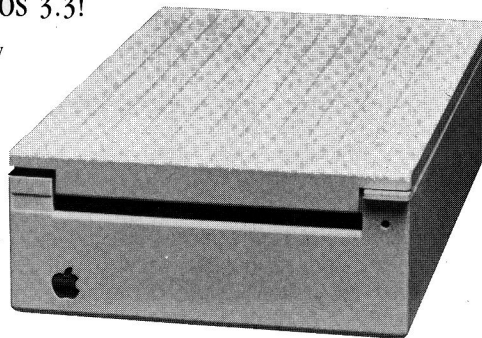
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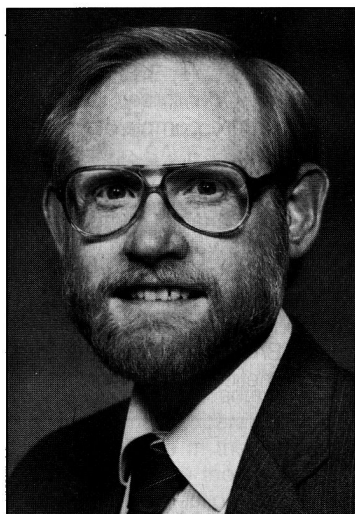
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APPLESOFT ADVISER

Compuapple

*"Your Apple
can function as
a calculator
from the
moment you
take it out of
the box and
plug it in."*



by Dan Bishop

This month, I'm initiating a new approach for Applesoft Adviser. Realizing that many of you are new Apple IIe and IIc owners and users, the editors at *inCider* and I have decided to reorient Applesoft Adviser back to the basics of BASIC. Although some of my recent columns included fun, useful BASIC programs, and illustrated a number of important BASIC programming concepts, they've also become more complex and difficult to follow. So if I've gotten a step or two ahead of you lately, you should feel more comfortable with this new approach.

Of course, the only way we can be sure we're meeting your needs is for you to write. Tell us what you want to see in this column. If you write to me for help with one of my programs, please send your printed listing, and I'll see if I can solve the problem. And please, if you expect a response, include a SASE with your letter.

Calculator Mode

If you're new to computers, you're probably not aware that your Apple can function as a calculator from the moment you take it out of the box and plug it in. Many computers require a BASIC interpreter program before you can use BASIC. Apples come with BASIC built into the machine's ROM (read-only memory). Such a deal!

So you just turned on your new Apple computer. And computers are for computing, right? To test it, type `3 + 5` and press the return key. But except for the bracket prompt (`()`) and blinking cursor, which moves down a line, nothing happens. It's time you learned your first BASIC command: `PRINT`. To make the computer display something on screen, you must precede the calculation with the word `PRINT`.

To test this newfound knowledge, type in:

```
PRINT 3 + 5
```

When you press the return key, the number 8 appears on the line directly below your command. You can substitute a question mark for `PRINT`.

Type in:

```
? 3 + 5
```

You'll see the same result.

Now try subtraction, multiplication, division, and exponentiation. The minus sign is the same as the hyphen on your keyboard. For multiplication, use the asterisk (above the number 8—hold down the shift key while pressing the number 8). The symbol for division is the slash (`/`), making your division problems look like fractions. For exponentiation, use the caret symbol (`^`). For example, try typing in:

```
? 34 - 10
```

```
? 15 * 8
```

```
? 12 / 4
```

```
? 10 ^ 2
```

Press return after each line. The result for each calculation appears on the next line of your screen when you press return.

Your computer performs arithmetic operations in more complex expressions according to strict rules built into ROM. If there are no parentheses in the expression (see below), it first evaluates a plus or minus sign, used solely for specifying the sign of the number (or variable) following it. Then it carries out all exponentiations in the expression. Multiplications and divisions are next, followed by additions and subtractions. The computer conducts each step in the expression from left to right. You don't see any of this, of course, but you need to be aware of the rules so that you don't type in an expression improperly—you'll get incorrect results.

For example, the expression

```
? 9 + 2 * 6 / 2 - 6
```

is ambiguous because you're not telling the computer what you want. If you expect to add nine to two, multiply the result (11) by six, divide that result (66) by two, then subtract six to get the answer, you won't get the expected result (27) from your computer.

Instead, the computer uses the rules described above and does the multiplication and division first, left to right. The intermediate result would look like this, if it were displayed:

```
? 9 + 6 - 6
```

It then carries out the addition and subtraction left to right, and displays the correct answer (9).

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You can avoid situations like this by using parentheses to order the operations the way you want the computer to carry them out. The parenthesis rule states that the machine first performs all calculations enclosed in parentheses, according to the rules given above. Then it removes the parentheses and, following the same rules as before, evaluates the resulting expression. You could force the example above to produce 27 as an answer if you type it in this way:

? (9 + 2) * 6 / 2 - 6

Calculator Memory

Many hand-held calculators have built-in memory you can use to store intermediate results. You can then recall the value(s) stored in memory when you need them. As you might expect, your Apple's RAM (random-access memory) can store nearly 1000 intermediate results.

To use this memory, you "name" the memory location the computer will use to hold a specific intermediate value. A name can be one or two characters, must begin with a letter, and use a letter or number for the second character. Examples of valid names are A, Z, AA, XY, M4, and L5.

Applesoft allows longer names, such as AVERAGE, SPEED, or GALLONS-PER-HOUR, but it uses only the first two characters: AV, SP, and GA. The computer stores values for PERCENT and PERIOD in the same location (PE), substituting the most recent value for the previously stored value. Therefore, be sure the first two characters in all variable names you

use are unique.

You must also be sure the variable names you select don't include any Applesoft keywords. For example, SPRINT isn't allowed, since it contains the keyword PRINT. Only seven keywords have two characters: AT, TO, GR, IF, ON, OR, and FN. To avoid using a keyword, I generally use only two characters.

Now that you know how to name memory locations, you can start using them with your calculations. Simply substitute the chosen name and an equal sign for the question mark:

SP = (9 + 2) * 6 / 2 - 6

Type in the above equation and press return. You'll note that nothing seems to happen. But don't be fooled—the computer carries out your calculation and, using the name SP to tag the location, stores the result in memory. (The term *variable name*, or simply *variable*, denotes names for memory locations in which values are stored.) The variable SP contains the value 27.

To use this stored value, simply refer to it by name in any valid BASIC command. For example, ? SP displays the value 27 on screen. Or you can use it in a more complex expression, such as:

? 455 + (387.6 / (SP/10))

You can use a variable name over and over again. Its value won't change until you give it a new one with an SP = command. (Note the use of "nested" parentheses in the last example. BASIC evaluates the innermost parenthetical expression first,

Program listing. Compuapple.

```

5 REM COMPUAPPLE CALCULATOR PROGRAM
10 PRINT "*****"
20 PRINT "CALCULATOR READY: ";
30 PRINT "ENTER + - * / ^ ";
40 INPUT C$
50 PRINT "ENTER 2 NUMBERS, SEPARATED BY A COMMA:"
60 INPUT A, B
70 IF C$ = "+" THEN R = A + B:GOTO 140
80 IF C$ = "-" THEN R = A - B:GOTO 140
90 IF C$ = "*" THEN R = A * B:GOTO 140
100 IF C$ = "/" THEN R = A / B:GOTO 140
110 IF C$ = "^" THEN R = A ^ B:GOTO 140
120 PRINT "SORRY, THAT OPERATOR DOES NOT COMPUTE."
130 GOTO 10
140 PRINT A; " "; C$; " "; B; " = "; R;
150 PRINT " MORE? (Y/N) ";
160 INPUT " "; R$
170 IF R$ = "Y" THEN GOTO 10
180 IF R$ = "N" THEN GOTO 200
190 GOTO 140
200 END

```


then works its way outward. In this case, the computer first divides SP by ten, then divides the result into 387.6, then adds 455.)

Another thing you can do with variable names is use them in their own expressions to change their values. For example, $SP = SP + 1$ is a form frequently used in BASIC. You can read this equation, "Add one to the value currently stored in SP and store the result in SP, replacing the former value." If the value in SP were 33, it would be 34 after this operation.

Finally, you can use variables to store alphanumeric information, such as names, addresses, and zip codes, but you must follow them with a dollar sign. A\$, BR\$, and L5\$ are examples of valid "string-variable" names. You read the dollar sign as "string," so you read L5\$ as "el-five-string."

Compuapple

The accompanying **Program listing** turns your Apple into a simple five-function calculator, in addition to illustrating several BASIC commands.

Type in the **Program listing**, beginning each line with the line number shown, and ending by pressing the return key after each line. When you're finished, copy the program to disk with the SAVE COMPUAPPLE command. Tomorrow, when you want to use the program again, you can copy it from disk and execute it with the command RUN COMPUAPPLE. For now, though, since the program's still in the computer, just type in the word RUN to execute it.

When you run the program, the first prompt asks you to enter a symbol for the arithmetic operation you want to perform. Type in the appropriate symbol and press the return key to transmit your selection from the keyboard buffer to the microprocessor for processing.

The next prompt asks you to enter two numbers, separated by a comma. For example, type in 44,12 and press return. If you'd chosen the minus sign for an operation, the computer will subtract 12 from 44, and the answer will appear on screen:

44 - 12 = 32 MORE? (Y/N)

If you type in N, the program will end. If you enter Y, the computer will prompt you again for selection of a math symbol, beginning a new sequence of calculation.

How It Works

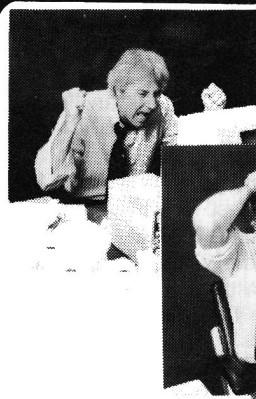
This **Program listing** is a simple

BASIC program containing only six BASIC commands: REM, PRINT, INPUT, IF...THEN, GOTO, and END. The REM command tells the computer to ignore anything following it on that program line. Its only purpose is to let you type in titles and explanations describing what the program is doing. REM is short for *remark*—a type of documentation for the humans reading the program listing.

I've described the PRINT command above. But note that the PRINT commands in lines 20, 30, 140, and 150

end with a semicolon (;). When the computer executes a PRINT line that doesn't end with a semicolon or comma, it automatically executes a line feed and returns the cursor to the left edge of the screen. If you end a PRINT line with a semicolon, the computer suppresses the line feed/carriage return. The next PRINT command will display information on the same line, where the previous PRINT command left off.

Now pay special attention to line 140. This PRINT command has seven



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segments, each separated from the next by a semicolon. In line 140 are three literals, enclosed in quotation marks; two are blank spaces, and the third is an equal sign with a blank space on each side. The other four segments are variables (memory locations that hold a value). All the semicolons in line 140 are optional, except the last one. I've used them here to make it easier to identify the individual segments.

The **Program listing** contains three INPUT commands (lines 40, 60, and 160), each of which you must follow with at least one variable name. INPUT tells the computer to bring the program to a screeching halt and wait (forever, if necessary) for someone to type data into the computer. The PRINT command in line 50 displays the prompt ENTER 2 NUMBERS, SEPARATED BY A COMMA, and the variables listed after the INPUT command in line 60 store the data.

Since the computer must store each number you type in its own memory location, the INPUT com-

mand names two variables, in this case, A and B. No matter what numbers you enter, the computer will store them in "locations" A and B, and you can use them anywhere in the program by referring to A and B.

Lines 40 and 160 use string-variable names (the names end with dollar signs), which are required if the computer is to store nonnumeric information in those variables. C\$ stores the arithmetic-operation symbol, while R\$ stores the Y or N you entered in response to the displayed question, "MORE? (Y/N)." Finally, line 160 has two quotes and a semicolon between INPUT and R\$. This tells the computer not to display the question mark, which is the normal prompt when BASIC encounters an INPUT command.

The program contains seven IF... THEN statements. IF... THEN's tell the computer to test for some particular relationship and, IF the relationship is true, THEN carry out the commands remaining on the line following the word THEN. The line can contain

more than one command if they're separated by a colon (:). For example, line 70 tells the computer that if C\$ (the operator symbol you typed in) is a plus sign (notice that you place the literal between quotes), then add A and B, store the result in R, jump over the next several instructions, and resume program execution at line 140. The other IF...THEN statements are similar; you should be able to trace exactly how they work.

A program line number always follows the GOTO command. Be sure that number actually appears in your program. GOTO forces a jump to another part of the program, either forward or backward. It's best to use GOTO sparingly in your programs—only when necessary. Too many GOTO's make a program difficult to read and understand.

Finally, line 200 contains the END command—pretty self-explanatory. Need I say more? ■

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```

COUNT WORD
-----
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1 ADDRESS
1 ADDRESSES
6 ALL
1 ALMOST
1 ALWAYS

1 WORK
1 WRITING
5 YOU
1 YOU'VE
8 YOUR

-----
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```

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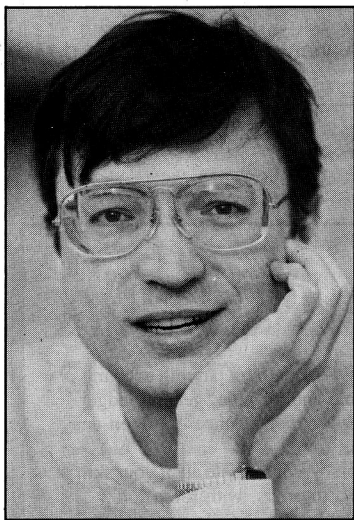
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PASCAL PRIMER

Pascal Pointers

"Pointers refer to variables the way street signs direct you to parking lots, buildings, and museums."



by Tom Swan

You'll have no trouble with Pascal pointers if you remember one simple fact: A pointer is an address—a location in computer memory that stores the first byte of another Pascal variable, which could be an array, a record, or even another pointer.

Because pointers address, or refer to, other variables, there's an important difference between pointers and the data to which they point. Pointers refer to variables the way street signs direct you to parking lots, buildings, and museums. In the city, you follow signs to your destination; in Pascal, you follow pointers to data.

In this month's column, I'll show you how to create and use pointers in your own Pascal programs. I'll also explain how to use pointers to access normally unavailable memory locations. With pointers, you can directly manipulate the Apple II's video memory to write a screen-print program, an example several readers requested. This month I'll also present a sneak preview of the new Apple Pascal 1.3.

Pointers and Carets

To declare a pointer, put a caret (^) in front of the data type you want the pointer to address. You can declare pointers to any Pascal type. For example, the variable declaration

```
VAR
```

```
Ptr : ^Real;
```

creates Ptr, a pointer variable, which points to a real number, the *base type* of the pointer. The real number the pointer addresses is identical to any other real-number variable. But, before using a pointer variable, you initialize it with Pascal's New procedure as shown in **Listing 1**, TestPtr.

In line 4, New causes two actions to occur. First, Pascal reserves memory space for a variable of the pointer's base type, in this case 4 bytes, enough space for one real number. The memory space comes from an area known as the Heap. Next, Pascal assigns that memory's address to the pointer variable. After New executes, therefore, Ptr addresses a 4-byte memory location on the Heap.

