NEW READER POLL, PAGE 42

inCider

The Apple II Journal

September 1985, USA $2.95
A CWC/I Publication

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- Find Your Local Group—Over 200 Listed

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  —QC10
  —The Sider
  *—Sun*Disk*

- EDITORS' CHOICE:
  The Z-RAM Card

- Also Reviewed:
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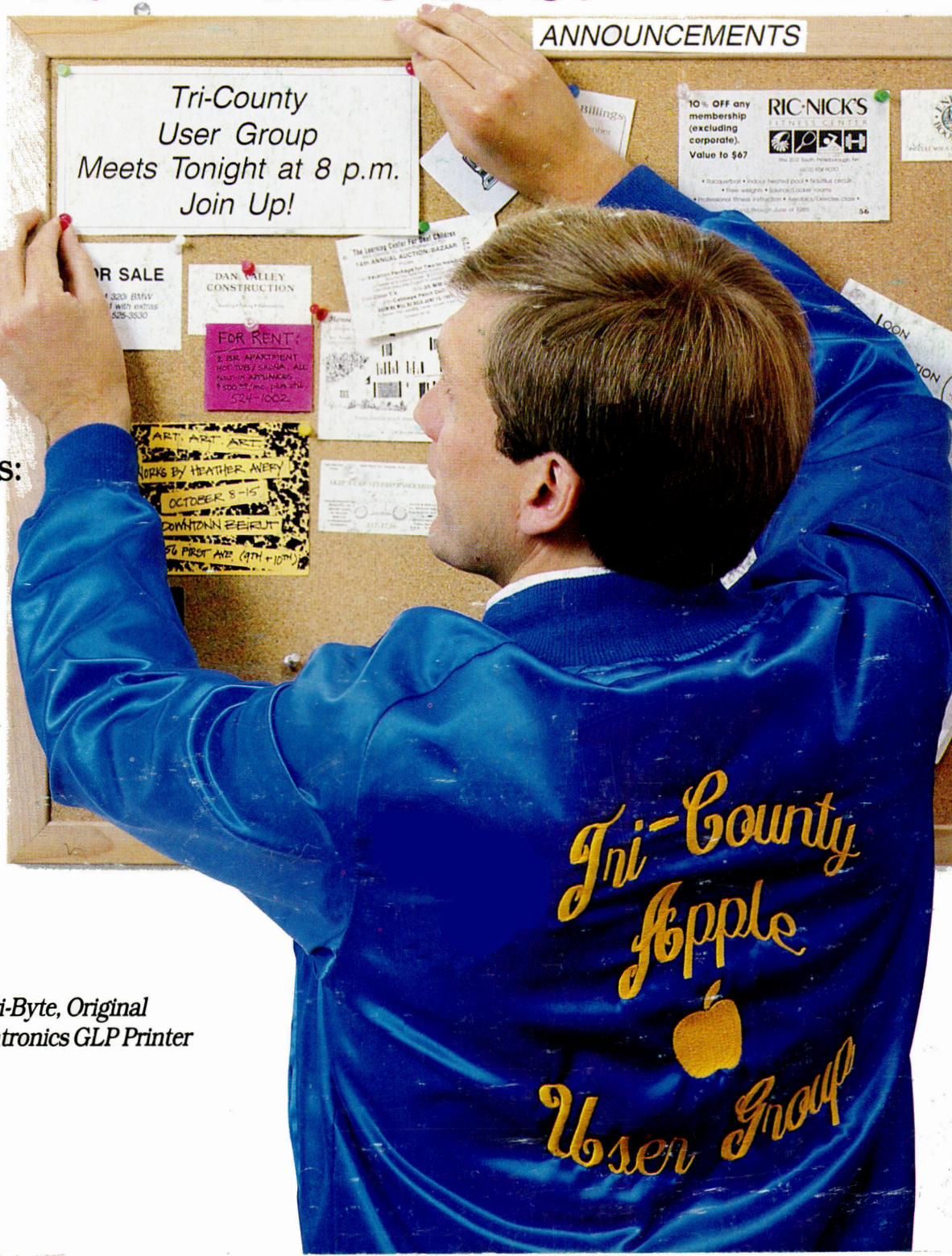

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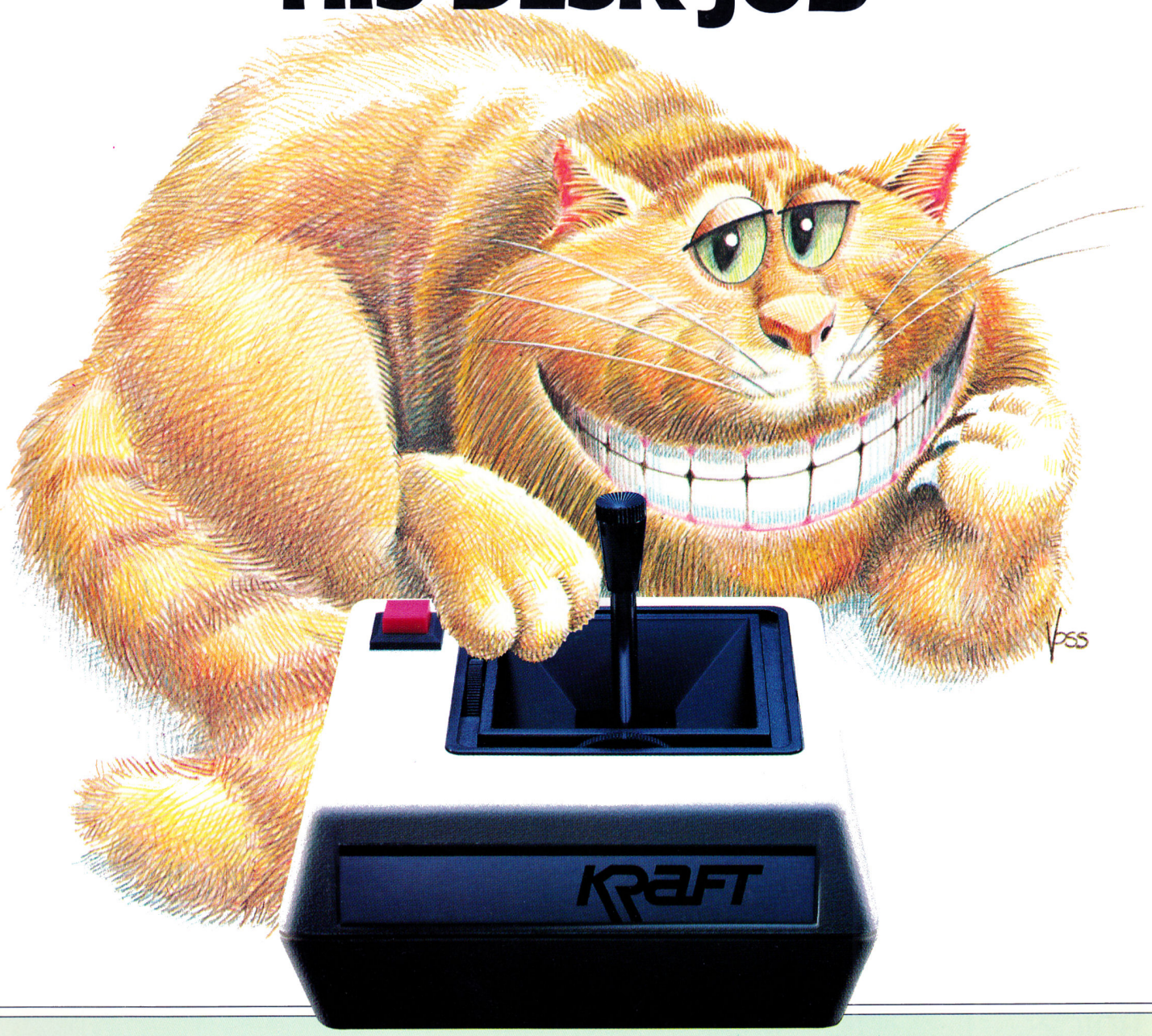

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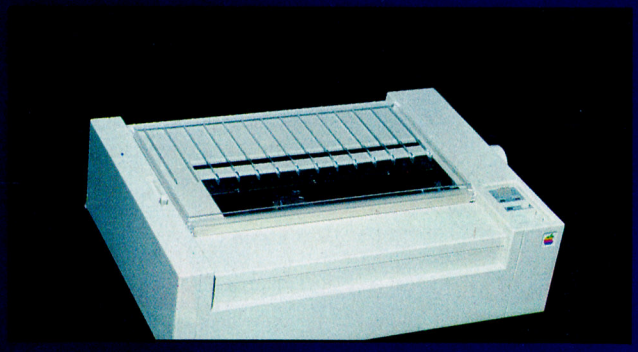

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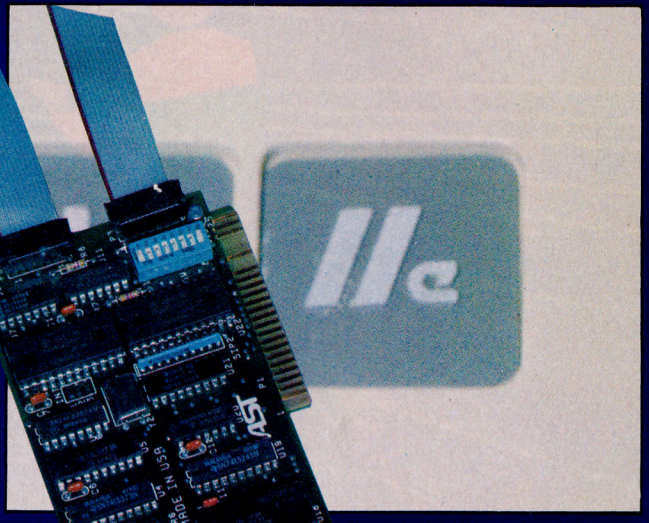
Modem serial port

Clock/Calendar

Software Utilities



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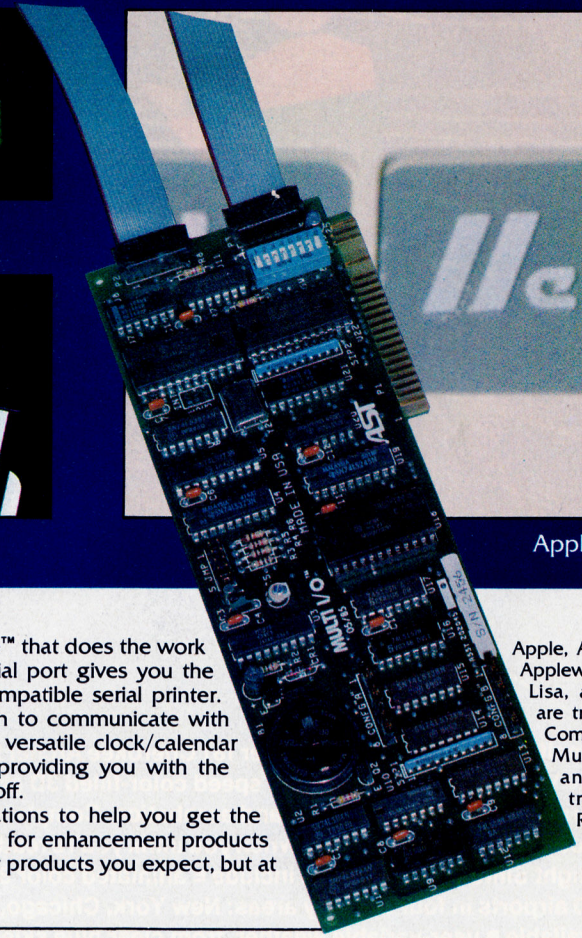

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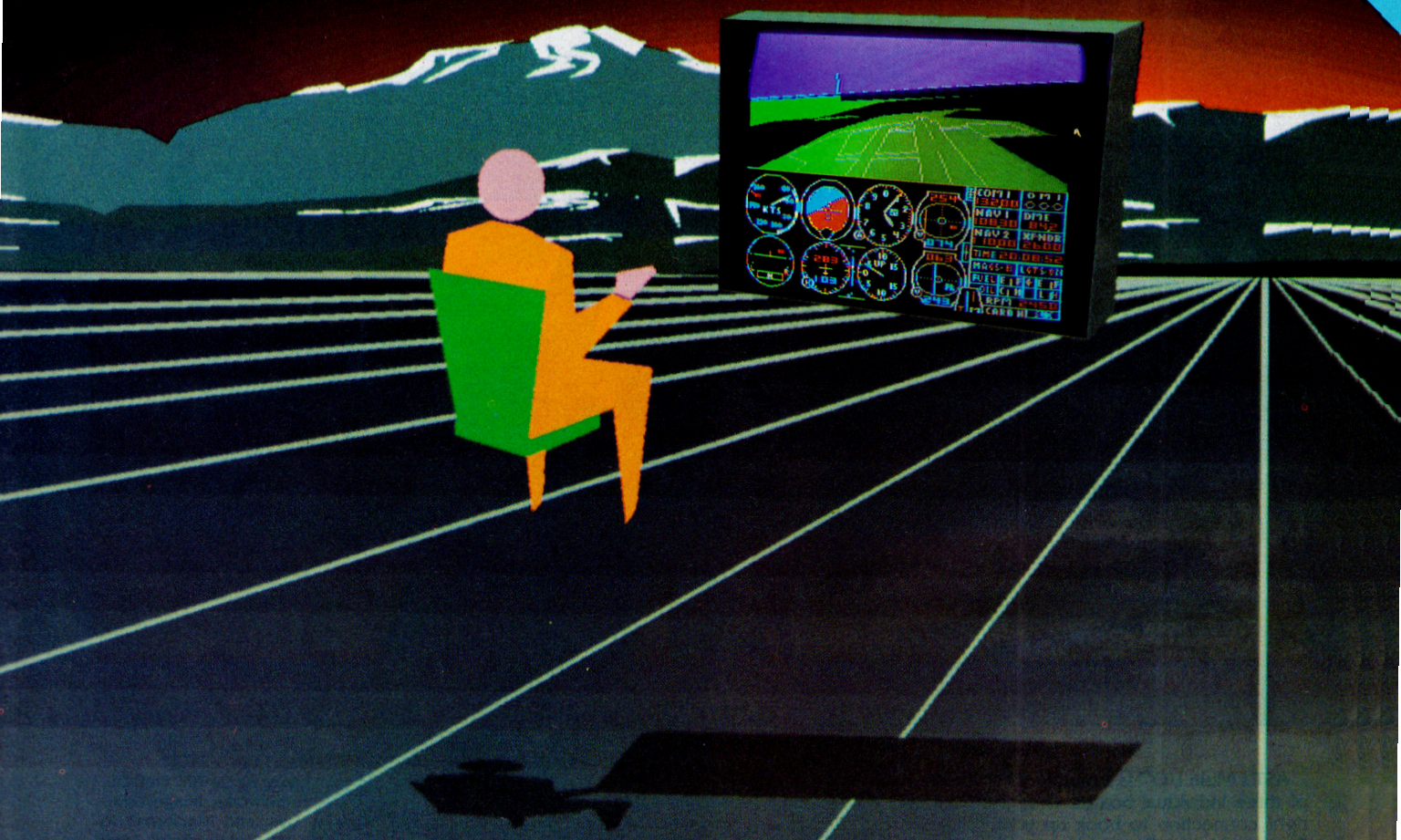

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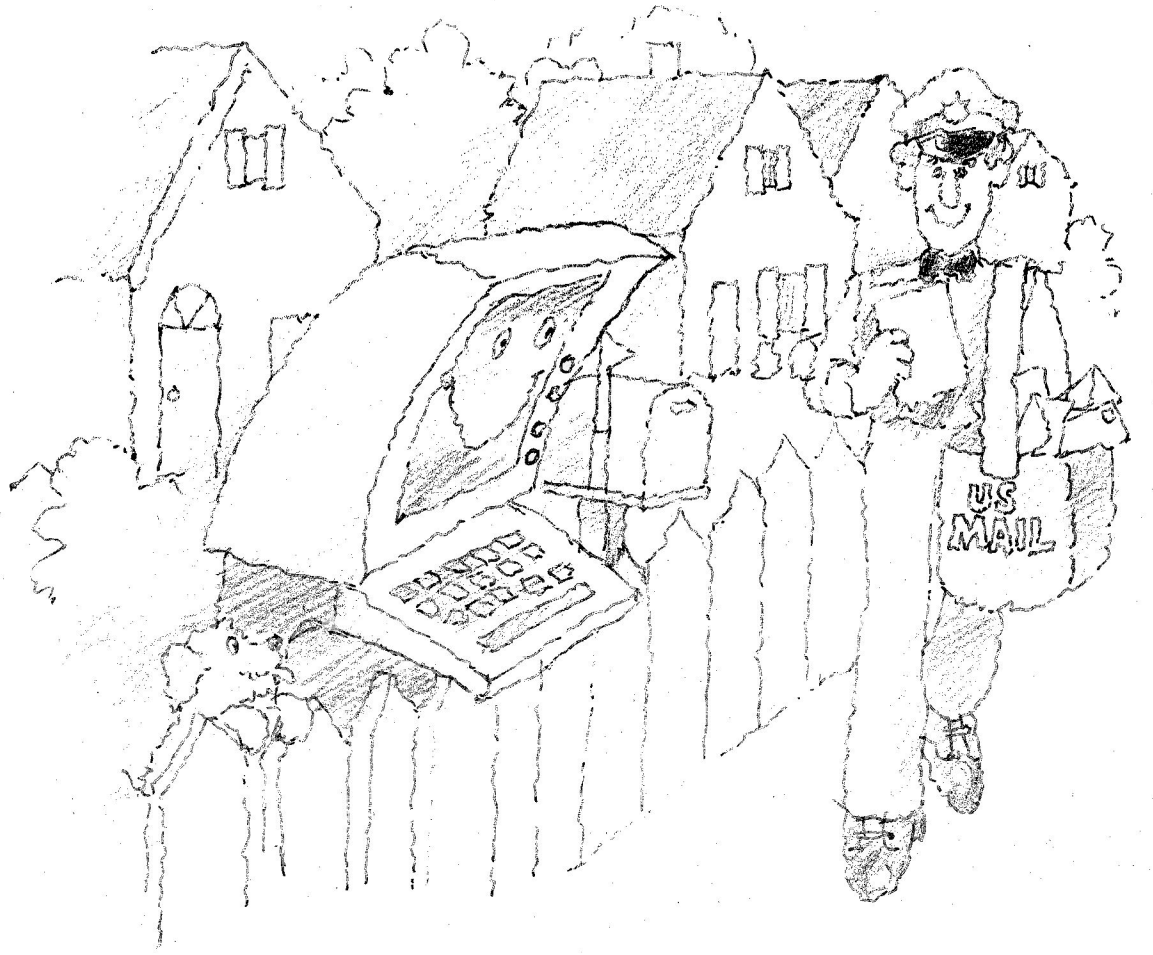

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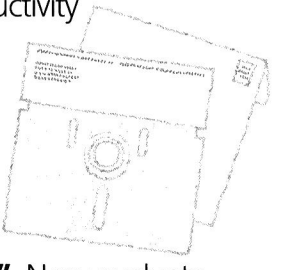

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ARTICLES

Not for Hackers Only — 16
by Cynthia K. Carr

Become part of the fastest-growing support system in our computer culture. Apple user groups lend a helping hand when you seek to unravel the mysteries of your Apple II. Groups can be formal or informal—we've found two that, though geographically close, differ in organization to suit members' needs.

User groups name the meeting time and place—basements, libraries, coffee shops, even on-line information services. Public-domain software is often a fringe benefit of membership—and we've included our pick of the best programs.

Hard-Driving Disks — 24
by Bill O'Brien

How much data can you pack onto a hard disk? More than enough—and you can do it ten times faster than you can on any floppy. We've reviewed six for you: OmniDrive, TeamMate, ProFile, QC10, The Sider, and Sun*Disk.

And Introducing. . . — 42

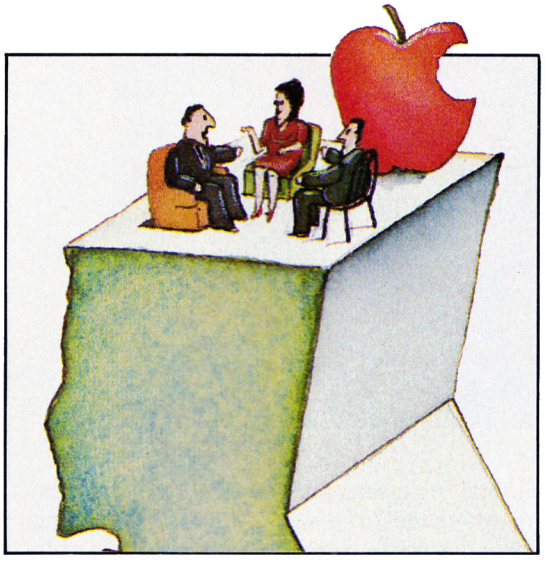
BackTalk—your chance to speak out on current topics in the computer industry. Our new poll surveys your comments by modem or mail. This month's topic: Software Piracy.

Guide to User Groups — 105

To find the Apple user group nearest you, consult our directory of more than 200 organizations across the United States and Canada.

Cover photograph by Frank Cordelle

September 1985 Vol. 3 No. 9



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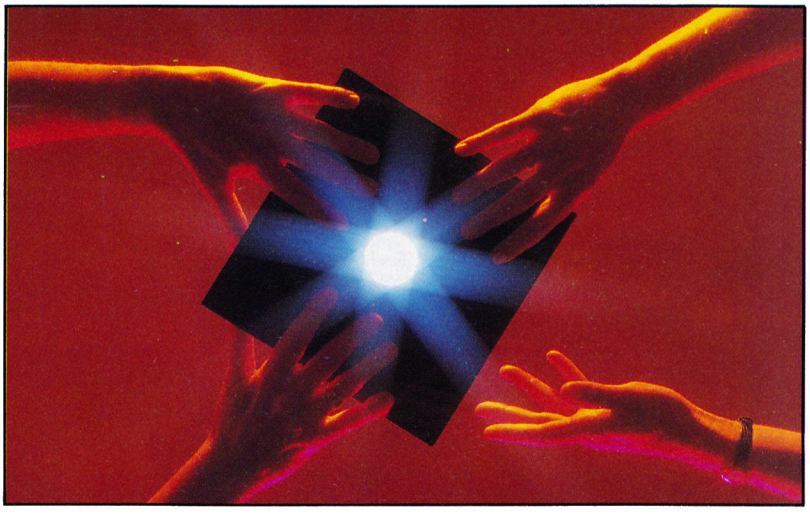

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Editor's note: Dan Bishop's column, The Applesoft Adviser, will return in the November 1985 issue.

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Editorial

The Best Support Systems

No man is an island, entire of itself.
—John Donne, 17th century

Alone, alone, all, all alone;
Alone on a wide, wide sea.
—Samuel Coleridge, 18th century

He travels the fastest who travels alone.
—Rudyard Kipling, 19th century

Apple II user: You are not alone!
—*inCider* magazine, 20th century

If you've been wondering lately whether Apple Computer Inc. has abandoned you, the Apple II owner, wonder no longer.

The reorganization at Apple along functional, rather than product-oriented, lines; the ascendancy of Del Yocam, former head of the II division, to the position of executive vice president; the distinct possibility of new-product releases for the II line (see the "Inside Out" section of July's Cider Press); the implicit squelching of Mac chauvinism through some high-level machinations (sorry) that have confounded Prince Steven and ensconced King John even more solidly, should all reassure you.

But if you need further comfort—yea, verily, even camaraderie—in these best of times and worst of times, this issue of *inCider* is devoted, in part, to some of the best support systems we know.

User groups across the country (see our directory beginning on page 105) can help pull you away from those lonely moments at the monitor, when all you're getting for your time and trouble are I/O errors, and give you the perspective, and the help, of fellow computerists. You needn't be a member of some advanced, priestly sect to participate, either. Our experience is that user groups are democratic, eclectic, and as varied as the members composing them.

By the way, *inCider* is officially designating September the "Month of the User Group." If we've failed to include your organization or if we've printed an inaccurate listing, we can help spread the word through our BBS (bulletin-board system). Call (603) 924-9801 via modem, then follow the easy prompts to list your group's current address and contact information.

And if you can't find a group within commuting distance, think about starting your own.

By the way, we consider our BBS yet another support system. So far, we've had thousands of calls from readers who've made use of the many services we offer on the board: downloading *inCider* programs (one new program per month); leaving messages of general interest; accessing fast-breaking news of the Apple world; corresponding with members of the staff and other readers; chatting with the sysop (system operator). Finally, our BBS represents one of the most direct ways to let *us* hear from *you*. Through the BBS, we can answer your concerns, criticisms, and queries.

In addition, you can act as resources for one another. Some of the most interesting threads I've followed on the BBS are those our readers are spinning among themselves. Ultimately, we hope to engender a sense of community in that global village of Apple enthusiasts out there.

So, unless like Garbo you "vant to be alone," you needn't be.

New and Forthcoming

We inaugurate our monthly reader BBS poll, BackTalk, on page 42, by soliciting your views on the issue of software piracy. Please log on and be counted! We'll be publishing the results of the poll in November.

Those of you who remember Roger Wagner from *Softalk* days will be pleased to hear that in October he'll be starting a new monthly column, Right of Assembly, devoted, not surprisingly, to assembly-language programming. Tell your friends. ■

by Susan Gubernat

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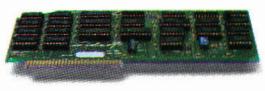

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LETTERS

Machine Language

In the April 1985 issue of *inCider*, Tom Smith asked about a book containing assembly-language programming examples. He might try *6502 Assembly Language Subroutines* by Leventhal and Saville, ISBN 0-931988-59-4.

Mark James
1318 Mohawk Street
Bismark, ND 58501

Tom Smith requested information (*inCider*, April 1985, p. 8) about books that show and explain actual source code, so that he could learn assembly programming. I know of two books that teach you how to program in assembly and list source code: *Machine Language for Beginners* and *The Second Book of Machine Language*, both by Richard Mansfield. They are quite easy to understand. The first contains a number of short assembly-language programs that teach you the basics. The second book explains assembly programming in greater detail.

Assembly language can be hard to learn. It's not like BASIC—you can't just look at source code and understand what all those little numbers and symbols mean. If you really want to learn assembly programming, don't be discouraged by the tutorial approach in these books.

Richard T. Brunsman, Jr.
3684 Krierview Drive
Cincinnati, OH 45248

*Tom and all you aspiring assembly-language programmers are in luck—*inCider *will soon be launching a tutorial column on this topic. Watch for it in an upcoming issue.*
—eds.

Copy Protection?

I know everyone is tired of hearing about the copy-protection issue, but an incident I just experienced needs to be aired.

Recently, I stopped by the Apple dealership in my town to look for an educational program for my 4-year-old son. After searching through what was on the shelf, I narrowed my choices down to two programs—one by Spinnaker and the other by Springboard, both of which I considered to have reputable products. Leaving the choice up to my son, I purchased the program by Spinnaker.

When I got home and tried the program, it would not boot. I took it back to the store for replacement, and the customer-service representatives successfully booted it on three different machines. They explained to me that Spinnaker's copy protection is so tight that if my disk-drive speed is off even a little, the program won't boot. So, how much to have my disk drive adjusted? Fifty dollars minimum. Fifty dollars so I can run this one game—no way.

It's pretty sad when a company goes so overboard in copy-protecting its product that a legitimate purchaser of the program can't run it.

Donald N. Cotabish
1824 Dawn Lane
Chambersburg, PA 17201

Tennis, Anyone?

I'm a member of a small tennis club and an owner of an Apple //c computer. We're looking for a program we can use to record our scores for both singles and doubles, and produce statistics relating to an individual's or team's performance.

I would appreciate hearing from you if you know of such a program and its availability.

Philip Carter
20 Steeplechase Avenue, R.R. 2
Aurora, ON L4G 3G8

Tennis Draw, from Market Computing, might suit your needs. Ac-

cording to The Apple Software Directory, *"for each of 21 events, Tennis Draw registers from 8 to 64 players. This program can be used for a single-elimination tournament. It creates a single-elimination random-draw sheet with preliminary matches and seeding byes using USTA regulations." Check out the wide variety of statistics programs available, and* The Apple Software Directory *or* Book of Apple Software, *too.* —*eds.*

In Praise of Muppets

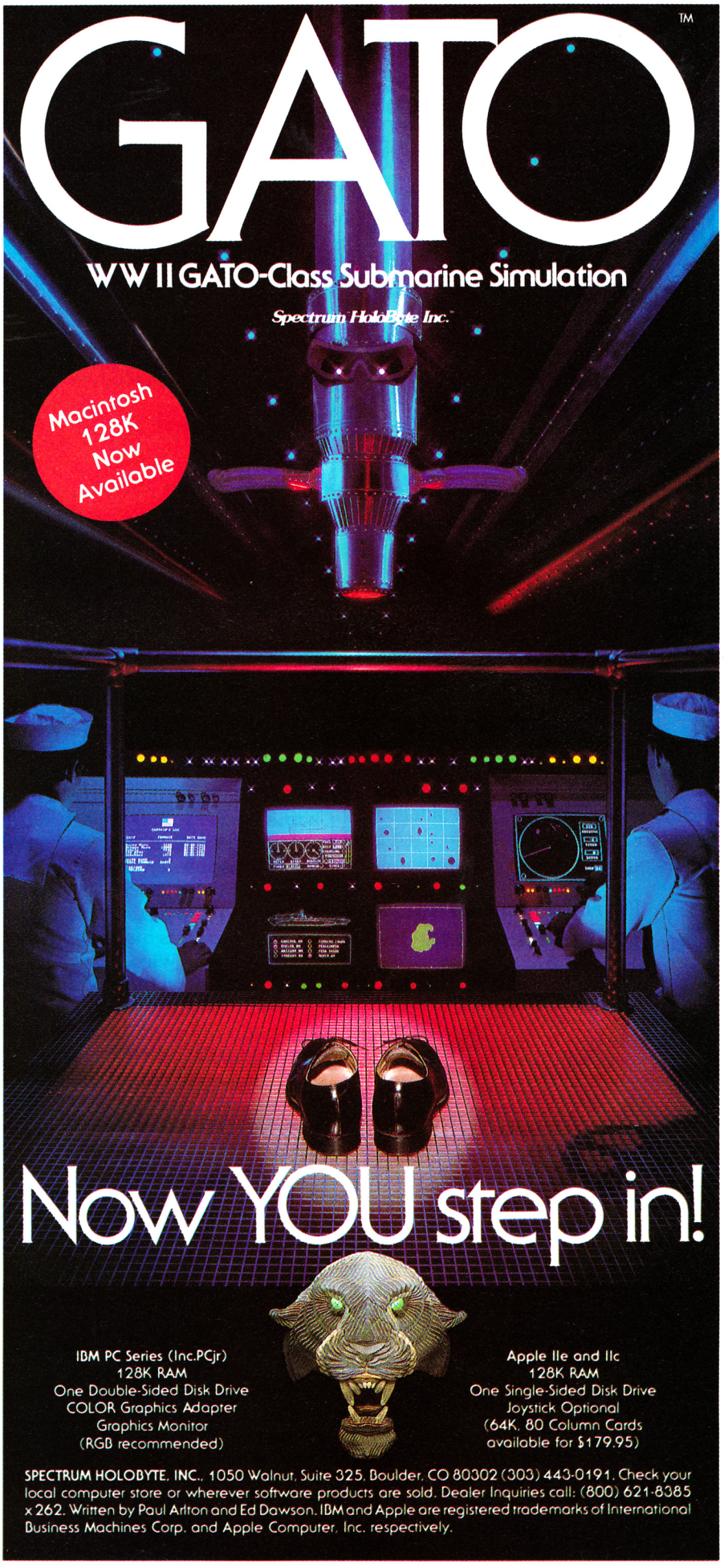
I am writing in response to the hardware review (April 1985, p. 98) titled "Muppet Learning Keys" (MLK). The physical description of the MLK and the explanation of its operation were very good. However, several portions of the review cast a cloud over this fine piece of hardware.

The review contains five references to the limits of the software. The author claims that all the MLK provides is a program that is "strictly an alphabet- and number-learning tool. . . ." This comment implies that the MLK can do nothing else—that the MLK has limited capability. Three points need to be mentioned:

1) The MLK is a piece of hardware and serves primarily as a device that may be adapted to specific applications. Koala Technologies provides some software to illustrate a number of uses.

2) The MLK is promoted as a first keyboard for children—this probably means kids from 2–4 years of age. The concepts with which these children can deal are very elementary, and the MLK demonstration package is acceptable for the age range indicated.

3) As briefly mentioned in the review, Koala Technologies is busy preparing other software for the MLK—as it has done with its KoalaPad.



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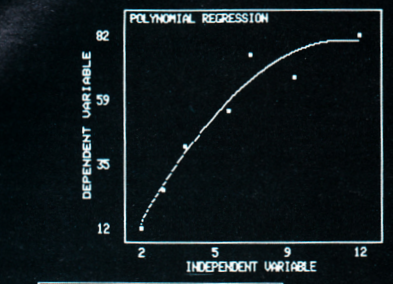

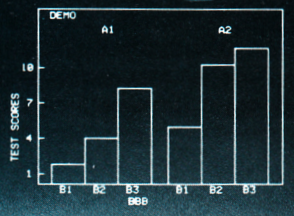

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LETTERS

Addressing the issue of children being at a disadvantage when they graduate to a real (QWERTY) keyboard, I can only say that anyone—child or adult—has the same problem when he or she first attempts to use a keyboard.

R.P. Pinckney
Lander College
Greenwood, SC 29646

Of Mice and Jane

You reviewed Jane software from Arktronics in the February 1985 issue (p. 108) of *inCider*. Is the mouse that comes with Jane (for the Apple II) the Apple mouse?

I am disappointed with the Jane software and I don't use it, but I would very much like to keep the mouse if it's supported by other Apple programs.

Joe Norman
429 Miller Avenue
Brooklyn, NY 11207

When Jane was introduced, some dealers packaged it with a Wico mouse, which is compatible with the Apple II family. The Apple mouse is a better choice for those who don't have a mouse yet, because it supports more Apple II software than the Wico.

While we're on the topic, we'd like to point out an error in the Jane instruction manual. On page 77, it states that you can back up the gray disk—however, you cannot, since it is copy-protected. If you send in your warranty card, Arktronics will send you a free backup. —eds.

Modem Magic

In your May 1985 issue, you printed listings for three file-conversion programs (p. 38), as well as other modem programs (pp. 34, 36, and 48). The articles ("Private Lines" and "Modem Battleship") state that you can use these programs with a Hayes Micromodem IIe. Can you also use those programs with any "Hayes-compatible" modem, such as the Apple 300 modem, or the Micromodem II? If not, could you provide listings for programs that will work with these modems?

Is there any program that lets an Apple II series computer with an Epson RX-80 printer print labels? Also, I really loved Lee Swoboda's "Using ProDOS" series—it was a great help.

David Seidel
2877 Cedar Canyon Court
Atlanta, GA 30345

The programs to which you refer do not work with "Hayes-compatible" modems. If we come up with enough programs that are compatible with those modems, we will print them in the future. Look for an RX-80 label program in an upcoming issue. And thank you for your comments on the "Using ProDOS" series. —eds.

Corrections

Weather Services International's address and phone number are incorrect as they appear in "*inCider*'s On-line Sampler" (June 1985, p. 18). They shoud read: 41 North Road, Bedford, MA 01730, (617) 275-8860.

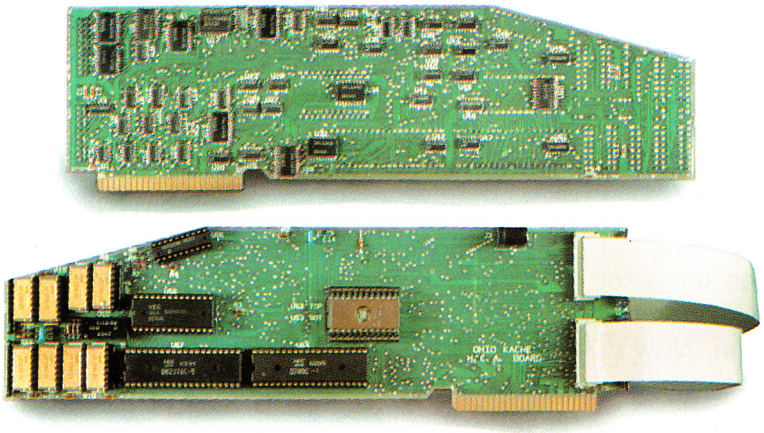
Time for a tune-up. In W.M. Miller's program, Should I Trade? ("A Classic Dilemma," July 1985, p. 20), the tables on page 22 are facsimiles—not exact copies of the printouts the program produces. The tables were typeset for typographical clarity. Also, the program listing contains a line error. On page 56, line 1360 should be 160.

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* inCider, *Letters, 80 Pine Street, Peterborough, NH 03458.*

THE KACHE BOARD GIVES YOU WHAT YOU'VE BEEN WAITING FOR TEN TIMES FASTER.

SPEED UP THE RESPONSE TIME OF YOUR MICROCOMPUTER BY AS MUCH AS 10:1.

Ohio Kache System's™ "Kache Board"™ effectively reduces the frequency of hard disk accessing, and consequently, the cause of most "waiting frustration"—mechanical latency. Apparent response time can be reduced by up to ten times since data requested already resides in cache memory. The Kache Board features a microprocessor that actually manages the operation of the cache memory buffers without drawing on your microcomputer's main processor. Data in cache memory is constantly purged to maintain 256K of the most frequently accessed data, combining the speed of RAM disk with the capacity of hard disk.



THE KACHE BOARD IS SUPERIOR TO RAM DISK.