Like all variables in Pascal, the variable to which the pointer points has

no specific value until you give it one. Line 5 assigns the value 3.14159 to the real-number variable Ptr addresses. Line 6 displays the same value. Notice that in both these lines the caret follows Ptr^, telling Pascal to refer to the object to which Ptr points. Without the caret, Ptr refers to the pointer variable (the memory address); with the caret it refers to the variable located at that address.

Placing the Caret

Of all pointer subjects, the placement of the caret seems to give people the most trouble. In a VAR or TYPE declaration, the caret always goes in front of the pointer's base type. But in the program, the caret always follows the pointer variable name.

To remember this rule, you might pronounce the caret in a VAR or TYPE declaration as "is a pointer to." You are, after all, declaring that such-and-such is a pointer to a particular kind of object. For example, you could pronounce the declaration

```
VAR
```

```
CharPointer : ^Char;
```

as "CharPointer is a pointer to type Char." Later, when you refer to the data to which the pointer points, you can pronounce the caret as "the variable addressed by." Referring to **Listing 1**, you might read line 5 as "assign 3.14159 to the variable addressed by Ptr."

If you read through this month's examples and your own programs this way, you'll rarely forget where to place the caret. Carefully reading published programs is a great way to learn new tricks, and I frequently pronounce aloud those statements I don't understand. (When my Apple starts answering back, though, I take a vacation.)

Pointers to Complex Types

You can declare pointers to any Pascal data type, even those of your own making. As with other Pascal declarations, it's best to first declare new type identifiers before creating variables of those types. In this way, you can use custom data types as parameters or as part of local variable declarations in procedures and func-

Listing 1. TestPtr.

```
0: PROGRAM TestPtr;
1: VAR
2:   Ptr : ^Real;
3: BEGIN
4:   New( Ptr );
5:   Ptr^ := 3.14159;
6:   Writeln( Ptr^ )
7: END.
```

tions. To create a pointer to an array, you could write:

```
TYPE
  IntArray : ARRAY[ 1 .. 100 ] OF Integer;
  ArrayPtr : ^IntArray;
VAR
  APtr : ArrayPtr;
```

Taking it a step at a time, you first define IntArray as an array of 100 integers. Next, create ArrayPtr, a pointer to the new array type. Finally, you declare APtr as a variable of type ArrayPtr. You can add a later statement, New(APtr), to reserve enough memory for the array. After that, to assign values to the array,

you could use a FOR loop:

```
FOR i := 1 TO 100 DO
  APtr[i] := i;
```

Notice the caret placement. APtr (without the caret) is the array's address; APtr^ (with the caret) refers to the entire array; APtr[i] (with the caret, brackets, and index) is an individual array variable, in this case, an integer. You can't write APtr[i] because an address isn't an array, and, therefore, you can't index it.

Free Unions and Pointers

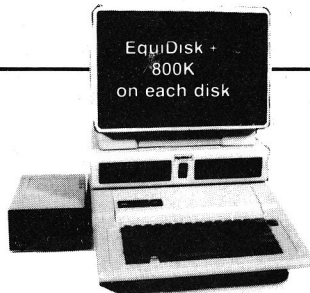
A useful trick you can perform with Pascal pointers is to assign the addresses of known memory locations to a special kind of record variable called a *free union*. A free union is similar to a normal record, but has all or many of its fields at the same position. This lets you subvert Pascal's type-checking rule, which normally prevents you from assigning values to variables of different types. For example, if you have a character variable ch, you can't write ch := 65. But as Char-

Listing 2. CharTrick.

```
0: PROGRAM CharTrick;
1: TYPE
2:   CharTranslator =
3:     RECORD CASE Boolean OF
4:       True : ( ch : char );
5:       False : ( n : 0 .. 255 )
6:     END;
7: VAR
8:   ASCII : CharTranslator;
9:   i : integer;
10: BEGIN
11:   FOR i := 32 TO 127 DO
12:     BEGIN
13:       IF i MOD 16 = 0 THEN writeln;
14:       ASCII.n := i;
15:       write( ASCII.ch )
16:     END
17:   END.
```

Trick in Listing 2 proves, with a free-union record, you can do exactly that.

Lines 2-6 of CharTrick declare a free-union CharTranslator record. The CASE Boolean part of the declaration tells Pascal to place the following field lists at the same location in the record. This construction, called a "CASE variant record," lets you de-



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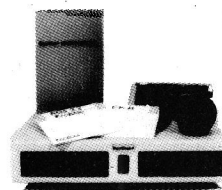
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Listing 3. ScreenTest.

```

0: PROGRAM ScreenTest;
1:
2: (*
3:  * DESCRIPTION: Screen print test program
4:  * SYSTEM:      Apple II+ 40-column display
5:  * LANGUAGE:    Apple Pascal all versions
6:  * AUTHOR:      Tom Swan
7:  *)
8:
9:
10: CONST
11:   XMax = 39;          (* Maximum x coordinate *)
12:   YMax = 23;          (* Maximum y coordinate *)
13:   HighBit = 128;      (* 0 to not affect char bit 7 *)
14:
15: TYPE
16:   Byte = 0 .. 255;    (* Range of values in an 8-bit byte *)
17:
18:   OneByte = PACKED ARRAY[ 0 .. 0 ] OF Byte;
19:
20:   MemRec =             (* Free union "trick" record *)
21:     RECORD CASE Boolean OF
22:       True  : ( MemAddress : integer );
23:       False : ( MemValue   : ^OneByte );
24:     END;
25:
26: VAR
27:   ScRow : ARRAY[ 0 .. YMax ] OF integer; (* Screen row addresses *)
28:
29: PROCEDURE Poke( Address : integer; Value : byte );
30: (* Insert value directly into memory at address *)
31: VAR Memory : MemRec;
32: BEGIN

```

Listing continued.

clare records with varying structures. In this example, there are two variant field lists, a character variable *ch* and a subrange-of-integer variable *n*. Both exist at the same location in the record.

The program assigns the values 32-127 to variable ASCII's *n* field. But, as you'll see when you run the program, line 15 magically displays the ASCII character set, because the assignment to field *n* also changes field *ch*. Both fields exist at the same location and, therefore, overlay each other. Assigning a value to one also makes the other change.

Peeks and Pokes

You can use the same idea to assign memory addresses to records with pointer fields. You can point anywhere in memory and tell Pascal what kind of variable you expect it to find there. For an example of this, **Listing 3**, ScreenTest, includes two routines (Peek and Poke) you may have thought impossible to write in Pascal.

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PASCAL PRIMER

Listing continued.

```

33:   Memory.MemAddress := Address;
34:   Memory.MemValue[0] := Value
35: END; (* Poke *)
36:
37: FUNCTION Peek( Address : integer ) : byte;
38: (* Return 8-bit value at memory address *)
39: VAR Memory : MemRec;
40: BEGIN
41:   Memory.MemAddress := Address;
42:   Peek := Memory.MemValue[0]
43: END; (* Peek *)
44:
45: FUNCTION ScAddress( x, y : integer ) : integer;
46: (* Return 16-bit address of screen coordinate (x,y) *)
47: BEGIN
48:   ScAddress := ScRow[y] + x
49: END; (* ScAddress *)
50:
51: PROCEDURE PutChar( x, y : integer; ch : char );
52: (* Insert ch into screen memory at coordinate (x,y) *)
53: BEGIN
54:   Poke( ScAddress( x, y ), ord( ch ) + HighBit )
55: END; (* PutChar *)
56:
57: FUNCTION GetChar( x, y : integer ) : char;
58: (* Read character at screen coordinate (x,y) *)
59: BEGIN
60:   GetChar := Chr( Peek( ScAddress( x, y ) ) - HighBit )
61: END; (* GetChar *)
62:
63: PROCEDURE Center( y : integer; s : string );
64: (* Center string s at display line y *)
65: VAR i, x : integer;
66: BEGIN
67:   x := ( XMax DIV 2 ) - ( length(s) DIV 2 );
68:   FOR i := 1 TO length(s) DO

```

Listing continued.

from other RAM locations. Directly inserting values into screen memory displays characters on the monitor. Likewise, you can read values from display memory.

ScreenTest puts both these ideas to work. At line 20 is another example of a free-union record. In this case, field MemAddress is of type integer while field MemValue is a pointer to OneByte. Looking back a few lines, you find the declaration of OneByte, a single-value, packed array of Byte, a subrange of integers zero to 255. Packing the array lets Pascal treat memory values as individual bytes—normally, it treats them as 2-byte words.

Procedure Poke at line 29 shows how to use these declarations. By assigning an address to a Memory record (see line 34), Poke easily inserts a value into memory at that address. It assigns Value to the OneByte array I described earlier.

Function Peek at line 37 also assigns an address to a Memory record. In line 42, it then reads the value at that address, returning as the

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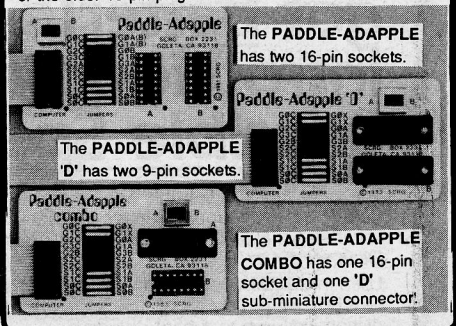
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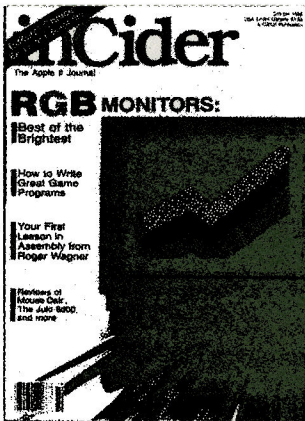
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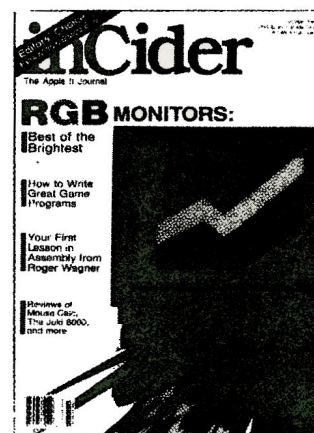
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function result the value it finds there.

With Peek and Poke, it's easy to write PutChar and GetChar as shown in lines 51 and 57. These two routines read (GetChar) and write (PutChar) directly to the Apple's display memory. Procedure PrintScreen at line 104 uses GetChar to read memory bytes, transferring the displayed characters to the printer.

Although I tested **Listing 3** on an Apple II 40-column display, you could use the same idea to write a print-screen program for a //e 80-column setup. You'll have to increase line 11's XMax constant from 39 to 79 and rewrite function ScAddress at line 45 to return the 16-bit address of the screen x,y coordinate. The rest of the program shouldn't require modification.

Pascal News

Apple Pascal 1.3 is here! Although I haven't had time to try all its features, it appears that Apple has outdone itself this time.

The most impressive part of the new release is the 862-page manual. Too large for Apple's traditional spiral-bound books, it comes with a *Work-Bench* three-ring binder. You have to assemble this massive tome yourself and apply the six chapter labels to plastic-coated separators.

The text has been revised and reprinted. Program examples, of which there are many, are set in a boldface, monospaced font. So far, I've found the material complete and well organized.

The software comes on four floppy disks. Also, there's a surprise: a 3½-inch, double-sided microfloppy. This hard-plastic disk contains all the programs and files of the four floppies—with room to spare! (A floppy holds 280 512-byte blocks, while the 3½-inch holds an impressive 1600 blocks.)

When I have the opportunity to run a few benchmarks, I'll compare all three Apple Pascal versions. Until then, I strongly recommend upgrading to version 1.3. The new manual alone is a bargain.

And Finally. . .

Pointers let you create variables on the Pascal Heap and directly access memory bytes. In future columns, I'll explain how you can use pointers to create lists, trees, and data structures that dynamically shrink and expand.

Many readers have requested information about the Apple Pascal assembler. Although this is a Pascal

tutorial, writing procedures and functions in assembly language is an important Apple Pascal technique, which I'll explain in my next column. ■

Tom Swan is the author of the Apple Pascal series, Pascal Programs for

Business, Pascal Programs for Games and Graphics, and Pascal Programs for Data Base Management, published by Hayden Book Company. Address correspondence to Tom at P.O. Box 206, Lititz, PA 17534. Please enclose a self-addressed, stamped envelope if you want a personal reply.

Listing continued.

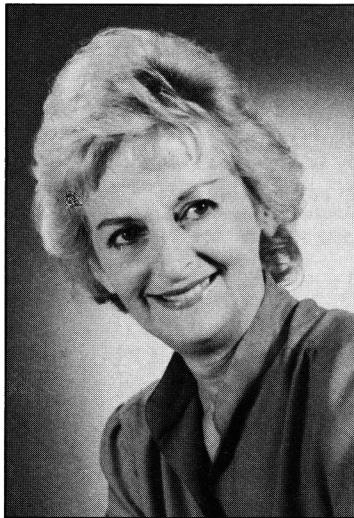
```
69:      PutChar( x + i, y, s[i] )
70: END; (* Center *)
71:
72: PROCEDURE ClearScreen;
73: (* Clear display memory *)
74: VAR x, y : integer;
75: BEGIN
76:   FOR y := 0 TO YMax DO
77:     FOR x := 0 TO XMax DO
78:       PutChar( x, y, ' ' )
79:     END; (* ClearScreen *)
80:
81: PROCEDURE CreateTestPattern;
82: (* Create something to print *)
83: VAR x, y : integer;
84: BEGIN
85:   ClearScreen;
86:   center( 3, 'P R I N T   S C R E E N   T E S T' );
87:   center( 6, 'BY TOM SWAN' );
88:   center( 9, 'FOR APPLE 40-COLUMN DISPLAYS' );
89:   center( 14, 'COPY PROCEDURE PRINTSCREEN INTO YOUR' );
90:   center( 16, 'OWN PASCAL PROGRAMS' );
91:   center( 18, 'TO ADD SCREEN PRINTING' );
92:   FOR y := 0 TO YMax DO
93:     IF ( y = 0 ) OR ( y = YMax )
94:       THEN (* Top and bottom borders *)
95:         FOR x := 0 TO XMax DO
96:           PutChar( x, y, '*' )
97:         ELSE
98:           BEGIN (* All other lines *)
99:             PutChar( 0, y, '*' );
100:            PutChar( XMax, y, '*' )
101:          END (* else *)
102:        END; (* CreateTestPattern *)
103:
104: PROCEDURE PrintScreen;
105: (* Dump screen memory to printer *)
106: VAR pf : TEXT; x, y : integer;
107: BEGIN
108:   rewrite( pf, 'PRINTER:' );
109:   FOR y := 0 TO YMax DO
110:     BEGIN
111:       FOR x := 0 TO XMax DO
112:         write( pf, GetChar( x, y ) );
113:       writeln( pf )
114:     END (* for *)
115:   END; (* PrintScreen *)
116:
117: PROCEDURE Initialize;
118: (* Prepare global variables and printer *)
119: BEGIN
120:   ScRow[ 0 ] := 1024;   ScRow[ 1 ] := 1152;
121:   ScRow[ 2 ] := 1280;   ScRow[ 3 ] := 1408;
122:   ScRow[ 4 ] := 1536;   ScRow[ 5 ] := 1664;
123:   ScRow[ 6 ] := 1792;   ScRow[ 7 ] := 1920;
124:   ScRow[ 8 ] := 1064;   ScRow[ 9 ] := 1192;
125:   ScRow[10] := 1320;   ScRow[11] := 1448;
126:   ScRow[12] := 1576;   ScRow[13] := 1704;
127:   ScRow[14] := 1832;   ScRow[15] := 1960;
128:   ScRow[16] := 1104;   ScRow[17] := 1232;
129:   ScRow[18] := 1360;   ScRow[19] := 1488;
130:   ScRow[20] := 1616;   ScRow[21] := 1744;
131:   ScRow[22] := 1872;   ScRow[23] := 2000;
132:   center( YMax, '-- W A I T --' )
133: END; (* Initialize *)
134:
135: BEGIN
136:   Initialize;
137:   CreateTestPattern;
138:   PrintScreen;
139:   readln
140: END.
```

End of listing.

APPLEWORKS IN ACTION

Publicizing Your Company's Safety Campaign

"Formatting will turn this pedestrian pumpkin into a golden coach."



by Ruth K. Witkin

Employees expect safety in the workplace, and it's an employer's responsibility to provide it. Accidents are costly in terms of lost time, insurance rates, and lawsuits, and can lead to morale problems that can affect profit.

Many companies establish committees to promote safety awareness, provide safety training, issue protection devices, and oversee emergency procedures. Courses in first aid, CPR (cardiopulmonary resuscitation), and defensive driving, and arranging for low-price purchases by employees of smoke detectors, fire extinguishers, and first-aid kits for the home, are other steps in the right direction.

Let's pretend you're vice president of operations for Templeton Togs, a clothing manufacturer. You chair a safety committee of line managers and factory workers. Each month, the committee prepares a short, informative safety poster. Vacation time is rolling around, so this one deals with driving safety.

You get a workout in the three phases of word processing: entering, editing, and formatting text. **Figure 1** shows the text pasted into a frame. This kind of poster attracts attention, is easy to make, and really perks up a company bulletin board. You can use the frame over and over to give continuity to a safety-awareness program. I put it together quickly using press-on lettering, circuit-board tape, and a clip-art line drawing. Feel free to copy it.

Creating the Document from Scratch

Use the AppleWorks Startup and Program disks to bring up a new word-processor screen. Name this file SAFETY. You should now be in the Review/Add/Change screen. When you see such key combinations as OA-Z, hold down the open apple key and type Z. With repeated combinations, such as OA-Y (4 times), hold down the open apple key and type Y four times.

Entering the Text

Figure 2 contains the text. The numbers at the left correspond to the line numbers that appear at the bot-

tom of the screen as you type. You press Return only to end a paragraph or insert a blank line between paragraphs, shown in **Figure 2** by dotted rectangles called *blots*. Press OA-Z to keep the blots on screen as you work.

First set a tab stop so you can type a lowercase o (dubbed a bullet) or a number, then tab over and type the text. To set the tab, press OA-T, then right arrow (3 times). Type **S** and press the escape key.

Now enter the text according to the instructions in the **Table**. To make sure we're at the same place when it's time to edit, press the space bar only once between sentences. If you make a typo, press the delete key to back up the cursor and erase the character before it. Your cursor is in line 1 column 1.

Now review the text to make sure it agrees with **Figure 2**. If something needs changing, the insert cursor (a blinking underline) lets you insert characters—place it on the character to the right of the insertion. The over-strike cursor (a blinking rectangle) lets you type over your errors—place it atop the character you want to change. Press OA-E to switch from one cursor to the other. You can use either cursor when you delete text. Just place the cursor to the right of the doomed character and press the delete key.

Editing the Text

Refer to **Figure 2** as you follow the editing sequence described here. These keys move the cursor from place to place: The left and right arrows move the cursor one character at a time in the direction of the arrow; the down and up arrows move the cursor one line at a time; OA-left arrow and OA-right arrow hop the cursor from word to word. The AppleWorks Ruler—keys OA-1 through OA-9—jump the cursor vertically through the document in proportional increments.

Now start editing. You're working with the insert cursor until the instructions say otherwise. To help keep your place, each action is numbered.

1) First insert the word *many* before *people*. Press OA-1 to jump the cur-

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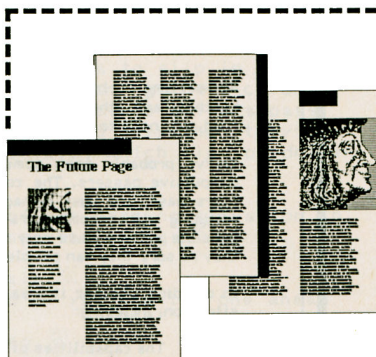
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sor to row 1. Place the cursor on line 4 column 24 (atop the *p* in *people*). Type **many** and press the space bar.

2) Next, place the cursor on line 4 column 55 (the space between *off* and *to*). Press the delete key (4 times) to delete *off* and a space.

3) Now place the cursor on line 6 column 23 (the *d* in *drivers*). Press OA-E to switch to the overstrike cursor. Type **cars on the road**, press the right arrow key (5 times), and press the delete key (5 times).

4) Place the cursor on line 9 column 45 (the space between *calls* and *involving*). Press OA-E to switch to the insert cursor. Now type a comma, press the space bar, and type **many of them**.

5) Place the cursor on line 15 column 53 (the space between the period and *Which*). Press OA-Y (4 times) to delete the sentence *Which kind of driver are you?*

6) Place the cursor on line 17 column 1. Follow these steps to start the Move command, confirm *Within document*, and move *You should* to the sentence below the bulleted items: Press OA-M, Return, then OA-right arrow twice. Press left arrow and Return. To move the cursor atop the *o* in *observe*, press OA-6. Press Return. Press OA-E to switch to the overstrike cursor and type **y**.

7) Place the cursor on line 17 column 1. Move the words starting with *consider* and ending with *situation*: Press OA-M and Return. Press OA-right arrow (7 times), press left arrow, and Return. Now place the cursor atop the first *i* in *including*: Press down arrow, OA-left arrow twice, and press Return.

8) Place the cursor on line 17 column 1 (the *i* in *in*) and type **!**.

9) Place the cursor on line 18 column 25 (the space between *situation* and *including*). Press OA-E to switch to the insert cursor and type a comma.

10) Place the cursor on line 29 column 53. Type an **s** after *vehicle*.


11) Place the cursor on line 30 column 20 (the *b* in *behind*) and press the delete key (8 times) to erase *the one* and a space.

12) And finally, place the cursor on line 38 column 31 (after the blot following *lane*). Type the sentence **It's safe to move back in when you can see the front of the car you just passed in your rear-view mirror**. Press OA-S to store the document on disk.

Printing the Document

Seeing the text before and after formatting can be an eye-opening experience.

Figure 1. Poster designed for a company safety-awareness program.



Templeton Togs

Safety Reporter

DRIVING SAFETY

Summertime is here and many people will be driving to vacation spots, beaches, and other places for rest and recreation. With more cars on the road, you need to be especially aware about driving safety.

You've probably seen some pretty close calls, many of them involving compulsive passers. The compulsive passer lurches out from behind you, roars past, and just manages to slip in ahead of you in time to avoid colliding with oncoming traffic. Until one day, he or she doesn't make it. Sensible drivers pass only when it's absolutely necessary and only when they're sure they can complete the pass safely.

In deciding whether it's safe to pass, consider all aspects of the passing situation, including:

- o The capabilities of your vehicle.
- o The speed of the vehicle ahead of you and the one ahead of it.
- o The weather and road conditions.
- o Oncoming traffic.

Once you determine it's both necessary and safe to pass, you should observe the following passing procedure:

1. Signal your intention to pass so that the vehicles ahead of you and behind you are aware of your intention. Be sure no one is about to pass you.
2. Move into the passing lane. Be prepared to pull back if obstacles appear ahead or if the driver you are passing acts unpredictably.
3. After passing the vehicle, signal your intention to move back into your original lane. It's safe to move back in when you can see the front of the car you just passed in your rear-view mirror.

Remember, pass only when absolutely necessary. If you're not sure you can complete the pass safely, stay where you are. We care about your safety on the job and on the road.

ience. Turn on your printer and follow these steps to print the document in its raw form: Press OA-P, press Return, press Return (or type a printer number, then Return), and press Return again. The printer starts working and here's the document (yawn).

Formatting the Document

Formatting will turn this pedestrian pumpkin into a golden coach. First set the margins: Press OA-1 to jump the cursor to line 1 column 1. Press OA-O to bring up the Printer Options screen. Type **TM**, press Return, type **1**, and press Return again. Now type **LM**, press Return, type **1.2**, and press Return. Type **RM**, press Return,

type **1.2**, and press Return again.

Make the heading larger than the rest of the text and center it: Type **CI**, press Return, type **6**, and press Return again. Type **CN** and press Return. Press the escape key to exit the Printer Options screen.

Boldface type makes the heading really stand out. Leave the cursor on line 6 column 1 and press control-B. The caret (^) indicates the start of boldface. There's no need to end it because boldface cancels itself at the end of a line.

The rest of the text prints with proportional spacing, which gives each character—whether it's a skinny *i* or a chubby *w*—only the amount of room it needs, unlike standard spacing,

Figure 2. Text on driving safety produced with the AppleWorks word processor.

```

LINE
1  DRIVING SAFETY
2
3
4  Summertime is here and people will be driving off to
5  vacation spots, beaches, and other places for rest and
6  recreation. With more drivers out and about, you need to be
7  especially aware about driving safety.
8
9  You've probably seen some pretty close calls involving
10 compulsive passers. The compulsive passer lurches out from
11 behind you, roars past, and just manages to slip in ahead of
12 you in time to avoid colliding with oncoming traffic. Until
13 one day, he or she doesn't make it. Sensible drivers pass
14 only when it's absolutely necessary and only when they're
15 sure they can complete the pass safely. Which kind of driver
16 are you?
17
18 You should consider all aspects of the passing situation in
19 deciding whether it's safe to pass, including:
20
21   o The capabilities of your vehicle.
22   o The speed of the vehicle ahead of you and the one ahead
23   of it.
24   o The weather and road conditions.
25   o Oncoming traffic.
26
27 Once you determine it's both necessary and safe to pass,
28 observe the following passing procedure:
29
30 1. Signal your intention to pass so that the vehicle ahead
31 of you and the one behind you are aware of your intention.
32 Be sure no one is about to pass you.
33
34 2. Move into the passing lane. Be prepared to pull back if
35 obstacles appear ahead or if the driver you are passing acts
36 unpredictably.
37
38 3. After passing the vehicle, signal your intention to move
39 back into your original lane.
40
41 Remember, pass only when absolutely necessary. If you're not
42 sure you can complete the pass safely, stay where you are.
43 We care about your safety on the job and on the road.

```

which gives every character the same amount of room. AppleWorks has two types of proportional spacing, P1 and P2. Characters printed in P2 are slightly wider. Press the down arrow key to place the cursor on line 7 column 11. Press OA-O, type **P2**, and press Return.

Justifying produces a straight right edge and returns the centered text to normal. You're still in the Printer Options screen, so type **JU** and press Return. Now press the escape key.

Bulleted paragraphs look better when they're narrower than the text above and below. Press OA-5, then the down arrow key, to move the cursor to line 26 column 1. Follow these steps to increase the margins: Press OA-O. Type **LM**, press Return, type **1.6**, and press Return again. Now type **RM**, press Return, type **2**, and press Return.

Next, tell AppleWorks to indent the text so it wraps around to the proper inCider

place: Type **IN**, press Return, type **3**, and press Return. Press the escape key. Now stop the indent after the bulleted paragraphs: Place the cursor on line 35 column 5 and press OA-O. Type **IN**, press Return, type a zero, and press Return. Press the escape key.

Now return the margins to normal by copying the existing options. Press OA-1, then down arrow to place the cursor on line 2 column 1. Follow these steps to start the Copy command, confirm *Within document*, highlight the margin indicators, and insert them after the zero indent indicator: Press OA-C, Return, down arrow, and Return again. Press OA-6 and press Return. The numbered paragraphs have the same margins and indentation as the bulleted paragraphs. To copy these indicators, place the cursor on line 26 column 1. Now press OA-C, Return, down arrow twice, and Return again. Press OA-7, then up arrow, and press Return.

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APPLEWORKS IN ACTION

Copy the indicators that stop the indent and return the text to normal width: Place the cursor on line 35 column 1. Press OA-C, Return, down arrow twice, and press Return. Press OA-8, then down arrow (3 times) to move the cursor below paragraph 3, and press Return. Press OA-S to store the document on disk.

It's printing time again, so be sure your printer is on. To start the Print command, confirm *Beginning*, the printer, and one copy: Press OA-P and press Return (3 times). That formatting surely paid off. The text in your document should now look like **Figure 1**.

Next month, I'll tell you how to build a customer data base to produce various sales reports, including some that contain calculations. ■

Ruth K. Witkin is a consultant in computer applications for business. Write to her at 5 Patricia Street, Plainview, NY 11803. Enclose a stamped, self-addressed envelope if you want a personal reply.

Table. Instructions for entering the text in Figure 2.	
Line	Action
1	Type DRIVING SAFETY and press Return three times to end the paragraph and insert two blank lines. The cursor moves to line 4.
4	Refer to Figure 2 and type the paragraph starting with <i>Summertime is here and people...</i> At the end of the paragraph, press Return twice. The cursor moves to line 9.
9	Type the paragraph starting with <i>You've probably seen some pretty close calls...</i> Press Return twice. The cursor moves to line 18.
18	Type the sentence starting with <i>You should consider all aspects...</i> and press Return twice. The cursor moves to line 21.
21	Type a bullet (a lowercase o) and press the tab key. Type The capabilities of your vehicle. and press Return. The cursor moves to line 22.
22	Type a bullet and press the tab key. Type The speed of the vehicle ahead of you and the one ahead of it. and press Return. The cursor moves to line 24.
24	Type a bullet and press the tab key. Type The weather and road conditions. and press Return. The cursor moves to line 25.
25	Type a bullet and press Tab. Type Oncoming traffic. and press Return twice. The cursor moves to line 27.
27	Type the sentence starting with <i>Once you determine...</i> and press Return twice. The cursor moves to line 30.
30	Type 1. and press Tab. Type the paragraph starting with <i>Signal your intention to pass...</i> and press Return twice. The cursor moves to line 34.
34	Type 2. and press Tab. Type the paragraph starting with <i>Move into the passing lane.</i> and press Return twice. The cursor moves to line 38.
38	Type 3. and press Tab. Type the sentence starting with <i>After passing the vehicle...</i> and press Return twice. The cursor moves to line 41.
41	Type the paragraph starting with <i>Remember, pass only when absolutely...</i> When you finish, the cursor should be in line 43 column 59.