The Kache Board offers performance that is superior to RAM disk for three primary reasons: data is automatically updated on the disk as it is changed, minimizing its vulnerability; data fetching from disk is transparent, eliminating the need to copy files; and cache memory retains only those files that are most frequently accessed, ensuring the greatest possible reduction in hard disk accessing.

SYSTEM COMPATIBILITY.

To date, the Kache Board is only compatible with Apple II+ and IIe systems with hard disk drive; however, boards for IBM, AT&T and Texas Instrument microcomputers are already in final testing stages and will become available later this year.

TECHNICALLY SPEAKING.

The Kache Board, a host adapter, is compatible with most Small Computer Standard Interface (SCSI) hard disk drives. Management of the cache memory buffers is carried out by a Z80 microprocessor which draws its power from an outside, custom tabletop power source (available as an optional purchase). Heat dissipation from the board amounts to approximately 6 watts.

SURFACE MOUNTED DEVICE TECHNOLOGY.

The functionality and intelligence of the 11" x 3¼" Kache Board is made possible by the technology of Surface Mounted Devices (SMD's). SMD's, tiny integrated circuits a fraction of the size and weight of conventional devices, are mounted on the underside of the board in a highly concentrated schema. This allows room on the top side of the board for the microprocessor, memory chips, custom integrated circuits and other components that, to date, are not available in SMD proportions.

EASE OF INSTALLATION.

The Kache Board is easy to install and can reside in any one of four slots: 4, 5, 6 or 7. In addition, a cable is provided for ease of installation to your 50 pin SCSI disk connection. The self-contained power source plugs into the Kache Board and relays power from any standard 110 volt electrical outlet.

AVAILABLE FROM MANUFACTURER ON A DIRECT MAIL BASIS.

The Kache Board is available from Ohio Kache Systems (OKS) on a direct mail basis only. A rigorous 48 hours of testing is completed on every unit prior to shipment. Nonetheless, Ohio Kache Systems offers a 90 day warranty on all components and labor as well as a 30 day trial period. If the Kache Board doesn't perform as we say it will, return it to us for a full refund.

ORDER TODAY

The OKS Kache Board comes complete, ready for installation in your Apple IIe or II+ for $695.00. You can order yours by calling toll-free: **800-338-0050**

Phone orders may use Visa or MasterCard. To order by mail, write to the address listed below. For faster service use Visa, MasterCard, bank or certified checks. Please allow 18 days for delivery of shipments accompanied by money orders, company or personal checks.

Kache Board (256K)	$695.00
Optional Power Source	$35.00
6 Ft. Shielded, 50 Pin Extension Cable	$40.00
6 Ft. Non-Shielded, 50 Pin Extension Cable	$30.00

MasterCard VISA

Prices include shipping and handling. Ohio residents please add 5.5% sales tax.

For further information on the Kache Board, Ohio Kache Systems Corp., or the compatibility of your hard disk drive, please contact us at (513) 746-9160.

Ohio Kache Systems, Corp.
75 Tahlequah Trail, Dept. 11,
Springboro, Ohio 45066-1154

OKS

Circle 37 on Reader Service Card.

Test-drive software before you buy.

Buying software can be a tricky proposition. Unless you know someone who has used a given product, you don't have much to go on. Now there's an easier way.

You can test drive commercial Apple II software from some of the biggest names in the business on the Demonstration Section of *inCider*'s Bulletin Board.

It's very simple to do. All you need is a modem. (If you don't have a modem yet, the money you save by testing software could pay for one.) Dial up *inCider*'s bulletin board at **603/924-9801**. Access the demonstration section and you will see a menu of software for you to try. It's all fun from there. Now you can experience some of the best Apple II software before you commit your dollars.

Photo 1. If you're new to the *inCider* BBS, you must answer the questions shown in Photo 1 when you first log on, using your own name and phone number. You should enter NEW when asked for a password.

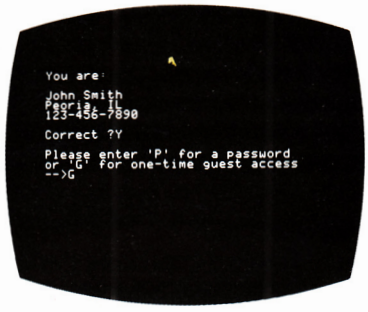


Photo 2. Next, you're asked to confirm the information you've entered. Now, enter G (for guest access) to complete the log-on procedure.

Photo 3. You're now in the *inCider* BBS. Enter DEMO to access the software demonstration download section.

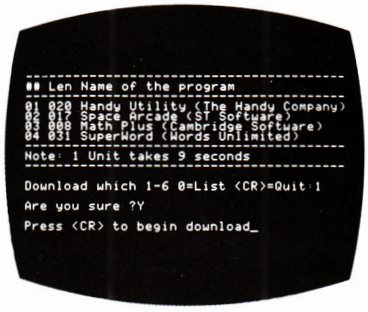


Photo 4. Choose the program you want to download and follow the instructions. Make sure that your communications software is set up to receive a file. Once you have completed downloading, you EXEC the files you received to view the demos.

Note: Once you've finished downloading, you can become a regular user of the *inCider* BBS by entering P at the Command prompt!

Software Demos on **inCider's** BBS.

Manufacturing Company, Inc.

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Curtis Electronic Surge Protection costs less and is warranteed for a lifetime of protection, which should make you and your computer very happy.

With our Diamond's advanced circuitry and semiconductor technology, we promise to honor the laws of electricity. To protect your computer hardware and software from dangerous overvoltage "surges, spikes and glitches" that can create disk read/write errors, destroy data and create instant hardware failure or drastically shorten system life. Diamond's color also blends perfectly with any modern office or home environment. If the Diamond is just not your type, come over some time and meet our other precious jewels — Ruby, Emerald, and Sapphire.

Curtis products are available nationally from leading Dealers, Distributors and Retail Chains. In Canada: Micro-Computer Products, P.O. Box 235, Ajax, Ontario, Canada L1S 3C3, (416) 427-6612.

For the Dealer or Distributor nearest you call Curtis at (603) 924-3823.

Curtis Manufacturing Co., Inc.
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Peterborough, N.H.
03458

Diamond SP-1

Switched surge protector; adapts duplex outlet; six outlets.

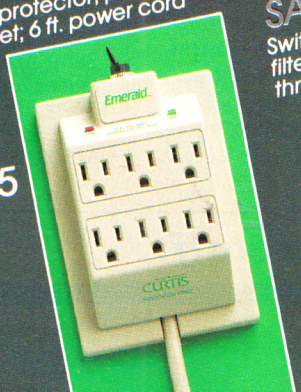
SPECIFICATIONS: • 6 Outlets, 15 Amps Total • 125 Volts, 1875 Watts • Operating Temperature: −40°C to +85°C • Peak Pulse Power Dissipation @ 25°C, 585,000W for 8/20 Micro Sec. • Maximum Clamping Voltage @ Test Current 50A (8/20 sec.) 340V Clamping Occurs Line to Line (normal mode) and Line to Ground (common mode) • Clamping Response Time: 1 Nanoseconds (1 × 10 / −9 sec.) • Dielectric Test: 3000VAC 60 Sec. • Forward Surge Rating @ 25°C, 1440 Amps For 1/120 Sec.

$49.95

EMERALD SP-2

Switched surge protector; plugs into duplex outlet; 6 ft. power cord with built-in circuit breaker/switch; six outlets.

$59.95



SAPPHIRE SPF-1

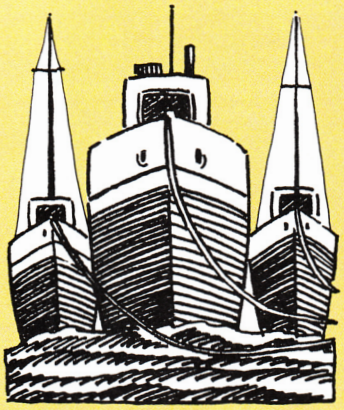
Switched surge protector; EMI-RFI filtered; adapts duplex outlet; three outlets.

$79.95

RUBY SPF-2

Switched surge protector; EMI-RFI filtered; plugs into duplex outlet; 6 ft. power cord with built-in circuit breaker/switch; six outlets.

$89.95



Seaside BBS

You'll get your sea legs in no time with The Wharf, a free bulletin-board system based in New Egypt, New Jersey. Operated by George Karr, a public-school teacher, and Ken Buchholz, a telecommunications-management consultant, The Wharf is on line 24 hours a day, every day.

Besides a general-news section, the BBS features four special-interest groups: Apple Harbour for Apple and Franklin users; The Commodore's Ship for Commodore owners; The TRS Boat House, dedicated to TRS and Radio Shack; and Tari Cove for Atari enthusiasts. Each SIG provides discussions of operating systems, telecommunications, programming, hardware and software, and industry news. According to Buchholz, Apple Harbour has been busy with questions on ProDOS, telecommunications hardware and software, and DOS 3.3 PEEKs, POKEs, and CALLs.

Among The Wharf's five forums are Wharf-Side Trivia/The Answer Sheet (a dual-base trivia game) and Huck Finn's Fishin' Hole (an area devoted to sport fishing).

Get your feet wet and call The Wharf at (609) 758-8653.

INSIDE OUT

● **Rearranging. . .** Apple Computer, Inc.'s recent restructuring is a positive development for the Apple II family. So says Tim Bajarin, an analyst with Creative Strategies. Bajarin anticipates an end to the sibling rivalry between the Macintosh and II divisions, an upgrade of II products, and a 16-bit machine that will serve both education and such vertical markets as law and agriculture.

● **The Waiting. . .** The long-rumored upgrade board for the //e has a new CMOS chip that will provide ProDOS-Apple DOS compatibility, according to an industry source who has seen a demonstration of the new board. The board was originally scheduled for release in April.

● **Testing, Testing. . .** Student test scores improved dramatically—as much as 30 percent in some cases—at an educational test site in Arizona where Apples provided individualized, remedial instruction.

● **Hello?. . .** Apple and Pacific Bell are cooperating in a high-tech experiment, and the results could radically change the amount and type of on-line information available to personal-computer users. Pacific Bell's technology (patent pending) is supposed to combine voice and data signals to allow separate voice conversations while digitally sending one medium-speed and four low-speed transmissions over a single phone line.

● **Apples in the Orient. . .** Apple will ship Macs, II's, and peripherals to China this fall. A three-part agreement with the People's Republic of China specifies that Apple will help develop ideas for using microcomputers in education.

● **Au revoir. . .** No sooner had Lotus Development Corporation acquired specific assets from Software Arts than it announced plans to stop producing the classic financial-analysis program, VisiCalc. Credited with putting personal computers in offices, VisiCalc appeared in 1979 and sold more than 800,000 copies. Lotus says it will support VisiCalc customers for two years.

—Wendy Lea McKibbin
***inCider* staff**

Piecing It Together

June's restructuring of Apple Computer Inc. left many people wondering what would happen to the company's core, especially since Chairman Steve Jobs has been removed from day-to-day operations. According to securities analyst Eugene Glazer of Dean Witter Reynolds in New York, Apple's new functional structure brings it more into line with conventional corporate America. But he doubts that the Cupertino-based company is in a hurry to shed its image as the innovative alternative to IBM.

"I don't think [Chief Executive John] Sculley wants to go too far; I don't think he wants to make Apple into an IBM, because the company needs the differentiation in the marketplace," Glazer says.

A former Apple executive notes that the company's new direction, however, is taking "the obvious path instead of the unexplored one." He sees Apple's emerging conservatism as the first sign of "the lack of innovation characteristic of most large corporations." Today, he says, the firm is moving far from its original freewheeling, "try anything" gospel.

The executive comments that because Apple grew at a breakneck speed, it didn't have enough time to be selective about new managers and then school them in the company philosophy.

"The breakdown in culture began when we had lots of new people coming in who were given tremendous responsibilities in a very short amount of time," he says.

The former Apple employee applauds the end of the territorial skirmishes between the Macintosh and II divisions, but he indicates that Apple is now "definitely more stodgy."

—W.L.M.

Send Apple-related news releases and press photos to The Cider Press, inCider, *80 Pine Street, Peterborough, NH 03458.*

by Cynthia K. Carr,* inCider *staff

On-line Yellow Pages

Anybody—a manufacturer, a distributor, a service company—who sells to businesses should use the Instant Yellow Pages, a service from American Business Lists that provides on-line access to a data base of more than six million businesses across the United States.

Looking for the names, addresses, and phone numbers of all the doctors in San Diego? How about a list of restaurants in New York? The Instant Yellow Pages is the place to start. With this service, you can retrieve business information 24 hours a day, seven days a week.

Started in March 1984, the Instant Yellow Page Service is divided into 400 major classifications ranging from physicians to restaurants. President Jack Betts says that while complete Yellow Page listings have been compiled for only seven states, American Business Lists is tackling the remaining states one by one. Currently, 4900 people and companies subscribe to the on-line service.

You can use any printing terminal, communicating word processor, or computer with a modem to access the Instant Yellow Page Service. In addition to a $15 monthly subscription fee, charges include $1 per minute for connect time and 10 cents per name. As a special introductory offer, American Business Lists will provide $100 worth of free usage over three months and a 30-day trial guarantee. For details, contact American Business Lists, P.O. Box 27347, Omaha, NE 68127, (402) 331-7169.

Write the Great Story

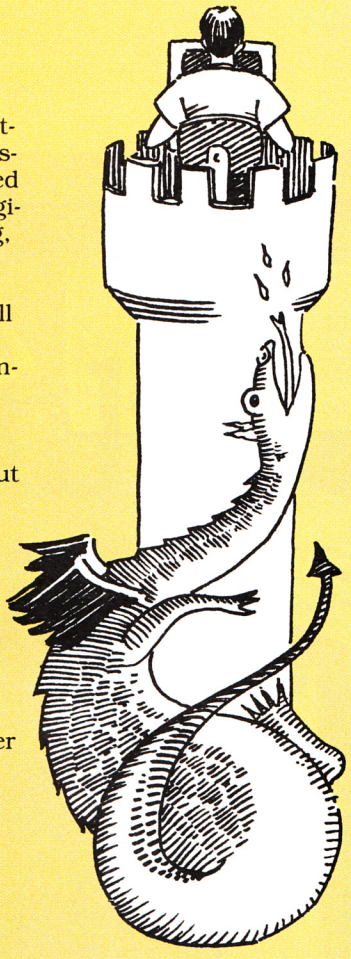
Everyone wants to write the Great American Novel. And Woodbury Software and Grolier Electronic Publishing are using that lure to improve children's writing and reading skills in the Great American Writing Contest. The contest gives children in three age groups the chance to write, edit, and print their own novels with Woodbury's PlayWriter Series.

According to Michelle Kaye, director of marketing for Woodbury Software, the contest encourages children to write by "continuing to conjure up more excitement for children." Kaye explains that "no one will be disappointed, [since] every child who enters will receive a prize."

Each age group must write about a different subject. Fourth grade and under must explore Adventures in Space; the fifth- and sixth-grade group delves into Castles and Creatures; and the seventh-grade-and-up category must develop a Mystery. Entries will be judged according to content, originality, grammar, spelling, and overall effect.

Three winners—one from each age group—will receive more than $1000 apiece in prizes and a computer for his or her classroom. Not only will their books be published by Grolier and Woodbury, but the winning authors will participate in radio and television interviews.

Woodbury plans to distribute contest entry blanks through schools and retailers carrying the PlayWriter series. The Great American Writing Contest runs from October 15, 1985 to January 30, 1986. For details, write to Woodbury Computer Associates, 127 White Oak Lane, Old Bridge, NJ 08857. Perhaps a new Hemingway awaits.



Illustrations by Katherine Mahoney

Calendar

September

5-7

THIRD PERSONAL COMPUTER FAIRE
San Francisco, CA
contact:
David Small
Computer Faire
181 Wells Avenue
Newton, MA 02159
(617) 965-8350

7-8

COMPUTER SUPERMARKET
San Mateo, CA
contact:
Jim O'Donnell
Microshows
1209 Donnelly Avenue
Suite 203
Burlingame, CA 94010
(415) 340-9114

12-13

THIRD ANNUAL COMPUTER VERTICAL MARKET CONFERENCE
White Plains, NY
contact:
Wendy Engelberg
Frost & Sullivan
106 Fulton Street
New York, NY 10038
(212) 233-1080

17-18

COMM/MART
New York, NY
contact:
Louise Myerow
CW Conference Group
375 Cochituate Road
Box 880
Framingham, MA 01701
(800) 225-4698
(617) 879-0700

27-29

THE BYTE COMPUTER SHOW
San Francisco, CA
contact:
Linda Yogel
The Interface Group
300 First Avenue
Needham, MA 02194
(617) 449-6600

ANNOUNCEMENTS
Tri-County
User Group
Meets Tonight at 8 p.m.
Join Up!
LOST:
Head Edgewood
Tennis Racket at
Adams Playground -
Call 924-3097
LAWNMOWER
FOR
SALE
233-5811
FOR SALE:
1984 BMW 320
loaded - in excellent
condition -
call 525-3530
BABYSITTING
IN MY HOME
CALL:
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JUST IN TIME FO
BIRD & CO.—Home
(if we can't do it,
Let us fly your errand
HOME:
ENTERTAIN
ANYTHING WE
Phone: (603)847-3
The Learning Center For Children
14th ANNUAL AUCTION/BAZAAR
CO-ED
Tri-County
Apple
User Group

Not for Hackers Only

by Cynthia K. Carr, inCider staff

Join the ranks of the enlightened. Your local Apple user group is the ultimate information resource for everyone from duffers to hackers.

It takes two to tango—and at least two to start an Apple-computer user group, the latest in information resources. Some members claim it's a new social structure. Some say it's a meeting of minds. Others emphasize that it's a chance to talk. Whatever it is, the user group is a growing faction of our computer culture. So before you knuckle under to those high-tech complications created by ProDOS, Pascal, or WPL, check out a user group.

Just what is a user group? Basically, it's a group of people with the same type of computer system who meet to share information, ideas, and problems. Here at *inCider*, we tracked down more than 200 Apple-computer user groups across the United States and Canada. (See our listing on page 105.) Although united by a common cause—or computer, if you will—each group is as distinct as its individual members. The numbers of the rank-and-file range from a handful of Apple fans to 30,000-plus enthusiasts.

People join user groups because "they're lost and have nowhere else to turn to," says Art Blumberg, club librarian for the Maryland Apple Corps. Many "discover" a group after exhausting other sources of information—manuals, computer dealers, friends—in search of answers.

"I find there are probably as many different reasons [why people belong] as there are different people who join," says Jonathon Rotenberg, president of the Boston Computer Society, which is considered the largest, most prestigious user group in the country.

Who Belongs?

On average, user groups attract white, middle- and upper-class, professional males in their 30s. Blumberg estimates that his members have spent approximately $2000 each on their systems—not including software. And, in keeping with the draw for be-

ginners, the bulk of the membership is classified as novice to intermediate users.

Often seen by outsiders as an ostentatious, intimidating clique of technical aficionados, user groups are actually an assemblage of amateurs. A user group is "never for hobbyists or hackers," Rotenberg explains. "It's an organization for everyone—[one that] makes people feel comfortable about personal computers."

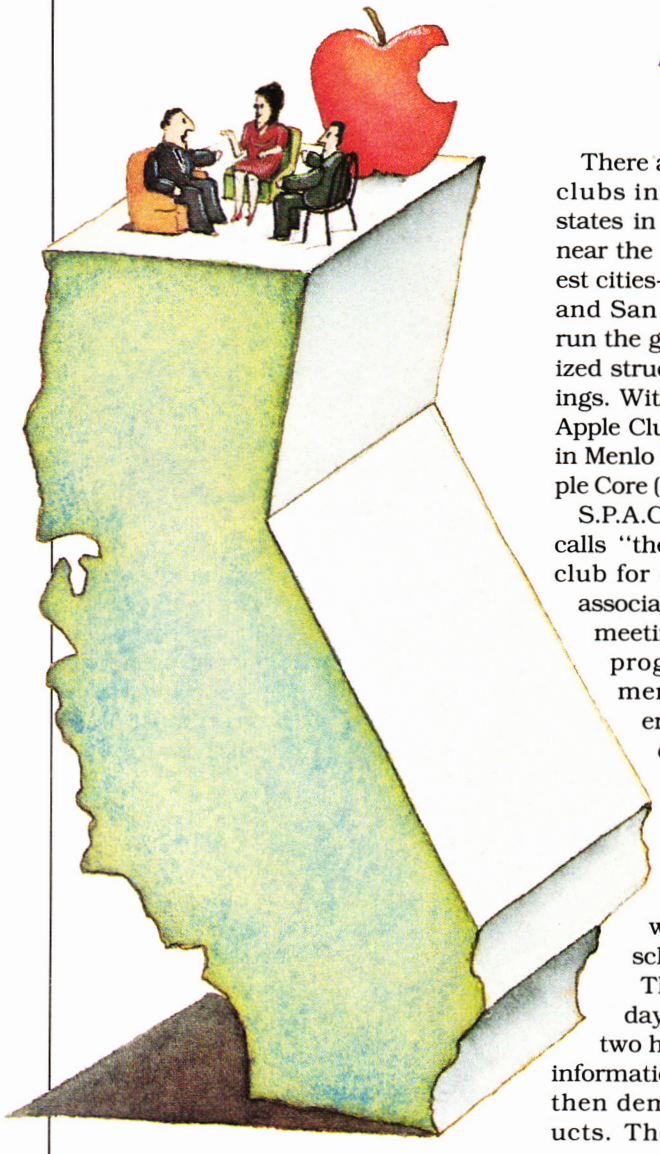
Most groups, in fact, claim a humble heritage. Take the Maryland Apple Corps, for example. In 1979, the club started with 13 members; today, it lists 85 on the roster. "We're just a bunch of people who can't meet at the local computer store anymore—we just got big," Blumberg says.

Size is only part of the attraction. As groups grow in numbers, so do their services. Common benefits of user groups include public-domain software exchange, product demonstrations, guest speakers, newsletters, magazines, bulletin-board systems, and technical-help hot lines—anything that's support-oriented. But regardless of group size, the credo—helping people learn about their computers—remains the same.

Name the Time and Place

You can find user groups in libraries, classrooms, meeting halls, family rec rooms, coffee shops, computer stores, even on bulletin-board systems and on-line information services such as CompuServe and Delphi. (See the sidebar on page 20 for more about one such on-line membership, the Micronetworked Apple Users Group.) The place isn't as important as the people.

Members aren't looking solely for technical assistance. Gordon Andrews, former president of The Apple Resource Team in Richmond, Virginia, says members want current informa-



A Tale of Two User Groups

There are almost as many Apple clubs in California as there are states in the Union. Concentrated near the Golden State's three largest cities—San Diego, Los Angeles, and San Francisco—user groups run the gamut from highly formalized structures to informal gatherings. Witness the South Peninsula Apple Club Enthusiasts (S.P.A.C.E.) in Menlo Park and the Original Apple Core (OAC) of Los Angeles.

S.P.A.C.E. is what one member calls "the equivalent of a hot-rod club for computer owners." The association began in 1978 as a meeting place for engineers and programmers. The original members were a high-powered band who wrote their own programs, Chairman David Harris recalls. These advanced members outgrew the club; today's constituency reflects business owners, writers, consultants, and schoolteachers.

The club meets one Tuesday evening each month for two hours. Members exchange information during the first hour, then demonstrate various products. The relaxed environment gives the meeting an almost party-like atmosphere.

People may trade technical tips during the free-flowing discussion, but most people want advice concerning future equipment purchases. At the May meeting, one member sought a high-quality, low-cost joystick. Another needed suggestions for an easier-to-use word-processing package than Apple Writer II. Another needed an extra disk drive, while someone else wondered if he could buy an Apple card with an attachment for a video camera.

Going the Distance

A 30- to 40-mile trip doesn't deter some people from attending this swap meet of ideas. One S.P.A.C.E. member says he regularly travels 100 miles roundtrip to make his three Apple club meetings. The effort, though, is "well worth it."

This man represents the *migrant membership*, which General Manager Karen Zinsmeister of the International Apple Core says is fairly consistent worldwide. At least half of those who frequent the S.P.A.C.E. meetings belong to one or more additional clubs. Harris explains that by attending other clubs, Apple

tion about the industry and evaluations of new products. Blumberg observes that people are more interested in topics that specifically concern their own needs: What education software is available? When will the next Wizardry series be released? Is ProDOS the way to go?

That Certain Ambience

Depending on the group's personality, meetings may assume a relaxed or a methodical style.

"We keep things informal and personalized," Blumberg says of Maryland Apple Corps monthly meetings. "If we got too much into the heavy-duty *Robert's Rules of Order*, we'd turn people off."

He notes that smaller groups have at least one advantage over larger ones—you're guaranteed more personal attention. Also, meetings "get down to the nitty-gritty" issues.

But even Blumberg acknowledges the draw of larger groups, such as Call-A.P.P.L.E. As an umbrella user group for Apple clubs worldwide, Call-A.P.P.L.E. provides a forum for its 30,000 members to exchange information, primarily through its BBS, with a wider variety of people than they'd encounter in a limited local group.

Sometimes, though, organizations become too structured for their own good. When meeting agendas shift from new-product demonstrations to executive-board business sessions, Andrews says newer members feel inadequate because they're not getting anything out of the meetings. Even veterans may become frustrated.

"Our group is becoming too structured, too concerned with *Robert's Rules of Order*," he insists. Andrews indicates that the more dissatisfied members become, the less likely the organization is to survive. Splinter groups—such as the eight people who meet in Andrews' basement to talk about programming—may also materialize in an attempt to recapture the user-group philosophy. The movement symbolizes a return to basics.

THE User Group

Structure doesn't have to mean rigidity and depersonalization. The Boston Computer Society, with its 16,000 members and 44 special-interest and user groups, represents the ideal. Started in 1977 by Jonathon Rotenberg, the BCS epitomizes the ultimate user group.

"The BCS began as a Boston organization and grew way beyond anything ever imagined," Rotenberg says. "First and foremost, BCS is a people organization. Some think it's also a professional network, educational institute, social opportunity. . . . It's having someone there to help them when they have a problem."

Computer jargon isn't permitted at BCS meetings. Since most newcomers know little or nothing about personal computers, they would feel intimidated by a high-tech vocabulary, according to Rotenberg. Guest lecturers receive a guide to speaking before making their presentations.

The BCS has come a long way since its first meeting in a high-school library. "The BCS has come to represent the voice of the consumer. It has established a strong reputation because of the quality of service it provides and the influence it has in the industry," Rotenberg says.

users can garner extra information needed to build informal networks that provide support outside one association.

Do Friends Let Friends Pirate Software?

Because people share hospitality and technical advice at the user-group meetings, Harris says there's social pressure to share software, too.

"It [software piracy] probably goes on, but never during our meetings because that would endanger our group," Harris says. He does admit that he addresses the issue "gently" and has mixed feelings about the best way to handle piracy.

Russ McCaffrey, president of the Original Apple Core, entertains no such doubts about software sharing.

"We're 100 percent against piracy and don't even encourage making back-up disks for personal use during our meetings," he says. "Anyone caught reproducing software while in the club would be asked to leave for the evening."

The Original Apple Core, which is almost three times the size of S.P.A.C.E., differs from its neighbor to the north in style and membership. Although both clubs started at about the same time, the OAC is a tightly run group with an annually elected board of directors. The club regularly offers formal classes in Microsoft BASIC, Applesoft, and various CP/M programs. OAC also provides a disk-of-the-month club, a public-domain software library, and an educational program.

Monthly meetings, which sometimes last four hours, open with announcements followed by new-product reports and hardware and software demonstrations conducted by representatives from manufacturers and publishers. And while questions are answered throughout the evening, McCaffrey rarely allows the meeting to lapse into an unstructured forum like S.P.A.C.E.'s easy-going sessions.

McCaffrey reports that the OAC's membership ranges from novices to experts. The group also attracts consultants looking for new clients. The OAC is unusual, though, because it's heavily weighted with family memberships and boasts a 30-percent female membership.

McCaffrey, who spends 60 to 80 hours each month working for the club, says his ambition is to significantly improve the computer literacy of Apple owners.

"It's safe to say that our members are computer-aware when they join the group," McCaffrey states. "But they need to become computer-literate so they can do something with their systems other than shove in off-the-shelf software. We work hard to help them get maximum mileage out of their computers."□

—Wendy Lea McKibbin
***inCider* staff**

That reputation translates as clout—especially when companies like Apple use the BCS to formally introduce their products to the public.

Rotenberg attributes the organization's success to its volunteers. There are only seven paid staff members, and he says 95 percent of the work is done by about 350 volunteers.

While smaller groups would beg, borrow, or steal for volunteers, the BCS has learned how to make the most of its ranks. Rotenberg stresses it's important to keep people enthusiastic, their energy level up. The secret is in making "people feel a part of what's going on." The BCS has a reward system for its volunteers—putting in ten hours of volunteer work a month entitles a member to special training sessions, workshops, parties, and recognition.

But despite a high level of organization, even the BCS feels some growing pains. To counteract rapid growth at the expense of its members, the BCS has implemented a new internal structure: board of directors, board committees, internal services, member services, and public services. Each branch is subdivided into smaller committees and areas of interest. The idea is to make people feel involved in the decision-making process. According to Rotenberg, the restructure has helped the BCS quell the internal resentment that often accompanies an organization's rapid growth.

While many user groups may look to the BCS as a role model, Rotenberg doesn't advise others to create similar versions. "To do it right would take an incredible amount of time and commitment. It fundamentally would take a great deal of work and persistence," he says.

Outside Interests

While some user groups are primarily concerned with the needs of their members, other groups put members' talents to good work in the community. The Tulsa Computer Society and one of its special-interest groups, the Handicapped Users Group (HUG), has designed programs for paralyzed people so they can operate Apple com-

MAUG: The User Group Goes On-Line

Why join a user group? User groups provide a forum for gathering and sharing information, unraveling snarls in a program, and getting the inside track on the latest hardware and software. Geography poses no constraints, thanks to MAUG, the Micronetworked Apple Users Group, a club that links Apple owners coast to coast via the on-line information services CompuServe and Delphi.

MAUG offers its subscribers four main communications features: messaging, bulletins, real-time conferencing, and information storage and retrieval. The messaging facility, which lets members store and read electronic communiqués to other MAUG participants, can be a help line for new users or a vehicle for getting in touch with thousands of "pen pals." And MAUG maintains a file on its members that catalogs them according to name, state, and interests, so locating other users of kindred tastes and comparable levels of computing ability is effortless.

You can create messages of up to 96 lines or 2500 characters—whichever comes first—privately or publicly. (In the latter case, anyone with similar interests can "view" a conversation.) For storage and retrieval of messages, you can currently choose from nine special-interest groups (MAUG can handle a maximum of 11): business, software, hardware, programming/systems, AppleWorks, games and graphics, community square, Apple ///, and telecommunications. If you're having trouble getting a printer to work with a new piece of software, for example, you can log on to MAUG and send out an "SOS" under the "software" heading. Or an Apple /// owner who's discovered a new product can go on line to announce the windfall to fellow users in search of help.

For more interactive communication, MAUG provides real-time conferencing. Members can choose from the same nine categories that partition message storage and retrieval. Each topic has two channels, or "rooms" where discussions take place; conference participants can view the conversation or take an active role.

MAUG's system operator/administrator regularly posts bulletins, which contain such items as announcements of on-line conferences, membership notices, and information about MAUG's Data Library. The library maintains files in each of MAUG's nine topical areas; you can either scan them—the library is a great place to browse—or download them to your Apple. Members can also upload files to the library, although the system operator/administrator reviews them before integrating them into a data base.

If you own an Apple system with modem and are interested in "talking" with other Apple enthusiasts, check out a new kind of computer club—the Micronetworked Apple Users Group. For more information, call CompuServe in Columbus, Ohio (800-848-8199) or Delphi in Cambridge, Massachusetts (800-544-4005).□

—Wendy Lea McKibbin
***inCider* staff**

From Origin, creators of the Ultima™ series,
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MOEBIUS

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A danger-filled adventure through a complex and colorful Oriental world of magic, mysticism and intrigue.
By Greg Malone.

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Moebius, the fabled deity of the island kingdom of Khantun, has chosen you, his disciple, to recover the stolen Orb from the renegade Warlord and prevent the destruction of the universe.

You will journey through the ascending planes of Earth, Water, Air and Fire. At each level your challenges increase in difficulty, demanding greater courage and cunning. All of your martial arts skills will be required to survive the ninja-like assassins who seek to foil your quest. Sword-wielding rebel guards will test your blade every step of the way. And watch out for wild beasts that stalk the forests!

Local villagers can help, but beware—the wrong approach will frighten them away, leaving you in a world where starvation looms ever-present. Wise use of magical charms, prayers and fireballs is essential in reaching the final confrontation with the treacherous Warlord—where victory brings recovery of the long-sought Orb of Celestial Harmony. Good luck!

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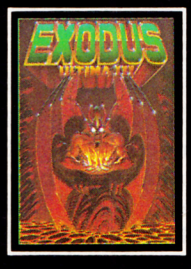

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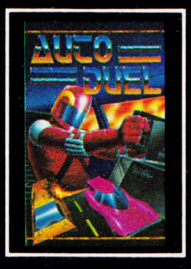

AUTODUEL™ is a futuristic, fast-paced strategy role-playing game where the right of way goes to the biggest guns.

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Ultima is a trademark of Richard Garriott/Moebius is a trademark of Greg Malone
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puters. President Linda Gail Christie says the 450-member group also organizes public-service projects for the Tulsa Rehabilitation Center and a local special-education school system.

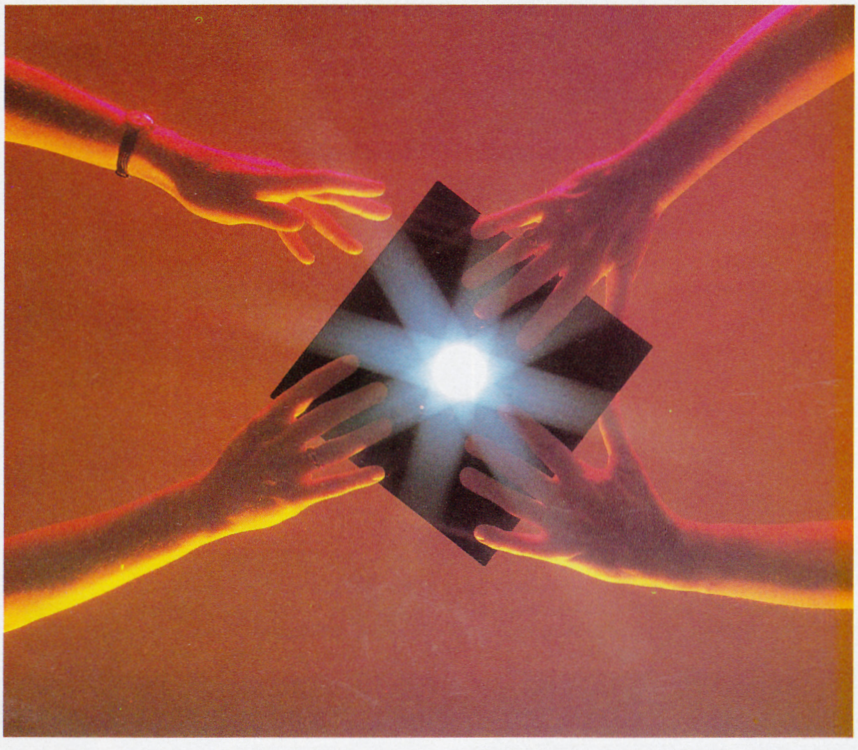
"Through HUG, everybody gets together and shares their expertise for a common cause. And with HUG, they're a solution looking for a problem," Christie says. "Those who donate time really don't need thank-you's. They get their kicks out of helping the handicapped person—even if they don't know that person."

But even groups with a "cause" may succumb to internal problems. Christie says members pay a $10 fee, $1 of which is allocated to one of 15 special-interest groups. Since these smaller groups are "where the action is," members resent that only a small percentage of their dues goes to the group with which they're most involved. Christie explains that in addition to the SIGs' stipends, the Tulsa Computer Society's budget covers its newsletter, BBS, administrative costs,

Public Domain's Greatest Hits

One of the prime functions of user groups is the distillation and distribution of public-domain software. When an author consents to give up his or her copyright on a particular program, that software becomes part of the public domain. You can buy a public-domain program for little more than the price of a disk, and use it, modify it, or copy it to your heart's content. The only thing you can't do is include it as part of a copyrighted commercial program.

The quality of public-domain software varies from brilliant to bogus. I've recently spent a few weeks trying out scores of public-domain programs, and I've come across quite a few gems. Check out the public-domain library of your local user group, or write to the distributors listed in the accompanying sidebar "Sources of Public-Domain Software." If you've never taken advantage of the plethora of almost-free software (an average of $5 per disk) available for your Apple, you're in for a pleasant surprise.



Freewriter

Paul Lutus, creator of Apple Writer, the most popular Apple II word processor, has released a ProDOS-based word processor called Freewriter to the public domain. His new package has proven to be a favorite of public-domain devotees.

Freewriter consists of a text editor and print-formatting program (called, appropriately enough, Printer). The text editor contains most of the features you would expect to find in the editor portion of a commercial word processor. You can load and save text files, perform block moves and automatic search and replace, and embed printer commands; you can move easily through text using the cursor keys; and you can change the width of your document to match the width of your display. It isn't Apple Writer, but then it isn't priced like Apple Writer, either.

Freewriter's weakest feature is its print-formatting program. Printer lets you set margins and print page headers, but that's about it. It's certainly not the ultimate formatter, but it's a "quick-and-dirty" way to print the files you create with Freewriter. On the whole, I think the Freewriter editor and Printer are the best programs in the Apple public domain.