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REVIEWS

Continued from p. 39.



No Bargain

BROWN BAG DATA BASE/ WORD PROCESSOR

Brown Bag Software, 2105 South Bascom Avenue, Campbell, CA 95008

Data-base manager and word processor; any 48K Apple II
\$49.95

- Ease of setup ■
- Ease of use ■
- Documentation ■
- Support ■
- Overall ■

How many of you owned a micro-computer in the late 1970's? At that time, decent software was hard to come by. Any program that came close to filling a need—even a program with bugs—was a real find. With the release of Brown Bag Data Base/Word Processor, Brown Bag Software apparently wants to return us to those "good old days" of inexpensive, no-frills, clumsy-to-operate, poorly documented, bug-ridden software.

Brown Bag Data Base/Word Processor comes—appropriately—in a brown manila envelope containing a double-sided disk and a 100-page paperback manual. Side 1 of the disk is for the Commodore 64 and 128, and side 2 is for the Apple II line. The Apple portion of the manual provides an explanation of each program function, but offers no examples or tutorials. And instead of separating the instructions for the two components of the program, the publisher apparently felt it would be more interesting to jumble all the information together.

The program refers to two potentially useful sections of the manual (a quick-reference chart of program commands and a list of printer-control sequences you can embed in text)—

but they don't exist. In other places, the manual suffers from an embarrassing lack of proofreading. It looks as though no one bothered to examine it during its trip from typesetter to printer. My favorite lines were these, from page 35: "The information displayed with each text file. The information displayed in this leist is very important." At first I thought they were examples of text you could correct with some spelling checker I hadn't read about yet. Such was not the case.

Incompatibilities and Bugs

Since the envelope and manual state that Brown Bag supports the Apple II series, I initially tested the program on my 64K Apple II Plus. My first surprise was that the manual didn't mention how I could distinguish upper- from lowercase letters. You see, I never quite got around to making the shift-key modification on my old Apple. Most of the other word-processing programs I've examined over the years either let you type in capital letters by pressing the escape key or a control-key combination first (and assumed all other letters were lowercase), or mentioned in the manual that the program required the shift-key modification. Brown Bag takes another route and ignores both alternatives. A bad start at best—word processing with capital letters only.

With that in mind, I jumped into the word processor and began typing. One of Brown Bag's nicer features is its ability to scroll the screen horizontally to accommodate 80-character lines on a 40-column screen. Unfortunately, at each scroll point, Brown Bag commits the cardinal sin of word processors—it loses characters. Even a two-fingered typist like me can easily get ahead of the program.

Although Brown Bag has word wrap, be prepared for some real gymnastics if you decide to insert or cut text from a line. To make an insertion, you can do any of the following: 1) If there's still room on the line, you can add blank spaces to the text, then type the text. If you attempt to add more spaces than the remaining room will accommodate, the program beeps. 2) You can insert an entire blank line. 3) You can split the line into two parts, add text to either section, then paste them back together. If there's no room to paste the lines together, the program will paste as much of the second line's

text as the first line can accommodate, and you'll have to repeat the procedure for the following lines until you find a paste that fits. You must use a similar procedure to fix large deletions—there's no automatic reformatting.

After giving up on the word processor, I moved on to the data-base-management program. Included on disk is a series of ready-to-use data-base templates for recording addresses, computer programs, articles, recipes, and the like. With each data base, you can either use a template as is or edit one to create a slightly different or special-purpose data base. After spending several minutes editing the computer-program template, I saved the changes to disk and exited from the option—only to lock up the system. Although Brown Bag is generally very good about telling you when to switch from the data disk to the master disk, this is one of the exceptions.

Next I selected "Entering Information," since that's how you create a new data base. The program then asks if you want to start a new data base and whether you want to use an existing template. I answered yes to both prompts and ended up in an infinite loop—answering the same questions over and over again. The only way I could use the data-base option was to say I wanted to create a new template, set it up, and immediately type in a few records (to get some real data into the data base). All editing of templates—under "Alter a Template"—is for naught.

To be fair, I also checked Brown Bag on a //c. Although I could now get lowercase letters for word processing, several new problems arose. First, pressing the escape key still brings up a chart of program commands. Returning from the chart to your word-processing document, though, immediately overwrites approximately two lines of text with control characters and gibberish. Thus, if you press the escape key for help with the editing commands, you'll have more editing than you expected. Another problem I encountered with the //c was that the Data-Base Utilities menu didn't work. After I selected it, the cursor flashed rapidly, and I was unable to select any of the menu options—including exiting from the menu. The only way out was to reboot the system.

Support Policy

The Brown Bag Software support policy is unusual, but seems appropriate for an inexpensive program. Purchasing the program entitles you to 20 minutes of free technical support. Additional time is available in five-minute increments (at \$10 per increment), and you can charge it to MasterCard, Visa, or American Express. When I called, I spoke to a technical-support person Brown Bag Software had just hired, and he wasn't prepared to answer any questions. The members of the company who were "in the know" were all at Fall Comdex.

Conclusions

Brown Bag Data Base/Word Processor has all the signs of a product that was tested insufficiently before its release. The errors in the manual and the blatant bugs in the program are inexcusable. The moral? Cheap software that doesn't work is no bargain. Several popular word processors and data-base managers on the market fall into the same general price range (such as PFS:Write and PFS:File, and Bank Street Writer and Filer). Al-

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though none is packed with features, each gets the job done and is easy to use and well documented.

With a rewritten manual and some serious reprogramming, Brown Bag *might* become a contender in the low-priced-software arena. An inexpensive, easy-to-use word processor/data-base manager with merge capabilities should find a market. Right now, though, if you're looking to save money, check out public-domain soft-

ware first or buy one of the other low-cost word-processing and data-base programs. ■

Steven Schwartz
Framingham, MA

Editor's note: According to Sandy Shepard, of Brown Bag Software, a new bug-free version of the software is available for \$59.95; however, it has been sent to purchasers of the original program at no charge.

Improving a Standard

EPSON AP-80

Epson America, 2780 Lomita Boulevard, Torrance, CA 90505

Dot-matrix printer; Apple II, II Plus, or IIe with serial card, or IIc
\$379

Ease of setup	■ ■ ■ ■
Ease of use	■ ■ ■ ■
Documentation	■ ■ ■
Support	■ ■ ■ ■
Overall	■ ■ ■ ■

The Epson AP-80 represents a distinct and ironic change in printer technology. Once upon a time, Epson compatibility was a must for Apple printers. The tables have turned, though, and the ImageWriter is now the standard Apple printer. The AP-80 is a fully ImageWriter-compatible printer.

I tested the AP-80 with a diverse set of programs, including AppleWorks, MousePaint, Logo II, Triple Dump, The Print Shop, and the ImageWriter Tool Kit. I selected the Epson as an ImageWriter from each printer menu, and found that it performed flawlessly with each package.

The AP-80 includes a front-panel switch that lets it print near-letter-quality type with pica and elite ImageWriter fonts, as well as proportional fonts. The graphics modes are identical to the ImageWriter's. The AP-80 also contains built-in sets of subscripts, superscripts, and italic fonts, which you access by creating custom printer files with various programs. Epson might have been wiser to choose Scribe control codes for its superscript and subscript modes, for even greater Apple compatibility. AppleWorks supports printing superscripts and subscripts by rolling the paper back and forth, as you do with the ImageWriter. The AP-80 with fanfold (tractor-fed) paper actually handles this task better than the ImageWriter (an opinion based on experience with many chemistry-experiment reports). It's flawless with single-sheet paper.

The Mechanics

The AP-80's paper-feed mechanism is different from the ImageWriter's, perhaps explaining this advantage. The tractor feed pulls the paper over the bail, unlike the ImageWriter's arrangement and more akin to the Scribe's. In most cases, though, you lose every first sheet of paper. The

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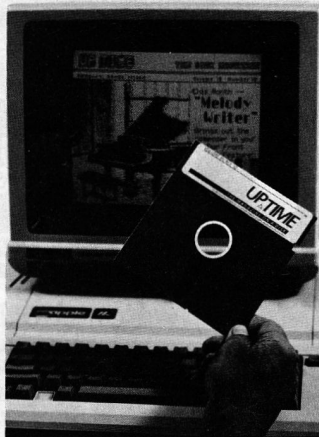
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REVIEWS

AP-80 handles friction feed with easy removal of the tractor unit. The tractor mode's paper tray converts to a single-sheet feeder. As you load each page, just place it against the bail, and turn the paper-feed knob to release the bail. This automatically advances the paper to the printing position. Frequent users of single sheets, letterhead paper, and form letters will find this feature handy.

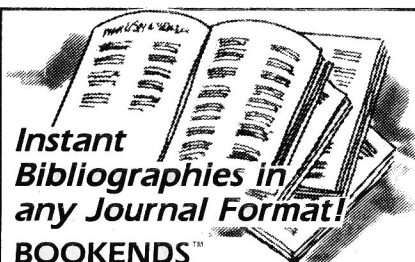
The major disadvantage of the AP-80 is its slow speed. Top speed in pica draft is 75 characters per second, but near-letter-quality pica comes out at only 15 characters per second. Graphics printing is also sluggish. At this speed, though, the AP-80 is much quieter than the ImageWriter.

Since the printer is both software- and hardware-compatible with the ImageWriter, interfacing it with the //c (or the Macintosh) is as easy as plugging it in. You may run into some trouble setting the DIP switches on Apple II's with slots and Super Serial cards, though. The appendix to the documentation includes a table of these settings, but it's ambiguously labeled. Dealers familiar with ImageWriter installations won't find this a problem. Likewise, users who interface the AP-80 with Street Electronics' BusinessCard will have no difficulty, since the board includes //c-type standard serial ports.

Is there a market for the Epson AP-80? The advent of the ImageWriter II, with its speed, near-letter-quality type, and color capability could dampen the Epson's impact. The price increase of the II over the original model, though, may send consumers to the AP-80. Potential buyers of Apple's low-end printer, the Scribe, may opt instead for the AP-80 because of its low price, ImageWriter compatibility, and advanced features. Over the long run, the AP-80 is certainly a better investment than the Scribe, as frequent users of the Scribe often find themselves spending more than \$100 a year on thermal-ribbon cartridges. The Scribe also has no proportional or downloadable fonts. Educational users will welcome the AP-80's total compatibility and low price.

Overall, the entry of third-party printers such as the Epson AP-80 into the ImageWriter-compatible serial market is a welcome trend and an indication of the stability of the Apple world. ■

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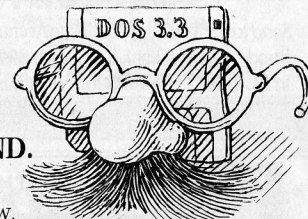
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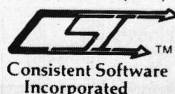
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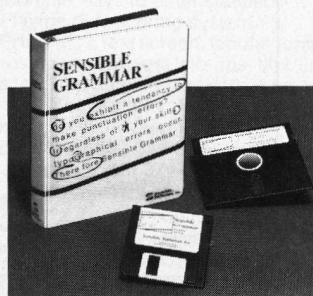
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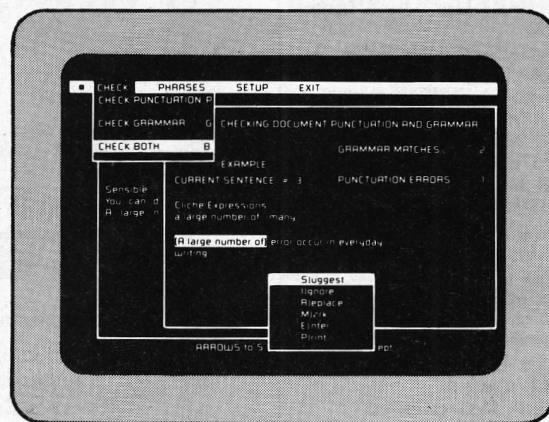
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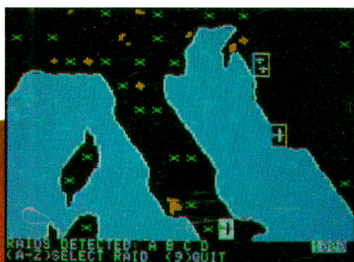


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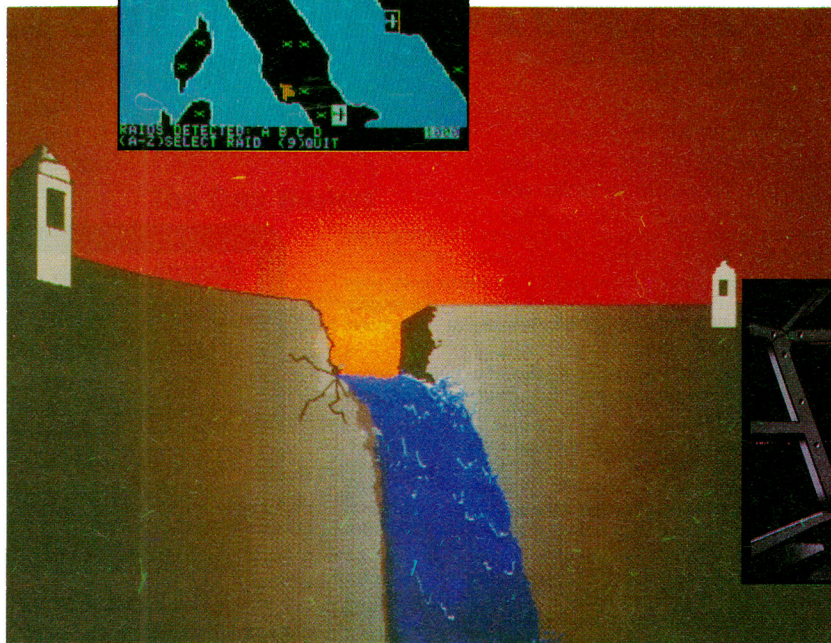


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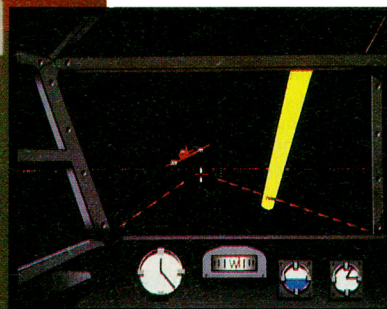


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crews flying five miles high in subzero weather through flak and enemy fighters toward an enemy target, then running those hazards again to get home.

The war in the air was anyone's to win or lose. Fortunately for civilization, the Allies, with their superior armament and tactics, won. Could it have been different? War games can give you the chance to find out.

U.S.A.A.F., by Strategic Simulations, is a re-creation of the massive American bombing campaign in Europe. This detailed simulation gives one or two players control over every bomber and fighter group in the war from 1943 to 1945.

Both "commanders" have to make tough strategic decisions, but the American has the easier job. He has to decide which objectives to attack, assign bomber groups and fighter escorts, and plot the safest routes to the targets.

Deciding which targets to hit for a maximum number of victory points is the biggest challenge the U.S. player faces.

Complex problems test the skill of the German player. He must try to anticipate the other side's strategy, deploy his forces accordingly, and order the right fighters from the factories to provide the best defense against the enemy bombing campaign.

Combat takes place in "real time." The German player can halt the game to issue orders to fighter squadrons, and vector them after American raids. Once combat begins, the actions of the U.S. units are on automatic control. Bombers and fighters fly their predetermined routes and defend themselves as best they can.

For the American player, the fun lies in systematically choosing the target industries to demolish one by one, and watching the ef-

fects, especially on the quality of enemy fighter defenses. For the German player, the fun comes in maintaining a viable defense, even with the American player throwing everything at you.

Europe Ablaze

★★★

Strategic Studies Group

1747 Orleans Court
Walnut Creek, CA 94598
Strategic air-warfare game
Any 64K Apple II, one disk drive
Pricing and ordering information by written inquiry only

Europe Ablaze, a war-game creation from Strategic Studies Group, provides another angle on the same campaign. This delightfully complex game lets the player assume the rank of commander in chief of all air forces of one side, or to command just one Luftflotte (air fleet) or one Allied air force. The objectives are much the same as

When you really want to see how Apple works...

AutoWorks by Alan Bird (AUTOMATIC AppleWORKS)

AutoWorks adds to AppleWorks several important time-saving features including mail merge, file organizing, macros, new AppleWorks commands and mouse control.

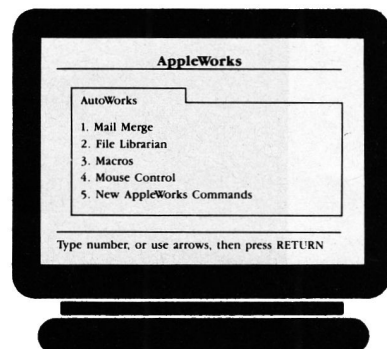
MAIL MERGE allows you to automatically print form letters and fill out forms from your AppleWorks data base files. Form letters are reformatted to accommodate varying lengths of names, addresses, etc. Since AutoWorks is built-in, there is never any need to leave AppleWorks to do a mail merge.

AutoWorks allows you to use your MOUSE to make menu selections and to quickly scroll through and position the cursor in your document, data base file or spreadsheet. This feature alone is worth the price of AutoWorks.

With AutoWorks' powerful MACROS, you can automatically enter hundreds of keys including AppleWorks commands with a single keystroke. You can, for example, print out one or several reports by entering one key. The macros are easily updated instantly using the AppleWorks word processor. New AppleWorks commands are also included with macros such as forward delete, word delete, jump to beginning or end of line, etc. With macros you can even create your own AppleWorks commands.

The Disk Librarian helps you keep track of all your disk files. It reads ProDOS file information directly from your disks into an AppleWorks data base file where you may search for certain files and disks, sort on various file characteristics, find disks with free space, etc.

AutoWorks is compatible with AppleWorks versions 1.1, 1.2, and 1.3.



AutoWorks
\$39.95

FontWorks by Mark Simonsen

Good-looking Printing for AppleWorks

Now you can print your AppleWorks files in a variety of typestyles. FontWorks reads your Appleworks files directly (no need to save them in a different format) and prints them with the typefaces you choose. You can even print your files sideways — great for those wide spreadsheets.

There are no complicated commands to learn. FontWorks incorporates the same easy-to-use menu style as AppleWorks.

Choose from 20 typefaces of various styles and sizes, including Broadway, Delphin, Old English, Peignot, Script, Times, and many more. You can use up to 4 of these typefaces at one time when printing your AppleWorks files. And FontWorks comes with its own Font Editor, allowing you to customize our typefaces or create your own.

FontWorks works with any Apple IIe or IIc and is compatible with most popular dot-matrix printers, including ImageWriter, Epson, and Okidata.

Note: Owners of previous versions of FontWorks may upgrade for FREE by returning their original FontWorks (disk only) to The Software Touch.

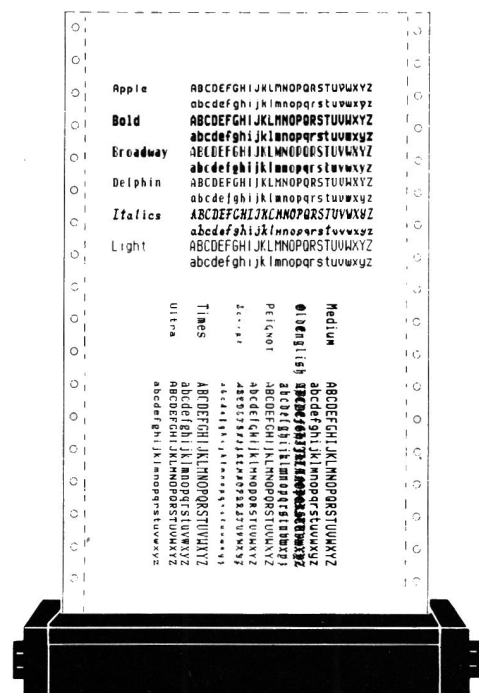
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(Apple, AppleWorks, and ProDOS are trademarks of Apple Computer, Inc.)



FontWorks
\$49.95

U.S.A.A.F.'s, but the game differs in complexity and flexibility.

Here's a glimpse of how it works. Once you've decided on a level of command, you start issuing orders. You'll have more fun as commander of one air force, rather than as commander in chief. You decide the targets to bomb and where to place flak units. You'll order recon missions, fighter sweeps, raids against tactical targets, and bombing missions against strategic targets.

The game uses a system of nested menus to give you control over your forces and provide information. It's almost as much of a challenge to navigate among the menus as it is to outsmart your opponent. But those challenges pale compared to designing your own game scenario (a 24-page manual shows

you how). If you're ambitious, you can create a new map and fleets of customized fighters, bombers, and recon planes (simulating such factors as payload, speed, service ceiling, optimum altitude, climb rate, maneuverability, firepower, endurance, radar, and so on).

The Dam Busters

★★★★

Accolade

20863 Stevens Creek Boulevard
Cupertino, CA 95014
Combat-flight simulation
Any 64K Apple II, one disk
drive, joystick
\$34.95

When you've had your fill of strategy and want to personally come to grips with the enemy, you can get into the cockpit of a bomber with Accolade's **The Dam Busters**, a combat-

flight simulation strictly for warriors with nerves of steel.

It's a dangerous mission you're undertaking. Your Lancaster four-engine bomber carries a special 10,000-pound bomb you must skip across the surface of a German lake to destroy a dam.

Believe it or not, this mission really took place when the pilots of the R.A.F. Number 617 Squadron blew up the Ruhr River dams, to cripple Nazi war industries in the river basin. Like those pilots, you'll have to calculate your speed, altitude, and distance from the target with minute precision.

You'll have to come up with one heck of a virtuoso performance when you fly an actual mission. First, you have to fly the plane—and remember, this is a highly realistic, complex simulation of multi-engined flight. As

you fly, you must also move your control from one point to another around the ship. You'll man the machine guns and fire at radar-guided night fighters, turn on the bomb spinner, aim it, adjust the aircraft speed and line it up on the target, keep your plane out of enemy searchlights and flak barrages, and finally skim a scant 60 feet over the surface of a lake to skip-bomb the target dam.

Dam Busters isn't impossible to master, it just seems that way at first. The challenge is entertaining, and animated color graphics adds a high degree of realism. This is what computer games are all about. ■

Brian Murphy is anxious to learn what you think of the current state of computer games. Write him at inCider, 80 Pine Street, Peterborough, NH 03458.

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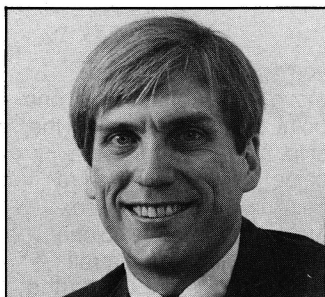
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"We Set the Standard"
APPLIED ENGINEERING

STATUS REPORT



Information, Please

by Paul Statt, *inCider* staff

"The eventual goal of CD-I is a single machine and a single storage medium that will replace your stereo, TV, videotape player, computer, and bookshelf."

Conceptual artists" will love this: Imagine a performance—something like a movie—except that you, the audience, act along, making decisions that affect the outcome, to the strains of perfectly synchronized stereo sounds. Words, music, and video combine in a seamless fabric of sound and sight, woven at your whim.

It sounds like science fiction, but that's the promise of compact disks.

The technology available today is called CD-ROM: compact-disk read-only memory. It's the latest rage in small-size information storage—a data disk you can read but not write on. One disk replaces 200 books of 1000 pages each, or about 3000 floppy disks.

Remember compact videodiscs? You've probably also seen those high-powered, high-fidelity digital-audio compact disks. CD-ROM drives that technology into your Apple II.

Here's what you need: First buy an optical disk drive (your digital-audio player won't do). CD-ROM stores information optically, unlike floppies and hard disks, which lay up data magnetically. So you need a laser beam—light—instead of an electromagnetic sensor to read the disk.

Optical data storage makes physical marks on the disk: You can't erase data with a wayward magnet, and pirates can't copy it. A CD-ROM drive, from Sony or Philips, costs around \$1000.

But your computer can't read a naked series of ones and zeros streaming from an optical disk drive: You also need a CD-ROM interface card.

MicroTRENDS (650 Woodfield Drive #730, Schaumburg, IL 60195, 312-310-9828) sells an interface named Jonathan that includes a 68000 coprocessor, the OS-9 operating system (infamous as the op system of the fabled Tandy Color Computer, now a CD-ROM standard) and other goodies for the Apple IIe, such as 512K of RAM expansion (\$795). A daughterboard (\$395) sits on Jonathan's lap and interprets signals from the CD-ROM drive.

There you sit, armed for the information revolution, with your CD-ROM drive and interface. Not yet. You need data on compact disk and software to help you read it.

Right now, you can peruse just two sources. One is the Electronic Encyclope-

dia—the space-age edition of the American Academic Encyclopedia from Grolier Electronic Publishing (95 Madison Avenue, New York, NY 10016, 212-696-9750). The other is the catalog of the Library of Congress—the largest library in the world, with 80 million items—which the Library Corporation (P.O. Box 40035, Washington, DC 20016, 304-725-7220) has squeezed onto four CD-ROM disks. These 120mm disks glow like rainbows and look like audio disks. Your Apple reads these compact disks with the help of retrieval software that comes on 5¼-inch floppies, in black only. Ask MicroTRENDS what bait works with which fish—that is, what retrieval software you need.

Encyclopedias and catalogs are all you'll read on CD-ROM for a while. CD-ROM makes big lists easy to keep, and nobody has imagined anything as big as a list of everything in the world to put on a CD-ROM disk. CD-ROM doesn't seem like a real home product—who needs 3000 floppy disks? Lack of consumer demand isn't the only hindrance to production. Manufacturers aren't rushing to produce disks because they're waiting for standards.

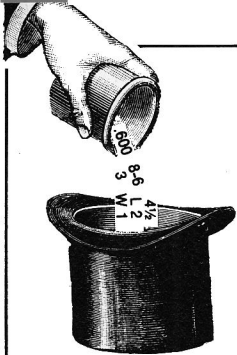
A code for compact disks is emerging, slowly. In January, Philips and Sony agreed on a CD-I standard—compact-disk interactive—which they hope will bring all possible types of CD information storage into line. The CD-I standard uses the Motorola 68000 chip and that old chestnut, the OS-9 operating system, so Jonathan will feel right at home.

A standard in the field of "information storage" means a great deal: You'll be able to store music, movies, and books all as information—all your information in one place.

The CD-I standard embraces audio (speech and music), video, and computer software. The eventual goal of CD-I is a single machine and a single storage medium that will replace your stereo, TV, videotape player, computer, and bookshelf.

One machine—it's a comforting thought to a shopper pondering the purchase of a stereo system, a VCR, and a computer.

The CD-ROM technology available for the Apple IIe today won't take Laurie Anderson's breath away—CD-ROM encyclopedias are far removed from multimedia art extravaganzas—but the groundwork has been laid. It's comforting also to note that Apple IIe CD-ROM already fits the CD-I standard. ■



Magic Numbers

Magic Numbers play on baseball's love of statistics and offer fans a quick idea of what the home team needs to win the pennant. The Magic Number represents the number of games your hometown heroes must win to clinch a flag.

When your Magic Number is zero, break out the champagne—you've won the championship. But if your Magic Number is greater than the number of games you have left to play—it's time for the showers.

Figuring Magic Numbers isn't easy, so why not just type in *inCider's* Magic Numbers program below, written by Bob Ryan, *AmigaWorld* Technical Editor (and based on Jerry Hall's "Print Using," January 1986, p. 116), and let your Apple do the work? The program needs only the sorts of statistics you'll find in the daily newspaper: win-loss records and standings.

A bonus feature of our Magic Numbers program is the ability to figure, early in the season, what percentage of games your team must win before the World Series if the current leader continues to play at the same pace.