XMODEM

Software in the Apple public domain is not limited to DOS 3.3 and ProDOS—you can also buy programs that run under Pascal and CP/M. One of the best of the latter is XMODEM, a powerful file-transfer program that uses the Christensen protocol. XMODEM has been around for years and has become the standard communications program for CP/M machines. You can find versions of XMODEM for many popular

and the like. Contributing to the problem, according to Christie, is the fact that many people attending the SIGs aren't members of the Tulsa Computer Society. "We don't have a symbiosis," she adds, in which the main organization and its subgroups mutually support one another.

Because of this, Christie says, the Tulsa Computer Society has a 50 percent turnover rate: "We have no trouble attracting members, but we have trouble keeping them."

Accentuate the Positive

Despite the problems, the philosophy behind the user group—the ready availability of non-threatening help—keeps the spirit of membership alive.

"Since we started [the Maryland Apple Corps], we found one thing that tends to be universal," Blumberg notes. "People don't know what they're doing and they don't want to hurt [the machine] while they're doing it. We were all at that point once. And we provide that [necessary] help."■

Apple modems and interface cards, including the Hayes Micromodem, the Apple-Cat modem, and the Super Serial Card. If you use CP/M on your Apple, then you need XMODEM.

Eamon Adventures

If you're an adventurer seeking new worlds to explore, take a look at the Eamon Adventures, a series of games in the Apple public domain. I'm not talking about four or five scenarios here. The Eamon series consists of more than 70—enough to keep a hard-core adventurer busy for a lifetime. If you're not satisfied with simply playing, you can get a disk that lets you create your own Eamon adventures. You can join Eamon clubs and subscribe to Eamon newsletters—the fun never stops with Eamon Adventures.

Utilities

The list of good utilities you can find in the public domain is long indeed—DOS disk-zap software, setup programs for just about any printer, and many hard-to-find Pascal device drivers, among others. Since utilities from different suppliers have different names, I won't specify titles, but every source of public-domain software carries versions of these and many other types of utilities.

Diversi-DOS

Strictly speaking, Diversi-DOS is not a public-domain program. It belongs to a growing category of software called *personal-domain* software. Like a public-domain program, Diversi-DOS is available for little more than the cost of the disk. Unlike public-domain authors, however, the suppliers of Diversi-DOS ask that you send them a licensing fee if you like the program and use it on a regular basis.

Diversi-DOS is a substitute for DOS 3.3. It significantly cuts the time it takes your computer to read from and write to disk, while maintaining compatibility with programs written for DOS 3.3. Diversi-DOS is an excellent program, and it demonstrates how individuals and small companies can make their presence felt in a market that is increasingly becoming the domain of large corporations.

Star Trek

I couldn't end a roundup of my favorite public-domain programs without a mention of the many versions of Star Trek you can find. None of these games is terribly exciting, but they appeal to the armchair Captain Kirk in all of us. (Come to think of it, Kirk was an armchair captain.) Until Jerry Pournelle releases the super Star Trek game he has been promising (or threatening) for so long, you can't do better than a voyage through the cosmos courtesy of the Apple public domain.□

—Bob Ryan, Technical Editor

Sources of Public-Domain Software

All large user groups, and most small ones, maintain public-domain libraries. (Some clubs charge non-members a higher price than members.) And, the sole business of some organizations is the distribution of public-domain software. To prepare "Public Domain's Greatest Hits," I obtained software from the following sources—the list is by no means complete, but it's a great place to start:

A.P.P.L.E. Co-op
PDS Department N
290 S.W. 43rd Street
Renton, WA 98055

LOGIC Disk Copy Service
P.O. Box 696, Station 'B'
Willowdale, Ontario M2K 2P9
Canada

Pandora Software
P.O. Box 55
Clearfield, UT 84015

The Public Domain Exchange
673 Hermitage Lane
San Jose, CA 95134

SOFTSWAP
Microcomputer Center
San Mateo County
Office of Education
333 Main Street
Redwood City, CA 94063

Software Library
Mail-Order Department
North Central Regional Library
238 Olds Station Road
Wenatchee, WA 98801

3A Computer Products
1803 Warren Avenue
Cheyenne, WY 82001

—Bob Ryan, Technical Editor

Hard-Driving Disks

by Bill O'Brien

inCider test-drives six hard-disk systems for your Apple.

While you may not absolutely need a hard disk for your Apple, you can't beat the kind of convenience this peripheral offers—*all* your files in one place. If you're working on complex accounting procedures, large data-base applications, or professional word-processing projects, hunting through piles of floppies just won't do.

Features vary from model to model, however, and before you select a hard disk, you should closely examine the units available to find the one best suited to your task. I've methodically tortured six of them for your benefit, and have summarized the results in a comparison chart (see the accompanying **Table**).

So what's so special about hard disks? First, we're talking about 10 megabytes of storage—versus 143K on a Disk II floppy. Second, the rigidity of hard-disk material means less distortion from pressure and heat within the drive, and higher reliability when the drive reads and writes densely packed data. Third, because the disk is rigid and the read/write head is suspended over it on a cushion of air (rather than actually touching it, as in a floppy drive), a hard disk can spin ten times faster than a floppy—3000 rpm versus 30 rpm—making data-transfer rates much higher.

The increased speed and capacity, however, are at the expense of mobility and durability. Cartridges are one cure for lack of mobility. Packed in a shell slightly smaller than a floppy, these hard disks let you carry your data from one location to another.

But data stored on a hard disk still require more attention than data stored on a floppy, since the increased storage poses a greater potential for disaster if the disk is destroyed. Jarring the hard-disk head so that it touches the disk damages the head by scraping the metal from its surface. And if the stream of air suspending the head is disrupted while you're reading or writing to disk (even a particle of smoke can do that), the head will descend to the disk surface with all the grace of a kamikaze attacking a battleship.

Be sure to keep back-up copies of your data—on floppy disk or tape cartridge—in case something goes wrong. Although cheaper initially, a floppy-disk backup is slow (almost a half minute to write 50K), and you'll need several floppies each time you back up your data. Special tape units can cost almost as much as a hard disk, but even the worst of them have an inherent speed advantage over floppy disks, and one tape cartridge—compared to several boxes of floppies—can completely back up a 10-megabyte hard disk. Tape backup has no size (width) standards, however, and reading and writing methods vary in terms of number of tracks per tape and direction of tape movement.

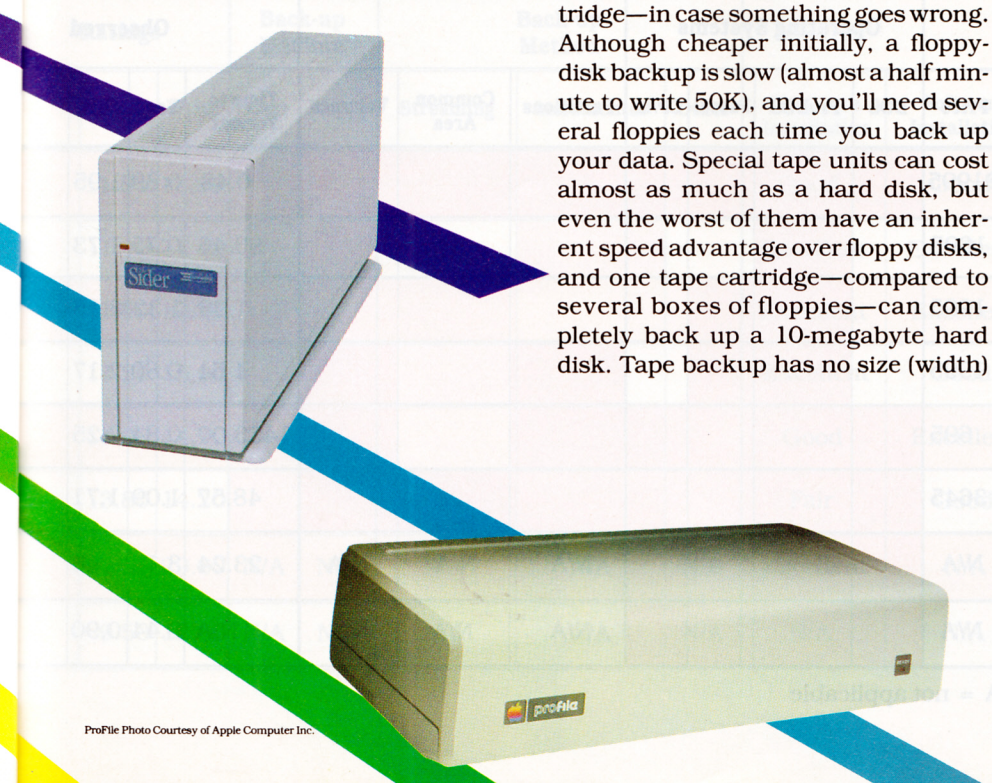
Back up your data frequently. Whether you call the method mother-daughter, father-son, or just alternate-day backup, never rely solely on the last copy you've made. Keep one tape (or disk) of your current information and an additional one containing the previous day's work. Except under the most catastrophic circumstances, you'll never fall more than two days behind should your disk fail to cooperate—even if you cannot use your last backup because of it.

Transfer Methods

There are two general methods of transferring data from a hard disk to either tape or floppy disk: *streaming* and *incremental* backup. Streaming backup, the faster method, starts copying your hard disk at the first bit of the first sector on the first track and transfers everything from the disk to the back-up medium in a mirror image.

If your hard disk fails, you can often recover it by reformatting, which locks out bad tracks and sectors from the usable space. Unfortunately, when you restore your data from a streaming system, it ignores the current condition of the hard disk and puts things back exactly as they were originally. It's possible with that technique to restore data right into the bad spots you've just locked out—putting you in a catch-22 position.

Incremental backup (also called a stop-start system) ignores the location of your data on the hard disk. It can transfer all the information on the disk, a portion of it, or just a single file—and then it keeps track of the information in a directory. This process makes incremental backup slower than streaming, but avoiding a streaming system's potential for redundant errors more than compensates for this delay.



ProFile Photo Courtesy of Apple Computer Inc.

Test Procedures

For all tests (including those done for comparison purposes on an Apple Disk II and the //e's internal /RAM disk), I employed a 128K Apple //e with a 65C02 (CMOS) processor and the complete extended //e kit (which now runs ProDOS), the clock portion of an AST Multi I/O board, and a Prometheus VersaCard. I used a simple Applesoft program to write data to and read it from a sequential file on each device I tested (see the sidebar "A //e-Enhancement Problem"). To create a 50K file, I defined and wrote a 128-byte variable as 400 records. I repeated this ten times, reading the clocks before and after each pass. After each write procedure, I erased the file (except for the final time), and took the average of the ten trials as the result.

With the files created from the write test, I established average read times. I performed load and save tests with a 12K program (ProDOS' STARTUP), and timed them with a stopwatch. I repeated both operations five times and used the best time. (See **Figures 1** and **2** for a comparison of the read/write and load/save times.)

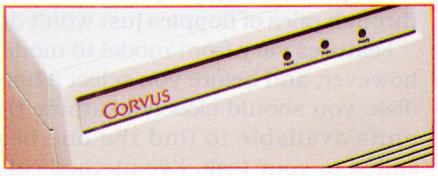
The Chart

Three entries on the ratings chart—partitions, common areas, and volumes—refer to hard-disk management. If the disk's manufacturer supplies software for more than one operating system, you can use it two ways. First, you can dedicate the entire disk surface to one operating system. (In general, this is wasteful—it means erasing and reformatting the hard disk if you want to switch operating systems.) Or, you can create *partitions*—formatting different segments of the hard disk for particular operating systems. Beyond the minimum partition-size requirement of some programs, you can assign as much space as you want to each operating system, but any unused space is unavailable to the other operating systems.

You must format your disk differently for DOS, ProDOS, and CP/M, and that makes data transfer between operating systems difficult, if not impossible. *Common areas*, however, hold information all partitions can access.

To accommodate certain programs (notably DOS-, Pascal-, or CP/M-based ones) a *volumes* feature lets a single hard-disk drive function as more than one drive. As in ProDOS' volume names, each hard-disk volume is considered distinct from the others.

Finally, the chart carries subjective judgments not based on statistics. I derived them from looking through the manuals, plugging in the equipment, and using it. Weigh these opinions against the more factual criteria before you make your final selection. Keep in mind that you have hard data to which you can refer—you won't need to rely on sales dialogue and advertising.



OmniDrive

If all you want is a hard disk for your Apple, don't buy an OmniDrive. Although the accompanying manuals delineate the procedures you need to know, and hardware installation is a fairly simple task, the software will drive you crazy.

Table. *Hard-disk comparison chart.*

				Operating Systems							Observed		
Drive	Size	Distributor	Price	DOS	ProDOS	Pascal	CP/M	Partitions	Common Area	Volumes	Time to Format	Load	Save
OmniDrive[1]	11,059K	Corvus	$1995								0.48	0.89	1.95
TeamMate	11,126K	Data Technology	1695								93.46	0.75	1.73
ProFile	9961K	Apple	1995								1.98	1.32	3.15
QC10	10,654K	Quark	1995								1.51	0.80	2.17
The Sider	10,027K	First Class Peripherals	695								1433.00	0.84	2.25
Sun*Disk	10,541K	Sunol	3645								48.57	1.09	1.71
Disk II (floppy)	143K	Apple	N/A					N/A	N/A	N/A	23.24	3.18	9.56
/RAM (RAM disk)	65K	Apple	N/A					N/A	N/A	N/A	N/A	0.44	0.90

[1]The Bank is $2195 additional. N/A = not applicable

As part of a local-area-networking (LAN) system, the OmniDrive requires you to provide the interface-card and drive addresses within the network by setting individual DIP switches. Then, after you install the interface card in slot 7, you have to connect a twisted pair of wires and a grounding wire between the drive and the computer.

Before the OmniDrive can autoboot, you have to condition it with the installation software—press control-reset and enter PR#6. You can then add the partitions for the operating system(s) and create any volumes you want to make accessible from the operating systems you've installed. You can set up a common area immediately or later on.

After you've initialized the drive and switched the floppy-disk interface to slot 4, reboot onto OmniDrive as A2MGR, the Apple II system manager—the first and only user the drive recognizes. Thereafter, you create new users by entering their names and passwords, and assigning the partitions and volumes they can access—including level of access (none, read only, or read/write). As the sole user, you can enter several log-on names and passwords so that after booting the Apple you can enter any operating system.

OmniDrive has no integral back-up facility. Rather, as an alternative to ProDOS' Filer and floppy disks, Corvus sells The Bank—a 100-megabyte tape-storage device that uses a selectable combination of streaming and incremental techniques. Although installing The Bank requires re-installing some of the network parameters and rewriting the OmniDrive boot track, the software does most of the work automatically. The manual explains the few remaining menu choices step by step. The tape is fast—it took 23 minutes to back up and verify 5.6 megabytes. A floppy system would take an additional 26 minutes.

Corvus ships the 100-megabyte tapes preformatted. Before you can use the tape, however—whether you're using The Bank or another system—you have to condition it. Part of that process is to open the tape's wrapper and leave it in the same environment as the tape drive for about two hours while it reaches the same temperature and humidity as the drive. The other part of conditioning involves fast-forwarding and rewinding the tape the first time you use it to take up any slack. The Bank does that automatically; most tape systems don't.

TeamMate

An obscure package, packed in a small, inauspicious brown box, TeamMate provides little to complain about. Its performance speaks for itself, and, while back-up procedures are still on the primitive side, it's an acceptable product that just falls short of complete integrity. TeamMate has no software, so installation is no more difficult than connecting a floppy disk.

The TeamMate configuration I tested—model 2213—includes a 2.78-megabyte Kodak floppy disk, which I used as a back-up medium for the 10-megabyte hard disk. Backing up the contents of a 10-megabyte hard disk is where TeamMate falls short, as do so

Ratings		Back-up Medium		Back-up Method			Other Categories				
Read	Write	Tape	Floppy	Streaming	Incremental	Other	Hardware Installation	Software Installation	Documentation	Technical Support	Overall Impression
11.80	15.00						Good	Good	Excellent	Excellent	Good
11.10	14.40						Excellent	Excellent	Excellent	Excellent	Excellent
11.50	19.20						Excellent	Excellent	Fair	Fair	Good
11.20	15.90						Excellent	Good	Excellent	Good	Good
11.00	14.70						Good	Excellent	Fair	Excellent	Good
13.80	14.20						Fair	Good	Poor	Good	Fair
27.60	29.60	N/A	N/A	N/A	N/A	N/A	Excellent	N/A	N/A	N/A	N/A
9.50	12.60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

many other drives. There are no back-up procedures except for ProDOS' Filer. The 2.78-megabyte floppy disk makes incremental backup less monstrous, but by no means desirable. Although the Kodak floppy's performance time is faster than that of the Disk II, it's still about one minute per 143K of data. Backup // won't work on the large floppy. And if you have a data file larger than 2.78 megabytes, you can't back it up at all. Data Technology says it's exploring several sources for back-up programs, but until they appear, keep the limitations in mind.

TeamMate is only ProDOS-compatible, but I've found that the most successful hard-disk installations (in terms of amount of work accomplished with them) tend to run under only one operating system. ProDOS represents, at least, a compilation of the best features of all the Apple operating systems. It's quite likely it will

Figure 1. *Read/write performance.*

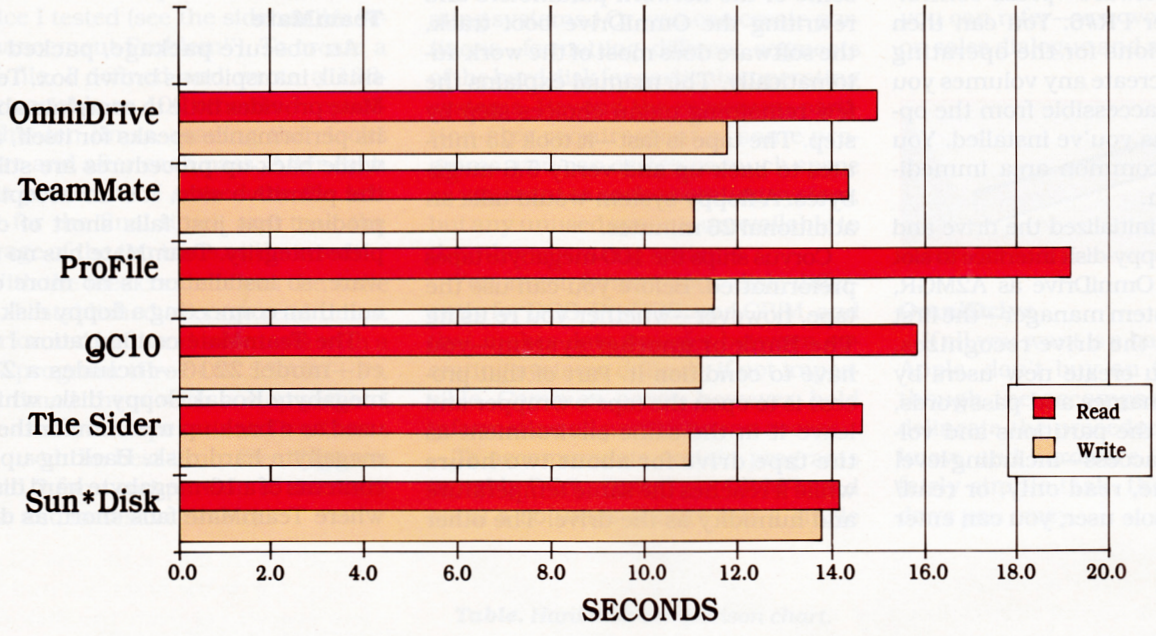
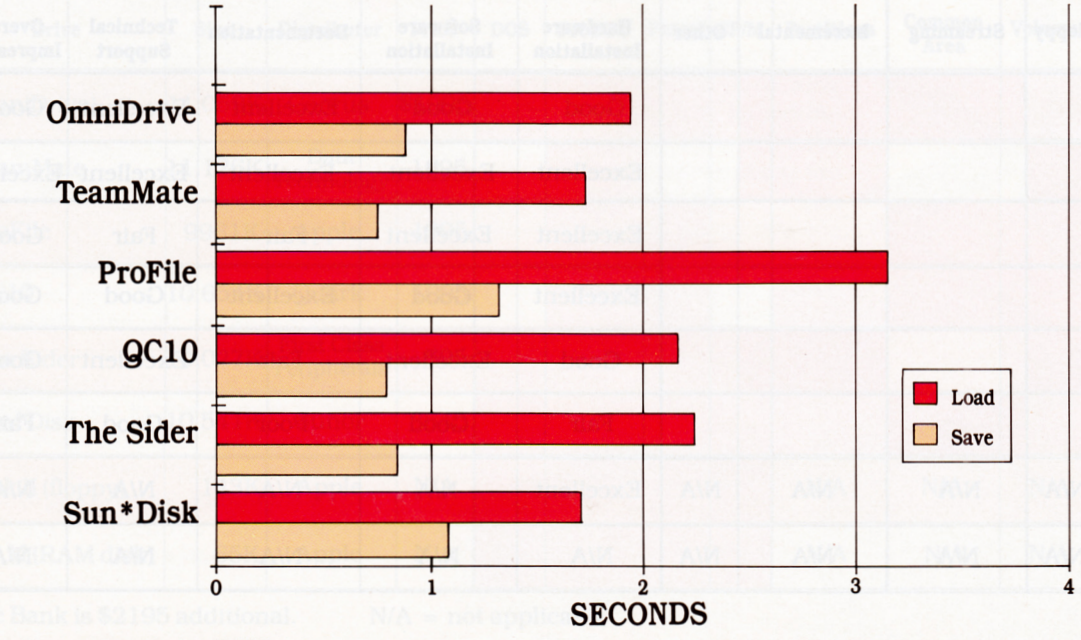


Figure 2. *Load/save times.*



Why Every Serious User of an Apple IIe is Buying RAMWORKS™

APPLEWORKS MEMORY Even though Ramworks enhances and expands a VAST ARRAY of other programs, Appleworks is our claim to fame. A 64K Ramworks will ADD 46K to your available desktop memory, a 128K Ramworks will ADD 91K, a 256K Ramworks will ADD 182K, a 512K Ramworks will ADD 364K and a 1 meg Ramworks will give you nearly an 800K desktop. And it's all done automatically! When you plug in more memory chips into your Ramworks card, Appleworks will find them—automatically. Ramworks also increases the maximum number of records from 1350 to 4300. And should you ever create a file larger than your disk capacity, Ramworks will automatically prompt you to insert more disks, so that any size file can be saved on regular floppies or a hard disk.

APPLEWORKS SPEED AND POWER Ramworks does more than just increase the desktop memory (as if that weren't enough). With Ramworks, Appleworks will be able to run up to 20 times faster. If you buy a 256K or larger Ramworks card, Appleworks will automatically load itself in Ramworks. This greatly increases the speed at which Appleworks operates by eliminating all that nasty, time consuming disk access on Drive 1. These are but a few reasons why we say that Ramworks is Appleworks' best friend.

EXPANDABILITY Ramworks was designed with the future in mind. As your needs increase, so can Ramworks. Clear instructions show you how to plug in more memory.

CO-PROCESSOR POWER A memory expansion connector on Ramworks will allow future co-processor cards to access the Ramworks memory, so you'll be able to take advantage of the new 16 and 32 bit microprocessors. This connector will also allow Ramworks to be expanded another 2 megabytes, so as memory technology improves, so will Ramworks.

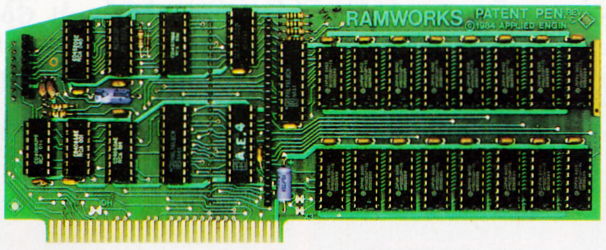
SPEED Today, as programs become more and more sophisticated, they inevitably become larger. And many of today's best selling programs (like Appleworks) won't fit in a 128K Apple, so many of these new larger programs continually go back to disk in search of more data. With Ramworks, you can have enough memory so that the entire program will be loaded into Ramworks' memory. This greatly increases the speed of software because your disk runs at 300 RPM, but Ramworks operates at the speed of light!

COLOR The same slot that's used for memory expansion is also the slot that's used for RGB color display, so all those lesser memory cards of yesterday make you decide in advance if you want RGB color. Ramworks lets you decide later to add RGB color. For only $129, an RGB option can be added to Ramworks to give you double high resolution color graphics and 80 column text. All with a razor sharp, vivid brilliance that's unsurpassed in the industry. The RGB option does not waste another valuable slot, but rather plugs into the back of Ramworks and attaches to any Apple compatible monitor. Remember, you can order the RGB option with your Ramworks or add it on at a later date.

COMPATIBILITY, OF THE SOFTWARE KIND Programs like Appleworks, Magic Office System, Flashcalc, The Spread Sheet, Diverse-A-Dos, Supercalc, Magicalc and many others automatically recognize all or most of Ramworks' memory (512K is average). The simple fact is that Ramworks is compatible with more off-the-shelf software than any other RAM card. Ramworks is 100% compatible with ALL software written for the Apple 80 column and extended 80 column card. Additionally, Ramworks can emulate other RAM cards so software written for other cards will run without modification. Software written for Ramworks will not work on other cards. We can emulate others, but others can't emulate us.

COMPATIBILITY, OF THE HARDWARE KIND Unlike others, Ramworks is fully compatible with hardware add on's from other companies, like the Sider and Profile hard disks. And Ramworks was designed in accordance with the official expansion rules defined by Apple so you don't have to worry about compatibility problems. As you continue to expand and make your Apple more powerful with other expansion products from Applied Engineering, you'll appreciate how each product has extra features designed to work with Ramworks and other products to give you a total performance package that is more powerful than the sum of its parts.

IT'S POPULAR Popularity translates into great software support because software companies can't support all RAM cards, they can only support the ones their customers are likely to own. And software companies appreciate the fact that when they write software for Ramworks in the IIe, they're also writing software for our memory expansion card for the IIc, Z-RAM. And our customer list reads like the Who's Who of Apple computing with just about every software company in the land buying one, including Apple Computer and Steve Wozniak



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become more prominent than DOS.

TeamMate's 36-page manual is a general-purpose hardware-installation guide. Although it contains some directions, it's generally devoid of most operating information. Instead, it refers you to your *ProDOS User's Guide* for in-depth instructions. Normally that would be a strike against it, but with TeamMate's natural affinity for ProDOS, the operating-system manual seems appropriate.

TeamMate's best feature is its speed. It took only 1.8 seconds longer than ProDOS' /RAM virtual disk to write the test data. And saving the test program took only an extra .83 seconds over the /RAM speed. Considering a virtual disk's penchant for moving information rapidly, TeamMate's performance is laudable.

Don't look for TeamMate at your local computer store. Data Technology has removed the drive from the middleman retail market and cut its price. The company sells Apple versions of TeamMate (including the Kodak floppy disks) directly to consumers. Data Technology also handles technical support, and the people are courteous, knowledgeable, and, most importantly, available.

ProFile

ProFile is a bit of an enigma. It was originally a 5-megabyte disk designed for the Apple ///. When Apple discontinued the ///, it upgraded ProFile to 10 megabytes and attached it to the //e with ProDOS.

The hardware end of ProFile installation on your //e is a snap. Plug in its interface board (it prefers slot 5), screw in the Apple's rear-panel connector, and join the computer and the drive using 4 feet of shielded cable. Software installation is even simpler—there isn't any if you're using ProFile for ProDOS. You'll find that the Filer utilities instinctively "know" that you have a large-capacity hard disk as soon as they "see" the controller card.

Using Pascal is more complicated, since Pascal and ProDOS have slightly different file-storage systems. First, format the hard disk for ProDOS; then use Apple's Pascal ProFile Management software to create a separate partition. For ProDOS, the drive is considered one volume; you can divide it up into a number of small volumes (units 4, 5, 9–20, and 128–143) for Pascal.

ProFile's omission of DOS is not surprising, as Apple has been moving away from this operating system, but I'm disappointed by the lack of CP/M support. None of the vendors I called could supply a patch for it, though PCPI claims it's on the way for its Z-80 AppliCard.

When you boot ProFile, you may wait up to two minutes before you can use it while the ROM-based software performs an integrity check on the

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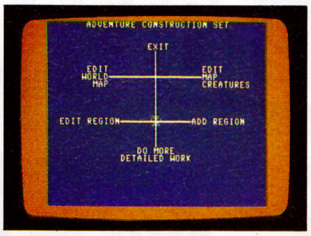

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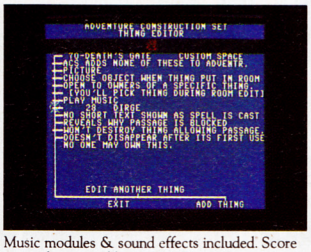

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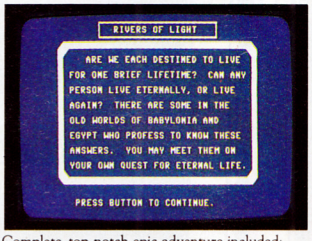

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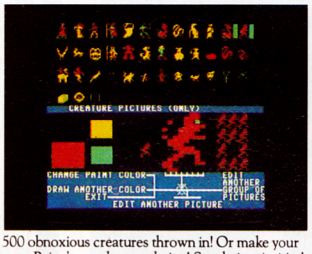

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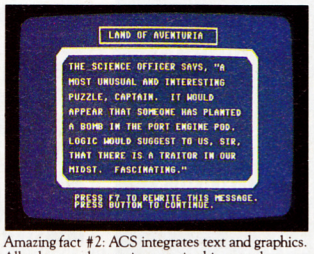
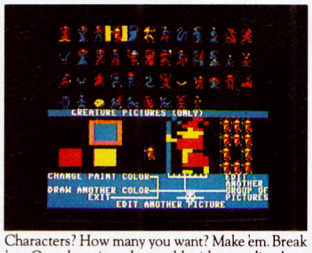


Amazing fact #2: ACS integrates text and graphics. All other products wimp out in this regard.



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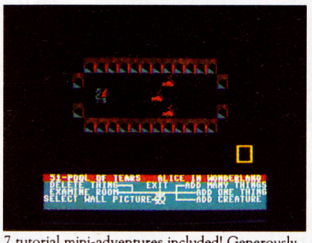

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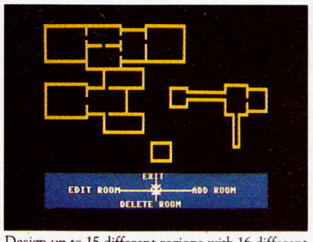

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surface of the disk because it examines every track and sector. If the software finds faults, ProFile will try to read as many of the data on the bad tracks as possible, then it will relocate them to a good portion of the disk, automatically updating the directory as it does so.

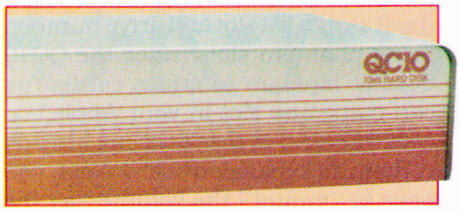
Read times are similar to those of most other drives, but write times are quite slow in comparison because of ProFile's safeguards: Apple has built a verify-after-write routine into the drive. When the disk writes data, it also reads those data to compare them against the original information. Also, whenever the read/write head is not in use, ProFile retracts it to prevent damage to the disk medium from an accidental head crash. This safety measure increases disk-access time by 30 percent.

Documentation is another sore point. While the Pascal ProFile Management manual is an intensive 158-page document, ProFile's own manual is an unsatisfying bit of fluff that only details the installation procedures and contains an overdose of pictures and illustrations.

ProFile (and Apple Computer) deserve some points for the Backup // software, which lets you back up your drive to floppy disk. You can store files by volume, subdirectory, or date (a good reason to add a clock board to your system when you install a hard disk). It takes about one minute to fill a floppy and an additional 24 seconds if you format it.

Backup // stores your data in an encrypted form that is not directly transferable to ProFile with ProDOS' Filer, although Backup //'s "restore" option will do that. Menus and prompts adequately guide you through the program. Consequently, you're not likely to make a mistake.

Expecting constant innovation from Apple, or any other company for that matter, is unrealistic. It doesn't look like the 10-megabyte ProFile is a significant technological breakthrough. Apple has turned over further development of its hard disk to Sony; perhaps that company will shrink the drive to 3.5-inch size and add an internal tape backup.



QC10

I hesitated to look at Quark Peripherals' QC10 again—my original review (July, p. 82) was unfavorable. Despite its technical wizardry, the Apple II installation software fell flat on its face. Much of that has changed now.

The QC10 is compatible with the //c, //e, ///, and Macintosh—without an interface card. Plug the disk into the floppy-disk interface (DuoDisk or Disk II), then, for all machines but the Mac, attach the floppies to a connector on QC10's back panel, set two switches, and plug in the power cord.

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When you create volumes, you can assign them three access levels, a system usually found only in network (LAN) systems where the amount of access by a number of users requires supervision. Bringing this to the QC-10, a stand-alone hard disk, adds a degree of protection to your data files and makes it a workable system within many networking schemes.

After you've created a volume, you must assign it a slot and drive number, using phantom slots (since the QC10 doesn't have an interface card). You can name any slot in your Apple (except 0, 3, and 6) that does not already contain an expansion board. Next, you have to "mount" the volume—let the operating system know that it exists—either automatically or manually. You can assign different mounts and volume characteristics to different disks, depending on the requirements of each.

The QC10 ignores CP/M and DOS, but supports Pascal. Some automatic floppy reassignments are based on how you configure the access for the hard-disk volumes, and could become confusing were it not for Quark's excellent manuals—the QC10 documentation and the Pascal supplement—which total more than 100 pages of information about installation and use of the drive.

Backup is almost a problem. The QC10 relies on Apple's Backup // program—which Apple supplies only with ProFile. Quark, however, ships Backup // with a program called Catalyst //e—for $149. That may seem like a steep price to pay for the privilege of copying your data files, but Catalyst is a unique program in its own right. It lets you copy protected software to your hard disk and, thereafter, select the programs from a menu. Back-up times were the same as ProFile's—about one minute per disk after formatting.

I wish the QC10 had a common area. For those people who have more than one of its supported computers at home or in the office, it would be the ultimate pleasure to swap at least text files among them. Having instituted a few other networking features, Quark may just turn its attention to that as well.

The Sider

If you can look past the glare of its low price, you might find that the Sider is still a little rough around the edges. First Class seems to be smoothing things out, however, and with just a little more work, the drive may become one of the best Apple enhancements since VisiCalc.

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Continued on p. 38.

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Continued from p. 34.

Sider to your Apple is so heavy-duty that a small steel box is clamped onto the back of the computer to give the rear-panel connector support.

The cable running from this connector to the interface card feeds in through one of the rear slots and is attached to the front of the interface—leaving about 4 extra inches of cable to account for inside your computer. If the interface card is in slot 7, that extra length is relatively harmless, but to avoid electrical interference, you should be careful if you're installing the card in a slot that has an adjacent board.

When you turn on the Sider and your Apple, the hard disk normally takes control and displays a boot menu on the screen. The drive I received, however, prompted me with a DISK FULL message and dumped me into the assembler—that gave me a chance to use the installation software.

The installation software lets you view the disk's current partitions. You can also install new sections for DOS, ProDOS, CP/M, or Pascal. If you're starting from scratch, the Sider has one of the simplest installation routines I've ever seen. It combines manual dexterity and simple reading skills: A rectangle divided into four equal areas represents the drive's four possible partitions, while a text listing shows their actual sizes. As you shrink or expand a partition with the left- or right-arrow keys, the screen shows the adjacent one changing as it reflects what you're doing. DOS partitions, however, can be no larger than 400K, and you can't totally remove any one partition.

After you've set a partition's overall size, the software automatically subdivides it into several equal volumes, the size of which you can then adjust. ProDOS uses /Hard1/ and /Hard2/; DOS sees it as two drives; CP/M thinks it's A:, B:, C:, and D:; and Pascal believes it to be units 9 through 12. Think carefully when you're adjusting volume and partition sizes; you can't change them again without reformatting the entire disk. You can boot into any of the partitions (or boot the disk at slot 6, drive 1), which makes the Sider one of the most intelligent implementations of hard-disk technology I've seen on any machine.

Everything isn't roses, though. Although the Sider's manual contains a wealth of installation and diagnostic information, it doesn't explain how to use the drive or some of the more obscure menu options. And the Sider is noisy. The 3600 rpms of its drive motor create a persistent whine that eventually fades into the background, but is always ready to remind you it's there. Also, although the ventilation slots on top of the drive's case let heated air drift out of the computer, they also let dust enter. Louvered vents would have been preferable.

The Sider has its own back-up and restore program for DOS, Pascal, and CP/M. ProDOS is at the mercy of the usual Apple Filer copy routines. You can spread out DOS, Pascal, and CP/M files over a series of disks, but if your ProDOS file exceeds the capacity of a single floppy disk, you can't back it up. The original documentation includes no description of how the back-up program works, but a new, revised manual contains the needed information.

Backing up your data is a complex process. Certain functions that should be automatic (keeping a spare directory of the files it's copying) are performed manually with the Sider. And you can't back up any data unless you've placed a directory library on the floppy—making backing up data an annoying two-step procedure.

To back up only a select group of files, use a wild-card character in place of the file names. You must then confirm or negate the transfer of every file on the disk. That approach is much too manual for my taste.

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Sun*Disk

Sun*Disk suffers from deficiencies in its installation and manual. Actual performance, however, is quite good.