Real stats fans will be able to imagine further feats of statistical legerdemain and should find that Magic Numbers' modular structure makes adding components as routine as a pop fly. □

—Paul Statt

Program listing. Magic Numbers.

```

100 GOSUB 3000: REM TITLE SCREEN
110 FOR X = 1 TO 2000: NEXT X: REM PAUSE LOOP
120 GOSUB 4000: REM MAIN MENU
130 IF A$ = "1" THEN GOSUB 1000: REM MAGIC NUMBERS ROUTINE

140 IF A$ = "2" THEN GOSUB 2000: REM PERCENTAGES ROUTINE
150 IF A$ = "3" THEN HOME: END
160 GOTO 120

1000 REM ** CALCULATE MAGIC NUMBERS **
1010 HOME: VTAB 5: HTAB 14: PRINT "MAGIC NUMBERS"
1020 VTAB 8: PRINT "FOR WHAT TEAM DO YOU WANT?": PRINT "TO CALCULATE MAGIC NUMBERS?"
1030 PRINT: INPUT "TEAM NAME: "; NAME$
1040 HOME: VTAB 10: PRINT "WHAT IS THE CURRENT RECORD OF THE TEAM?": PRINT NAME$
1050 VTAB 14: INPUT "NUMBER OF WINS: "; W1
1060 VTAB 16: INPUT "NUMBER OF LOSSES: "; L1
1070 VTAB 18: PRINT "ARE THE "NAME$;" IN FIRST PLACE?": PRINT "(Y/N)": GET B$
1080 IF B$ < "Y" AND B$ < "N" THEN 1070
1090 HOME: VTAB 5: PRINT "ENTER THE RECORD"
1100 IF B$ = "Y" THEN PRINT "OF THE SECOND PLACE TEAM": GOTO 1120
1110 PRINT "OF THE FIRST PLACE TEAM"
1120 PRINT: INPUT "NUMBER OF WINS: "; W2
1130 PRINT: INPUT "NUMBER OF LOSSES: "; L2
1140 HOME: VTAB 10
1150 IF W1 + (162 - (W1 + L1)) < W2 THEN PRINT "THE "NAME$;" ARE": PRINT "MATHEMATICALLY ELIMINATED": GOTO 1200
1160 MN = (W2 + (162 - (W2 + L2))) - W1
1170 IF MN = 0 THEN PRINT "THE "NAME$;" HAVE CLINCHED A TIE": GOTO 1200
1180 IF MN < 0 THEN PRINT "THE "NAME$;" HAVE CLINCHED THE DIVISION": GOTO 1200
1190 PRINT "THEN MAGIC NUMBER FOR THE": PRINT NAME$; " IS: "; MN
1200 PRINT "ANY KEY TO CONTINUE": GET C$: RETURN
2000 REM ** PERCENTAGES ROUTINE **
2010 HOME: VTAB 5: HTAB 14: PRINT "PERCENTAGES"
2020 VTAB 10: PRINT "WHAT TWO TEAMS DO YOU WANT TO COMPARE?"

2030 VTAB 12: INPUT "TEAM #1: "; N1$
2040 VTAB 14: INPUT "TEAM #2: "; N2$
2050 HOME: VTAB 5: PRINT N1$: VTAB 10
2060 PRINT "ENTER THE CURRENT RECORD OF THE": PRINT N1$
2070 PRINT: INPUT "NUMBER OF WINS: "; W3
2080 PRINT: INPUT "NUMBER OF LOSSES: "; L3
2090 P3 = W3 / (W3 + L3)
2110 HOME: VTAB 5: PRINT N2$
2120 HOME: VTAB 5: PRINT N2$: VTAB 10
2130 PRINT "ENTER THE CURRENT RECORD OF THE": PRINT N2$
2140 PRINT: INPUT "NUMBER OF WINS: "; W4
2150 PRINT: INPUT "NUMBER OF LOSSES: "; L4
2160 P4 = W4 / (W4 + L4)

```

```

2170 HOME: VTAB 5: PRINT N1$; HTAB 20: PRINT N2$
2180 PRINT: PRINT " W-L": HTAB 10: PRINT "WIN%": HTAB 20: PRINT " W-L": HTAB 30: PRINT "WIN%"
2190 PRINT: Z$ = "###": Z = W3: GOSUB 7000: PRINT "-"; L3;
2200 Z = W3 / (W3 + L3): Z$ = "###": HTAB 10: GOSUB 7000: HTAB 20: Z$ = "###": Z = W4: GOSUB 7000: PRINT "-"; L4;
2210 HTAB 30: Z$ = "###": Z = W4 / (W4 + L4): GOSUB 7000: PRINT
2220 WD = W3 - W4: LD = L3 - L4: GB = (WD / 2) - (LD / 2)
2230 IF GB > 0 THEN PRINT "THE "; N1$; " ARE "; GB; " GAMES": PRINT "AHEAD OF THE "; N2$
2240 IF GB < 0 THEN PRINT "THE "; N2$; " ARE "; ABS (GB); " GAMES": PRINT "AHEAD OF THE "; N1$
2250 IF GB = 0 THEN PRINT: PRINT "THE TEAMS ARE TIED"
2255 PRINT: PRINT "ANY KEY TO CONTINUE": GET D$
2260 HOME: VTAB 5
2270 PRINT "AT THEIR CURRENT PACE, THE"
2280 IF P3 > P4 THEN 2500
2290 PRINT N2$; " WILL FINISH AT ";
2300 PW = (162 - (W4 + L4)) * (W4 / (W4 + L4)): TEMP = INT (P W): IF PW - TEMP > .5 THEN TEMP = TEMP + 1
2305 PW = TEMP
2310 PRINT PW + W4; "-"; 162 - (PW + W4)
2320 PRINT: PRINT "IN ORDER TO TIE, THE "; N1$
2330 WN = PW + W4 - W3: PCT = WN / (162 - W3 - L3)
2340 Z = PCT: Z$ = "###": PRINT "WILL HAVE TO PLAY "; Z: GOSUB 7000: PRINT " BALL"
2345 PRINT: PRINT "ANY KEY TO CONTINUE": GET E$
2346 GOSUB 5000
2350 RETURN
2500 PRINT N1$; " WILL FINISH AT ";
2510 PW = (162 - (W3 + L3)) * (W3 / (W3 + L3)): TEMP = INT (P W): IF PW - TEMP > .5 THEN TEMP = TEMP + 1
2515 PW = TEMP
2520 PRINT PW + W3; "-"; 162 - (PW + W3)
2530 PRINT: PRINT "IN ORDER TO TIE, THE "; N2$
2540 WN = PW + W3 - W4: PCT = WN / (162 - W4 - L4)
2550 Z = PCT: Z$ = "###": PRINT "WILL HAVE TO PLAY "; Z: GOSUB 7000: PRINT " BALL"
2555 PRINT: PRINT "ANY KEY TO CONTINUE": GET F$
2556 GOSUB 5000
2560 RETURN
3000 REM ** TITLE SCREEN **
3010 TEXT: HOME
3020 VTAB 8: HTAB 11: PRINT "*****"
3030 VTAB 10: HTAB 13: INVERSE: PRINT "MAGIC NUMBERS": NORMAL

3040 VTAB 12: HTAB 11: PRINT "*****"
3050 VTAB 17: HTAB 19: PRINT "BY"
3060 VTAB 19: HTAB 16: PRINT "BOB RYAN"
3070 RETURN
4000 REM MAIN MENU
4010 HOME: VTAB 3: HTAB 15: PRINT "MAIN MENU"
4020 VTAB 8: PRINT "DO YOU WANT TO..."
4030 VTAB 10: HTAB 5: PRINT "<1>...CALCULATE MAGIC NUMBERS"
4040 VTAB 12: HTAB 5: PRINT "<2>...CALCULATE WINNING PERCENTAGES"
4050 VTAB 14: HTAB 5: PRINT "<3>...EXIT THE PROGRAM"
4060 VTAB 17: PRINT "ENTER THE NUMBER OF YOUR CHOICE: "; GET A$: PRINT
4070 IF A$ < "1" OR A$ > "3" THEN 4000
4080 RETURN
5000 REM ** PERCENTAGE TABLE ROUTINE **
5010 IF P3 > P4 THEN 5500
5020 HOME: PRINT "WHAT IF TABLE"
5030 VTAB 3: PRINT N2$: HTAB 20: PRINT N1$
5040 PRINT: PRINT "WIN% FOR REST": HTAB 20: PRINT "WIN% NEADED": PRINT "OF SEASON": HTAB 20: PRINT "TO TIE"
5095 PRINT
5100 FOR PCT = .80 TO .15 STEP -.05
5110 Z = PCT: Z$ = "###": GOSUB 7000
5120 TW = W4 + PCT * (162 - (W4 + L4)): TEMP = INT (TW): IF TW - TEMP > .5 THEN TEMP = TEMP + 1
5130 TW = TEMP: WN = TW - W3: PN = WN / (162 - (W3 + L3)): Z = PN: Z$ = "###": HTAB 20: GOSUB 7000: PRINT
5140 NEXT PCT
5150 PRINT: PRINT "ANY KEY TO CONTINUE": GET G$
5160 RETURN
5500 HOME: PRINT "WHAT IF TABLE"
5510 VTAB 3: PRINT N1$: HTAB 20: PRINT N2$
5520 PRINT: PRINT "WIN% FOR REST": HTAB 20: PRINT "WIN% NEADED": PRINT "OF SEASON": HTAB 20: PRINT "TO TIE"
5525 PRINT
5530 FOR PCT = .80 TO .15 STEP -.05
5540 Z = PCT: Z$ = "###": GOSUB 7000
5550 TW = W3 + PCT * (162 - (W3 + L3)): TEMP = INT (TW): IF TW - TEMP > .5 THEN TEMP = TEMP + 1
5560 TW = TEMP: WN = TW - W4: PN = WN / (162 - (W4 + L4)): Z = PN: Z$ = "###": HTAB 20: GOSUB 7000: PRINT
5570 NEXT PCT
5580 PRINT: PRINT "ANY KEY TO CONTINUE": GET G$
5590 RETURN
7000 Z1 = LEN (Z$): Z2 = 0: Z3 = 0
7010 FOR Z4 = 1 TO Z1: IF MID$ (Z$, Z4, 1) = "." THEN Z2 = Z4
7020 IF MID$ (Z$, Z4, 1) = "." THEN Z3 = Z4
7030 NEXT
7040 IF Z3 = 0 THEN Z3 = Z1
7050 Z4 = 10 ^ (Z1 - Z3): Z = INT (Z * Z4 + .5) / Z4: ZA$ = STR$ (Z): IF Z2 = 0 AND Z3 = Z1 THEN 7200
7060 IF Z3 = Z1 THEN 7150
7070 Z5 = 0: FOR Z4 = 1 TO LEN (ZA$): IF MID$ (ZA$, Z4, 1) = "." THEN Z5 = Z4: Z4 = LEN (ZA$)
7080 NEXT: IF Z5 = 0 THEN ZA$ = ZA$ + ".": Z5 = LEN (ZA$)
7110 IF Z1 - Z3 > LEN (ZA$) - Z5 THEN ZA$ = ZA$ + "0": GOTO 7110
7150 Z5 = LEN (ZA$): IF Z2 = 0 OR Z5 < (Z1 - Z2) THEN 7200
7160 ZA$ = LEFT$ (ZA$, Z5 - (Z1 - Z2)) + "," + RIGHT$ (ZA$, Z1 - Z2)
7200 IF LEN (ZA$) > Z1 THEN ZA$ = " " + ZA$: GOTO 7220
7210 IF LEN (ZA$) < Z1 THEN ZA$ = " " + ZA$: GOTO 7210
7220 IF LEFT$ (ZA$, 1) = " " THEN ZA$ = " " + MID$ (ZA$, 2, 4): PRINT ZA$: RETURN
7225 IF LEFT$ (ZA$, 1) = "0" THEN ZA$ = " " + MID$ (ZA$, 2, 4): PRINT ZA$: RETURN
7230 PRINT ZA$: RETURN

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NEW PRODUCTS

edited by Lafe Low

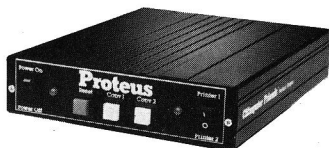
Hardware

Look at This

I/CT's Visagraph **eye-movement recording** system analyzes your reading performance. The Visagraph viewer interfaces with your IIe or II Plus, and as you read, samples your eye movements 50 times per second. Results of reading efficiency are automatically presented in a graph. Visagraph is available for \$699, from I/CT, 10 Stepar Place, Huntington Station, NY 11746, (516) 549-3000. Circle Reader Service number 362 for more information.

Pick a Peripheral

If you've been wanting to expand your system, you now have four more choices. Interface Modules has added to its lineup the AP **3½-inch disk drive**, the AP series of **5¼-inch drives**, and the 8064 and 80256 **dual-function cards**. Retail prices for this family of products are \$349 for the 3½-inch drive, \$199 to \$205 for the 5¼-inch drives, \$219 for the 80256 card, and \$79 for the 8064 card. Contact Interface Modules, 2893 East La Palma, Anaheim, CA 92806, (714) 630-5350, or circle Reader Service number 364.



Fleet of Print

Juki's fastest **letter-quality printer** yet, the 6500, prints 60 characters per second (50 cps Shannon Text) with 10/12/15 pitch and proportional spacing. The Juki 6500 has a standard 3K buffer memory, expandable to 15K, so you can use your computer while you're printing. Like the Juki 6100, 6200, and 6300 printers, the new 6500 has a number of print features, such as shadow, superscript, subscript, and graphics capabilities. The Juki 6500 retails for \$1395, from Juki Office Machines, 23844 Hawthorne Boulevard, Suite 101, Torrance, CA 90505, (800) 325-6134. Circle Reader Service number 366 for more information.

Flexible Buffering

Print with two printers at once, and free your computer memory for work. The Proteus **parallel double buffer** has a buffer on each of two output ports, a data switch activated manually or via software, and multiple-copy capability on both ports. Proteus features "flexible-capacity buffering," with which any output port is allocated as much memory as available. Proteus is \$199 for the 64K version, and \$299 for the 256K version, from Computer Friends, 6415 Southwest Canyon Court, Portland, OR 97221, (503) 297-2321. Circle Reader Service number 365 for more information.

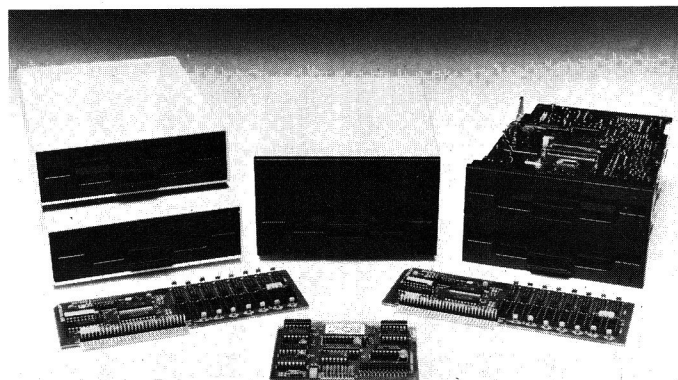
The Proteus parallel buffer doubles your printing capability.



Keep your mouse clean and comfortable with a MouseTop.

Hide Your Cheese

Turn your ordinary-looking mouse into a charming computer pet with a MouseTop. These silver-gray **fur covers** protect your mouse from the dust and dirt of ordinary use, and come in two varieties—one with granny glasses for \$5.95 and one without for \$5.49. To give your mouse some personality, contact H & H Enterprises, Box 2672, Corona, CA 91718, (714) 737-1376, or circle Reader Service number 363.



Add to your system with Interface Modules' peripherals.

Software

What's the Story?

Children can become authors of their own books with The Storyteller. This **interactive-fiction** program combines language arts, reading, and creative-writing skills. The child types in his or her name, age, home town, favorite food, pet, and a friend's name, and the story unfolds from there. Kids get to shape the story as it goes along, adding their own dialogue or choosing from various dialogue and plot options. The Storyteller retails for \$59.95, from Educational Activities, 1937 Grand Avenue, Baldwin, NY 11510, (516) 223-4666. Circle Reader Service number 350 for more information.

Come Together

Play Together, Learn Together is an **activity book and disk** kids can use with their parents and teachers to learn about reading and computers. The activity book uses games, puzzles, and art and music exercises to demonstrate the computer's versatility, while

the disk has activities and games to further skill development. This interactive package is \$24.95, from Grolier Electronic Publishing, 95 Madison Avenue, New York, NY 10016, (212) 696-9750. For more information, circle Reader Service number 360.

Fore!

Play 18 holes of **golf** on the famous St. Andrews Old Course without leaving your computer. The Golf's Best series simulates famous golf courses, such as St. Andrews and Pinehurst No. 2. Each simulation recreates conditions identical to the real course, including the 5- to 25-mph wind that has made St. Andrews notorious. Choose your clubs, and tee off with Golf's Best, \$49.95 from One Step Software, Charlotte, NC 28244, (800) 525-GOLF. For more information, circle Reader Service number 356.

I Dream of...

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CORRECTION

The price of the Titan III plus //e card is incorrect as it appears in our April 1986 issue (p. 103). The correct price is \$499.

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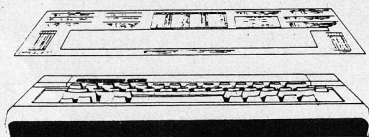
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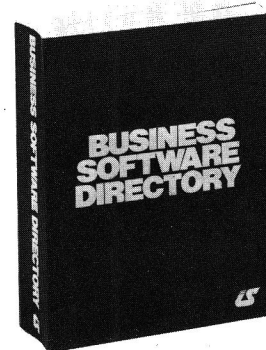
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● Cermetek Microelectronics has upgraded its **AppleMate 1200** modem for use with Apple Access, PFS:Access, Modem Magician, and Easy Come/Easy Go communications programs. Get in touch with Cermetek, 1308 Borregas Avenue, P.O. Box 3565, Sunnyvale, CA 94088, (408) 734-8150.

● If you've been using **Flow Charting** to graph your progress, your task has just become easier. Flow Charting now has new printer drivers, presentation-quality print in all modes, and no copy protection. There's also **Flow Charting II**, which works with a 14-inch screen, from Patton & Patton, 340 Lassenpark Circle, San Jose, CA 95136, (408) 629-5044.

● In support of Apple user groups, Schmidt Enterprises is offering its **Apollo Accountant** and **Apollo Database System** for half price. For a limited time, user-group members can get these packages for \$60 each. Contact Schmidt Enterprises, 7448 Newcastle Avenue, Redwood City, CA 94061, (415) 342-5930, and pocket the difference.

● To meet the demand for hard-disk installation, **BusinessWorks** will now be shipped on 5¼-inch floppies, as well as the program's standard 3½-inch disks. From Manzanita Software, One SierraGate

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● **SchoolWorks** now includes AppleWorks templates for teachers, coaches, and administrators. Tutorials, hints, and printing information help school personnel tap AppleWorks' resources right away. SchoolWorks and its AppleWorks templates are available from Lucky Mushroom Software, R.R. 4, Box 38CA, Syracuse, IN 46567.

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HINTS/TECHNIQUES

Apple users know that there's always an easier way to get the job done. A shortcut here, an elegant twist there. That's what Hints/Techniques is all about. It's an information swap for readers who want to share their programming pointers, DOS tips, hardware secrets, AppleWorks applications, WPL enhancements, and all those other insights that make you go "Aha!" in the night. So read on and see if you don't find just the solution you've been looking for.

Three ProDOS Utilities

by Kenneth Buchholz

The first two short BASIC programs presented here, Cat and Time, not only are useful utilities on their own, but are handy modules for other programs, as well. Cat illustrates just how easy it is to read the lines of a ProDOS directory file, or catalog, into string variables you can manipulate using any Applesoft string function; Time reads your computer's clock and displays the date and time. A third program, Startup, demonstrates how Cat and Time can serve as library routines.

A Sorted Catalog

Cat (**Listing 1**) produces a sorted CATALOG listing, either to screen or printer, of any ProDOS directory. When you run Cat, it first asks you to type in the name of the directory you want to sort and display. If you press the return key, the program assumes the default prefix (the volume directory if you've just booted the disk). Next, Cat asks if you want to print the output. If you answer yes, it asks you to type in the slot number of the printer you want to use. Cat then reads the directory, sorts the files alphabetically by filename, and prints or displays the sorted CATALOG listing.

The principle behind Cat is that any ProDOS directory can be read as a simple sequential text file; that is, each line in a ProDOS directory can be read into a string variable, and then any string function can be performed. Consider the information displayed when you perform the CATALOG command: the pathname of the direc-

tory (for example, /USERS.DISK/), a line of column headings followed by a blank line, then one line for each file in that directory, another blank line after the last file in the directory, and a block-status line (indicating the number of BLOCKS FREE, BLOCKS USED, and TOTAL BLOCKS remaining in that volume).

The same file structure exists regardless of the number of files the directory contains, and CAT takes advantage of this. First, it opens the directory file for reading and inputs the first three lines into string variables U\$, E\$, and C\$, respectively (line 5). Next, it inputs each subsequent line within the directory file (each line representing one file within the CATALOG listing) into the string array A\$(x), until it inputs a blank line, indicating that the last file line has been read into the array (line 6).

Cat then reads the block-status line into variable B\$, closes the directory file, and sorts the file lines by filename, with the string function MID\$(A\$(x),2,15) sorting the string array (lines 7 and 8). Finally, the program displays the sorted CATALOG by printing U\$, E\$, C\$, each element in A\$(x), and B\$. Cat adds one line of information before the block-status line: the number of files that directory contains (helpful if you have large volumes).

The rest of the code is "house-keeping." Line 1 sets the current prefix as a default directory so that you can simply press the return key rather than type in the directory name to sort or display the current directory. Line 1 also illustrates how to assign the current pathname (or prefix) to a string variable (A\$). Lines 2, 3, 9, and 12 handle output to printer. The purpose of the blank REMark statement in line 4 will become apparent later when we build Startup.

One additional task you can perform is to switch the ProDOS commands CAT and CATALOG. Make the following two POKES from within your Startup program: POKE 45117,39 to make CATALOG act like CAT, and POKE 45111,79 to make CAT act like CATALOG.

When you invoke these two POKES, you can generate the standard "short" directory listing with the real ProDOS command CATALOG, the standard "full" directory listing with the read ProDOS command CAT, and the sorted "full" directory listing with the pseudocommand -CAT.

Reading Your Clock

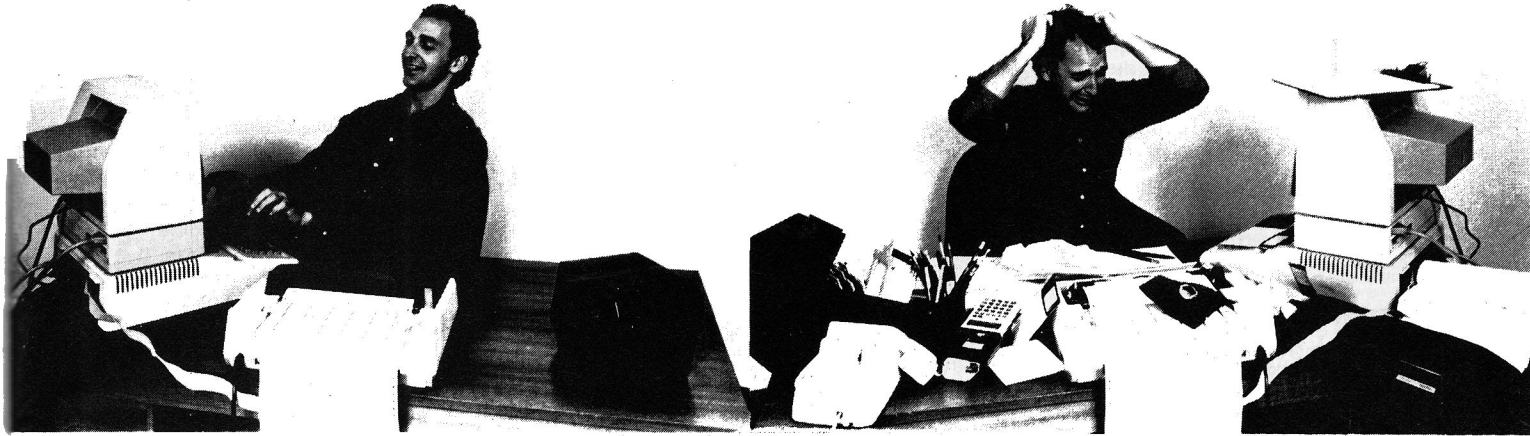
Time (**Listing 2**) is a short program that reads a Thunderclock or compatible clock (for example, a VersaCard) and displays the current date and time. The program assumes the clock is in slot 7; if your clock is in a slot

Listing 1. Cat.

```
1 HOME : DIM A$(100):D$ = CHR$(4):A = 0: PRINT D$"prefix": INPUT
A$: PRINT D$"prefix";A$: INPUT "Directory to list? ";F$: IF F$ = ""
THEN F$ = A$
2 PRINT : INPUT "Do you wish to print sorted directory? ";Z$: IF
LEFT$(Z$,1) < > "Y" AND LEFT$(Z$,1) < > "y" THEN 4
3 Z$ = "Y": INPUT "Printer is in what slot? ";P$:P = VAL (P$)
4 REM
5 HOME : PRINT "Reading Directory of "F$"...": PRINT D$;"OPEN
"F$",TDIR": PRINT D$;"READ "F$: INPUT U$: INPUT E$: INPUT C$
6 A = A + 1: INPUT A$(A): IF A$(A) < > "" THEN 6
7 A = A - 1: INPUT B$: PRINT D$;"CLOSE": PRINT : PRINT "Sorting
Directory...";:T$ = "": FOR Q = 2 TO A: FOR W = 1 TO A - 1: IF MID$
(A$(Q),2,15) < MID$(A$(W),2,15) THEN T$ = A$(Q):A$(Q) = A$(W):A$(W)
= T$
8 NEXT W: NEXT Q: HOME
9 IF Z$ = "Y" THEN PRINT D$"pr#"P
10 REM
11 PRINT : FOR R = 1 TO A: PRINT A$(R): NEXT R: PRINT : PRINT "There
are "A" files in "F$: PRINT : PRINT B$
12 IF Z$ = "Y" THEN PRINT D$"pr#0"
13 END
```


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★ **InstaDOS** is like having DOS 3.3 or ProDOS built directly into your Apple. Now you can store each of these utilities in the *EasyCard* memory and download them without ever using the diskettes again. What a time saver! Your own programs may be also stored in *EasyCard*'s EPROM or battery backed-up static RAM and downloaded into Apple at any time.

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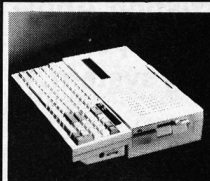
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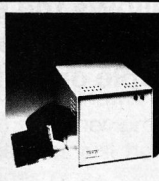
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HINTS/TECHNIQUES

other than slot 7, change the first
statement in line 30000 to reflect your
clock's slot (for instance, IN#4 if the
clock is in slot 4).

The code contains two modules the
"main program" calls (line zero). The
first (lines 30000-30007) reads the
clock output into variable T\$, then as-
signs hours, minutes, seconds, month,
day, and year to variables D, F, H, K,
E, and J, respectively. The second
module (lines 30100-30108) con-
structs and displays the date/time out-
put line: for example, *Date: 12 Dec
1985 Time: 09:30:15 am*.

If you're curious about what the in-
put from the clock looks like, run
Time, then PRINT T\$. Notice that the
time is based on the 24-hour clock (that
is, 7:00 pm is 19 hours, and so on).

Time's two-part approach facilitates
its use as a library module you can
easily insert into other programs. To il-
lustrate, add Time to a modified Cat
program to create Startup.

Combining the Modules

Startup (Listing 3) runs when you
boot it and displays the current date
and time, the sorted directory (CATA-
LOG) of that volume, and the number
of files within that directory. Before
you type in Startup, take a look at
the changes required in both Cat and
Time.

First, you want Startup to display
the sorted CATALOG of the default
(volume) directory, rather than prompt
you for the directory you want to sort
and display: Delete the last two state-
ments in line 1. Next, if you don't
want to print the sorted CATALOG

each time, delete lines 2, 3, 9, and
12. Next, add GOSUB 30000 to read
the clock, and GOSUB 30100 to write
the date and time.

I prefer to immediately read the
date and time (line 4) and write the
date and time just before displaying
the sorted CATALOG listing (line 10),
but you can display the date and
time anywhere before, during, or after
the CATALOG listing. Time's two-mod-
ule setup facilitates this selection.
Don't attempt to read the clock (that
is, GOSUB 30000) while directing out-
put to your printer, though, or you'll
get some strange effects.

Only one change is required in
Time: Delete line zero, since lines 4
and 10 in the modified Cat are the
calling points. Then combine the
modified programs via any program-
ming utility that includes a merge
feature.

I used Apple Computer's APA (Ap-
plesoft Programmer's Aid) to load the
original Cat, make the necessary
changes, and HOLD the program
while I loaded the original Time, mod-
ified it, then issued the command
MERGE. If you don't have APA or
some similar programming utility,
you'll have to load one of the two
original programs, modify it, then re-
enter the code for the other program.
Either way, SAVE the final program to
disk as Startup.

Comments

If you'd like to have the date and
time on all sorted CATALOGs you
print, just add line 4 GOSUB 30000
and line 10 GOSUB 30100 to the

Listing 2. Time.

```
300000 PRINT CHR$(4)"IN#7": INPUT "": T$: PRINT CHR$(4)"IN#0"
300001 K$ = "???JanFebMarAprMayJunJulAugSepOctNovDec": E = VAL ( MID$
(T$,4,2)): J = INT ( PEEK (49041) / 2): K = VAL ( LEFT$(T$,2)): H$ =
MID$(K$,K * 3 + 1,3)
300002 FOR I = 1 TO 9: I$ = MID$(H$,I,1): IF I$ = " " THEN GOTO
300004
300003 G$ = G$ + I$: NEXT I
300004 H$ = G$: G$ = ""
300005 F = VAL ( MID$ (T$,10,2)): D = VAL ( MID$ (T$,7,2)): H = VAL (
MID$ (T$,13,2)): IF D > 11 THEN G = 1
300006 IF D > 12 THEN D = D - 12
300007 IF D = 0 THEN D = 12
300008 RETURN
301000 PRINT "Date: ";: IF E = 0 THEN PRINT "<NO DATE>"
301001 IF E < 10 THEN PRINT " ";
301002 PRINT E; " ";: PRINT H$; " 19";: IF J < 10 THEN PRINT "0";
301003 PRINT J; " ";: PRINT "Time: ";: IF D = 12 AND F = 0 AND E = 0
THEN PRINT "<NO TIME>"
301004 IF D < 10 THEN PRINT " ";
301005 PRINT D; " ";: IF F < 10 THEN PRINT "0";
301006 PRINT F; " ";: IF H < 10 THEN PRINT "0";
301007 PRINT H;: IF G = 1 THEN PRINT " pm"
301008 IF G = 0 THEN PRINT " am"
301009 RETURN
```


Listing 3. Startup.