I wasn't prepared for this massive drive, with its digital front-panel display straight from the dashboard of an '86 Eldorado. Aside from a bank of eight LEDs, there are five numeric displays, which tell you the current status, drive, track, head, and sector you're using.

Installing the drive is quite simple. An interface card, a cable, and the Sun*Disk are all you need. The Sun*Disk is one of the few hard disks with an interconnecting cable that exits from the rear of the interface card—you don't have to make wild loops around the front of the card, along the sharp solder edges, then out the back. This arrangement creates only one problem. The connector from the ribbon cable to the interface card protrudes about ¼ inch from the flat plane of the card—approximately the distance between slots on the Apple motherboard—and Sunol recommends that you place the card in slot 5. Installing a card in an adjacent slot makes for a snug, somewhat awkward fit because of the connector.

Additionally, you can use the Sun*Disk as part of a LAN, so you must set some small DIP switches. Sunol has placed those switches in one of the most inane places it could have found—recessed behind the front panel, beneath the Sunol Systems logo, about ½ inch above the access hole. That certainly will prevent anyone from accidentally rearranging them, but a better solution must exist.

The less-than-acceptable quality of Sun*Disk's installation manual is inexcusable. To say it's bad, though, might be overstating its flaws. Rather, it's a cacophony of unrelated details illogically placed and fraught with invalid assumptions. For example, it tells you to initialize a new floppy disk using the System Menu command, which has nothing to do with initializing floppies. (It's a program on the Sunol installation disk.) The on-off orientation of the DIP switches is reversed in the manual, but the legend on the switch itself is correct.

Thankfully, software installation is menu-oriented; the manual follows the actual procedure, but doesn't go far enough at times. After you format the hard disk, you can scan it for bad tracks. The installation manual explains only that the program will tell you whether or not any tracks are bad and which ones they are. It doesn't mention the possibility of an installation error, however—and, in that event, you must look up the status message frozen on the screen in the hard-disk reference manual.

Locking out bad tracks is a two-step manual process that requires you to write down the bad tracks and enter them again when you run another software option. Writing the track information to a disk file (there's room on the floppy you're using to install the hard disk) and reading it back automatically would eliminate human error.

Observed-speed ratings were almost nil because the Sun*Disk obstinately refused to work with ProDOS. The manual insisted I use a DOS utility (FID) to transfer ProDOS programs to the hard disk. That didn't work, but changing one of the parameters in the ProDOS partition did. With the exception of read times for the data file, Sun*Disk was one of the faster disks of the six I reviewed.

Sun*Disk's integral tape drive handles all backup. The SSD10/T22 uses a 20-megabyte 3M DC600A tape cartridge in streaming mode, and it's very fast. The back-up software is part of the drive's secondary diagnostics, but it's too manual: You have to provide the starting block number and block length for the backup. Copying an entire volume without regard to its size is a better option for a streaming system.

Sunol is working on Sun*Disk's deficiencies; you can probably expect a usable product sometime this fall.

Reviewer's Choice

Being surrounded by 60 megabytes

[SEE PREVIOUS PAGE]

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of storage (not to mention the 123 megabytes' worth of tape systems) is quite intimidating. But whenever you compare several items, one or two usually rise to the top of the heap. Hard disks proved to be no exception.

There's no getting around the awesome barrier of the Sider's price. It's too inexpensive not to recommend it for any personal hard-disk system, despite its rough edges. But I couldn't honestly recommend the Sider for a business installation.

In that category, the dark horse is TeamMate. It's fast, it can use a large-capacity floppy-disk drive either as additional storage or for incremental backup, and it's just too simple to use to pass up. Consequently, it's my hands-down favorite and my only choice for a business environment needing a stand-alone hard disk. But take a look at the selection of front runners presented here—you have all the information you need to make your own choice—to find the hard disk that meets your specific requirements. ■

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

A //e-Enhancement Problem

Aside from the usual difficulties handling more than 60 megabytes of hard-disk storage, I ran into a problem during the course of writing this feature that almost brought everything to a grinding halt. I carried out some of the tests before I installed the Apple //e Enhancement kit. The original data file consisted of eight 128-byte fields per record, written 50 times. The print-to-file line looked like this:

```
PRINT
VARIABLE$,VARIABLE$,VARIABLE$,
   VARIABLE$,VARIABLE$,
   VARIABLE$,VARIABLE$,
   VARIABLE$
```

That's a legal Applesoft statement when you write multiple fields to a record. Repeated 50 times, it created a 102-block file.

Both the read and write programs worked fine until I installed the new ROMs. The file size increased to 113 blocks, and the read routine bombed with an OUT OF DATA error message. I checked the programs; I pulled the clock boards in case the new ROMs found them disagreeable; and just to make sure the hard disks weren't interacting strangely with the new ROMs, I repeated the programs with a floppy and the Apple /RAM virtual disk. Nothing worked the way it should. Finally, I rewrote the programs to read and write one field per record and performed the test again. Only then did things return to normal.

The problem occurred, it seems, because Apple restructured the comma-tabbing function in the new ROMs. Tabbing is now absolute to the next unused tab position, not the next available tab position after the last printed character. For instance, screen-column 1 is the first tab position, column 8 the next, and so on across the display. With the old ROMs, if you printed a variable beyond the next available tab position and followed it with a comma and another variable, the computer would print the second variable beginning at screen-column 15.

Absolute tabbing with the new ROMs overlaps those two variables. The second variable always starts at position 8. Unfortunately, that carries over to comma-separated variables in disk file fields. If you want multiple-field records, your print statement must look like this:

```
PRINT
VARIABLE$;",";VARIABLE$;
   ",";VARIABLE$;",";VARIABLE$;
   ",";VARIABLE$;",";VARIABLE$;
   ",";VARIABLE$;",";VARIABLE$
```

This particular write-procedure format puts a hard comma between the fields in the file as it appears on disk. Your read routines can stay the same because they'll recognize the comma as a field delimiter and return the correct results. □

—W.O'B.

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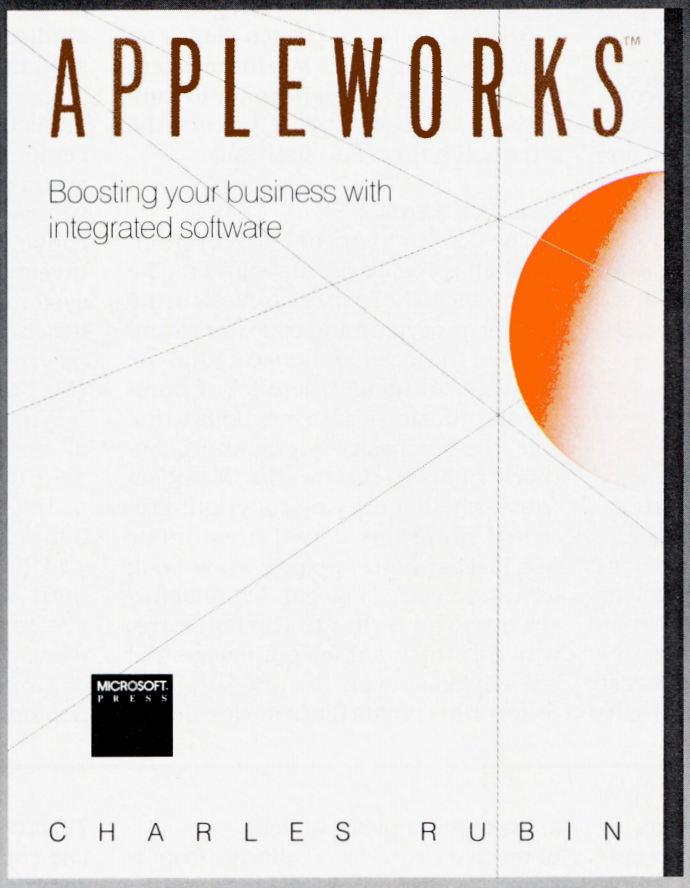

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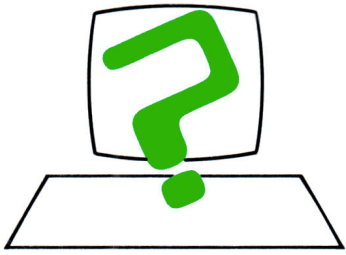

Software Piracy: Bounty or Plunder?

For all you movers and shakers—Apple enthusiasts with something to say—BackTalk is your chance to let us know what you think about current topics in the realm of personal computers. This month's hot issue is software piracy. Read the pros and cons below, then dial (603) 924-9801 with your modem and answer the survey on our bulletin-board system. (If you don't have a modem, complete the following questionnaire and mail it to: BackTalk, *inCider*, 80 Pine Street, Peterborough, NH 03458.)

Pro: Pirates Unite

Expense is the major reason why people make illegal copies of copyright-protected software. Software "pirates" contend that manufacturers are concerned only with the almighty dollar. They don't understand that the average person can't afford to buy every program he or she wants. And forget about one computer, one piece of software, as many software licenses stipulate. Imagine what that expense would do to a business or school budget!

Besides, software pirates claim, no one is getting hurt. Manufacturers have more than enough money to compensate for illegal copying. Once on the streets, it's share and share alike.

Con: It's Theft

The Copyright Act of 1976 covers almost all software on the market. The law protects the form of expression (the specific programming code, for example), not the ideas contained within the software. Although there are a number of confusing legal exceptions to the rule, the law basically guarantees authors' rights to their works. Manufacturers say that copying copyright-protected programs constitutes unfair use, just as photocopying a whole book for use in class is illegal. Manufacturers own the rights to the software, which is intended for purchase—and use—by one buyer.

Reports estimate that software theft—copying programs for purposes other than backing them up—accounts for almost $2 billion in lost sales. Other studies reveal that for every program sold, three are copied illegally.

Manufacturers have gone as far as establishing a Software Publishers Association. Based in Washington, DC, the group operates a hotline for manufacturers reporting incidents of illegal copying. The SPA also enlists private investigators to track bulletin-board systems that download various publishers' programs.

It's Your Turn

Which side of the fence do you fall on—or are you straddling? Give us your two-cents' worth by responding to the questions below. This survey appears on our bulletin board, so if you have a modem call (603) 924-9801, and leave your answers for the system operator. We want to know what you think; please send us your comments—by modem or mail—by September 13, 1985.

---

1) Based on the arguments above, do you think software piracy is an acceptable practice?
a) Yes
b) No

2) If yes, software piracy is acceptable because:
a) the package price is too expensive
b) there is a lack of manufacturer support
c) everybody does it

3) Do you own illegal copies of copyrighted programs?
a) Yes
b) No

4) If yes, did you:
a) make the copies yourself
b) receive them, at no charge, from a friend
c) buy the copies from another source

5) If you make copies of copyrighted programs, do you:
a) only use them yourself at home
b) use them at work or school
c) give them to friends
d) I don't copy copyrighted programs

6) Do you use illegal copies of copyrighted programs at (mark all that apply):
a) work or school
b) home
c) I don't use illegal copies of programs

7) Software manufacturers sometimes use copy protection to foil pirating of copyrighted material. Did you ever *not* buy a program because it was copy-protected?
a) Yes
b) No

8) Software thieves should expect to face:
a) a $10,000 fine and criminal prosecution
b) a license violation and compensation for any lost sales
c) a pat on the back

9) I believe the copyright law:
a) is necessary to protect the manufacturer's investment and the creative rights of the author
b) is too vague and unenforceable
c) has no bearing on the software market

10) What do you think of "software pirates"—those who illegally copy copyright-protected programs? Could there ever be an instance when piracy would be acceptable? ■

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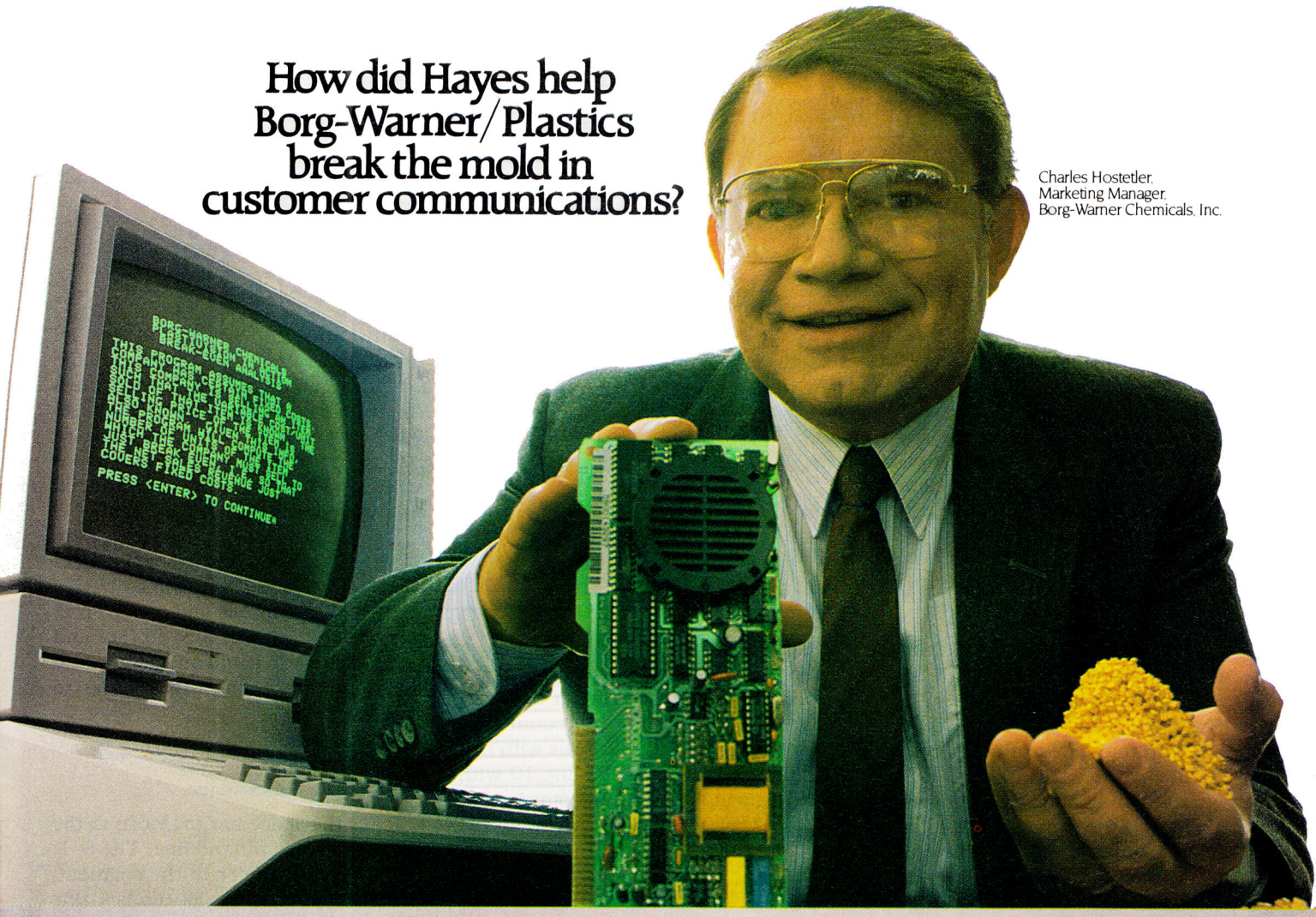

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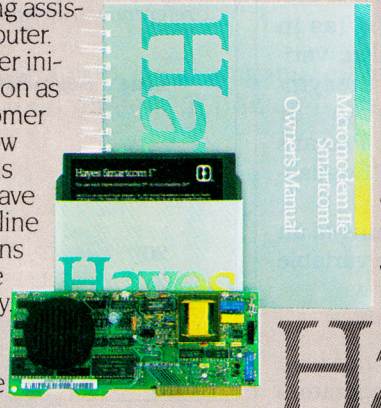

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Pascal Primer

Naming Names in Pascal

Learn how to declare constants and variables in your Pascal programs.

From games to data-base systems, programs spend most of their time processing information, facts, and figures. Pascal programs represent these data as constants or variables. A *constant*, as its name suggests, holds an unchanging value; a *variable* holds a value that may change while the program runs.

Declaring Variables

Listing 1, which computes the average of successive numbers, shows you how to declare variables in Pascal. (See the sidebar on page 52 as well.) The variable declaration starts with the key word VAR in line 1; a list of variable names and types follows (lines 2 and 3). Line 3 shows a single-variable declaration. A colon separates the variable name (count) and type (integer). Integers in Pascal are equivalent to whole numbers. A semicolon separates that declaration from others. Line 2 declares two variables (entry and total) as real or rational numbers, with a comma separating the variable names.

Assigning Values to Variables

Unlike some languages, Pascal doesn't assign its variables any particular initial values. To be safe, use Pascal's assignment symbol : = (as in **Listing 1**, line 10) to initialize variables. Many users pronounce the symbol : = as "becomes equal to" or "becomes" in keeping with Pascal's ability to produce readable, English-like programs.

This symbol assigns the value of an expression on its right to the variable on its left as diagrammed below:

<variable> : = <expression>

The expression may be a literal value (line 10), or use mathematics operators (lines 12, 15, and 17). Assigned values must match the declared type of the variable. For example, you can't assign a string to an integer count variable. To see how Pascal deals with this kind of blunder, replace line 10 with the following line, then recompile:

```
count : = 'Strings are not integers!';
```

After you receive the error, press the E key to return to the editor.

Finding Run-Time Errors

You may be unfamiliar with some of the statements in **Listing 1**. The REPEAT loop, starting at line 11, executes the four statements following it until the entry variable equals zero. The conditional IF statement in line 18 tests the value of the count variable and, if it's greater than zero, executes the compound statement in lines 19–23. A *compound statement* is a number of individual statements, separated by semicolons and surrounded by the key words BEGIN and END.

This IF statement prevents a division by zero in line 22. To see the effect of that fatal error, remove lines 18, 19, and 23, then compile and run the program. Enter 0 to the first prompt and press the return key. You should see a "run-time" error message similar to the following:

```
Divide by zero
S#1, P#1, I#314
Type <space> to continue
```

Press the space bar to return to the main Pascal command line. The S, P, and I numbers refer to the segment, procedure, and index locations inside the compiled code where the error occurred. To make sense of these numbers, turn on your printer, set it to 132 columns, and recompile with the following compiler option as the first line:

```
(*$L PRINTER:*)
```

This compiler option tells the Pascal

Table. *This portion of* ***Listing 1****, compiled with the listing option on, includes reference numbers for locating run-time errors.*

Line	Segment	Procedure	Index	Program Text
1	1	1:D	1	(*$L PRINTER:*)
2	1	1:D	1	PROGRAM Average;
				<removed>
20	1	1:1	235	writeln;
21	1	1:1	243	writeln('Average for ', count, 'items = ');
22	1	1:1	305	writeln(total / count:8:2)
23	1	1:0	330	END.

by Tom Swan

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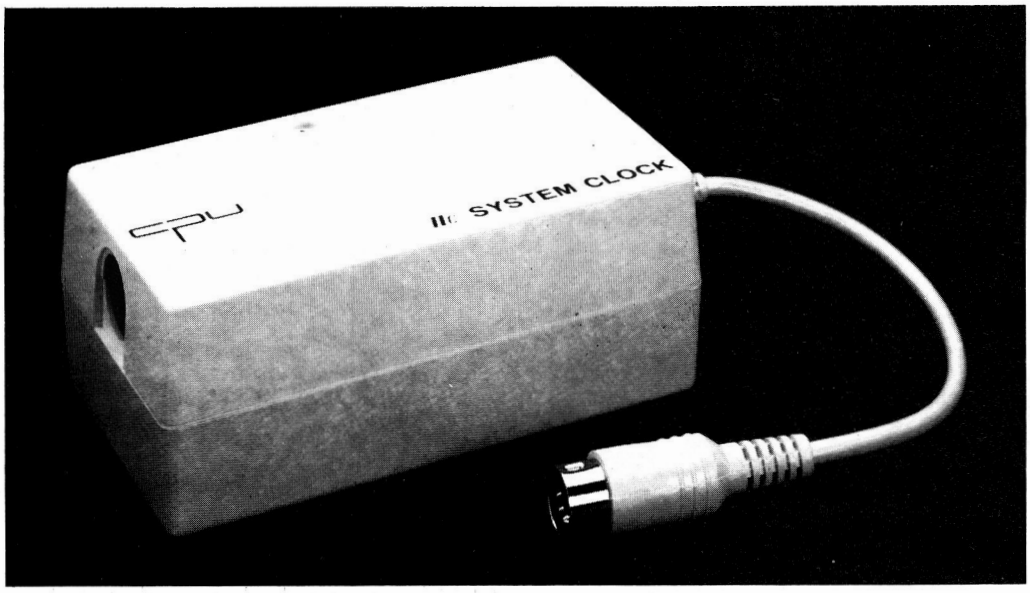

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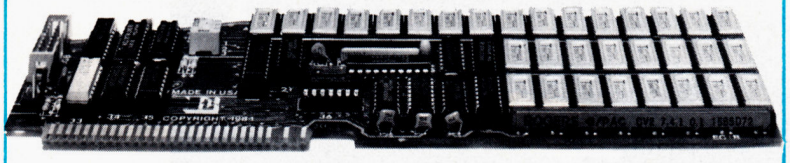

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compiler to print a listing. (If you forget the colon, your listing will be sent to a disk file named PRINTER.) If you don't have a printer, replace PRINTER: with CONSOLE: to display the listing on the screen. Control-S pauses and restarts the display.

The compiler generates the line, segment, procedure, and index numbers of the p-code (pseudo-code). The **Table** shows a partial result. To find the divide-by-zero error, look up the S, P, and I values. (For now, ignore the additional colon and digit, the "lexical" or nesting level, in the procedure column.) Usually, you'll find an index number such as I#314 between two values, here 305 and 330. In this example, the index number corresponds to line 22, the source of the error.

Scientific Notation

In **Listing 1**, the formatting values :8:2 inside the "writeln" statement in line 22 tell Pascal to write the average in eight columns with two decimal places. To understand their effect better, remove :8:2 and recompile. With no formatting instructions, real-number values appear in scientific notation, computer shorthand for large and small numbers—for example, 450.62 becomes 4.5062E2 (4.5062×10^2). To find equivalent values, move the decimal point the number of places indicated by the value after the E (exponent). If the exponent is positive, move the decimal to the right; if negative, to the left. For example, 2.567E-3 equals 0.002567, and 3.1415E1 equals 31.415.

Some Things Never Change

Constants in Pascal are values that do not change. Rather than write 3.14159 whenever you want the value of pi, you can use a *constant declaration* to tell the compiler to relate *pi* to the value 3.14159. Whenever you use pi, the compiler inserts the associated value in its place.

This declaration appears in a Pascal program as:

```
PROGRAM your_program;
CONST
   pi = 3.14159;
```

Notice that a plain equals sign, not the assignment symbol := , declares a constant value—a minor, but important, difference.

Continued on p. 54.

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Expanding Your IIc Is Easy With Z-RAM

Applied Engineering and Apple computer have teamed up to take your IIc to new heights.

Applied Engineering's Z-RAM card for the IIc is available with 256K or 512K of additional memory and a powerful Z-80 microprocessor for running CP/M software.

Z-RAM fits neatly inside the IIc. Installation is easy, clear instructions show you how. You'll need a screwdriver and about 10 minutes (if you can change a light bulb you can install Z-RAM).

Z-RAM and Appleworks will knock your socks off.

A 256K Z-RAM will give you a 229K available desktop and Appleworks will be completely loaded into memory. Appleworks will now run about 10 times faster in your IIc with 1 disk drive than in other IIc's with 2 disk drives. A 512K Z-RAM will give you a 413K available desktop. A 256K Z-RAM can be upgraded to 512K by just plugging in more memory chips.

Z-RAM is also a high speed solid state disk drive. With Z-RAM, your programs will load and save over 20 times faster. Z-RAM's RAM disk is compatible with Applesoft, Pro-DOS, DOS 3.3, PASCAL and CP/M. And with Z-RAM, you can copy a disk in one pass. Just insert the original, remove the original, insert blank disk! That's it! Z-RAM is another disk drive, only 20 times faster, 4 times larger capacity, and no whirring, clicking or waiting!

But before you start panting over all that extra memory, don't forget that the Z-RAM card has a built-in high speed Z-80 processor chip that allows you to run CP/M programs like Wordstar, dBASE II, Turbo PASCAL, Microsoft BASIC, FORTRAN and COBOL and over 3,000 other CP/M programs. So Z-RAM not only makes Apple programs run better and faster, it lets you run MORE programs.

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So the next time somebody asks you why you didn't get an IBM P.C., tell him you bought a IIc because the IBM didn't have enough memory and was too slow and couldn't run CP/M software. And tell him you made it past the 8th grade.

Z-RAM with 256K **$449**
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Pascal Primer

Listing 1. *Computing averages.*

```
 0: PROGRAM Average;
 1: VAR
 2:    entry, total : real;
 3:    count : integer;
 4: BEGIN
 5:    writeln( 'Average' );
 6:    writeln;
 7:    writeln( 'Enter values to be averaged. When' );
 8:    writeln( 'done, enter 0 to quit.' );
 9:    writeln;
10:    count := 0; total := 0.0;
11:    REPEAT
12:       count := count + 1;
13:       write( count, ') ? ' );
14:       readln( entry );
15:       total := total + entry
16:    UNTIL entry = 0.0;
17:    count := count - 1;
18:    IF count > 0 THEN
19:    BEGIN
20:       writeln;
21:       writeln( 'Average for ', count, ' items =' );
22:       writeln( total / count:8:2 )
23:    END
24: END.
```

Listing 2. *Volume of a sphere.*

```
 0: PROGRAM sphere;
 1: CONST
 2:    pi = 3.14159;
 3: VAR
 4:    r, volume : real;
 5: BEGIN
 6:    writeln( 'Volume of a sphere' );
 7:    writeln;
 8:    write( 'Radius? ' );
 9:    readln( r );
10:    volume := 4.0 * ( pi * ( r * r * r ) ) / 3.0;
11:    writeln( 'Volume = ', volume:6:3 )
12: END.
```

Listing 3. *Calculating the speed of light.*

```
 0: PROGRAM Light;
 1: CONST
 2:    speed_of_light = 186282.3976; (* Miles per second *)
 3:    prompt_char = '>';
 4:    program_name = 'S p e e d  O f  L i g h t';
 5:    prompt_string = 'Enter number of miles';
 6: VAR
 7:    miles, seconds : real;
 8: BEGIN
 9:    writeln( program_name );
10:    writeln;
11:    writeln( prompt_string );
12:    writeln;
13:    write( prompt_char );
14:    readln( miles );
15:    seconds := miles / speed of light;
16:    writeln( 'Light travels ', miles, 'miles in ' );
17:    write( seconds, ' seconds, or ' );
18:    writeln( seconds/60, ' minutes.' )
19: END.
```

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Entering Pascal Programs

1) Boot Apple Pascal. Single-drive users boot with disk APPLE3: followed by APPLE0:. Multi-drive users boot with APPLE1: in drive 1 and APPLE2: in drive 2.

2) Press the E key to begin editing, then press the return key to start a new SYSTEM.WRK.TEXT file on your boot disk. This procedure automatically loads an existing SYSTEM.WRK.TEXT for editing.

3) Press the I key to insert text, then type in the listing. Ignore the reference numbers and colons to the left of each line. Type in only the text to the right of the colons. You may use upper- and lowercase as listed or type in all uppercase. If you don't have an underline key, you may omit the underlines in variable names—type in SPEEDOFLIGHT instead of SPEED_OF_LIGHT.

4) Press control-C to stop inserting. Then, to correct mistakes, use the arrow keys to move the cursor (older Apples use control-O and control-L to move up and down), and press the X key to exchange (replace) characters or the D key to delete characters. Other features of the editor are detailed in the *Apple Pascal Operating System Reference Manual*. Press control-C again to stop inserting, exchanging, or deleting text.

5) Press the Q key to quit the editor, followed by the U key to update your work file and return to the Pascal command line.

6) To run your program, press the R key. The compiler reads your SYSTEM.WRK.TEXT file, producing SYSTEM.WRK.CODE on your boot disk. If your program contains no errors, the system loads and runs it. If it finds an error, the system shows the offending line. Press the E key to return to the editor and fix your typos.

7) To save your program, first press the F key to go to the Filer from the main Pascal command line, then press the S key to save it and enter a file name to the prompt. To save your work as MYPROG in drive 2, enter #5:MYPROG; in drive 1, enter #4:MYPROG.

8) After you have saved your work file, press the N key in the Filer to start a new program. Answer Y to the prompt asking if you want to throw away your work file. This erases both SYSTEM.WRK.TEXT and SYSTEM.WRK.CODE from your boot disk. Finally, press the Q key to quit the Filer and return to the main command line. Continue from step 2 to type in another program listing.□

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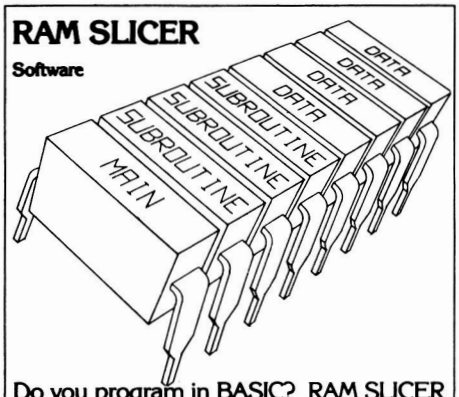

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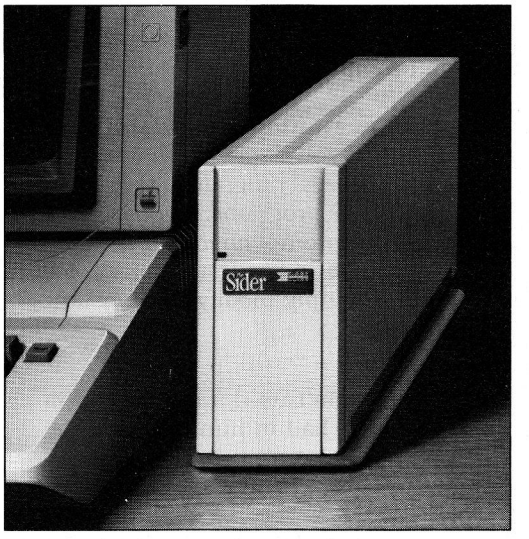

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Pascal Primer

Continued from p. 46.

Listing 2 uses the constant pi to calculate the volume of a sphere. The following formula is programmed in line 10:

$V_{sphere} = 4\pi r^3/3$

You can use a constant like pi in an expression, but you can't assign it new values. An assignment such as pi: = 4.50 is not only wrong, it also won't compile.

Using Constants for Readability

Because you declare constants at the top of Pascal programs, it's easy to modify those programs. If you want to change the prompt character in line 3 of **Listing 3** to a question mark, for example, simply modify the constant as follows:

```
prompt_char = '?';
```

If you hadn't used a constant, you would have had to hunt through the program for each prompt—a time-consuming, difficult job in large programs.

Listing 3, which calculates the time it takes light to travel a certain distance, has several constants—the real-number constant, speed_of_light, the character constant, prompt_char, and two string constants, program_name and prompt_string. It also has two real-number variables—miles and seconds. Line 13 prompts for the number of miles, and the "readln" statement in line 14 assigns your value to variable miles. Line 15 then calculates the number of seconds for light to cover that distance. Finally, lines 16–18 display the answer.

Large values work best. For example, the distance from the sun to the earth averages 93 million miles. Enter 9.3E7 to find out how long it takes for the sun's rays to get here.

To Comment or Not to Comment

Because of its many descriptive constants and variables, literal numbers are nearly absent from **Listing 3**. (The only literal value occurs in line 18 where seconds is divided by 60.) Well-chosen names, or *identifiers*, make Pascal programs readable and almost story-like. You can understand the purpose of line 15, even out of context, just as you might understand a sentence taken at random from a book.

Sometimes, however, a line may need an additional comment. Line 2 of **Listing 3** ends with a comment surrounded by the double-character symbols (* and *)—noting that the speed of light is expressed in miles per second. The compiler ignores all characters inside these symbols, even if the comment stretches for several lines. You can also use braces—{ and }—around comments.

"Well-chosen names make Pascal programs readable and almost story-like."

Brute-Force Magic Square

The final program this month, **Listing 4**, is a game I found in an old 1945 textbook, *Practical Mathematics*. Various algebraic formulas calculate a sort of brute-force magic square from any month, day, and year. (The program asks for your birthday, but any date will do.) The values of the three constants in lines 2–4 can be any one- or two-digit numbers. The 14 integer variables in line 6 hold the results of the expressions in lines 22–33.

Together, the values of the constants and variables form a magic square, with equivalent row and column sums, as the **Figure** shows. Notice how formatting commands (:4) in lines 41–44 line up values into four-character-wide columns. You can't specify decimal places here, as with real numbers, since integers have no fractional parts.

In addition to constants and variables, the program contains a few new elements. Pascal's MOD operator (line 22) forms the modulus, or remainder, of an integer division. The remainder

Figure. *The constants and variables from* ***Listing 4*** *form a magic square when their values are written in this sequence.*

a	e	i	m
b	f	j	n
c	g	k	p
d	h	l	q

of c divided by 100 is assigned to variable d. In line 23, the integer-division operator DIV divides c by 100, assigning the whole-number result back to variable c.

Also, **Listing 4** is divided into three procedures—initialize, calculate, and print. The main program in lines 49–53 activates each procedure in turn. Procedures, along with similar constructions called functions, are similar to subroutines in BASIC, as I'll show you next month. Also, in the next column, I'll begin exploring Apple Pascal's graphics abilities with a look at Turtlegraphics. ■

Tom Swan is the author of several computer books, including 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 17543. Please enclose a self-addressed, stamped envelope if you want a personal reply.*

Listing 4. *Magic Square.*

```
 0: PROGRAM Magic_Square;
 1: CONST
 2:    e = 6;
 3:    g = 1;
 4:    i = 7;
 5: VAR
 6:    a,b,c,d,f,h,j,k,l,m,n,p,q,sum : integer;
 7:
 8: PROCEDURE initialize;
 9: BEGIN
10:    writeln( 'Welcome to Magic Squares!' );
11:    writeln;
12:    writeln( 'Enter your birth date to the following' );
13:    writeln( 'prompts. Whole numbers only please!' );
14:    writeln;
15:    write( 'Day (ex. 12)? ' ); readln( a );
16:    write( 'Month (ex. 4)? ' ); readln( b );
17:    write( 'Year (ex. 1964)? ' ); readln( c )
18: END;
19:
20: PROCEDURE calculate;
21: BEGIN
22:    d := c mod 100;   (* e.g. if c = 1985, then d := 85 *)
23:    c := c div 100;   (* e.g. if c = 1985, then c := 19 *)
24:    sum := a + b + c + d;
25:    f := sum - ( a + b + e );
26:    h := a + b - g;
27:    j := 2 * a + b + c + e - g + ( i - sum );
28:    k := sum - ( a + c + i );
29:    l := sum - a - b - e + g - i;
30:    m := sum - (a + e + i );
31:    n := sum - a - b - c + g - i;
32:    p := a - g + i;
33:    q := a + b + c + e + i - sum
34: END;
35:
36: PROCEDURE print;
37: BEGIN
38:    writeln;
39:    writeln( 'Your Magic Square is...' );
40:    writeln;
41:    writeln( a:4, e:4, i:4, m:4 );
42:    writeln( b:4, f:4, j:4, n:4 );
43:    writeln( c:4, g:4, k:4, p:4 );
44:    writeln( d:4, h:4, l:4, q:4 );
45:    writeln;
46:    writeln( 'Row and column sums = ', sum )
47: END;
48:
49: BEGIN
50:    initialize;
51:    calculate;
52:    print
53: END.
```


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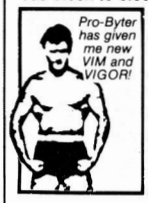

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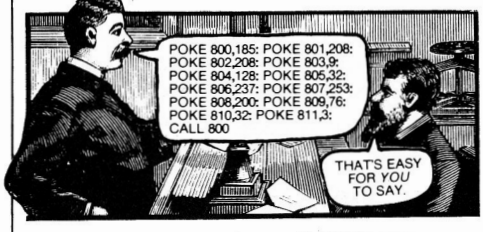

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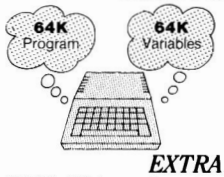
Even with 128K of memory, your Applesoft programs, pictures and variables only occupy and access the lower 48K. The EXTRA K disk contains several powerful programs that let you utilize *all* of that 128K capacity, speed and muscle.

EXTRA VARIABLES



Your Applesoft programs can now function undisturbed in main memory while all variables, strings and other data reside in your Apple's massive extra 64K. Everything functions normally—no special commands or procedures required.

EXTRA APPLE

EXTRA K lets you have two 64K Apples and programs in memory at once and switch between them at will. Plus, you can even have a ProDOS™ Apple and a DOS 3.3 Apple in memory simultaneously and swap files back and forth without subjecting yourself to Apple's *Convert* program.

EXTRA-FAST COPIES

Make disk copies fast and "on-the-spot" without re-booting! EXTRA K's "nibble copier" duplicates *and verifies* unprotected disks in 35 SECONDS instead of 1½ minutes. Thanks to your Apple's 128K, only 3-4 passes per disk are necessary.

EXTRA FEATURES

Compare any two disks, byte-for-byte. Create "dual personality" ProDOS/3.3 disks. Peek and poke auxiliary memory. Keep a live "logbook" of everything that has appeared on your text screen and review it when you want...

EXTRA SCREENS

Store all kinds of images in memory and display any one (all or part) instantly. Up to 7 hi-res pictures or 62 text screens can be stored at once. Call several pictures to the screen per second, opening up new Apple animation possibilities.