```

1 HOME : DIM A$(100):D$ = CHR$(4):A = 0: PRINT D$"prefix": INPUT
A$: PRINT D$"prefix";A$:F$ = A$
4 GOSUB 30000
5 HOME : PRINT "Reading Directory of "F$"...": PRINT D$;"OPEN
"F$","TDIR": PRINT D$;"READ "F$: INPUT U$: INPUT E$: INPUT C$
6 A = A + 1: INPUT A$(A): IF A$(A) < > "" THEN 6
7 A = A - 1: INPUT B$: PRINT D$;"CLOSE": PRINT : PRINT "Sorting
Directory...":T$ = "": FOR Q = 2 TO A: FOR W = 1 TO A - 1: IF MID$(
A$(Q),2,15) < MID$(A$(W),2,15) THEN T$ = A$(Q):A$(Q) = A$(W):A$(W)
= T$
8 NEXT W: NEXT Q: HOME
10 GOSUB 30100
11 PRINT : PRINT U$: PRINT E$: PRINT C$: FOR R = 1 TO A: PRINT A$(R):
NEXT R: PRINT : PRINT "There are "A" files in "F$: PRINT : PRINT B$
13 END
30000 PRINT CHR$(4)"IN#7": INPUT "":T$: PRINT CHR$(4)"IN#0":
PRINT CHR$(4)"PR#3"
30001 K$ = "???JanFebMarAprMayJunJulAugSepOctNovDec":E = VAL ( MID$(
T$,4,2)):J = INT ( PEEK (49041) / 2):K = VAL ( LEFT$(T$,2)):H$ =
MID$(K$,K * 3 + 1,3)
30002 FOR I = 1 TO 9:I$ = MID$(H$,I,1): IF I$ = " " THEN GOTO
30004
30003 G$ = G$ + I$: NEXT I
30004 H$ = G$:G$ = ""
30005 F = VAL ( MID$(T$,10,2)):D = VAL ( MID$(T$,7,2)):H = VAL (
MID$(T$,13,2)): IF D > 11 THEN G = 1
30006 IF D > 12 THEN D = D - 12
30007 IF D = 0 THEN D = 12
30008 RETURN
30100 PRINT "Date: ";: IF E = 0 THEN PRINT "<NO DATE>"
30101 IF E < 10 THEN PRINT " ";
30102 PRINT E;" ";: PRINT H$;" 19": IF J < 10 THEN PRINT "0";
30103 PRINT J;" ";: PRINT "Time: ";: IF D = 12 AND F = 0 AND E = 0
THEN PRINT "<NO TIME>"
30104 IF D < 10 THEN PRINT " ";
30105 PRINT D;" ";: IF F < 10 THEN PRINT "0";
30106 PRINT F;" ";: IF H < 10 THEN PRINT "0";
30107 PRINT H;" ";: IF G = 1 THEN PRINT " pm"
30108 IF G = 0 THEN PRINT " am"
30109 RETURN

```

original Cat listing, delete line zero from the original Time listing, and merge the two programs.

One caution regarding 80-column cards: If your Startup program automatically turns on your 80-column card with a PRINT CHR\$(4)"PR#3" command (which you can insert as line zero into Cat or Startup), be sure to also append that same command to the end of line 30000 if you've added Time. Many 80-column cards (for instance, RamWorks) require you to issue an additional command (such as <ESC>4) before accessing slot zero (which turns off the 80-column card)—otherwise, you'll see some bizarre results. Thus, to be safe, issue the PRINT CHR\$(4)"PR#3" again after the PRINT CHR\$(4)"IN#0" in line 30000.

Cat demonstrates the principle of reading the lines of a CATALOG listing into string variables, then performing string functions on those variables. You can modify Cat's sorting routine, for example, to sort files by type, date of creation, date of modification, and so

on. And with a little more effort, you can produce CATALOG listings sorted by file type and filename within file type. You can also perform tests on files: "If a file has been modified after a certain date, do x," or "If filename y already exists, do not save." A wealth of BASIC applications await. ■

Write to Kenneth Buchholz at Box 430, RD#4, Washington, NJ 07882.

An Applesoft FILL Command

by Edward Stammel

Many implementations of the BASIC programming language include a FILL command to fill in areas on the graphics screen with color. Although Applesoft contains a number of graphics commands, it lacks a FILL command. With the routine presented here, though, you can have the advantages of a FILL command with a simple CALL statement.

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Listing 4. Machine-language Fill routine.

```

0300- A9 00 LDA #000
0302- A4 E5 LDY $E5
0304- 91 26 STA ($26),Y
0306- C6 E2 DEC $E2
0308- A5 E2 LDA $E2
030A- A6 E0 LDX $E0
030C- A4 E1 LDY $E1
030E- 20 11 F4 JSR $F411
0311- A4 E5 LDY $E5
0313- B1 26 LDA ($26),Y
0315- F0 EF BEQ $0306
0317- E6 E2 INC $E2
0319- A5 E2 LDA $E2
031B- A6 E0 LDX $E0
031D- A4 E1 LDY $E1
031F- 20 11 F4 JSR $F411
0322- A4 E5 LDY $E5
0324- 88 DEY
0325- A5 1C LDA $1C
0327- C9 7F CMP #$7F
0329- F0 04 BEQ $032F
032B- 49 7F EOR #$7F
032D- 85 1C STA $1C
032F- B1 26 LDA ($26),Y
0331- F0 F1 BEQ $0324
0333- 38 SEC
0334- 2A ROL
0335- 2A ROL
0336- 90 FD BCC $0335
0338- 6A ROR
0339- 38 SEC
033A- 6A ROR
033B- 90 FC BCC $0339
033D- 09 40 ORA #$40
033F- 25 1C AND $1C
0341- 11 26 ORA ($26),Y
0343- 91 26 STA ($26),Y
0345- C8 INY
0346- A5 1C LDA $1C
0348- C9 7F CMP #$7F
034A- F0 04 BEQ $0350
034C- 49 7F EOR #$7F
034E- 85 1C STA $1C
0350- B1 26 LDA ($26),Y
0352- D0 06 BNE $035A
0354- A5 1C LDA $1C
0356- 91 26 STA ($26),Y
0358- D0 EB BNE $0345
035A- 38 SEC
035B- 6A ROR
035C- 90 FD BCC $035B
035E- 38 SEC
035F- 2A ROL
0360- 90 FC BCC $035E
0362- 09 01 ORA #$01
0364- 25 1C AND $1C
0366- 11 26 ORA ($26),Y
0368- 91 26 STA ($26),Y
036A- E6 E2 INC $E2
036C- A5 E2 LDA $E2
036E- A6 E0 LDX $E0
0370- A4 E1 LDY $E1
0372- 20 11 F4 JSR $F411
0375- A4 E5 LDY $E5
0377- B1 26 LDA ($26),Y
0379- F0 8B BEQ $0306
037B- 60 RTS

```

"The Fill routine fills in enclosed areas on the hi-res screen."

The accompanying Fill routine (see **Listing 4**) occupies 128 bytes of page 3. From a program, load it into memory by typing a line such as the following:

```
10 PRINT CHR$(4); "BLOAD FILL"
```

The Fill routine fills in enclosed areas on the hi-res screen, so before you use it, you have to HPlot a figure, such as a triangle or square, you want to color. The outline of the object you draw forms the boundary of the filled area. Next, HPlot a point inside the object to be filled. (If it lies

on the border or outside the figure, you'll get some strange results.) Finally, use CALL 768 to fill the object with the current HCOLOR.

Fill is easy to use, and it's relocatable. If you're already using a module that occupies page 3 of memory, you can move the Fill routine. Simply BLOAD FILL to a new direction. You should save Fill so that it doesn't cross a page boundary. Once you relocate it, be sure to change the CALL statement to reflect its new area. You'll also have to move HIMEM to protect the routine. ■

Write to Edward Stammel at 16 South Delaware Street, Stamford, NY 12167.

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EDITORS' CHOICE

A Mystery Unfolds

Intrigue!

A lot of interactive games come through the *inCider* offices. What makes this month's Editors' Choice stand out? With **Intrigue!** from Kination (located right here in Peterborough, New Hampshire), you skip the usual mundane, repetitive actions—like typing "GO NORTH" or "SEARCH THE CABINET"—and spend more time *interacting* with the characters and watching them react to you.

Even if you have no interest in solving the mystery, you can still have a great time trying to get a date with the gorgeous secretary, the glamorous reporter, or the naive (for lack of a better word) barmaid. And Kination hasn't forgotten female detectives, who can chat with the ambassador, the FBI director, or the mysterious private investigator Kruger.

But flirting is more than fun in *Intrigue!* It's a way to get precious information—sometimes it's the only way. You learn quickly in this game that it pays to be nice to the right people. And since there are more than 2000 different solutions to *Intrigue!*, you can never be sure who the right people are. A general rule of thumb is to be nice to everyone, but suspect everyone, too.

Intrigue!'s basic scenario goes something like this: Your brother Joe, himself a private investigator, is missing; you learn that Joe has been investigating a case that involves a dangerous virus that may be released by explosion into the air of Washington, D.C. Your mission, which you have no choice but to accept, is to find your brother, deactivate the device before it unleashes the crippling virus, and name the villain behind the crime.

Your investigation takes you through the streets of the nation's capital. You can stop at the Embassy, F.B.I. head-

quarters, the Bull & Bear Pub, the Hospital, the Warehouse, and other sites. The screen always displays your current location, and a map included in *The Little Black Book* accompanying the disk helps you get where you're going.

But the quality that sets *Intrigue!* apart from other games in the adventure genre is your involvement with the characters. While your goal is always to find your brother and deactivate the bomb, you can sometimes get sidetracked by the characters and forget your main objective. "I found myself more interested in getting a date with the secretary than in solving the mystery," Technical Editor Paul Statt admits. Jeanne Dietsch of Kination points out, though, that "that kind of thing is supposed to happen."

She explains that a primary concern in designing *Intrigue!* was pacing. If you take too long deciding on your next move, or if you're confused, the characters will offer a suggestion, give you a clue, or simply leave. "In other games you're left wondering what to do next. In *Intrigue!* the characters keep the game moving," Dietsch says.

Kination's concept of fast-paced action is based on the philosophy of television programming: "Interactive drama is probably more like television than any other medium. It uses small screens and works best with close, personal shots, rather than the broader vision of film. Characters develop over repeated interactions rather than a single one. An interactive drama is like a television series—combining new twists and surprises with familiarity and repetition."

What makes the theory behind interactive drama so appealing is that although it borrows some ideas from television, the audience isn't passive. You play a role in the adventure: You

can influence characters, respond to people and events, and affect the outcome of the drama.

Intrigue!'s graphics are enjoyable, but not terribly sophisticated. Characters are generated by animation of digitized photographs. The purpose of the animation goes beyond aesthetics, though—it plays a role in solving the mystery. You can tell whether a character is reacting favorably by his or her expression, which changes throughout the dialogue. If a conversation appears to be going well, but one of your questions causes the character to scowl, you've probably hit a nerve. In *Intrigue!*, actions sometimes speak louder than words.

Intrigue! offers three levels of play: beginner, intermediate, and difficult. Kination strongly recommends you play at the beginner level several times and solve the mystery at least once before you advance to intermediate. The top level is intended for people who have had the game for a couple of years and want a challenge.

Not surprisingly, though, Statt and Managing Editor Dan Muse assumed they could jump from the lowest to the highest level with no problem. "It's amazing how different the levels are. At the beginner level, a character will occasionally give you something to help with the case. At the most difficult level, nobody hands you anything," Muse notes.

Kination plans to release its next product, called *Saturday Night Disk*, this fall. The company wouldn't elaborate on the details of the program, except to say, "It's an interactive drama, but it's not a game."

Intrigue! is priced at \$39.95, from Kination, P.O. Box 3076, Four Winds Road, Peterborough, NH 03458, (603) 924-6720. ■

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VERSA INVENTORY™ \$99.95

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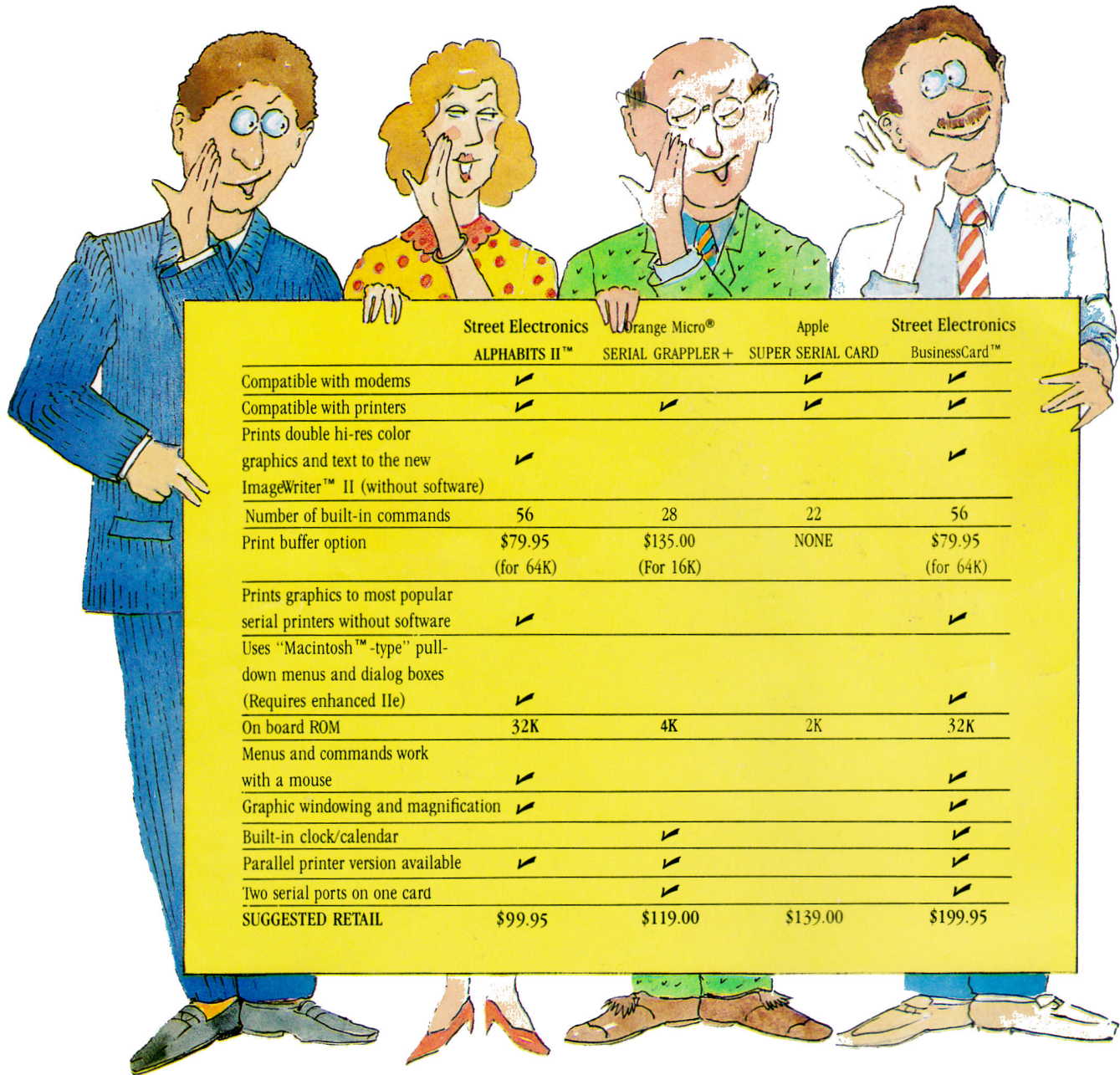
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