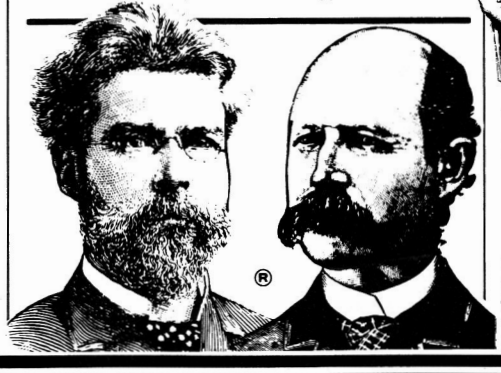
EXTRA K allows high-speed multi-screen switching.

DOS BOSS™

$24.00 (Compatible with any version of Apple II/DOS 3.3)

CUSTOMIZE DOS 3.3

Change *Catalog* command to *Cat,* or *"Syntax Error"* to *"Oops!",* or anything you want. ***Protect your programs:*** An unauthorized Save-attempt can print "Not Copyable". List Prevention, other useful tips and fascinating experiments. DOS Boss will teach you a ton about Apple programming!



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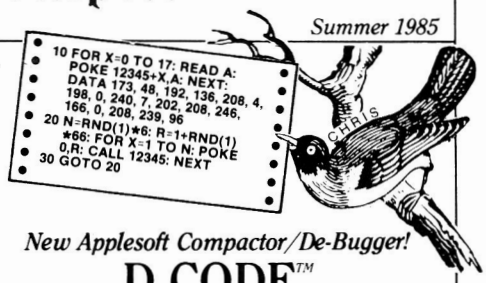
3990 OLD TOWN AVENUE, SUITE 102C
SAN DIEGO, CA 92110 PHONE 619-296-6400



New Applesoft Compactor/De-Bugger!

D CODE™

$39.95 (Compatible with any version of Apple II/DOS 3.3 *and* ProDOS™)

PROGRAM PACKER

D CODE squeezes all of the wasted and unused bytes out of your Applesoft programs, saving valuable memory space and increasing your programs' speed and efficiency.

Automatically combine program lines, shorten variable names and/or remove REMarks. D CODE also uncovers wasted program lines that can't possibly be executed.

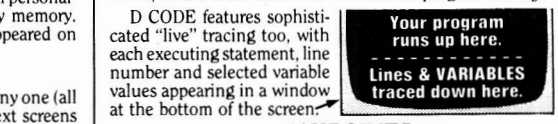
AUTO-PROOFREADER

Keyboard errors are caught as you type. If you enter an illegal program line, you are told immediately—*before* you (or worse—someone else) runs your program. Or you may simply type "CHECK" to scan an *entire program* in a couple of seconds and uncover potential crashes. If no mistakes are found, you get an immediate "NO ERRORS" message.

SUPER-TRACE

When a program stops or crashes, type "DUMP" to see the last 10-10,000 statements and line numbers that were executed, in the order executed—an instant program *history.*

D CODE features sophisticated "live" tracing too, with each executing statement, line number and selected variable values appearing in a window at the bottom of the screen.



BREAKPOINTS

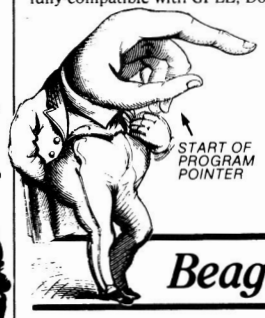
D CODE lets you set up de-bugging "breakpoints" so your program stops when you want. For example, you can ask that your program be stopped the moment X gets set to 99, or the 3rd time a particular program statement is encountered.

LIGHTNING-FAST FIND!

D CODE lets you find strings and variables *fast*—even large programs can be searched in about *2 seconds!* All lines with a specified word are automatically listed with the word highlighted. This feature alone is worth the price of D CODE.

GPLE COMPATIBLE

D CODE remains "transparent" to your programs and is fully-compatible with GPLE, Double-Take, ProntoDOS, etc.




```
1  HOME: HTAB 5: POKE
   33,28: FOR C=1 TO 92:
   POKE 50,255-192*
   (C=4 OR C=64)
9  J=J+1-31*(J=31):
   PRINT CHR$(9+(J=1));
   SPC(2+(J<10))J;:
   NEXT: PRINT
85 POKE 33,1: PRINT
   "JULY..AUG..SEPT...."
```

Beagle GAMES

I. O. SILVER™

$29.95 (Compatible with any version of Apple II)

HI-RES STRATEGY!

I. O. SILVER is *both* a thinking person's strategy game and a fast-action arcade game. Your job is to create a hi-res "Super Computer" on the screen while avoiding a pesty gang of computer bugs. I. O. Silver's Strategy Workshop lets you plan your moves before each level. Excellent high-speed animation and hi-res action. Great for ages 12 & up.

SOURCE CODE: Programmers can get fully commented *I. O. Silver* Source Code on three 2-sided disks for $30. Ordering info comes with the game.

BEAGLE BAG™

$29.50 (Compatible with any version of Apple II)

12 GREAT BASIC GAMES

Voted by Apple software buyers to *Softalk's* "Top-30 Most Popular" list, Beagle Bag is one of the best Apple game bargains on the market today. All games are LIST-able, so you can see what makes them work, or make changes.

Circle 179 on Reader Service Card.

Print Pictures on Your Printer!

TRIPLE-DUMP™

$39.95 (Compatible with any version of Apple II/DOS 3.3 *and* ProDOS™)

PRINT ANY APPLE IMAGE

TRIPLE-DUMP lets your dot matrix graphics-capable printer print *(1)* Hi-Res and Double Hi-Res graphics. *(2)* Lo-Res and Double Lo-Res graphics. *(3)* Forty and 80-Column text screen text.

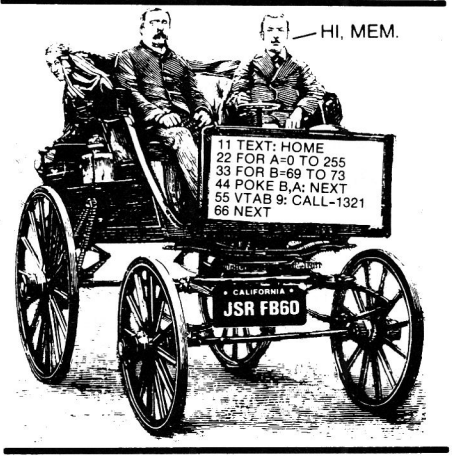
All kinds of images can be transfered to your printer with absolutely no programming knowledge. *Or* you can call Triple-Dump's routines from your own Applesoft Basic programs.

TRIPLE-DUMP gives you a full range of special effects—crop, rotate, magnify, compress, adjust density, etc.

GIANT BANNERS TOO

Print big signs and messages of all kinds (with 8½" high letters) on *any* kind of dot-matrix or letter-quality printer.

GIANT BANNERS



FATCAT™

$34.95 (Compatible with any version of Apple II/DOS 3.3 *and* ProDOS™)

APPLE-DISK LIBRARIAN

Organize your disk library! FATCAT enters all of your ProDOS and 3.3 disk catalogs into one or more "Master Catalog" for fast searching, sorting and printing. Find the files you're looking for and eliminate space-wasting duplicates.

You can update your Master Catalog at any time by simply letting FATCAT read in your new or altered disks.

ALPHABETIZE FILE NAMES

FATCAT will sort your ProDOS and 3.3 disks so they catalog in alphabetical order. Or you can re-arrange file names in any order. *Compare* any two files too, and find the differences.

DISKQUIK™

$29.50 (Compatible with Apple IIc or 128K IIe/DOS 3.3)

DOS 3.3 IN-MEMORY DISK DRIVE!

DISKQUIK makes your Apple IIc or 128K IIe think it has an extra drive connected to Slot 3. It's just like using a super-fast (hard-disk speed), silent drive. Catalog with a "CATALOG,S3" command. Save and load all kinds of files to and from RAM with normal commands (holds about *half* the data of a floppy).

MANY USES: For example, load often-used programs into memory when you boot, so they are ready to use.

PRONTO-DOS™

$29.50 (Compatible with any version of Apple II/DOS 3.3)

TRIPLE-SPEED DOS 3.3!

ProntoDOS lets you load & save files at triple speed. Hi-res pix, for example, load in under 3 seconds.

MORE RAM & DISK SPACE

Create high-speed bootable disks with 15 extra sectors of space. Move DOS 3.3 to your Language Card (64K reqd.) for an *extra 10K* of usable memory. Also: Pronto's new *TYPE* command instantly displays DOS 3.3 text file contents.

Hi-Res Shapes and Fancy Type!

APPLE MECHANIC™

$29.50 (Compatible with any version of Apple II/DOS 3.3)

HI-RES SHAPE ANIMATION

Your drawings are converted into hi-res "shape tables" so your programs can perform animation with Apple's built-in DRAW & XDRAW commands. ***List and Learn*** disk demos teach you how to create your own animated hi-res programs.

FANCY DISPLAY TYPE

Six proportionally-spaced hi-res screen-display fonts (both large and small) are included on the Apple Mechanic disk—

WESTERN: KLMN
apple: ABCDEFG
STENCIL: ABCDE

26 more typefaces are available on our *Apple Mechanic Typefaces*™ disk (sold separately: $20.00).

16-COLOR DOUBLE HI-RES GRAPHICS!

BEAGLE GRAPHICS

$59.95 (Compatible with Apple IIc or 128K IIe/DOS 3.3 *and* ProDOS™)

DOUBLE HI-RES

Access 16 hi-res colors and 560 (horiz.) x 192 (vert.) pixels (*twice* normal resolution) on your Apple IIc or 128K IIe.

AS AN ARTIST, you can draw, fill and label double hi-res pictures using just the keyboard, *or* your AppleMouse™, joystick, Koala Pad™ or Graphics Tablet. Easy-to-use icon-assisted ***Cut & Paste*** features make graphic manipulations easy. Any image section may be altered or re-located.

OR, AS A PROGRAMMER, you get 33 new commands for drawing, filling and manipulating double-res images. You can convert normal programs and pictures to double-res, save and load any image section, compress picture data to 1/3 disk space, produce double-res "slide shows" and more.

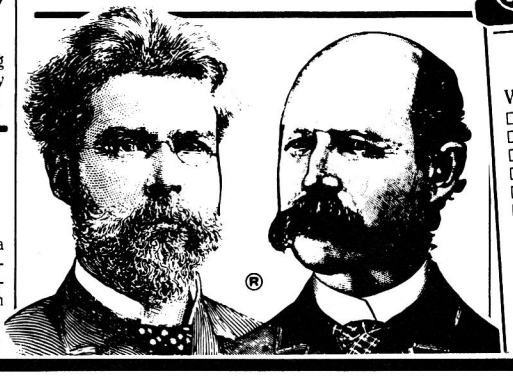
EXCELLENT REVIEWS—see Jan-85 *A-Plus* Magazine.

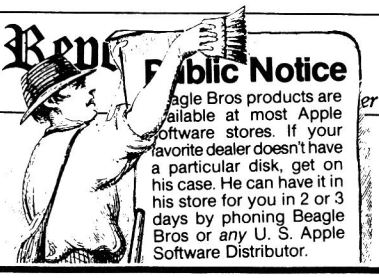
BEAGLE BASIC™

$34.95 (Compatible with unenhanced Apple IIe or 64K II+/DOS 3.3)

BETTER APPLE BASIC

Put Applesoft in RAM so you can change and improve it. Add new commands to Basic, like *ELSE, SWAP, TONE...*





Public Notice

Beagle Bros products are available at most Apple software stores. If your favorite dealer doesn't have a particular disk, get on his case. He can have it in his store for you in 2 or 3 days by phoning Beagle Bros or *any* U. S. Apple Software Distributor.

GPLE™

$49.95 (Compatible with any version of Apple II/DOS 3.3 *and* ProDOS™)

THE APPLE PROGRAM EDITOR

GPLE is Beagle Bros' "GLOBAL PROGRAM LINE EDITOR", the most popular, efficient way to edit Applesoft programs. GPLE works like a *word processor* for Basic program lines.

INSERT & DELETE

Now you can *quickly* make changes to your programs. No more awkward "escape-editing" to make changes. No more hassles with extra spaces in quote statements. No more slow "cursor-tracing" to the end of a line before pressing Return.

SEARCH & REPLACE

Find every occurrence of a string or variable in your programs. Or *replace* any word with any other. For example, change all X's to ABC's, or all "HORSE" strings to "COW".

FUNCTION KEYS

Define your own Apple "function keys". For example, ESC-1 can Catalog drive 1, ESC-N can clear the screen and type your name and address, etc. Customize your Apple with a set of ESC functions that perform any set of tasks that you want.

DOUBLE-TAKE™

$34.95 (Compatible with any version of Apple II/DOS 3.3 *and* ProDOS™)

2-WAY SCROLLING

Listings and disk Catalogs scroll both up *and* down, making file names and program lines easier and faster to find. You change scroll-direction with the Arrow keys. Machine language listings and Hex-Ascii dumps scroll two-ways too.

BETTER LIST FORMAT

Double-Take's easy-to-read listings have each Applesoft program statement on a new line for *fast* program reading.

BONUS FEATURES

A$="ABC" ←VARIABLE-DISPLAY: Instantly prints
X=3.14159 all of your program's variables in the
Y=255 order used, with their current values.

A$: 5 10 150 ←CROSS-REFERENCE: Alphabetizes
X: 10 20 3000 every variable your program uses, and
Y: 5 40 55 60 displays them with their line numbers.

Plus AUTO-LINE-NUMBER, improved Re-Number, Hex-Dec Convert, Program Stats, eliminate/re-define the cursor...

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APPLE Rx CLINIC

The Apple Clinic is a forum for discussing Apple II hardware and related subjects. If you have questions or answers, or want to make a statement, write to Jim Sather, Apple Clinic, inCider, *80 Pine Street, Peterborough, NH 03458.*

Apple //e Schematics

I've been trying for some time to find schematics and illustrative figures for the Apple //e computer and Disk II drive. If my equipment fails, I'd like to have this material on hand to make repairs. I understand that Sams Photofact has it available for the Apple II and II Plus, but not for the //e. Is it proprietary? I've tried inquiring about information at a couple of authorized Apple dealers here in New York City without success. They are really only sales people interested in selling systems and are not helpful in any other area.

Ralph Olsen
New York, NY

I've been in many computer dealerships and have never seen one run the way I would run it. My ideal dealer would talk to me user-to-user about industry trends, new software, computer projects, and anything to do with Apple computers. I behave that way when I demonstrate products at computer shows. I shoot the breeze for half an hour with a person who buys nothing from me, and both of us have a great time. However, I couldn't make a living selling things that way. I'm with you, Ralph. Most computer store owners and sales reps could learn a few things from us users. But they do have a right to make a living, and sales is the name of the game.

For schematics of the Apple //e, ask your computer dealer to order you the highly informative Apple //e Reference Manual *($30). A second option is to write Addison-Wesley and see if its version of the manual is available. I understand it's among the titles Apple intends to distribute through that publisher.*

You might also benefit from my book, Understanding the Apple //e *($24.95), which contains my own version of the Apple //e schematics with text and pictures describing //e operation. Any computer dealer can order it from Quality Software, and any full-service bookstore can order it from Brady Communications. A third book, Aaron Filler's* Apple Thesaurus *($29.95), contains //e and //c schematics as part of a remarkably comprehensive treatment of Apple II computing. Any computer dealer or full-service bookstore can order this invaluable book from Datamost. For a schematic of the Disk II drive, borrow an old DOS 3.2 or 3.3 reference manual from someone who owns an Apple II or II Plus.*

Jammed Scribe Cartridges

The March 1985 *inCider* review of the Scribe printer was very interesting. I have a problem with my Scribe printer with which my dealer hasn't been able to help me. When the printer ribbon is about half used, it binds in its cartridge, making the print head burn a hole in it. This has happened with three of the first six ribbons I've purchased (and more than once on the same ribbon), and is quite frustrating. Since the problem appears to be with the ribbon in the cartridge, my printer warranty doesn't help. The dealer's solution is to remove the cartridge, unwind the tightened ribbon, rewind it, then replace the cartridge. I wondered if anyone else has experienced this problem and if there is an easy solution. If not, I will soon part company with my Scribe printer and wouldn't advise anyone to buy one.

A drawback to the Scribe printer not mentioned in the review is that the ribbon cartridges cost $9.95 each and print about 20–30 pages. That's too expensive—another reason for not buying this printer.

Thanks for your help.

Brian Symonds
Powell River, BC

I have no experience with the Scribe printer, but I contacted the Apple technical-support people about your problem and found them to be helpful. They say your printer operation is abnormal and that bad ribbons, wax build-up on the print head, or misalignment of the printhead pressure against the platen could be causing your problems.

Your dealer may have received a shipment of ribbons that were wound too tightly or exposed to excessive heat in shipping and storage. Buying ribbons from a different source should prove or disprove this notion. A single bad ribbon could have caused print head-wax buildup when it jammed, thus causing the subsequent failures. Follow the procedures in chapter 5 of your user's manual for removing and cleaning the print head.

If you're using particularly thick paper, you might need to have a qualified technician adjust the pressure of the print head against the platen. If your dealer doesn't employ technicians who can make this adjustment, locate one who can or arrange for your dealer to ship the printer to an Apple service center. Your warranty should cover incorrect pressure adjustment.

I called a local dealer and received a quote of $6.25 for a black-ink Scribe ribbon, so you can definitely improve on your $9.95 cost. But even a ribbon price of $6 per 40 pages is awfully high. I couldn't tolerate such a price for the large quantities of draft material I generate, but it might not be too bad for someone needing low-quantity, high-quality black ink or color printing

by Jim Sather

NORTHEASTERN Software

For the APPLE

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QUME	
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SG-10C	259.00
SG 15	389.00
SR 10	490.00
SR 15	589.00
SD 10	345.00
SD 15	469.00
TOSHIBA	
P1340	549.00
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351SP	1,189.00

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Applied Eng. Viewmaster	105.00
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Hayes Mach III	33.00
Hayes Micromodem IIe w/SCI	129.00
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I/O Silver	17.00
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Circle 310 on Reader Service Card.

from a quiet $300 printer. Persons thinking of buying a Scribe should evaluate its cost (including ribbon cost) and performance compared to other printers that meet their needs.

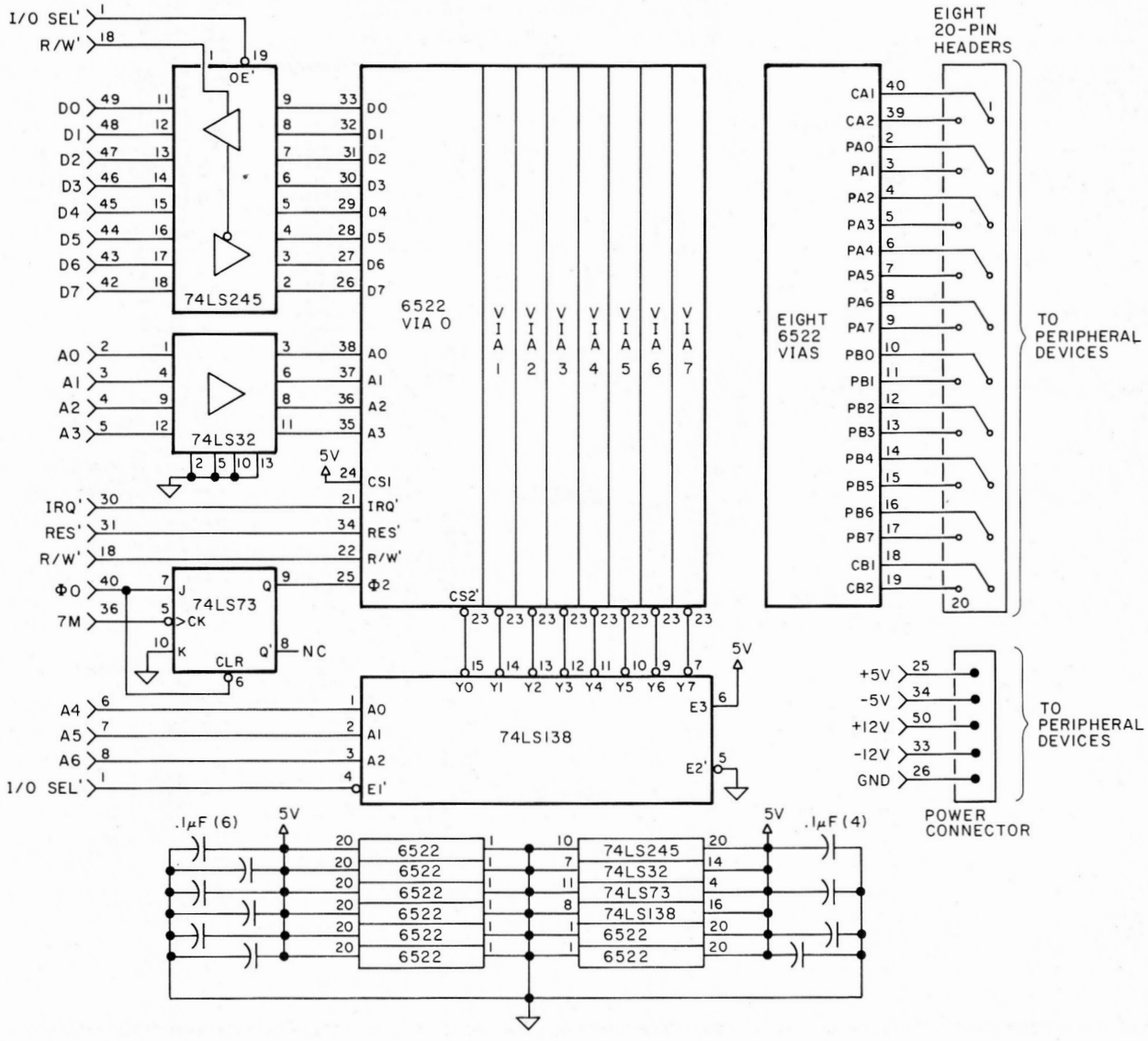
More on Trains

Last month, I told C. de Gier that it wouldn't be difficult to add a 74LS138 to the John Bell Engineering 32-channel parallel I/O card and expand it to 96 channels. I felt a little guilty about that since Mr. de Gier claimed no digital-design experience, so I put together a schematic (see **Figure 1***) to illustrate the interface card. My circuit is a 128 I/O-channel Apple interface card made up of eight 6522 VIAs (versatile interface adapters); each VIA has two programmable 8-bit parallel I/O ports.*

The VIAs are aptly named because they are highly versatile. In addition to its parallel ports, each VIA has two 16-bit interval timers; capabilities include individual channel-direction control, bidirectional data latching, I/O handshaking, serial-to-parallel or parallel-to-serial conversion, and interrupt generation. The 20-page data sheet Rockwell International (Rockwell document number 29000 D47) publishes fully describes these capabilities and programming details. Rockwell will probably send you a data sheet if you write and request one. You can purchase a 6522 and a data sheet from many electronic mail-order houses including Jameco Electronics and Mouser Electronics.

A 6522 has 16 control registers accessed at 16 addresses as shown in the 6522 data sheet. On my interface card, a VIA register is accessed at $Cxyz where x is the Apple slot

Figure 1. *A 128-bit (16-by-8) Apple digital-interface card.*



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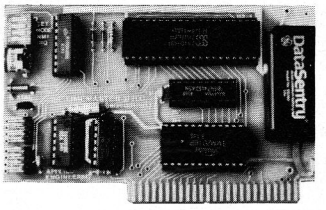

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H.O	PRO-DOS COMPATIBLE YES	INCLUDES DOS DATER YES	MILLISECOND TIME YES	YEAR DATA YES	LARGEST SAMPLE SOFTWARE YES	REMOTE SET PORT YES	BSR PORT YES	EMULATES ALL OTHER CLOCKS YES
BRAND A	NO	NO	YES	NO	NO	NO	NO	NO
BRAND C	NO	NO	NO	NO	NO	NO	NO	NO
BRAND M	NO	NO	NO	NO	NO	NO	NO	NO
BRANDP	YES	YES	NO	YES	NO	NO	NO	NO
BRAND S	NO	NO	NO	YES	NO	NO	NO	NO
BRAND T	YES	NO	NO	NO	NO	NO	YES	NO

Full emulation of all other clocks. Yes, we emulate Brand A, Brand T, Brand P, Brand C, Brand S and Brand M too. It's easy for the H.O. to emulate other clocks, we just drop off features. That's why the H.O. can emulate others, but none of the others emulate us. The Timemaster II H.O. will automatically emulate the correct clock card for the software you're using. Of course most programs will use the Timemaster II H.O. in its native mode, but it's comforting to know that you won't have to worry about compatibility problems. You can also give the H.O. a simple command to tell it which clock to emulate. This is great for writing programs for those poor unfortunates who bought some other clock card.

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SUP'RTERM	MORE	NO	NO	NO	NO	NO	YES	YES
WIZARD 80	MORE	NO	NO	NO	YES	NO	YES	YES
VISION 80	MORE	YES	NO	NO	YES	NO	NO	NO
OMNIVISION	MORE	NO	NO	NO	NO	NO	YES	YES
VIEWMAX 80	MORE	YES	NO	NO	YES	NO	NO	YES
SMARTERM	MORE	YES	NO	NO	NO	YES	YES	NO
VIDEOTERM	MORE	NO	YES	NO	YES	YES	NO	YES

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*number (1–7), y is the VIA number (0–7), and z is the accessed VIA register ($0–$F). From Applesoft, access a VIA register at 49152 + 256 * SLOT + 16 * VIA + REG. This card will not work in slot 0 of an Apple II or II Plus.*

C. de Gier needs a high-capacity control interface to service a complex model railroad, but the 128-channel I/O card is also useful in many other tasks—allowing a single Apple to service a network of 16 other Apples, terminals, or digital devices with 8-bit parallel I/O capability, for example. The interrupt-generating capability of the 6522 makes it possible to fully use the computing power of the Apple in such an environment.

By way of warning, my 128-channel I/O card exists only on paper. I've presented it only as a possible way to create an interface to numerous devices with an Apple computer. You would have to lay it out carefully, since an Apple interface card with eight 40-pin ICs and eight 20-pin headers would be very crowded. Additionally, it's fairly difficult to arrange the headers so that eight 20-wire ribbon cables can be routed out the back of an Apple. A final consideration is power-supply loading. The eight VIAs will draw considerable current on the Apple +5-volt line. I wouldn't attempt to install more than one such card in an Apple, and I recommend using a cooling fan to reduce power-supply temperature on any Apple to which you add this card.

Switch-A-Slot and the Mouse

Your lead-off question in the March Apple Clinic dealt with slot switching. I purchased a Switch-A-Slot some time ago from Southern California Research Group (overpriced, but that isn't the issue) and used it quite successfully. At one point, I had a John Bell 6522 card, a Hayes Micromodem, and a Mockingboard installed in it. Then I bought an Apple Mouse for my //e. The mouse works fine when it is selected, but no other cards can be selected with the mouse card in the Switch-A-Slot.

I've written to the SCRG people asking if they had any idea what was going on, but I have received no reply. After several months, I can safely assume they don't intend to answer. As I understand it, the Switch-A-Slot has all cards connected to the Apple, but only applies voltage to the one selected. Have you any idea what the trouble is?

James W. Patton
Littleton, CO

I happen to know Phil Wershba at SCRG well enough to get on his case about not answering your letter. I'm sure you will have heard from SCRG by the time you read this.

SCRG warns customers that some cards won't work in the Switch-A-Slot. The Mouse is one. SCRG couldn't tell me why the mouse card interferes with other Switch-A-Slot cards, but they do confirm that your symptoms are normal. Their basic position is that enough cards do work in the Switch-A-Slot that it will solve the expansion requirements of some Apple users.

Continued on p. 66.

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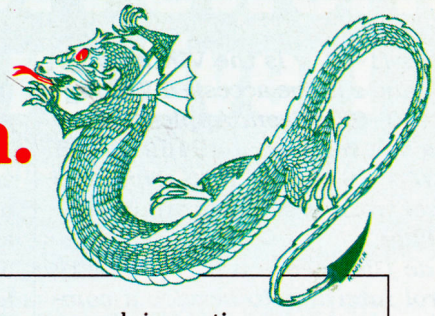

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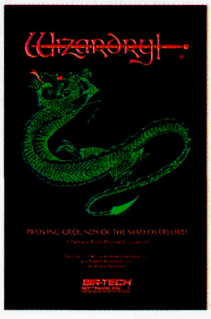

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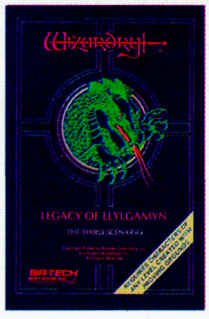

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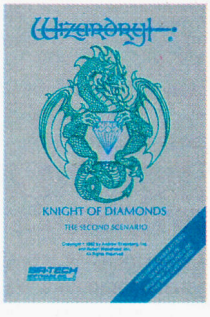

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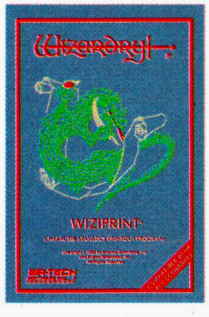

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Continued from p. 63.

Your comment about Switch-A-Slot being too expensive ($179.50) is correct if you compare it to mass-marketed computer peripherals manufactured on an assembly line. The Switch-A-Slot is also too expensive for me, but I'm thankful many Apple consumers are willing to pay substantial sums to achieve their objectives. It gives small companies that can't bring products like Switch-A-Slot to market for less than $179.50 a chance to survive. Small- and medium-sized companies are the life of the industry as far as I am concerned. If they disappeared, much of the thrill of being an Apple user would go with them.

ProDOS on Franklins

In the March 1985 Apple Clinic, Leonard Rosenthol referred to a patch that let him use ProDOS on his Franklin. I haven't been able to find such a patch. What can you tell me about it?

Fred Custer
Glendale, CA

***Mr. Rosenthol's casual statement generated numerous inquiries. I found information on patching ProDOS for operation with Apple compatibles in several publications. The main patch necessary is similar to the track 1, sector 9 patch shown in* Figure 2.**

I made two patches to a ProDOS 1.0.1 Master disk and sent it to Leonard Rosenthol for verification. He says the disk works fine on his Franklin. For the best chance of successfully patching any version of ProDOS, I recommend making the patches using a "ZAP" program that has disk-search features such as the sector editor of Copy II Plus, version 5.2. Just search for the $AE $B3 $FB and $69 $0B $D0 $03 byte strings and change them as shown below.■

Figure 2. *Patch to make ProDOS 1.0.1 boot on Franklin.*

Track/Sector—ByteChange
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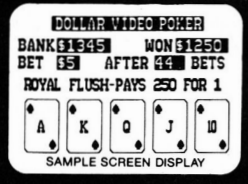

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Randomly Speaking

by Oswin A. Wilson

There's nothing random about it. When you use DOS 3.3, you'll find additions in your random-access files that create a random-access mess. Who would have thought the culprit, an extra carriage return, could wreak such havoc?

I stumbled on the problem after I wrote a program that kept data in sequential files. It required 84 files, with one file allocated for each of 84 operating units. I needed another disk for each month's new data based on the total number of files stored on a disk rather than the number of bytes stored. I changed the files from sequential to random access so I'd use only one file each month instead of 84. The process would not only save disks, but would also make it more convenient to store and use the data.

Premeditated Problems

I had to check the DOS 3.3 manual for the correct syntax for using random-access files. The manual says:

OPEN f, Lj[,Ss] [,Dd] [,Vv]
Example: OPEN SESAME, L2
OPEN allocates a 595-byt file buffer to the random-access file f, and sets the record length to the number of bytes j specifies. The number j must be in the range 1 to 32767; j defaults to 1.

This information, like the spelling of byte, is only partially correct. To show how misleading it is, type in and run the short program in **Listing 1**. (As you've included the MONI,O,C command in line 30, the computer displays on screen all messages to and from the disk. See **Figure 1** for an example.)

After you run **Listing 1**, you'll find that the computer stores R$, 64 bytes long, 84 times in TESTFILE.1 as records 1 through 84. Each record was specified to DOS as 64 bytes by the L64 when the file was OPENed.

The Investigation

In **Listing 1**, the DOS writes the record to disk and adds a carriage return. The result: The first 64 bytes are contained in R$ and the 65th byte is the carriage return. DOS then writes the second record to disk, starting at the 65th byte, thereby overwriting the end-of-record carriage return of the first record. This progression continues until the 84th record, which is written normally since its carriage return isn't overwritten.

When the program attempts to read the records, it never finds the end-of-record carriage returns. If the record number is lower than 81, the computer reads 256 bytes then writes a

Figure 1. *The results of accessing a file created with* ***Listing 1****.*

```
THIS PROGRAM SHOWS YOU WHAT
HAPPENS WHEN YOU CREATE A
RANDOM-ACCESS DATA FILE USING
THE SYNTAX GIVEN IN THE DOS MANUAL
LENGTH OF EACH RECORD = 64


EACH RECORD SHOULD READ:
S********1*********2*********3*********4*********5*********6***4

RECORD 79 READS:
S********1*********2*********3*********4*********5*********6***4S********1******
***2*********3*********4*********5*********6***4
```

Listing 1. *This program creates a random-access data file with the file-command syntax listed in the DOS manual.*

```
10  REM  *** FILETESTER.1 ***
20 D$ =  CHR$ (4)
30  PRINT D$"MONI,O,C"
40  HOME : VTAB 10
50  PRINT "THIS PROGRAM SHOWS YOU WHAT"
60  PRINT "HAPPENS WHEN YOU CREATE A"
70  PRINT "RANDOM-ACCESS DATA FILE USING"
80  PRINT "THE SYNTAX GIVEN IN THE DOS MANUAL"
90  FOR I = 1 TO 4000: NEXT
100  REM  DEFINE THE RECORD
110 R$ = "S********1*********2*********3*********4*********
     5*********6***4"
120 L = 64
130  PRINT "LENGTH OF EACH RECORD = ";L
140  PRINT D$;"OPEN TESTFILE.1,L64"
150  FOR I = 1 TO 84
160  PRINT D$"WRITE TESTFILE.1,R"I
170  PRINT R$
180  NEXT
190  PRINT D$"CLOSE TESTFILE.1"
200  REM  READ A RECORD
210  PRINT D$"OPEN TESTFILE.1,L64"
220  PRINT D$"READ TESTFILE.1,R79"
230  INPUT IN$
240  PRINT D$"CLOSE TESTFILE.1"
250  PRINT : PRINT "EACH RECORD SHOULD READ:"
260  PRINT R$
270  PRINT : PRINT "RECORD 79 READS:"
280  PRINT IN$
290  END
```

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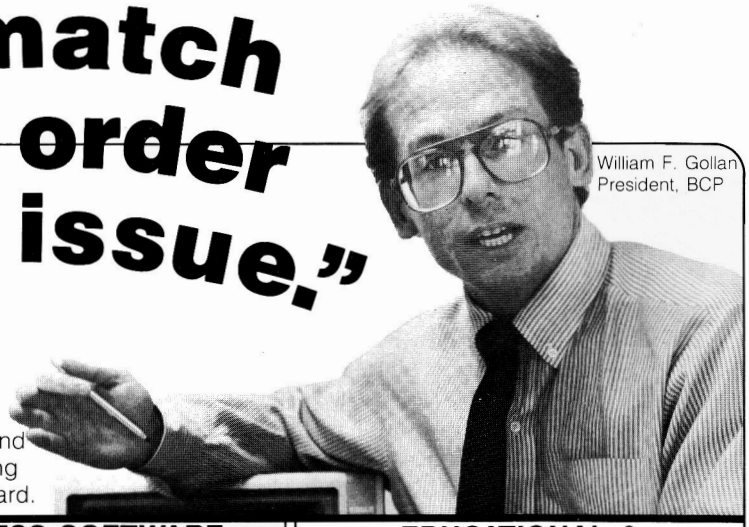

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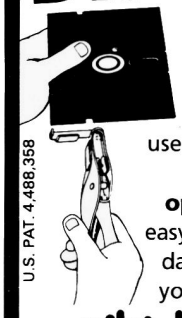

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Figure 2. *Typical session resulting from* ***Listing 2.***

```
THIS PROGRAM CREATES A RANDOM-
ACCESS DATA FILE THAT ACCOUNTS
FOR THE CARRIAGE RETURN THAT
DOS ADDS TO EACH RECORD.
THE LENGTH OF EACH RECORD IS 64


EACH RECORD SHOULD READ:
S********1*********2*********3*********4*********5*********6***4

RECORD 79 READS:
S********1*********2*********3*********4*********5*********6***4
```

Listing 2. *This program creates a random-access data file that leaves room for the extra carriage return.*

```
10  REM  *** FILETESTER 2 ***
20 D$ =  CHR$ (4)
30  PRINT D$"MONI,O,C"
40  HOME : VTAB 10
50  PRINT "THIS PROGRAM CREATES A RANDOM-"
60  PRINT "ACCESS DATA FILE THAT ACCOUNTS"
70  PRINT "FOR THE CARRIAGE RETURN THAT "
80  PRINT "DOS ADDS TO EACH RECORD."
90  FOR I = 1 TO 4000: NEXT
100  REM  DEFINING THE RECORD
110 R$ = "S********1*********2*********3*********4*********
     5*********6***4"
120 L =  LEN (R$)
130  PRINT "THE LENGTH OF EACH RECORD IS "L
140  PRINT D$"OPEN TESTFILE.2,L"L + 1
150  FOR I = 1 TO 84
160  PRINT D$"WRITE TESTFILE.2,R"I
170  PRINT R$
180  NEXT
190  PRINT D$"CLOSE TESTFILE.2"
200  PRINT D$"OPEN TESTFILE.2,L"L + 1
210  PRINT D$"READ TESTFILE.2,R79"
220  INPUT IN$
230  PRINT D$"CLOSE TESTFILE.2"
240  PRINT : PRINT "EACH RECORD SHOULD READ:"
250  PRINT R$
260  PRINT : PRINT "RECORD 79 READS:"
270  PRINT IN$
280  END
290  PRINT D$"CLOSE TESTFILE.2"
```

Listing 3. *Peek to Poke.*

```
0  HOME : VTAB 6
1 T$ = "*******************************": GOSUB 19
2 T$ = "*                             *": GOSUB 19
3 T$ = "*        PEEK TO POKE         *": GOSUB 19
4 T$ = "*                             *": GOSUB 19
5 T$ = "*             BY              *": GOSUB 19
6 T$ = "*         H. PORTNOY          *": GOSUB 19
7 T$ = "*                             *": GOSUB 19
8 T$ = "*******************************": GOSUB 19
9  REM
10  REM
11  REM
12  PRINT : PRINT : PRINT
13  REM
14 T$ = "CONVERTS A BINARY SUBROUTINE": GOSUB 19
15 T$ = " TO A POKE/DATA SUBROUTINE  ": GOSUB 19
16 T$ = "    FOR A BASIC PROGRAM     ": GOSUB 19
17  REM
18  VTAB 24: HTAB 15: PRINT "PRESS ANY KEY TO CONTINUE";: GET
     A$: GOTO 20
19  HTAB 5: PRINT T$: RETURN
20  ONERR  GOTO 600
30  REM  INPUT
40  HOME : PRINT "ENTER SOURCE ADDRESS": PRINT " IN DECIMAL
     OR HEXADECIMAL": PRINT "PRECEDE HEXADECIMAL ADDRESS W
    ITH '$'": PRINT "HEXADECIMAL RANGE: 0 TO $FFFF": PRINT
```

Listing continued.

slash (/) before reading more of the file in its search for a carriage return. If the computer is reading the first record, it must read the whole file before it finds a carriage return. The only good record out of 84 is the last one. The rest of the file is useless.

The Solution

Put an end to this frustration: Type in and run **Listing 2** and you'll see that random-access files do work after all. (A typical session appears in **Figure 2**.) The manual stipulates that you set "j" equivalent to the length in bytes of the record. The carriage return isn't part of the record; it's a requirement of the disk operating system. If the system decides to insert a carriage return, it should make storage allowances. But since it doesn't, you have to.

In the second program, the record length specified in the OPEN command is the record length *plus* 1 byte to account for the carriage return DOS adds after each record. DOS writes the second record to disk from the 66th byte, and so on through the whole file. DOS then correctly reads back the records from the disk.

And that cleans up the mess you didn't expect to get into. See—you *can* have your random text files and read them, too.■

Address correspondence to Oswin A. Wilson at 50 Poinciana Avenue, Yeppoon, Queensland 4703, Australia.

Peek to Poke

by Harold D. Portnoy

Need an easy way to capture a binary subroutine in memory with a BASIC text file you can append to a BASIC program? In contrast to the program Poker (listed in the *DOS Programmer's Manual*), which converts a binary subroutine into multiple POKEs, the program presented here converts it to a concise subroutine—a one-line FOR. . .NEXT loop with data statements. For example, Poker converts a 240-byte binary subroutine to 29 lines of BASIC and ten disk sectors. Peek to Poke, the program shown here

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Listing continued.

```
      "DECIMAL RANGE: Ø TO 65535": PRINT
 5Ø   INPUT "ENTER BEGINNING ADDRESS: ";A$: ON  LEFT$ (A$,1) =
      "$" GOTO 7Ø: GOSUB 53Ø: IF ER THEN ER = Ø: GOTO 5Ø:
 6Ø BA = DC: PRINT : GOTO 8Ø
 7Ø A$ =  RIGHT$ (A$, LEN (A$) - 1):V = 1: GOSUB 42Ø:BA = DE
      C: PRINT
 8Ø   INPUT "ENTER END ADDRESS: ";A$: ON  LEFT$ (A$,1) = "$" GOTO
      1ØØ: GOSUB 53Ø: IF ER THEN ER = Ø: GOTO 8Ø
 9Ø EA = DC: PRINT : GOTO 11Ø
 1ØØ A$ =  RIGHT$ (A$, LEN (A$) - 1):V = 2: GOSUB 42Ø:EA = D
      EC: PRINT
 11Ø  IF BA > (EA) THEN  PRINT : PRINT "BEGINNING ADDRESS >
      END ADDRESS": GOSUB 59Ø: GOTO 5Ø
 12Ø L = EA - BA + 1: PRINT "LENGTH IN BYTES= ";L:L = L - 1
 13Ø  PRINT
 14Ø  INPUT "FILE NAME: ";F$: PRINT : IF  LEFT$ (F$,1) < "A"
       OR  LEFT$ (F$,1) > "Z" THEN  GOSUB 58Ø: GOTO 14Ø
 15Ø  INPUT "SLOT NUMBER (1-6): ";S: IF S < 1 OR S > 6 THEN
       GOSUB 58Ø: GOTO 15Ø
 16Ø  INPUT "DRIVE NUMBER (1-2): ";D: PRINT : IF D < 1 OR D >
      2 THEN  GOSUB 58Ø: GOTO 16Ø
 17Ø  INPUT "STARTING LINE NUMBER: ";SL: IF SL < Ø OR SL > 6
      3999 THEN  PRINT : PRINT "LINE NUMBERS MUST BE IN RANG
      E": PRINT "OF Ø TO 63999": GOSUB 59Ø: GOTO 17Ø
 18Ø  INPUT "LINE NUMBER INTERVAL: ";LI: IF LI < Ø OR LI > 1
      Ø THEN  PRINT : PRINT "LINE INTERVAL MUST BE IN": PRINT
      "RANGE OF Ø TO 1Ø": GOSUB 59Ø: GOTO 18Ø
 19Ø D$ =  CHR$ (13) +  CHR$ (4)
 2ØØ  PRINT : PRINT "ONE MOMENT, PLEASE": PRINT "EXEC FILE '
      ";F$;" 'BEING CREATED": PRINT
 21Ø  REM   CREATE EXEC FILE WHICH CONTAINS POKES
 22Ø  PRINT D$;"OPEN";F$;",S";S;",D";D
 23Ø  PRINT D$;"DELETE";F$
 24Ø  PRINT D$;"OPEN";F$
 25Ø  PRINT D$;"WRITE";F$
 26Ø  PRINT SL;"REM POKES FOR ";F$;" SUBROUTINE AT ADDRESS:"
      ;BA;"-";EA;". ";EA - BA + 1;" BYTES"
 27Ø  PRINT SL + LI;"FOR N = Ø TO ";L;":READ P: POKE ";BA;"
      +N,P: NEXT"
 28Ø  FOR I = Ø TO  INT (L / 6Ø): REM    BREAK UP DATA LINES
       INTO 6Ø POKES EACH
 29Ø  PRINT SL + LI * (I + 2);"DATA ";
 3ØØ  FOR J = Ø TO 59
 31Ø  PRINT  PEEK (BA + (I * 6Ø + J));
 32Ø  IF J < 59 AND I * 6Ø + J < L THEN  PRINT ",";: GOTO 34
      Ø: REM   SEPARATE EACH POKE WITH A COMMA
 33Ø  PRINT : REM   END DATA LINE
 34Ø  IF L = I * 6Ø + J THEN J = 59: PRINT
 35Ø  NEXT J,I
 36Ø SL = SL + LI * (I + 2): IF SL > 63999 THEN  PRINT D$"CL
      OSE": PRINT "LINE NUMBERS EXCEED RANGE ( > 63999)": PRINT
      "PLEASE RE-ENTER USING SMALLER": PRINT "LINE NUMBER OR
       INTERVAL"; CHR$ (7): PRINT : GOTO 17Ø
 37Ø  PRINT SL;"RETURN"
 38Ø  PRINT "LIST": REM    FINISH BY LISTING NEW POKE SUBROU
      TINE
 39Ø  PRINT D$;"CLOSE"
 4ØØ  PRINT D$;"EXEC";F$
 41Ø  DEL Ø,63Ø
 42Ø  REM   HEXDEC TO DEC CONVERSION AND INVALID ENTRY FILTE
      R
 43Ø L =  LEN (A$):DEC = Ø
 44Ø  FOR N = Ø TO L - 1
 45Ø HD =  ASC ( MID$ (A$,L - N,1))
 46Ø  IF HD > 47 AND HD < 58 THEN HD = HD - 48: GOTO 49Ø
 47Ø  IF HD > 64 AND HD < 71 THEN HD = HD - 55: GOTO 49Ø
 48Ø  GOSUB 58Ø:N = L:INV = 1: GOTO 5ØØ
 49Ø DEC = DEC + HD * 16 ^ N
 5ØØ  NEXT : IF INV THEN  POP :INV = Ø: ON V GOTO 5Ø,8Ø
 51Ø  PRINT "DECIMAL ADDRESS= ";DEC: RETURN
 52Ø  REM   DEC TO HEXDEC CONVERSION AND INVALID ENTRY FILTE
      R
```

Listing continued.

Listing continued.

```
530  FOR N = 1 TO  LEN (A$): IF  MID$ (A$,N,1) < "Ø" OR  MID$
     (A$,N,1) > "9" THEN ER = 1
540  NEXT :DC =  VAL (A$): IF DC < Ø OR DC > 65535 THEN ER =
     1
550  IF ER THEN  GOTO 58Ø
560 HX$ = "":DEC = DC: FOR N = 3 TO Ø STEP  - 1:A =  INT (D
     EC / 16 ^ N):DEC = DEC - A * 16 ^ N:H$ =  CHR$ ((A + 4
     8) * (A < 1Ø) + (A + 55) * (A > 9)):HX$ = HX$ + H$: NEXT
     : PRINT "HEXADECIMAL ADDRESS $";HX$: RETURN
57Ø  REM  ERROR MESSAGES
58Ø  PRINT : PRINT "INVALID ENTRY":
59Ø  PRINT "PLEASE RE-ENTER"; CHR$ (7): PRINT : RETURN
6ØØ E =  PEEK (222): ON E <  > 254 GOTO 61Ø: GOSUB 58Ø: RESUME

61Ø  PRINT : IF E > Ø AND E < 16 THEN  PRINT "UNANTICIPATED
      DOS ERROR": PRINT "BE SURE SLOT AND DRIVE NUMBERS": PRINT
     "ARE CORRECT": GOTO 63Ø
62Ø  PRINT "UNANTICIPATED BASIC ERROR"
63Ø  PRINT "PROGRAM WILL START OVER"; CHR$ (7); CHR$ (7); CHR$
     (7): FOR N = 1 TO 3ØØØ: NEXT : CALL  - 3288: GOTO 3Ø
```

End of listing.

(see **Listing 3**), compacts the same number of bytes into six lines and four disk sectors.

After you enter the program, save it to disk using the file name PEEK/POKE, then run it and follow the prompts. Enter the beginning and ending addresses of the binary subroutine in memory. Either decimal or hexadecimal notation is acceptable. (The number must be preceded by a dollar sign [$] if you use hex.) Regardless of the notation you enter, the program prints the other type for verification. (Error-trapping prevents invalid entries throughout the program.) Next, enter the text-file name under which you're saving the subroutine, the slot and drive numbers of the disk to which you are saving the file (range: slot 1–6; drive 1–2), the beginning line number of the BASIC subroutine (range 0–63999), and the line interval for the subroutine (range 0–10).

If the combination of the initial line number and line interval results in a line number greater than 63999, the prompt will request that you enter smaller values. For a larger line interval, renumber the BASIC subroutine using the RENUMBER program on the DOS System Master disk.

Entering this information creates a text file. EXEC the file to display the binary subroutine in the form of a BASIC subroutine consisting of a FOR. . . NEXT loop and data statements.

The first line in the BASIC subroutine is a REM statement containing the file name, the beginning and ending addresses of the binary subroutine in decimal notation, and the number of bytes in the subroutine. The next line is the FOR. . .NEXT loop that reads the data statements and POKEs the values into memory. Data statements containing up to 60 bytes each follow. (The number of data statements determines the number of bytes in the subroutine.) The final line of the subroutine is a RETURN statement.

To add the subroutine to a program, load the program into memory from disk, and EXEC the text file containing the subroutine. This procedure appends it to the program in memory. List the entire modified program for review. Note that the subroutine overwrites any program lines the original program and the subroutine have in common. A GOSUB accesses the subroutine in the program and POKEs the bytes into memory. A CALL statement follows to activate the subroutine.

The heart of this program lies in lines 210–410, which create the text file. You should have no difficulty understanding the program if you carefully read the section on the command (EXEC) file in the *DOS Programmer's Manual*, then review these lines. The remainder of the program is nothing more than input, invalid-entry, and error-trapping statements, with hex-to-decimal or decimal-to-hex transformation. Converting binary to BASIC has never been so painless. ■

Write to Harold D. Portnoy at 1431 Woodward, Bloomfield Hills, MI 48013.

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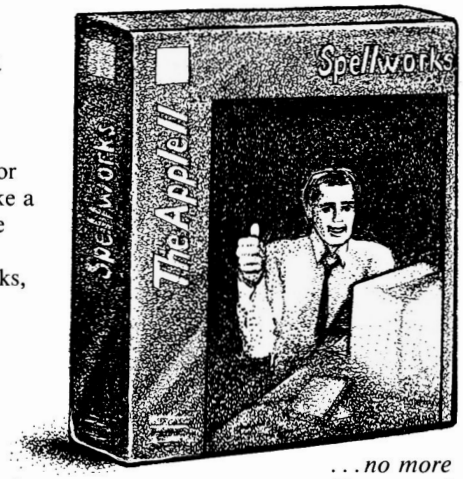

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LISTing Your Programs

by Mark Yannone

If you're tired of typing the same long string of commands just to print a program listing, here's an easy alternative. Type the short program shown below (see **Listing 4**) into a text file (I named mine LIST) using a text editor or word processor.

Then just load any BASIC program, turn on your printer, and type EXEC LIST. LIST clears the screen and reduces the screen size. After activating the printer, it determines the length of the BASIC program in bytes and lists the program in 80-column format. The program size is determined by subtracting the start of program address (contained in locations 103 and 104) from the end of program address (found in locations 175 and 176). When it's finished, it advances the paper to the perforation and deactivates the printer; then it reconnects DOS and restores the screen to 40 columns—all without lengthy access commands. ■

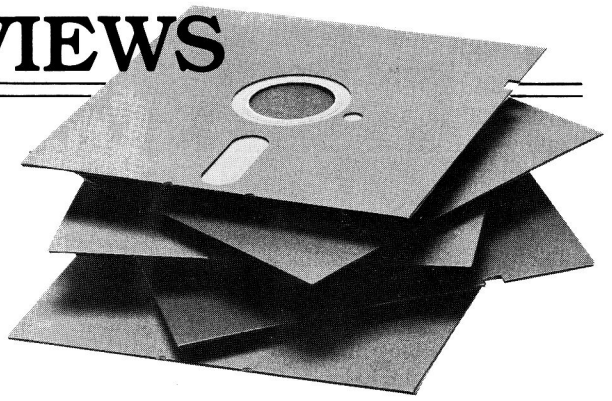
Address correspondence to Mark Yannone at 2202 North Laurel Avenue, Phoenix, AZ 85007.

Listing 4. *LIST lets you print your BASIC programs without typing a long series of commands. The program has been tested under both DOS 3.3 and ProDOS.*

```
HOME:POKE33,33:PR#1:PRINT
"PROGRAM LENGTH: "PEEK(175)
+PEEK(176)*256-PEEK
(103)-PEEK(104)*256"
BYTES":PRINT:LIST:
PRINT CHR$(12);:PR#0:
CALL1002:TEXT
```

Got a hint of your own? **inCider** ***would like to see it. If we can use it in Hints 'n' Techniques, we'll buy it from you. Send your tip to:*** **inCider,** ***80 Pine Street, Peterborough, NH 03458.***

SOFTWARE REVIEWS



inCider's Ratings

★★★★ Superlative
★★★ Above average
★★ Good
★ Not recommended
Stay away

BetterWorking Series: Spreadsheet and File & Report

Spinnaker Software
1 Kendall Square
Cambridge, MA 02139

Spreadsheet and data-base manager
Apple //e and //c, 128K
$59.95 each

★

Better isn't always good enough. Such is the case with BetterWorking Series: Spreadsheet and File & Report—productivity software from Spinnaker Software. Although better priced than its counterparts, the BetterWorking Series isn't better working.

Three programs comprise the Spinnaker series: Spreadsheet, File & Report, and Word Processor. These modules provide low-level, awkward integration through a utilities disk in the File & Report package. If you have only one disk drive, however, you can purchase each program separately.

File & Report would be a nice program with proper nurturing. Although well-conceived and friendlier than Spreadsheet, it eventually met a premature death after it scrambled my data and crashed—not an impressive act for a data-base manager.

File & Report makes it easy to design layouts for the electronic "index cards" (records) you want on each disk. At the touch of a button—or two—you can remove your second cousin from your Christmas card list or the gadfly from your bowling league.

As with other filing systems, the program can find and sort records meeting your search criteria. File & Report also lets you print mailing labels. File & Report makes it easy to create backups and check how much space remains on storage disks. With a little effort, you can also copy your blank index-card layout to another disk as your data base expands.

While the File program is on side 1 of the File & Report disk, side 2 lets you pull information from records and then combine the data into columns of information called a report. You can divide the report with headers, footers, and some simple, derived calculations (summing, averaging, counting).

A Different Twist

Spreadsheet performs most tasks well, although its set-up is peculiar. In comparable programs, such as the popular VisiCalc, the columns are lettered and the rows are numbered. For some reason, Spinnaker's Spreadsheet is just the opposite. The 256 rows are lettered A through Z, then AA through AZ, BA through BZ, and so on. The 100 columns are numbered 0 through 99.

The cells in this matrix are addressed as coordinates. Normally, the first number indicates the horizontal column or x value and the second number represents the vertical row or y value. This sequence is reversed in Spreadsheet. The row is given first; the column second. For example, the cell in the fourth column, first row is labeled A3, not 3A.

The Great Imitator

Spreadsheet imitates VisiCalc—just look at the many similar commands. But while VisiCalc has advanced to full-word prompts, Spreadsheet still uses mnemonics. You must remember that B is for blanking a cell, P is for printing, and so on.

Spreadsheet claims—albeit loosely—to have basic word-processing functions. You can add "text" to the bottom of your spreadsheet. And automatic word-wrap and justification are possible. But try to insert a long phrase or make corrections. It isn't an easy task. Consequently, you could best describe Spreadsheet's word-processing features as text entry without text editing.

It's true Spreadsheet possesses a data base's searching and sorting functions, and both work well. You can easily move to a particular cell. You can also sort data in alphabetical, reverse alphabetical, descending, or ascending order.

For the most part, Spreadsheet files are compatible with VisiCalc files. But if your VisiCalc file has a name 24 characters long, you can't load it into the Spinnaker program. Spreadsheet also lacks some of VisiCalc's less common, built-in mathematical functions. If your VisiCalc file contains these files, the Spreadsheet screen displays error messages.

Documentation

The manuals accompanying these programs assume too much about your technical background. They sup-

ply no warnings about probable pitfalls and there are no tutorials. On-screen help is available if you have at least 64K RAM or if you don't have a Sider hard disk drive installed. The help is worth accessing, but in Spreadsheet the help reminds me of quickly taken lecture notes.

Spinnaker's two releases—a senile data base and an illogical spreadsheet—are disappointing. Perhaps they're not better priced after all. ■

Cynthia E. Field
Wakefield, RI

Nutri-Byte

ICS Consultants
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New York, NY 10003

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Apple //e and //c, 48K
$79.95

★★★

Just when you thought that cute names were a thing of the past, along comes Nutri-Byte. Despite its gimmicky title, this software offers a couple of nice features—including a new, sharply reduced price tag. It's a shame, however, that the program as a whole is so unspectacular. Still, Nutri-Byte will appeal to those who are seeking new applications for their Apples, and who cherish their privacy when it comes to weight control.

Ease of use is probably Nutri-Byte's strong suit. I looked through the manual only once and got an immediate sense of the program's operation. Little is taken for granted in this handbook—it even covers the procedure for inserting a disk. The tone is friendly and unintimidating.

Nutri-Byte, a four-disk program designed for people between the ages of 20 and 69, requires two disk drives. Disk 1 is your personal data disk. If another member of your family wants to use Nutri-Byte, he or she must purchase a separate data disk.

When you boot the program, you enter the date and time of day. Press the return key, and "Dan," your electronic diet counselor, appears. (I was amused to see that Dan is a rather pudgy little guy himself.) You interact with Dan on a daily basis—he asks for your password, and, yes, you have to tell Dan *everything* you ate during the day.

Little notepads that come with the program simplify this process. On preformatted sheets of paper, you keep track of food items, amounts, time of day, and meal (or snack). Transferring this data into the computer is easy; the program is (if you'll excuse the pun) menu-driven.

What distinguishes Nutri-Byte from other weight-loss programs is the fact that you enter all the foods at once. Only when you are finished does Dan search through his 1200-food data base to see if he has some information about the foods you consumed. While Dan is doing his thing, you can watch the time-consuming search process, or you can leave the computer for a while—maybe take a walk to the refrigerator. Dan will beep when he's finished.

If Dan does not know any of the foods you told him about, you may look for similar foods he does recognize, enter nutritional information from the food label, or break the food down into its ingredients. In any case, Dan does all the calculations for you.

Dan then shows you the caloric con-

warning

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SCRG PRODUCTS FOR THE APPLE COMPUTER

SOUTHERN CALIFORNIA RESEARCH GROUP

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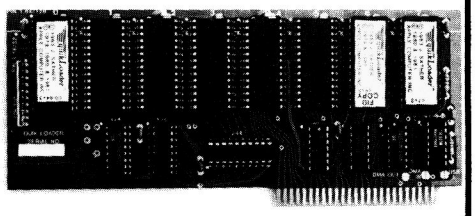

designed by Jim Sather

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- **Instantly** loads programs.
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The benefits of **quikLoader™** start when you turn on the computer. Standard DOS is *instantly* loaded . You may then catalog the programs available on the card by pressing **Q-reset**. Typing the index letter that appears on the left of the program name causes that program to be *immediately* loaded. We start your library of programs with the most popular utilities on **EPROM, FID** and **COPYA.** Now, if you have to copy a disk, you don't have to search for the master disk. You can start copying within **3** seconds after powering on.

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SYSTEM REQUIREMENTS

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

$179.50

DOS, Integer basic, FID, and COPYA are copyrighted programs of APPLE COMPUTER INC. licensed to SOUTHERN CALIFORNIA RESEARCH GROUP to distribute for use only in combination with quikLoader.

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designed by Bob Brice — software by Bob Sander-Cederlof

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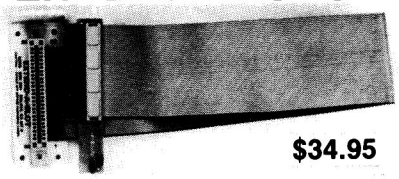

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The **EXTEND-A-SLOT** brings a slot outside your APPLE™, allowing an easy change of cards. The 18" flex cable is long enough to allow placement of the card in a convenient location. The high quality connectors are gold plated for reliability.

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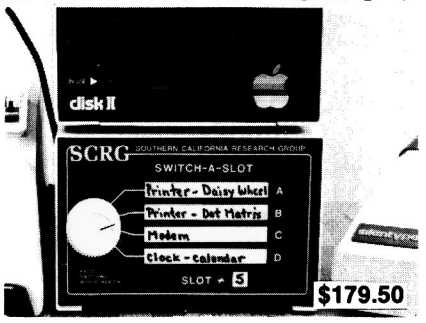
SWITCH-A-SLOT



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designed by Joy George

The **SWITCH-A-SLOT** is an expansion chassis, which allows the user to plug in up to four peripheral cards at one time. One of these cards is selected for use, and only that card draws power.

This product is especially useful where the software requires the printer to be in a particular slot, and the user wishes to choose between two or more printers.

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- Saves wear and tear on delicate connectors.
- 18" cable connects SWITCH-A-SLOT to computer.
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Paddle-Adapple

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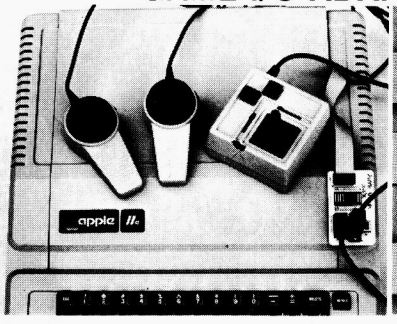

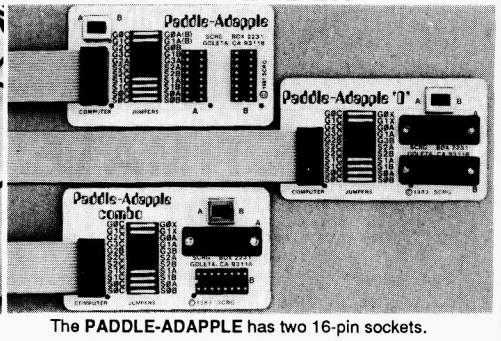

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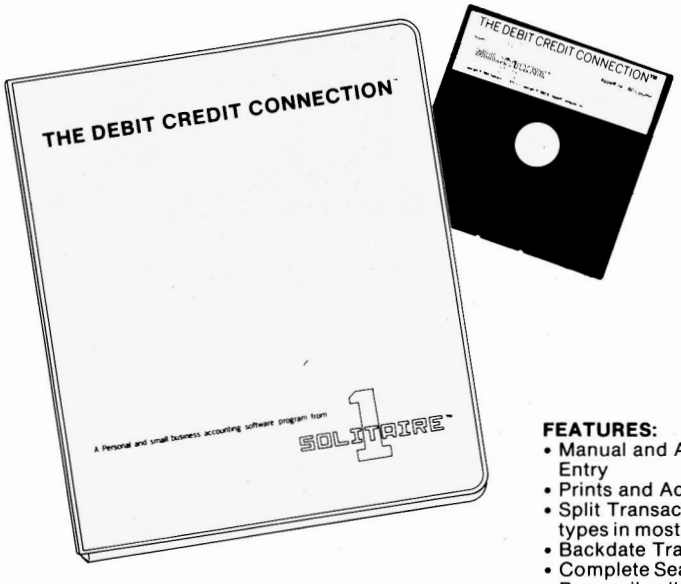

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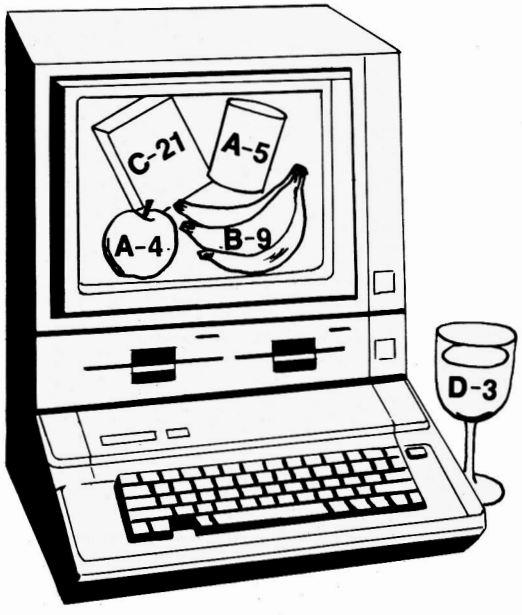

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tent of each food item, as well as the number of calories in each, derived from protein, fat, and carbohydrate content. Dan compares your actual intake to standards based on the Dietary Goals for the United States.

Nutri-Byte bills itself as Your Personal Weight-Loss and Nutrition Center—but you should take the latter phrase with a grain of salt. Nutri-Byte doesn't keep track of the vitamin content of your foods or warn you about lack of fiber in your diet. Dan doesn't distinguish between saturated and unsaturated fats or simple and complex carbohydrates, either. And surprisingly enough, Dan never mentioned that I drink too much coffee or asked if I am pregnant or nursing a baby.

At the end of each day's analysis, Dan gives you a chance to make any changes in the week's notes—but don't. Be sure to type in your data precisely every day. Otherwise, Dan will drag you through the program screen by screen until you find the item you want to modify. Making a single change can take you up to 20 very annoying minutes.

Nutri-Byte is a minimum five-week program. During the second week, you set your calorie and weight-loss goals. Dan cautions you about low calorie intakes and the need for vitamin supplements—he also counsels you to seek your physician's okay.

Also during the second week, the behavior-modification phase of the program begins. You rate your hunger on a five-point scale, from not hungry at all to famished beyond belief.

During subsequent weeks, you keep track of your moods, your activity level, and the setting. That's quite a bit to tally; the note pads that come with Nutri-Byte don't have enough room to jot down this information, so you will find yourself scrunching notes in the margins.

On a weekly basis, Dan digests all the data, including the results of your encounters with the bathroom scale, and provides an analysis and progress report.

With Dan's encouragement, I became more attuned to my hunger levels, but the information on mood and setting yielded no clear trends. One lesson was clear, however—writing is a sedentary way of life, and I should exercise more. (I already knew that, because my wardrobe was shrinking as I was expanding.) Nevertheless, I was able to reduce my caloric intake. That effort resulted in an almost mathematically predictable loss of weight—five pounds.

"Nutri-Byte is based on reasonable, healthful changes in eating habits—not crash dieting."

If you're looking for a quick fix, Nutri-Byte is not the diet for you. It's based on reasonable, healthful changes in eating habits—not crash dieting. One of the nice features of the program is that it doesn't ban any foods. Instead of eating six cookies, I learned to eat one.

The cynics among you may ask if you really need a computer to help you lose weight. No, of course you don't. Other alternatives, however, such as joining Weight Watchers, will probably cost just as much in time and money. In the end, only you can help yourself. ■

Cynthia E. Field
Wakefield, RI

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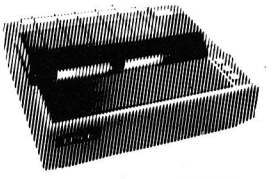

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★★★★

Does it seem that you've tried everything to fight the "battle of the bulge," and found that nothing has worked? There's one place you can turn that might not have occurred to you—your Apple. The Original Boston Computer Diet, a program from Scarborough Systems, supplies all the dieting information you'll need, plus personally tailored counseling.

The objective of the OBCD is to help you achieve your weight-loss goals while providing encouragement and tracking your progress. The program comes on two double-sided floppies. You must make ten disk swaps to install the program if you're using a single drive, but once that's done, disk switching is minimal during your counseling sessions. Two drives make installing the program much easier.

The OBCD package also includes two books—a *Food Reporting and Meal Planning Guide* with general instructions and program-module tutorials, food-preparation suggestions, a nutrition data base covering more than 700 foods, and information on food swaps and dietary maintenance; and the *OBCD Manual*, which discusses diet as it relates to pregnancy, breastfeeding, diabetes, hypoglycemia, purging, and fasting. The authors strongly encourage potential dieters with any of these special considerations to consult their doctors before using the OBCD.

The Original Boston Computer Diet is the result of a collaboration among J. Leighton Read, M.D.; Cris Carlin, M.S., R.D.; Isaac Greenberg, Ph.D.; George Blackburn, M.D., Ph.D.; and Turning Point Software, which actually produced the assembly-language and Forth code in which the program is written. Read, Carlin, and Blackburn are on the staff of Nutritional Management, Inc., which operates clinics specializing in the treatment of severe obesity. Dr. Greenberg designed the behavior-modification structure of the OBCD and wrote the psychological material included in the manuals. Like his colleagues, he specializes in the treatment of obesity, eating disorders, and addictive behaviors.

The OBCD program is a simple type of "expert" system—it acquires information about you, then takes those data into account in its projections. It also uses your daily input to track your progress, pinpoint faulty eating habits, and make suggestions for correcting them.

Your initial session with the OBCD involves answering specific questions about your general health, average food intake, and favorite foods. Details of your eating habits, including the room in which you usually eat, your favorite snacks, and when you eat them, all come into play.

The OBCD provides an "Eliza"-type "counselor" named Shirley to handle the first question-and-answer session. She's breezy and free-wheeling, but she'll get on your case if you don't follow your diet as prescribed.

Once you've finished entering your personal information, it's time to pick a counselor and set up an "appointment" for your next session. You may stay with Shirley or choose one of the other two personalities (and you may switch counselors at any time). "Amy" goes out of her way to be gentle—she's big on soothing encouragement. "George" is stern and doesn't tolerate any nonsense. His approach is more matter-of-fact, but he's a good motivator.

The counselors' programmed responses and comments are fairly realistic and natural-sounding. When you've stuck to your diet, your counselor addresses you by your nickname and praises you. If you've been a less-than-model dieter, he or she calls you by your first name instead, and you'll note a certain "coolness" of tone.

While the program is outstanding for planning meals, exercise, and dieting goals, the counselors are the feature that really makes the OBCD a superior product. They make the program personal—not just another keyboard input session. Dieting is a hassle to begin with, and these synthetic

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souls manage to make it a more pleasant experience.

In your first week with the OBCD, you set weight-loss goals and calorie targets, and begin meal-planning and exercise. In subsequent weeks, you'll make daily reports and receive text and graphics feedback on your food-report data. Your counselor may suggest reading in the manual or the reporting guide to provide additional knowledge about a specific problem. A quiz, discussion, or activity based on your assignments may follow. And when you finally reach your desired weight goal, you'll make the transition to a permanent maintenance diet.

The OBCD's design reflects attention to detail and careful programming. People who are serious about taking off extra pounds will find the Original Boston Computer Diet an innovative package and an invaluable aid in any weight-loss plan. ■

Tom Benford
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★★★

Welcome to the world of Story Maker! Your guide throughout this new creative-writing kit is Hack, a rotund, elfish cartoon figure. Story Maker allows children aged 7–14 to construct original stories, complete with delightful graphics. The program was developed by Sierra, and comes with a Story Maker Master Disk, a blank Story Disk, author labels, and a Book of Tips.

The Master Disk and Book of Tips, both featuring Hack, are interesting and informative. The Master Disk takes you through the process of creating a story step by step, with text and graphics. My seventh-grade English class enjoyed Story Maker's lighthearted approach. Most agreed that its humor was a refreshing change from dry computer guidebooks (not to men-

tion stale seventh-grade composition texts).

Both the Master Disk and Book of Tips are written in a conversational, personal tone that puts the reader at ease. This teaching method was tremendously successful with my students—they made very few mistakes during their work on creative projects.

Perhaps the most distinctive part of the guidebook is Hack's jovial introduction to creative writing. He concisely explains the use of characterization, setting, plot, tone, point of view, dialogue, simile, and metaphor to enhance the story—all the elements of style with which students should be familiar.

One of the most arduous tasks in teaching creative writing is getting students to proofread and edit—jobs that involve a great deal of effort and concentration, guaranteed to bring a chorus of moans and groans from a seventh-grade class. Students hate to look twice at a story. Story Maker comes to the rescue, however, with a built-in word processor that allows you to edit not only the text of the story, but the graphics, as well (even if the story has been saved to disk).

The projects my seventh-graders created were quite diverse. Most wrote short stories with graphics—some serious, some funny. Concentrating solely on graphics worked well for students who had trouble with verbal expression; after drawing their stories, they could describe what was happening—a marked improvement. Cartoon strips, poems, journals, and illustrated letters made up the remainder of their creative output.

Being a competent typist is a definite plus, but not a prerequisite for this program. Following directions and allowing time to become familiar with the various components of Story Maker are musts. For those reasons, younger children (aged 7–9) and students with poor reading and listening skills should have close adult supervision until they master the program. Most of my students who fall into the latter category were relatively successful writing illustrated stories with Story Maker—and rightfully proud of their efforts. ■

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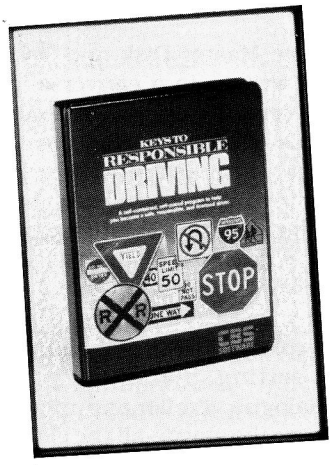

Whether you're a novice driver or a seasoned veteran of the roads, CBS Software's Keys to Responsible Driving can sharpen your skills behind the wheel. It primarily provides tutorial material to help you pass written driver's-license exams. It's not a substitute for experience and qualified instruction, but it can help you become a better, more careful driver.

The word that best describes Keys is *comprehensive*. The package begins with a pretest, which presents you with 20 "general-knowledge" driving questions, each worth five points. Items include approximate braking distances, procedures when encountering a school bus, and so on. When you're finished, enter your score in the program's records section.

Nine tutorial modules follow. Part 1 concentrates on control skills—handling and maneuvering. Topics covered in this section include the correct way to make left, right, and U-turns and to negotiate intersections. Section 2 discusses signs, road markings, and regulations. Section 3 focuses on safely coping with road hazards and unexpected happenings. This material stresses awareness of potentially dangerous objects and circumstances.

In part 4, the program explains the differences between city and town driving and the hazards that go along with each. Changing lanes is the main topic of section 5; the program outlines proper procedures and pays particular attention to the danger of "blind spots."

Section 6 addresses safe-driving techniques for open roads, highways, and country lanes. Part 7 covers expressway driving—entering the flow of traffic from an entrance ramp, accelerating, and safe exiting.

Section 8, "Unfit to Drive," is devoted to the serious issue of drunk and impaired driving. Alcohol, drugs, and driving are a lethal combination, responsible for more than 50 percent of the traffic deaths that occur each year. High-risk driving conditions, such as rain, snow, and glare, are covered. The program also describes common problems, such as temporary night blindness caused by the beams of an oncoming vehicle's headlights.

A post-test section presents a second group of 20 questions. If you've followed the modules in sequence, you should see some improvement in your score.

Keys is easy to follow and easy to use. You can access most functions with your Apple's cursor and return keys. The escape key lets you back up to study a previous screen. Occasional multiple-choice questions require you to type a letter or number, and true/false questions require you to simply hit T or F. The program includes a few fill-in-the-blank and short-answer items, also.

Keys to Responsible Driving presents straightforward diagrams, lively, animated graphics, and spot quizzes to enhance and clarify the text. The package's documentation, a booklet titled *Guide to Safe Driving*, is a supplemental text that expands on the material covered in the program and provides a sampling of questions from the driver's-license exams of various states, a glossary, and illustrations of common road signs.

Keys to Responsible Driving is the culmination of more than a year of research and consultation with dozens of traffic-safety engineers, government authorities, automotive-insur-

ance specialists, and driver-education experts.

Even after 19 years of driving experience, I found Keys to Responsible Driving informative and enlightening. It's serious software that addresses a serious issue, and it has something of value to offer drivers of all ages. ■

Tom Benford
Bricktown, NJ

Rainbow Painter

Springboard Software
7807 Creekridge Circle
Minneapolis, MN 55435

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Picture Perfect

Mindplay
82 Montvale Avenue
Stoneham, MA 02180

Graphics, writing, for children
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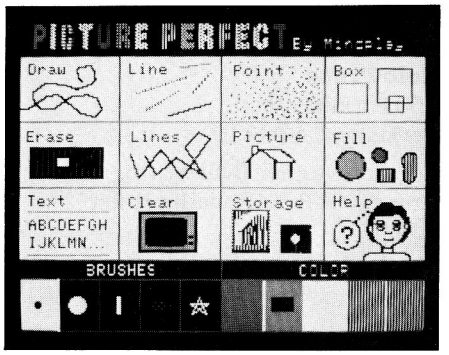
Being unable to create realistic pictures with computer graphics packages frustrates young children—they'd prefer to use a coloring book rather than a blank screen. The graphics programs Rainbow Painter and Picture Perfect, however, eliminate the usual obstacles by encouraging even the most fumble-fingered toward artistic exploration.

Rainbow Painter is an electronic coloring book that supplies more than 50 line drawings in ten categories. Simply choose one of the 100 color patterns, move the cursor to the desired location, and fill it in. Or, use up to 50 "crayons," or brush strokes, with the color patterns to work freehand. A special "tricks" option lets you draw lines, boxes, or circles, adjust their sizes, then add them to your drawings.

You can use these color patterns, brush strokes, and special tricks in



two additional work areas—Playground and Mirrors. Playground provides a blank page for exploration and original creations, while Mirrors lets you divide the screen in half vertically or horizontally, or into quadrants. Designs or drawings you produce in one area are mirrored in the other(s), creating fascinating patterns.

Picture Perfect always begins with a blank page. From there, place 72 shapes and drawings anywhere on the screen, enlarge or shrink them, and fill them in using five colors and five brush strokes. You can also draw freehand. An exceptionally nice option lets you add text to your pictures, enabling younger children to title creations and older ones to write illustrated stories. The feature I like best is that you can print the entire screen—picture and text—on a variety of machines.

On-screen menus for both programs were designed so that young children could easily manage them with the same simple cursor movements used in creating pictures. Rainbow Painter's documentation remains continuously on screen; with Picture Perfect, you can simply flip between selection and drawing screens. Written documentation for both packages is directed to parents and offers suggestions for stimulating a child's creativity.

Picture Perfect requires a mouse or joystick; but with Rainbow Painter, you can use the keyboard, a joystick, or a KoalaPad graphics tablet. The programs run on a green (monochrome) screen, but a color screen is more exciting, especially with Rainbow Painter. Both programs let you save your work on disk. The best aspect of these packages, though, is their ability to make creating pictures enjoyable. ■

Karen Swan
Wilton, CT

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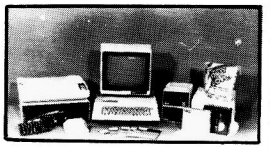

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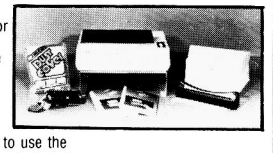

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You'd probably rather not think about writing a will. Not only is death unpleasant to contemplate, but an image of a lawyer with outstretched palm may come to mind. But WillWriter can keep you out of your attorney's office—it explains the legal ins and outs of this important personal document, and helps you draw up your own legally binding will without professional assistance.

A simple will prepared by an attorney for an individual usually costs less than $100—at first. Your personal estate, however, may change substantially after your lawyer draws up the will. Each time you want to issue a new bequest (specify that an item of personal property or real estate is to be left to someone) or change the will in any other way, you will need a lawyer again—for an additional fee—to write either a codicil (a statement of modifications) or an entirely new will.

A Computer Lawyer

Since much of the language in a will is standard, it's a natural for computerization, and many lawyers store a basic will as a word-processing document they can tailor for each client. WillWriter, however, gives you the freedom to write your own document. (Currently, any adult of sound mind, except residents of Louisiana, can draw up a legally valid will.) And if your needs change, you can easily add to or delete any part of your will.

The WillWriter manual is a 200-page paperback. It does an exceptional job of translating "legalese" into terms understandable to the layperson. In addition to explaining program operation, the book offers helpful suggestions on avoiding probate and taxes through estate planning.

The program is so simple to use, however, it's almost unnecessary to refer to the manual. WillWriter displays information and questions for you to answer one screen at a time. You may back up, view definitions of key terms, track your progress, or stop the program. When you reboot, WillWriter automatically starts where you left off.

You may copy the program and data. Since much of your spouse's information, especially key instructions such as naming a guardian, will be identical to yours, this feature simplifies the process of writing your wills.

When you've answered all the questions, you can then print your document. (If you have an 80-column card you can view the finished will on screen first.)

WillWriter lets you specify the parties who should receive your personal property and real estate; appoint guardians for your children and their property; name an executor of the estate; include children of a previous marriage or those born out of wedlock; and specifically exclude children from your will.

You can specify an alternate beneficiary for each bequest in case the individual fails to outlive you, and an alternate for each guardian or executor, should the appointees be unable or unwilling to serve. WillWriter even provides instructions for witnesses and lets you include a space for notarization.

If you'd still prefer to have your lawyer draft the actual will, WillWriter can help you organize your information beforehand—identify the bequests you want to make, name guardians and executors, and so on.

You can return WillWriter to Nolo Press within 30 days of purchase for a full refund if you're not satisfied with the program's performance. Nolo will also keep you up to date on changes in the law and program enhancements if you mail in your registration card.

Conclusion

WillWriter is an impressive package. The manual is informative, easy to read, and entertaining. The program itself is simple to use, yet offers a sufficient array of alternatives to take care of most individuals' needs. The low price should eliminate the "expense argument" against drawing up your will. ■

Steven A. Schwartz
Pittsburgh, PA

HARDWARE REVIEWS

inCider's Ratings

★★★★ Superlative
★★★ Above average
★★ Good
★ Not recommended
Stay away

Centronics GLP

Centronics Data Computer
1 Wall Street
Hudson, NH 03051

Dot-matrix printer
$299
★★

The under-$500 price category is an attractive draw if you're searching for a dot-matrix printer. The GLP (for Great Little Printer) is the latest offering from Centronics, and it will probably give adequate service for light users. With so many choices, however, the GLP doesn't look like it has what it takes to rival the quality and reputation of Epson.

Certainly at least part of the printer's name is correct. This printer is *little*—a scant 12 by 7 by 2½ inches. It's light, too, weighing less than 7 pounds. And the GLP is portable—an important consideration if you have an Apple //c that goes where you go. The GLP solves another problem: It has a serial RS-232C interface just waiting for your //c, and, not surprisingly, it also sports a Centronics-type parallel port. Of the few printers on the market featuring both interfaces, this is one of the least expensive. If you have an Apple //e and a //c, having both interfaces can be a true blessing.

The GLP runs standard Epson-style printer-control codes—a wise design choice, since there isn't a decent software package that doesn't work with an Epson-style printer.

A Stay-at-Home Printer

The GLP makes a reasonable home printer. This unit isn't up to workhorse hard-copy production, but it's suitable for program listings, letters, and graphics. (The GLP does a nice job of graphics using the familiar Epson control sequences, and it should work with most graphics programs that employ these commands.) It isn't an office-duty printer, and it doesn't seem intended as such. You'll need an Epson, Okidata, or similar machine if you plan to keep your printer busy.

A traditional 9-pin print head layout yields satisfactory print in draft mode. The enhanced mode produces dot-matrix type quite close in quality to that of the Epson MX-80.

The GLP provides all the usual print sizes and modes: pica (10 point), condensed, and enlarged, along with emphasis, double-strike, subscript, superscript, and underlining. While every mode isn't available in all sizes, there are enough combinations to suit most needs. There is no provision, however, for the more readable 12-point print size, however.

Printing speed clocks in at 50 characters per second, slow by dot-matrix standards. Emphasized- or enhanced-correspondence mode slows the print speed down accordingly. Don't look for quiet operation—this little printer is big on noise.

The easy-to-use manual describes each printer escape sequence, and includes short BASIC programs demonstrating the print features. The result of each escape function (bold, superscript, enhanced, double-density graphics mode, various line spacings, tabs, line feeds, and the like) is also shown in the manual.

This light-weight printer is constructed of plastic, making the unit a bit sensitive to hard use and a potential source of difficulties. For instance, the outer case on my test printer slightly overlaps the on-off rocker switch and prevents it from moving. Agile fingers and a thin, strong instrument helped—but didn't fix—the problem.

Feeding Time

I also found it difficult to get the paper feed to work smoothly without snagging the paper. Without a paper guide, you must align each sheet, unless you buy the $23 add-on pinfeed tractor for continuous-form paper. And according to Centronics, the optional paper-roll holder shown in the manual isn't available yet.

Installing the ribbon presents some difficulties. Because of the way you must loop it through the printer, about a foot of wasted ribbon gets in your way. In addition, the GLP's ribbons are specific to this model. Ribbon availability could be a problem if this printer doesn't become popular.

Perhaps there is a need for another low-cost, dot-matrix printer, but I suspect the market is already saturated. The GLP now joins this group of dot-matrix home printers, where it may get lost in the shuffle of similar machines. ■

Roger Hart
Merrimack, NH

Slot Buster

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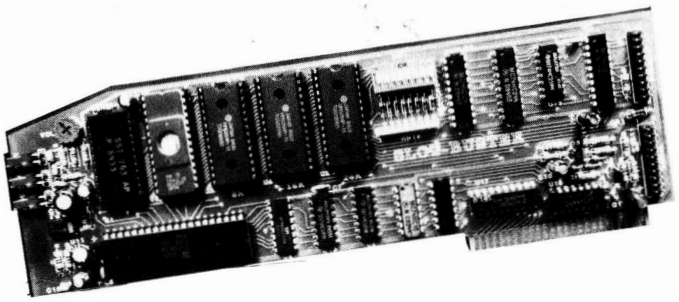

The multi-purpose Slot Buster card.

When you want your Apple to talk to you or your peripherals, who are you going to call? Slot Buster, of course. Slot Buster, a buffered space-saving card, is a Z-80 microprocessor-based serial interface, parallel interface, and unlimited-vocabulary text-to-speech synthesizer all in one. A utilities disk included with the card contains a number of programs that enhance the system's efficiency. Overall, Slot Buster's performance is impressive, but the synthesizer sounds somewhat coarse and mechanical.

Larger than the Apple Extended 80-Column card, Slot Buster fits into any slot except number 3. A cable connects it directly to your internal Apple speaker. After installing Slot Buster, you can interface your computer with any Centronics or serial printer (printer cables are optional at $19.95 each), plotter, or other serial or parallel external device, except a modem.

The printer ports have an 8-kilobyte buffer, expandable to 24 kilobytes, and are comparable to the Apple Super Serial and Parallel interface cards. The ports respond to all standard control-I command sequences, so you can use Slot Buster with most commercially available applications software.

You can turn on the serial and parallel interfaces individually, or together to print to two devices at once. To adjust the serial port's baud rate and data format, flip the appropriate switches on the card manually, or directly from the keyboard or from within a program with control-I sequences (reducing the number of times you have to remove the cover).

If the control-I command is within the text you send to your printer, you can redefine it; you can send any control-command sequence directly to your printer simply by typing control-I-I. With the aid of bank switches, you can select the mode in which Slot Buster will power up—serial or parallel port or speech synthesizer. Later, you can change the mode from the keyboard or from within a program with a control-I command.

Voice Synthesizer

Slot Buster's voice synthesizer is its most attractive feature. The unlimited-vocabulary system is based on the SSI263 chip from Silicon Systems (the same chip used in the Mockingboard voice synthesizer), and is driven by a ROM-based text-to-speech algorithm, which groups the incoming text into basic word sounds (phonemes) and routes them to the chip. The chip then takes the phonemes and turns them into intelligible speech by mimicking the sound-generation process of the human vocal tract. In all, the chip and its algorithm work well together, and the system produces acceptable speech output.

To make your programs talk, enter PR#S from the keyboard or from within your BASIC program to turn on Slot Buster's port. The text-to-speech algorithm intercepts all Applesoft BASIC PRINT statements, puts a screenful of text in a buffer, then speaks that section, while the screen remains in normal operation. Slot Buster can also vocalize all Applesoft and disk operating system (DOS) error messages, in addition to all characters—even control characters.

Slot Buster is speech-compatible with Apple DOS 3.3, Pascal 1.1, ProDOS, CP/M, both forms of Apple BASIC, and the Infocom series of text-adventure games. This software flexibility is possible because the text-to-speech firmware is ROM-based, requiring no disk-based software or internal random access memory.

Although Slot Buster gives you adequate control over its speech, the synthesizer isn't perfect; it uses an older voice chip, as many current voice synthesizers do. The SSI263 is only a slight improvement over the older SC01 Votrax chip on which it is based, and both have mechanical-sounding voices. I compared the speech quality of Slot Buster to the Mockingboard, Votrax, and Echo + devices. The accompanying **Table** shows the results.

You can alter the speed and pitch of the voice, and temporarily silence

Table. *Comparison of speech-synthesizer programs.*

	Slot Buster	Echo +	Intex	Votrax	Mockingboard
Speech quality	Fair	Good	Fair	Fair	Good
Words per minute	75	80	100	76	81
Programmability	Yes	No	Yes	No	No
Buffer size	8000	0	2700	3500	0
Music	No	No	Yes	Yes	Yes
Boot times	0	15	0	0	20
I/O	Slot	Slot	Ser/Par	Ser/Par	Slot

Word-per-minute tests were taken with a standard 1-kilobyte text file. Boot times are in seconds. All values were taken with each synthesizer set to its default (boot) mode.

it by issuing a control-I-R (without harming a program currently executing) or by holding down the reset key for more than two seconds. (This flushes out the voice synthesizer's buffer, but also clobbers any program currently running.)

Software Utilities

Slot Buster comes with a standard Apple DOS 3.3 disk containing a series of utilities that increase the board's usefulness, but are not necessary to operate the serial or parallel ports or the synthesizer. One of these utilities is a Spanish-pronunciation rule table. To my knowledge, Slot Buster is the only voice-synthesizer card with this feature.

The software's character-omission facility lets you define the characters you want the synthesizer to speak, and those you decide will remain silent. You can even change the way Slot Buster pronounces a word by creating your own rules with the Auxiliary Rule File. (With any text-to-speech algorithm, a garbled word or two is unavoidable because of the many exceptions to the rules of English pronunciation.) Then use the loader/compiler utility to store your rules in the board's RAM.

From the main menu, you can access a fast graphics-dump utility that works with Epson- and Imagewriter-compatible printers. The menu also offers a game of matchsticks—the goal is to pick up the last one. This program uses the voice synthesizer, but doesn't speak everything shown on screen.

A DOS 3.3-based version of the ProDOS User's Disk Startup program enables the slot-assignment utility to recognize Slot Buster, so you can use the card with all types of software. Another important feature is the built-in test mode, which lets you test all board components completely. A green tint highlights the components that pass; red identifies those that fail.

The utility disk also has an extensive tutorial that explains how to use the board's voice-generation functions. It painlessly shows you how to incorporate control-command sequences into your programs and describes how to alter pitch, volume, speech rates, and text modes. I found these commands easy to use from within programs and from the keyboard. The tutorial is good, but would be more im-

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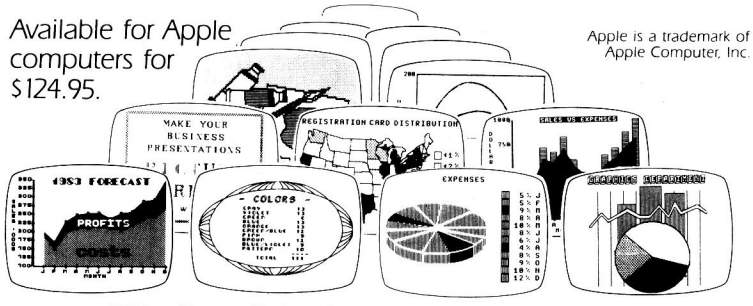

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This Ad Prepared July 1985

Circle 362 on Reader Service Card.

pressive if the program vocalized each screen entirely, rather than only a sentence or two.

Documentation

When I received the package in April, Slot Buster's documentation consisted of a stapled supplement containing the first few chapters of what is to be the official manual. Considering its brevity, it's fairly complete. If the supplement is an accurate representation of the final version, I'm fairly confident the manual will be useful. The supplement contains sections on installation and basic operation, but doesn't tell you how to write additional rules for the text-to-speech chip and doesn't fully explain the programs supplied on the utility disk. The documentation enabled me to use the board, but left me hungry for more.

The Slot Buster multi-purpose card is well-planned, well-built, inexpensive, and easy to operate. All things considered, it's a good investment for your Apple.■

Joseph J. Lazzaro
Revere, MA

Editor's note: Randy Carlstrom at RC Systems reports that a new ROM with better speech quality is currently being shipped. Present owners receive the new ROM at no cost, on the return of their Slot Busters. He adds, "we have added a remote clear capability, so that the user can empty the buffer without crashing the program."

Serial-to-Parallel Adaptor

Discwasher
1407 North Providence Road
P.O. Box 6021
Columbia, MO 65205

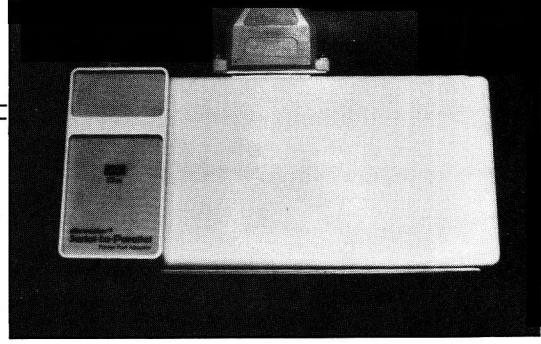
Parallel printer adaptor
Apple //c
$129.95
★★★

Plug it in, set the switches, and turn it on. That's all it takes to use your //c with a parallel printer—thanks to the Discwasher Serial-to-Parallel Adaptor. This sleek unit enables your //c to drive virtually any Centronics-type parallel-port line printer.

The //c transformer cube provides the interface with its operating voltage through a unique "pigtail" cable. Two DIN connectors, a male and a female, extend from the left rear of the printer interface. The transformer-cube connector, which usually plugs into the //c, plugs into one of these DIN connectors. This arrangement powers the interface. The second DIN connector plugs into the //c to provide its power. With this pigtail cable, you don't need a separate power supply for the interface.

A short cable with a DIN connector at the end extends from the right rear of the interface and plugs into the //c's printer port. Styled and angled to fit snugly under the computer, the unit extends slightly to the left. When properly connected, all cables are routed around the back of the computer, out of sight—and harm's way. The extending portion of the interface houses a red LED that indicates when the interface is on. A push-type power switch on the rear of the interface controls the unit's power. Shutting off the interface's power doesn't deprive the //c of voltage, so you can turn the device off when not in use.

A 25-pin "D" connector on the back of the interface mates with the unit's printer cable. This 5-foot cable is fitted with a 25-pin "D" connector at one end, while the opposite end sports a 36-contact Centronics-type connector. The flange screws on the "D" end secure the cable to the interface. The thickness of the cable (owing to additional shielding) affects its flexibility, but, functionally, it's more than adequate for delivering data to the printer.



Testing. . .1, 2, 3

Although I didn't experience any video static on my television while I used the interface, Discwasher supplies a special ferrite bead that limits possible interference. The ferrite bead, an optional installation, attaches easily to the interface with adhesive strips.

Four DIP switches next to the cable connector let you select the baud rate for data transmission to the printer. The rate settings include 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, and 19,200 baud, so you're covered for virtually any hardware configuration.

I tested the Serial-to-Parallel Printer Adaptor with a Star SG-15, and it performed flawlessly at 1200, 2400, and 9600 baud (the //c's "natural" speed) with most of the software I tried. I encountered some problems at other baud rates, however.

Special effects and graphics can be yours with the Discwasher Serial-to-Parallel Adaptor, but remember that they depend on the features built into the computer, printer, and software you're using. The adaptor can't add special capabilities to your system, but it can help you make the most of the ones you have by giving your //c access to parallel printing.■

Tom Benford
Bricktown, NJ

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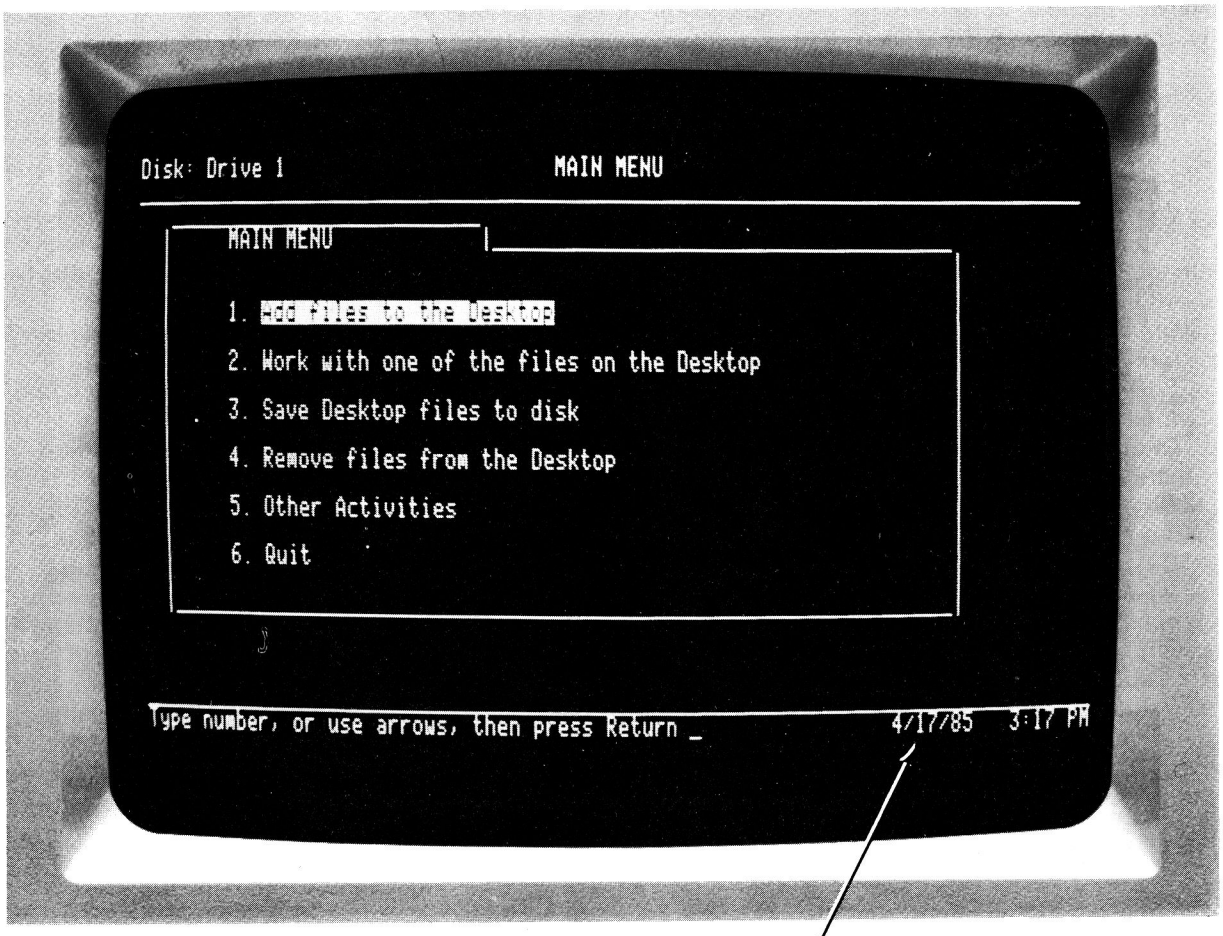

Just Look Right Here

Only the Timemaster H.O. displays the date and time on the Appleworks screen.* If you don't have a Timemaster H.O., you'll just get the help key reminder. The Timemaster H.O. will also automatically time and date stamp your files on disk. And don't forget, the Timemaster H.O. has all the features of all the competition combined, including year, leap year (not just in PRO-DOS), month, date, day, hours, minutes, seconds and milliseconds. The Timemaster H.O. is compatible with PRO-DOS, DOS 3.3, PASCAL and CP/M. And the Timemaster H.O. automatically emulates all other clock cards so you won't have any compatibility problems because the Timemaster H.O. works with ANY program that reads ANY clock.

In fact, you could put ALL the competitive cards in every slot in your Apple and you still wouldn't have all the features of the Timemaster H.O.

The Timemaster H.O. comes with a ton of fun and useful software. It has an easy to read yet detailed manual, a 20 year auto-recharging battery and a 3 year no hassle warranty.

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*If you purchased a Timemaster H.O. prior to AppleWorks support, an easy to use patch program is available for $20.00.

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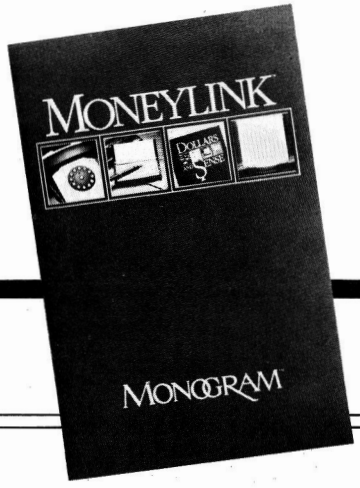
NEW SOFTWARE



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Money in the Bank

Bank at home with **MoneyLink**—you can electronically enter transactions into Monogram's Dollars and $ense personal finance software, pay monthly bills, and perform other banking business. Your record will show withdrawals, deposits, interest payments, bill payments, and credit-card purchases, which you can automatically transfer into Dollars and $ense files. MoneyLink works with personal-computer banking systems created by major national financial institutions. Individual banks will determine the price; contact Monogram for details at 8295 South La Cienega Boulevard, Inglewood, CA 90301, (213) 215-0355, or circle number 452 on the Reader Service card.

Fantastic Vision

Fantavision brings special effects and full-screen animation to the Apple II. All you do is draw "before" and "after" pictures, and the computer generates all the "in-between" shapes to create smooth animation. This "tweening" technology was previously available only on expensive minicomputers. Fantavision can store an hour-long animated flick—even real filmmakers may enjoy it, while doodlers are sure to. It sells for $49.95, from Broderbund Software, 17 Paul Drive, San Rafael, CA 94903, (415) 479-1170. For more information circle number 454 on the Reader Service card.

Canny Calculator

Varicalc performs all types of mathematical and financial calculations, optimizations, and numerical simulations, allowing you to solve for variables on either side of the equation. Simultaneous two-way transfer of variable values between main and secondary formulas is possible, letting you change the values of as many as five variables at once. Varicalc plots high-resolution curves from the values of any two variables, and you can print text screens, graphs, and lists. Varicalc sells for $148.50, from Practical Peripherals, 31245 LeBeya Drive, Westlake Village, CA 91362, (818) 991-8200. For more information circle number 451 on the Reader Service card.

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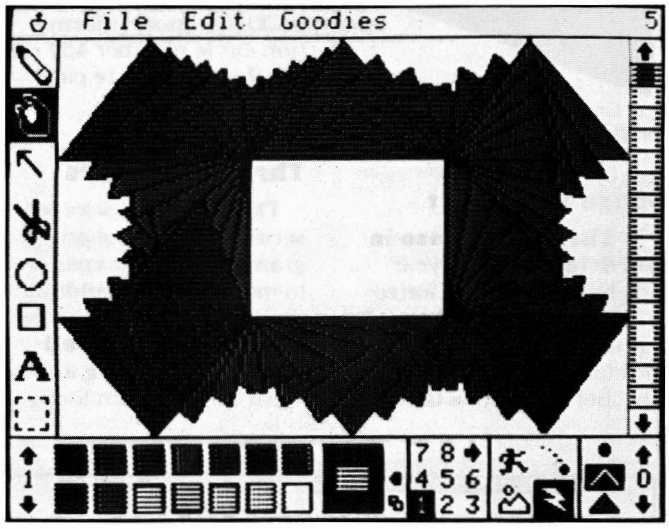
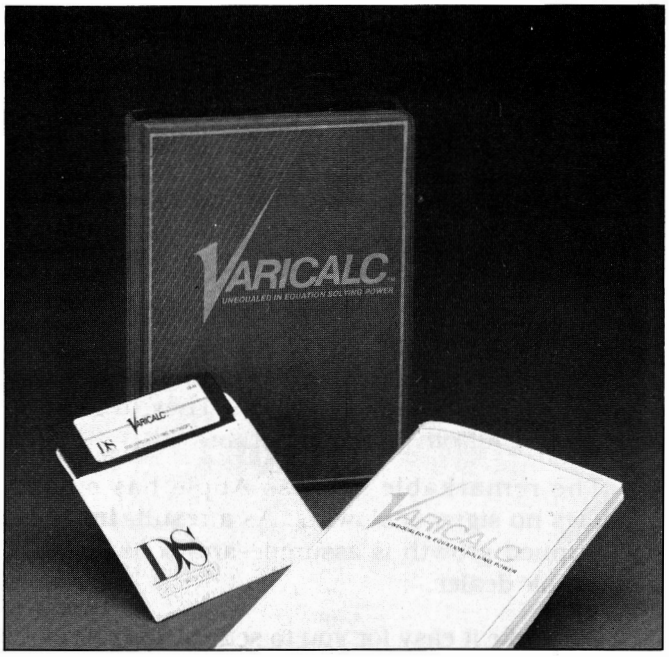
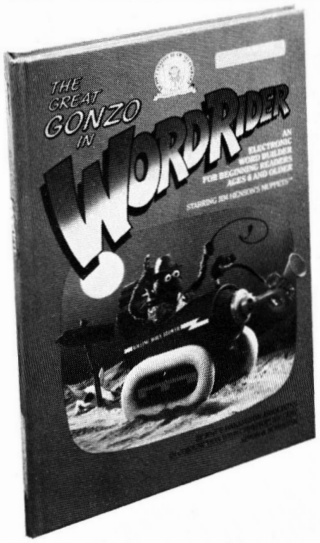


Create fantastic cartoons with Fantavision.



Solve equations without chalk—use Varicalc.

edited by Paul Statt



The Great Gonzo teaches reading skills.

Gonzo Wordrider

In **The Great Gonzo in Wordrider**, your 6-year-olds help the Great Gonzo rescue his own true love, Camilla the Chicken, from the clutches of the Swedish Chef. The plot's familiar to Muppet fans; the program teaches sentence building as children combine adjectives and nouns into a chariot in which Gonzo saves his beloved bird. It's a learning adventure. The Great Gonzo in Wordrider includes a four-color book you can read with your child, for $34.95, from Simon and Schuster Electronic Publishing, 1230 Avenue of the Americas, New York, NY 10020, (212) 245-6400. For more information circle number 457 on the Reader Service card.

Three New Bears

The popular Stickybear series of preschool programs has been expanded to include older children (5–9) in the thrill of learning. **Stickybear Spellgrabber**, a spelling and word-fun program for ages 6 to 9, includes three distinct activities in a single program—Picture Spell, Word Spell, and Bear Dunk.

Stickybear Typing is a fresh typing program for kids—and grownups, too. Stickybear Keypress, Stickybear Thump, and Stickybear Stories develop typewriter- and computer-keyboard skills.

Town Builder makes map-reading a skill anyone—even 6- to 9-year-olds—can master. Following clues to the hidden keys, players motor about town and learn compass directions in Build a Town, Take a Drive, and Find the Keys.

Each program is $29.95, from Weekly Reader Family Software, 245 Long Hill Road, Middletown, CT 06457, (203) 638-2400. For more information circle number 455 on the Reader Service card.

It's Elementary

Come, Watson—the game is afoot. You are Sherlock **Holmes**, sitting by your fire reading one of four text mysteries on your //e. What will you do? Visit the morgue? Call upon Inspector Lestrade at Scotland Yard, or try to find more clues? It all takes time, and Big Ben is counting down the hours. You not only must ask the right questions, you need to put them to the proper bloke at the proper hour. Holmes is an interactive romp through Victorian London. Remember that this mystery has only one solution—the correct solution. The price is only $19.95, from Hot Liner Software, 1591 Calle de Cinco, La Jolla, CA 92037, (619) 454-6664. For more information circle number 472 on the Reader Service card.

The Truth About inCider

You probably already know that **inCider** is the fastest-growing Apple*-specific magazine on the market today.

What you might not know is that there are nearly 2 million Apple computer owners out there. And, many of them buy their copies of **inCider** at dealerships like yours every month. They might even be buying it from your competitors. . ..

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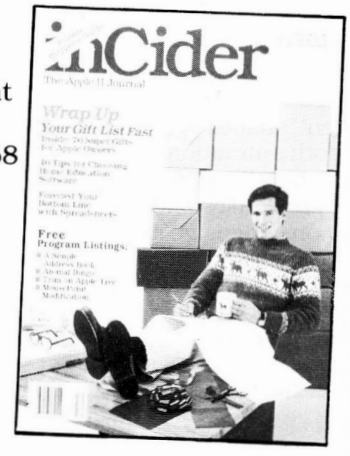


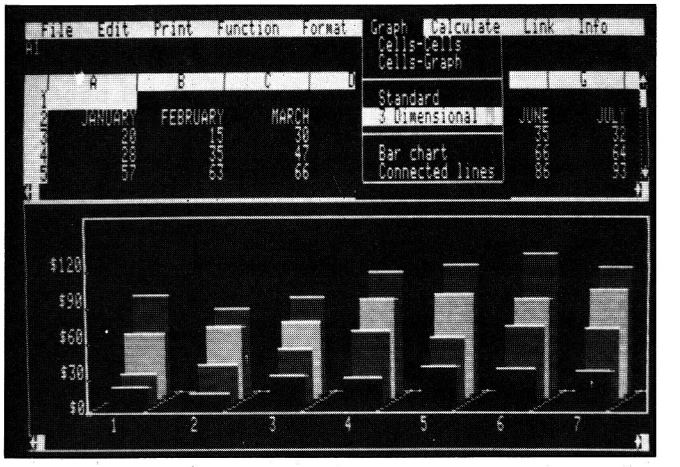
*Apple is a registered trademark of Apple Computer Inc.

Artificial Idiocy

Computers can't think—you can't really talk intelligently with your Apple—but now you can carry on an electronic semblance of a conversation with the author of The Policeman's Beard is Half Constructed (Warner Books). **Racter**, a game with a 2800-word vocabulary and a deep knowledge of English grammar—more than you can say for John Irving—responds to your questions at the keyboard. Racter demonstrates some of the latest advancements in artificial intelligence and speech, but should be considered a game. It's $44.95, from Mindscape, 3444 Dundee Road, Northbrook, IL 60062, (312) 552-6922. For more information circle number 453 on the Reader Service card.

Razzmatazz

Razzle Dazzle is a collection of 100 subroutines for formatting and displaying text screens. This package is a collection of utilities for the intermediate programmer in BASIC. You can use the routines in your own programs to add sophistication and professional pizzazz. Razzle Dazzle includes two double-sided disks—one contains the programs themselves, the other, documentation and instructions that make for clear and delightful reading. Including the Oracle—amusing and worldly words to live by—Razzle Dazzle sells for $49.95, from Psychological Psoftware, 4757 Sun Valley Road, Del Mar, CA 92014. For more information circle number 473 on the Reader Service card.



MouseCalc calculates, interprets, and graphs.

Le Calcul Souris

MouseCalc brings a best-selling Apple //c spreadsheet to the States from France—where the //c is the best-selling computer—and brings the ease of a mouse-based user interface to the II family. A series of productivity products from Version Soft will combine mouse technology and color graphics in an integrated package that will include MouseCalc and MouseWrite. MouseCalc handles 24 arithmetic, logic, search, and other spreadsheet functions, including rounding, and/or, and

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March 1984: Macintosh sneak preview, Lisa 2, "Starfrog and Flutterbye," "Presidential Power," Pascal, "Shogun"

SOLD OUT

April 1984: Apples and Olympic athletes, "Softball Statistics," "Ten Pin Tally," "Golf Slice II," "Design Maker," VisiCalc Tax Preparation, "Clearmem," "Builder"

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October 1984: Apples in business, Choosing business software, Sales leads on disk, "Pie Charts," "Letterhead Creator," Guide to Mouse Software, "KidWord"

November 1984: Top 40 games of all time, Wizardry, "Saving Graphics Screens," "Fast Tracks," Free Data Bases, Apples in Politics, "Dino Math"

December 1984: Holiday gift guide, Apple poker, "MousePaint Printer Dump," "Wundersheet," "Random Music," "Trim an Apple Tree," Spreadsheets reviewed

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Each back issue costs $3.50 plus $1 shipping and handling. On orders of ten or more back issues, there is a flat $7.50 shipping and handling fee. Quantities are limited so some issues may not be available. Send your orders to *inCider*, Attn.: Back-Issue Orders, 80 Pine Street, Peterborough, NH 03458.

Articles set off by quotation marks are published complete with type-in program listings.

true/false. It is marketed in the U.S. for the //c and enhanced //e with mouse, for $149.95, by International Solutions, 910 West Maude Avenue, Sunnyvale, CA 94086, (408) 773-0443. For more information circle number 450 on the Reader Service card.

Pascal Paraphraser

Hackers can now convert Applesoft BASIC programs to Apple Pascal without retyping dreary miles of complicated code. **P-tral** reads the BASIC source program from disk and generates equivalent Pascal code. You can translate even commercial applications software. As you see the familiar BASIC transformed into neat Pascal, you'll learn more about the new language. Move up to Pascal with P-tral, for $250, from Woodchuck Industries, 340 West 17th Street, New York, NY 10011, (212) 924-0576. For more information circle number 459 on the Reader Service card.

Middle Earth Apples

Fanatic readers of *The Hobbit* can now enter **Middle Earth**, the world of Bilbo the hobbit, of Thorin and Grandalf, of dwarves and trolls and Wilderland. Playing the part of Bilbo, you see the world through hobbit eyes as you travel through Tolkien's enchanted land. The adventure is fraught with surprise and danger, but fear not—you can read the paperback edition of *The Hobbit*, which is included with the high-quality graphics adventure for $34.95, from Addison-Wesley Software, Reading, MA 01867, (617) 944-3700. For more information circle number 458 on the Reader Service card.

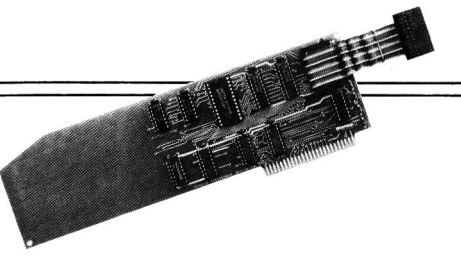
On the Road

Head out on the open highway with **Roadsearch Plus**, a road atlas and route finder for your Apple. Roadsearch can find and print the shortest practical route between any two of 406 North American cities in its data base. Some 70,000 miles of major highways and interstates are covered. If your town's not included, use the Roadmap Development System to put it on the map. Printed output—maps to the rest of us—show your driving route, distance, travel time, and even fuel consumption. Roadsearch Plus with Roadmap Development retails for $74.95, $34.95 without, from Columbia Software, 5461 Marsh Hawk Way, Columbia, MD 21045, (301) 997-3100. For more information circle number 456 on the Reader Service card.

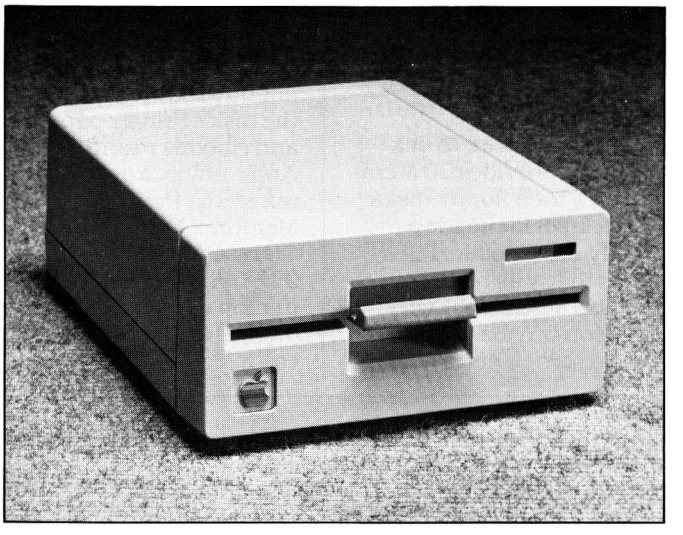
Hacker Jack

With the help of their Take 1 software and the Programmer's Toolkit, Baudville has developed a new line of Hacker Jack games. These games are not only great to look at and fun to play, but each is completely open to your inspection and "hacking." **Video Vegas** features Blackjack, Draw Poker, Slots, and Keno. **Ted Bear Discovers Rainy Day Games**—Concentration, Old Maid, and Go Fish—that your kids may have forgotten. **Guitar Wizard** helps you learn and analyze scales, chords, and tunings for all types of fretted stringed instruments. Each package is priced at $29.95, from Baudville, 10001 Medical Park Drive, Grand Rapids, MI 49506, (616) 957-3036. For more information circle number 471 on the Reader Service card.

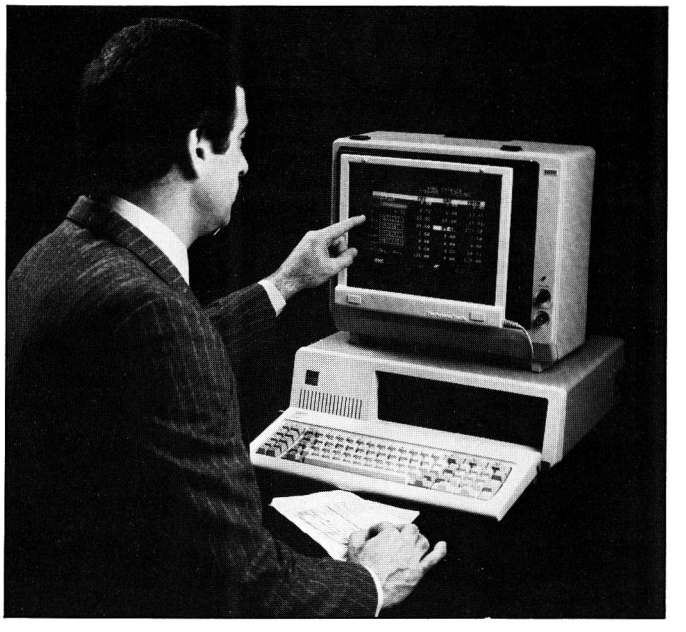
NEW PRODUCTS



Writable ROM makes life simple for programmers.



Store 143K with Apple's UniDisk.



The Touch Window used as a see-through touch screen.

Reading and Writing

The **Writable ROM Board** lets an Apple II, II Plus, or //e function as a 2K ROM, reducing the time you spend writing and debugging programs to store in ROM. Insert the WROM Board into an expansion slot on your Apple and connect it to the ROM socket on a destination computer or other device with a 12-inch, 24-pin jumper cable. You test programs by soft-switching the board to its RAM mode, copying the program to WROM, then soft-switching back to ROM. The destination computer "thinks" the program is already on-board in ROM. WROM is priceless for programmers, for $95, from Douglas Electronics, 718 Marina Boulevard, San Leandro, CA 94577, (415) 483-8770. For more information circle number 474 on the Reader Service card.

Overdrive

The **UniDisk** from Apple provides full compatibility with the 10,000 programs available for the Apple II family. The new drive is functionally identical to the drive it replaces, Apple's Disk II; technical improvements include a new disk-eject method and an advanced head-positioning mechanism, which gives a more precise reading of head tracks. The UniDisk requires a controller card for the II, II Plus, and //e machines. With the controller card the UniDisk sells for $429; the drive alone is $329, from Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014, (408) 996-1010. For more information circle number 460 on the Reader Service card.

Easy Touch

Mounted directly on your computer's monitor, the **Touch Window** converts your Apple into a see-through touch-screen system. Remove Touch Window from the display for use as a graphics tablet, input pad, or interactive manual. The four-in-one input device has a transparent, pressure-sensitive surface that allows immediate interaction—simply touch the surface with your finger or a stylus. Touch Window fits any 10- to 15-inch screen and sells for $195 from Personal Touch, 4320 Stevens Creek Boulevard, Suite 290, San Jose, CA 95129, (408) 246-8822. For more information circle number 463 on the Reader Service card.

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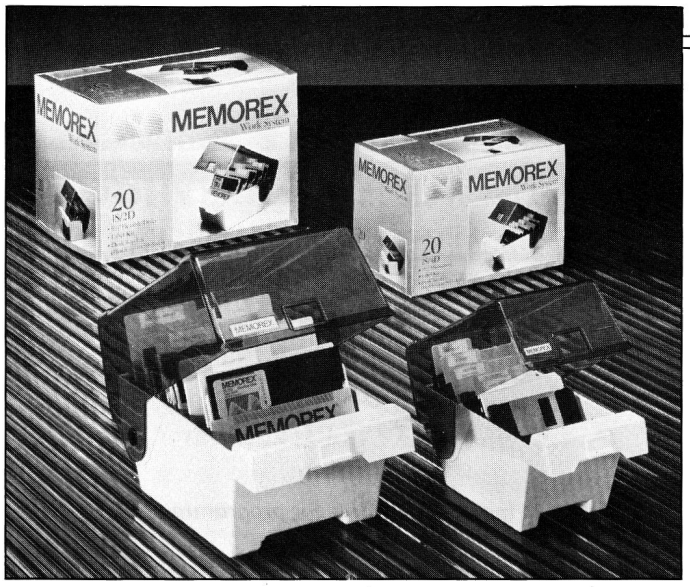
edited by Paul Statt



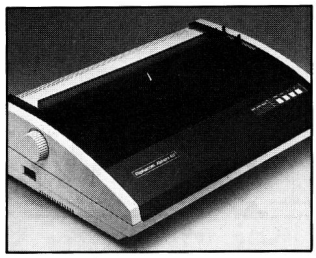
Quality storage for quality disks—Memorex.

System Operator

The **Memorex Work System** provides 20 Memorex 5¼-inch floppy disks and a label kit inside a handy desktop file. Files for as many as 50 disks are also available. Every disk you buy has to be stored somewhere; why not buy the storage with the disk? Printer paper and ribbons round out the Apple office, from Memorex Media Products, 1125 Memorex Drive, Santa Clara, CA 95052, (408) 987-0999. For more information circle number 468 on the Reader Service card.

Pro Printer

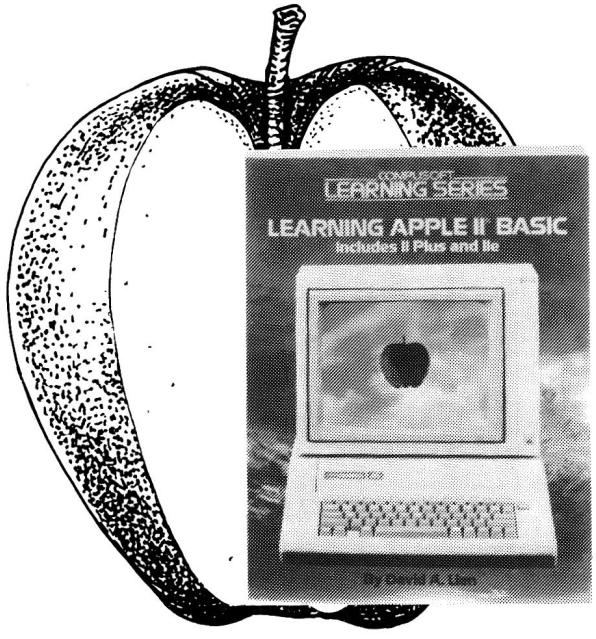
The **Alphapro 401** offers a print speed of 35 characters per second in a daisy-wheel printer for $599. Path-seeking logic and a 2K memory buffer, expandable to 16K, maximize printing speed. The 401 supports true proportional spacing, boldface, overprinting, superscripts and subscripts, and single-pass underlining. The sound cover of the compact desktop unit (21 by 7 by 15½ inches) minimizes noise. It handles paper up to 15.7 inches wide. The $599 price includes a ribbon cartridge, printwheel, and forms tractor. An optional sheet-cut feeder retails for $149, from Alphacom, 2323 South Bascom Avenue, Campbell, CA 95008, (408) 559-8000. For more information circle number 462 on the Reader Service card.



The Alphapro 401 offers both price and performance.

Do It Yourself

The respected Chilton Book Company now explains ***How To Repair and Maintain Your Apple Computer***. This illustrated guide covers system boards, disks and disk drives, power supplies, keyboards, printers, and monitors. You'll also learn how to install add-ons and peripherals, and the book describes simple safety precautions that can eliminate the danger of damage



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It's never been simpler. Open the book, pop in the system disk, turn on the computer, and begin! Our easy-to-understand **BASIC** tutorial will guide you from beginning through intermediate level programming skills. Sample programs and exercises will reinforce what you learn and suggest new uses for your Apple II -- like creating your own custom software!

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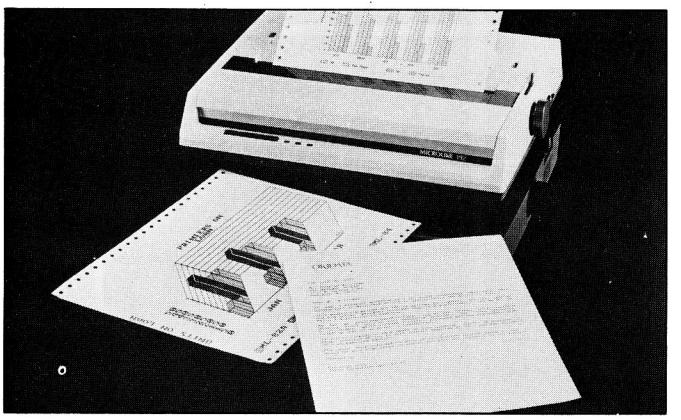

The Okidata Microline prints high-resolution graphics.

to your body or your computer. A troubleshooting guide charts dozens of common Apple maladies—and common cures. *How to Repair and Maintain Your Apple Computer* sells for $12.95 from Chilton Books, Radnor, PA 19089, (800) 964-4000. For more information circle number 469 on the Reader Service card.

Hi-Res Printing

High-resolution correspondence is possible with a dot-matrix printer, the **Microline 192**. Bit-image graphics creates dense characters and designs with accuracy and clarity. The ML 192 offers snap-in ribbon cartridges for clean installation, bidirectional printing, and an 8K buffer. Three print modes are available, along with a reinking ribbon. A wide-column printer with similar features, the **Microline 193**, sells for $699; the ML 192 is $499, from Okidata, 532 Fellowship Road, Mount Laurel, NJ 08054, (609) 235-2600. For more information circle number 465 on the Reader Service card.

Cache Us If You Can

The **Kache Board** offers cache memory on a board with microprocessor intelligence. The hard-disk interface with cache-host adapter is a high-speed memory buffer that stands between the CPU and the hard-disk drive. In slot 4, 5, 6, or 7, the Kache Board can hold ¼ megabyte of live disk data, considerably reducing the apparent hard-disk accessing time. The 11- by 3¼-inch board features a Z-80 chip that manages the operation of the cache buffer without draining the 6502 main processor. The Kache Board sells for $695 from Ohio Cache Systems, 75 Tahlequah Trail, Springboro, OH 45066, (800) 338-0050. For more information circle number 467 on the Reader Service card.

Tackle Board

You can print graphics as well as text with the help of **The Tackler**, an intelligent, dual-mode, parallel graphics interface for the II, II Plus, and //e. Easy keyboard commands let you set margins, line widths, page lengths, auto-line feeds, text-screen dumps, and printer-bell control. For high-resolution graphics, single-key commands create inverse

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Chances are you are already equipped to use Sensible Speller right now because it is compatible with AppleWorks and virtually all other Apple word processors.* It can run on all Apple //c, //e, II+, and Apple-compatible computers and is now available at your dealer for $125 in either the "IV" or ProDOS version.

Black's Law Dictionary,™ Sensible Technical Dictionary,™ and Stedman's Medical Dictionary™ are available separately on diskette.

Sensible Software, Inc. 210 S. Woodward, Suite 229, Birmingham, MI 48011 (313) 258-5566

*Sensible Speller ProDOS works with the following word processors: AppleWriter-ProDOS version, AppleWorks (Apple Computer, Inc.); Format II Enhanced-ProDOS (Kensington Microware), and others. Sensible Speller IV works with DOS 3.2 and DOS 3.3-AppleWriter (Apple Computers, Inc.); Bank Street Writer (Brodebund); Format II (Kensington Microware); HomeWord & Screen Writer (Sierra On-Line Inc.); PFS:WRITE (Software Publishing, Inc.); Word Handler (Silicon Valley Systems); CP/M-Wordstar (Digital Research Corp.-Micropro International); and others. All features are not available with CP/M. PFS:WRITE & Word Handler. Owners of trademarks indicated in parentheses.

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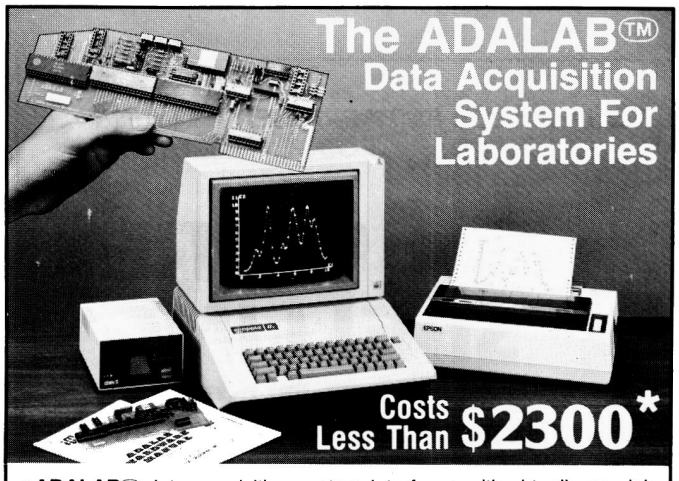

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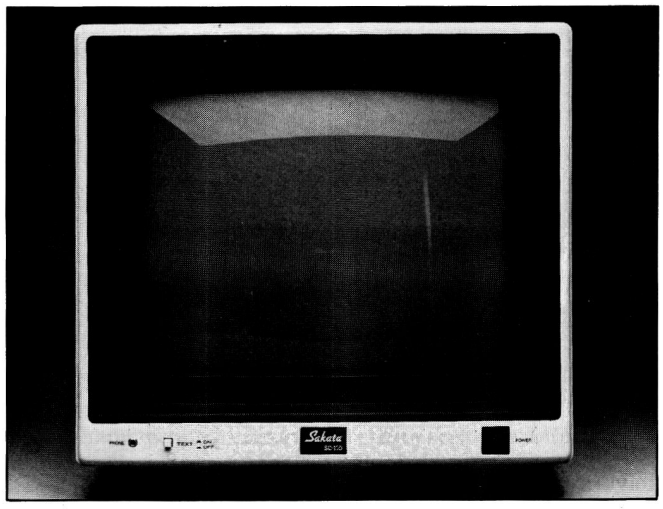

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//c CP/M

//c CP/M supports such standard software as WordStar, dBase II, and Turbo Pascal without modification. The package contains a Z-80 module, documentation, and the CP/M Plus operating system from Digital Research. The Z-80 hardware fits inside the Apple //c case. CP/M Plus is fully implemented for the //c and bank switches all 128K of RAM; it does not interfere with the computer's normal operation when CP/M is not in use. The kit sells for $240 from Precision Software, 6514 North Fresno Street, Milwaukee, WI 53224, (414) 353-1666. For more information circle number 461 on the Reader Service card.

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Beginner's Cookbook
(or)
How to Type in inCider Program Listings

The purpose of these pages is to give beginners the know-how they need to type in and enjoy the programs *inCider* publishes. It presents information in recipe form, with the number of potentially confusing explanations kept to a minimum.

The instructions assume that you have an Apple II, II Plus, //e, or //c computer with one disk drive and either DOS 3.3 or ProDOS. You also need one blank, 5¼-inch disk. To type in and run *inCider*'s programs, just follow the specific instructions for your computer-operating system combination.

CREATING A BASIC PROGRAMS DISK

The first step is to prepare a disk on which to save your programs. This process is called *formatting*. In addition, ProDOS requires you to copy two files to create a startup disk.

ProDOS, version 1.0.2—Apple //c

1) Put your System Utilities disk into the internal drive.
2) Turn on your monitor or TV set.
3) Turn on your computer.
4) After the disk-use light goes out and the main System Utilities menu appears, type 6 and hit return.
5) At each of the next two menus, type 1 and hit the return key.
6) Accept the default volume name by pressing the return key.
7) Remove the System Utilities disk from the internal drive.
8) Insert the blank, unformatted disk into the drive and hit the return key.
9) After about 30 seconds, the message "Formatting. . .Done!" will appear. Hit the escape key.

Although formatted, the disk needs two files—PRODOS and BASIC.SYSTEM, both on the System Utilities disk—to be useful as a place to store programs. To copy them to your programs disk, continue with the following instructions:

10) Type 1 and hit the return key. (Do this three times.)
11) Remove your programs disk from the drive and insert the System Utilities disk.
12) Type S and hit the return key.
13) Press the down-arrow key until PRODOS is highlighted.
14) Hit the right-arrow key.
15) Hit the down-arrow key until the brackets surround the words BASIC .SYSTEM.
16) Hit the right-arrow key, then press the return key.
17) When prompted, remove the System Utilities disk and insert your programs disk (the destination disk). Then hit the return key.
18) When prompted, remove the programs disk and insert the System Utilities disk (the source disk). Again, hit the return key.
19) When prompted, remove the System Utilities disk and insert your programs disk. Hit the return key.
20) The message "Copying PRODOS. . .Done!" will appear, followed by "Copying BASIC.SYSTEM. . . ." When prompted, remove the programs disk and insert System Utilities. After that, hit the return key.
21) When prompted, remove the System Utilities disk and insert your programs disk. Hit the return key.
22) When copying is done, remove the disk, label it "inCider programs disk #1," and turn your computer off.

Note: You can avoid disk swapping if you have an external drive, but, for the sake of uniformity, that method isn't shown here. See page 20 of the *System Utilities Manual*.

ProDOS, version 1.0.1—Apple //e or II Plus with 64K RAM

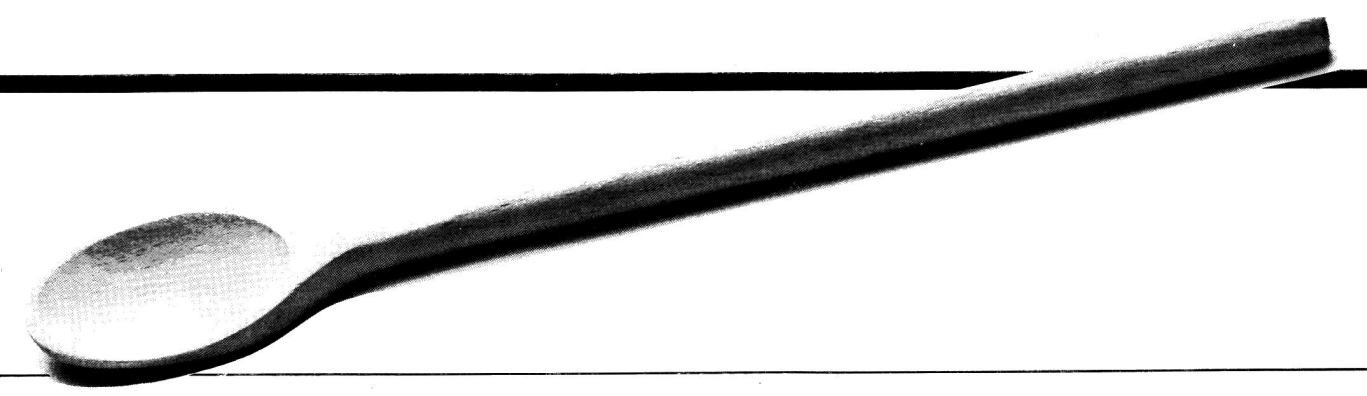
1) Insert the ProDOS User's Disk into drive 1.
2) Turn on your monitor or TV set.
3) Turn on your computer.
4) When the first menu comes up (after the disk stops working), hit the F key.
5) At the next menu, tap the V key.
6) Hit the F key, then press the return key twice.
7) Remove the User's Disk.
8) Insert a blank, unformatted disk into drive 1 and hit the return key.
9) When formatting is complete, hit the escape key twice.

You now have to copy PRODOS and BASIC.SYSTEM onto your newly formatted disk. To do so, follow these instructions. You should be at the Filer menu.

10) Hit the F key, then hit the C key.
11) Type PRODOS and hit return.
12) Type /BLANK00/PRODOS and hit the return key.
13) Remove the formatted disk (your programs disk) from drive 1.
14) Insert the User's Disk into drive 1. Now hit the return key.
15) At the prompt, remove the User's Disk (the source disk) and insert your programs disk (the destination disk) into drive 1. Hit the return key.

Note: If you have a two-drive system, drive 2 will spin for a while before you get the prompt to insert the destination disk. If you want to take advantage of your second drive in the copying process, see page 80 of the *ProDOS User's Manual*.

16) When you see the "Copy Complete" message, type in BASIC.SYSTEM and press the return key.
17) Type in /BLANK00/BASIC.SYSTEM and hit the return key.
18) Remove your programs disk from the drive and insert the User's Disk. Now hit the return key.
19) At the prompt, remove the User's Disk and insert your programs disk. Hit the return key.
20) When copying is complete, remove the programs disk, label it



"inCider programs disk #1," and turn off your computer.

DOS 3.3—Apple II Series

1) Insert the DOS 3.3 System Master disk into drive 1.
2) Turn on your monitor or TV and your computer.
3) If you have a //e, make sure the caps lock key is down.
4) When the disk stops and the Applesoft prompt "]" appears, type in NEW and hit the return key.
5) Type in 10 HOME and hit return.
6) Remove the System Master disk from drive 1 and insert a blank, unformatted disk there.
7) Type in INIT HELLO and press the return key.
8) When the disk stops working and the cursor appears, remove the disk from the drive, label it "inCider programs disk #1," and turn your computer off.

TYPING IN APPLESOFT BASIC PROGRAMS

Instructions for typing in BASIC programs can't be as detailed as the instructions for formatting a disk because every program is different. In general, however, you should follow the guidelines given below.

- When you find a program you'd like to type in, put your programs disk into drive 1 (the internal drive on the //c) and turn on your computer. After the disk stops, the Applesoft prompt "]" appears near the upper-left corner of the screen. At this point, type in NEW and press return.
- Having cleared memory with the NEW command, you are now ready to enter the first line of the BASIC program. First, type in the line number (most BASIC programs begin with line 10), and then type the rest of the line exactly as it appears in the magazine. Don't worry if the line is longer than the width of your screen display. The program line will automatically jump to the next line on your screen. Once you have entered the entire program line, hit return.
- Continue to enter program lines in this manner until the entire program is in memory. Now, even before you run the program, save it to disk so that all of your work won't accidentally be lost. The SAVE command copies a program from main memory (RAM) to disk. Just type SAVE filename (where filename is the name of the program) and press return.
- Since the program is still in (RAM) memory, you can run it with the RUN command. Unless you are a very careful typist, you now face the task of removing syntax errors from the program. For example, if, when you run the program, you get a message saying SYNTAX ERROR IN 1050, it's a good bet that you made a typing error in line 1050. The simplest way to correct it is to retype the entire line. The computer will automatically delete the old line and replace it with the new one.
- When you have the program running properly, save the corrected version by typing SAVE filename again. This command overwrites the old version of the program with the corrected version.

TYPING IN MACHINE-LANGUAGE PROGRAMS AND SHAPE TABLES

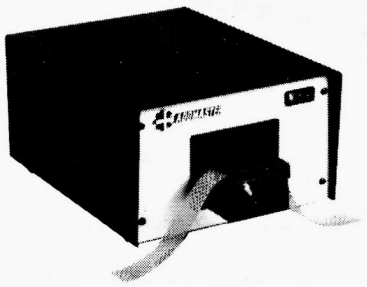
Many programs in *inCider* use machine-language routines and shape tables. The listings for machine code consist of hexadecimal RAM addresses followed by the hex code (5E00—A9 04 30 65 FA 8C 1B 09, for example). To type in such a listing, follow the guidelines below:

- Turn on your computer with your programs disk in drive 1.
- From the Applesoft prompt, type in CALL -151 (the dash is a minus sign) and hit the return key.
- An asterisk, the Monitor prompt, now replaces the Applesoft prompt.
- At this point, get the first address of the machine-language program from the listing. This address is the first four characters in the listing.
- Type in this address, followed by a colon (not a minus sign!). Now type in the hex numbers as they appear in the magazine. For example, if the hex line shown above were the first line of a hex program, you would enter:

5E00:A9 04 30 65 FA 8C 1B 09

and then hit the return key.
- For subsequent lines in the machine-language listing, you don't have to type in the address. Just type in a colon at the start of each line and then the hex bytes, followed by a return.
- To check your typing before you save the listing, type in the starting address of the program and hit the return key. Hitting it again produces the rest of the first program line on the screen. Subsequent returns make additional program lines appear for your inspection. If any line requires changing, just retype that line, being sure to include the address, and using a colon in place of the minus sign.
- Once the entire listing is correct, you have to save it. First, type in 3D0G and hit the return key to return to the Applesoft prompt.
- Now type BSAVE filename,Aa,Ll (where a is the starting address of the routine and l is the length). If these are hexadecimal instead of decimal values, then a $ will precede them. Don't worry about having to figure out the address and length parameters yourself; these are always published with the program.

You now know what it takes to type in and use the programs published by *inCider*. Consult your manuals for more detailed information. ■



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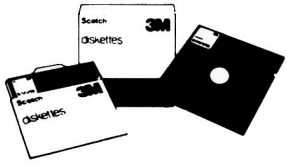

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Guide to User Groups

Here it is—the *inCider* guide to Apple user groups across the U.S. and Canada. Our staff has done extensive research, but we can't guarantee the complete accuracy of the information presented below. We've tried to include as many organizations as possible; if we've missed your club or made an error in your listing, please write to us at the following address: User Group Directory, *inCider*, 80 Pine Street, Peterborough, NH 03458.

The *inCider* bulletin-board system also carries a directory of Apple user groups. (To access it, type AUG at the command prompt.) If you'd like us to include your organization in the BBS listing, leave a message for the system operator on the board (with your modem call 603-924-9801), or drop a note to Bob Ryan c/o *inCider* at the address noted above.

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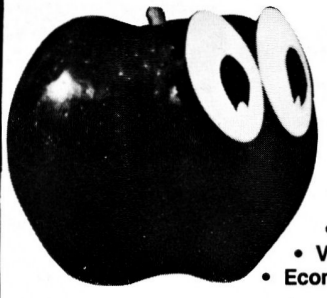

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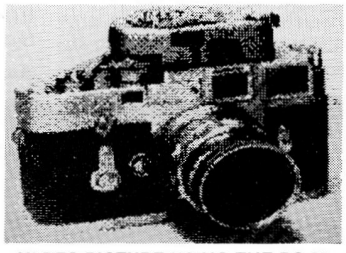

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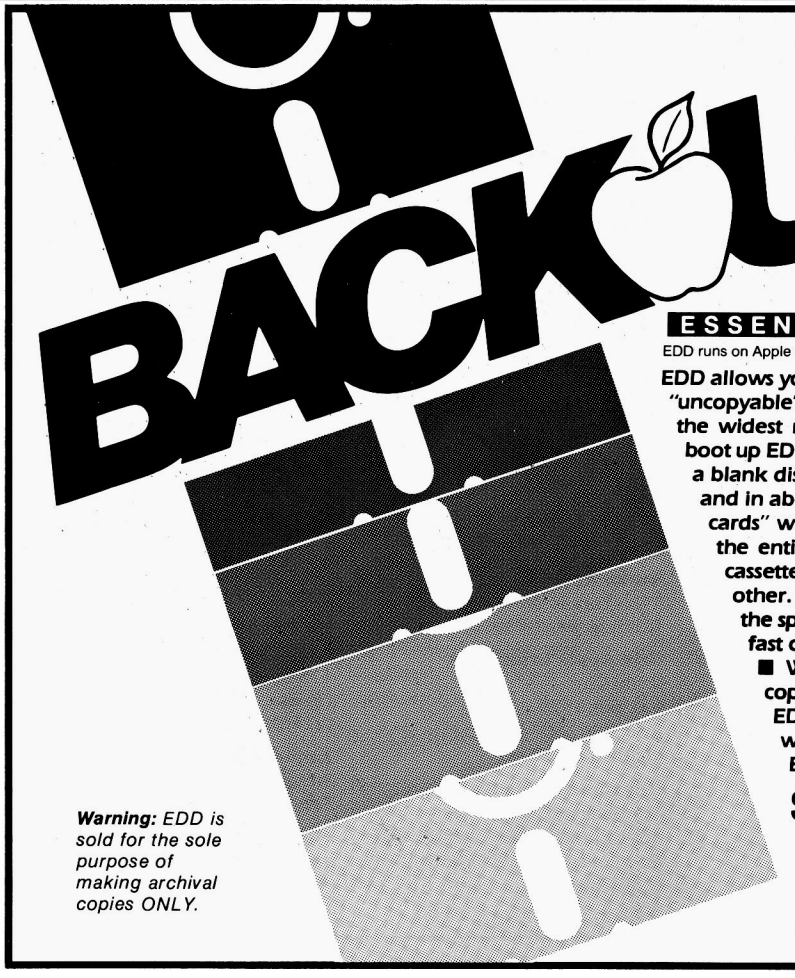

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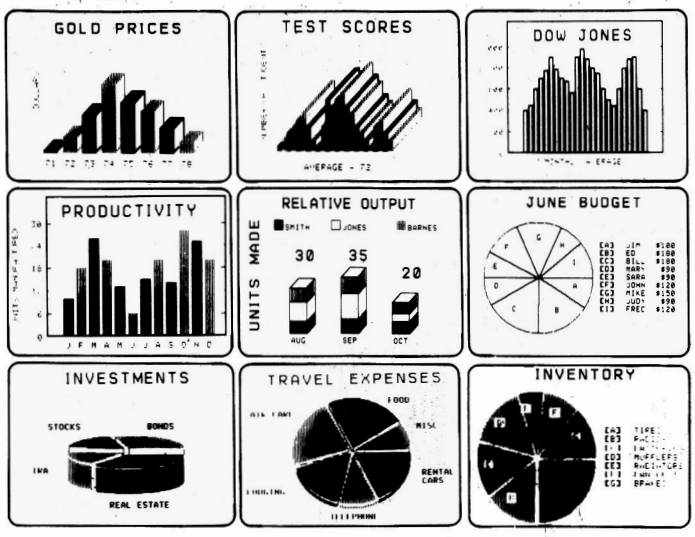

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"The software does much more than the advertisement suggests. Without question, this is among the best buys in software that I have ever come across, and certainly among the best written. It is extraordinarily easy to use, very well thought out, and priced to kill your competition (which I wish you every success in doing)." **Anthony J. Scriffignano, North Caldwell, New Jersey.**

"I have long been distressed by the lack of software available in the scientific academic community. At last there is a simple yet robust graphics program applicable for our purposes: AlphaChart!, by Spectral Graphics Software. Business folks and scientists alike will really appreciate how user-friendly it is; I was able to produce my first three-dimensional, multi-colored, labeled bar graph within five minutes of booting the disk–without reading my documentation. I would have had to pay a scientific illustrator much more than the whole program costs just to produce that one graph....you can't do without this gem." **John B. Iverson, Richmond, Indiana...letter to SOFTALK, April, 1984, page 23.**

ONLY $29.95 Apple II + /IIe/IIc. Satisfaction guarantee or your money back (really!). Send a check or purchase order to **SPECTRAL GRAPHICS SOFTWARE,** 6333 Pacific Avenue, Dept. 256C, Stockton, California 95207. Or call (209) 463-7309 for COD orders and dealer inquiries. AlphaChart! Is not yet sold in most stores. All orders are shipped immediately and are in your hands within three days.

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What do you think of current Apple II games? Are they hits or do they bomb? Brian wants to know what you think of them. Write to him at inCider, *80 Pine Street, Peterborough, NH 03458.*

Game Ratings

Gato

Spectrum HoloByte
1050 Walnut, Suite 325
Boulder, CO 80302
Apple //e or //c, 128K,
one disk drive
Joystick optional
$39.95

It's 1943. You are the commander of a U.S. Navy Gato-class diesel/electric submarine operating somewhere in the Pacific. Your mission is simple—strangle Japan's ocean supply routes—denying her oil, rubber, and other precious raw materials. You must also sink the Imperial Navy's troop transports, patrol boats, and anti-submarine destroyers. That's the theme of **Gato**—an exciting game now available to those with skill, courage, and an Apple //e or //c.

As this realistic simulation demonstrates, being a successful submarine commander is no easy task. First, you must master the skills of navigation. As with many games involving air, sea, or space travel, you have to use a 360-degree compass.

After you've pointed your boat in the right direction, you maneuver it with joystick or keyboard controls. Single keystrokes make the sub turn left or right (the 360-degree compass keeps track of the direction), submerge, or surface. (A special meter keeps track of your depth.) One keystroke makes the sub move in the same direction indefinitely, until you hit the hyphen (-) key. Single keys raise and lower the periscope, switch on electric motors, open the torpedo-tube doors, and fire torpedoes.

Once you can sail the submarine without diving too deep or crashing into a reef, you're ready for a mission. Each simulation starts with a message from COMSUBPAC, advising you to attack a convoy, rescue a downed pilot, engage patrol boats, or accomplish some other heroic feat.

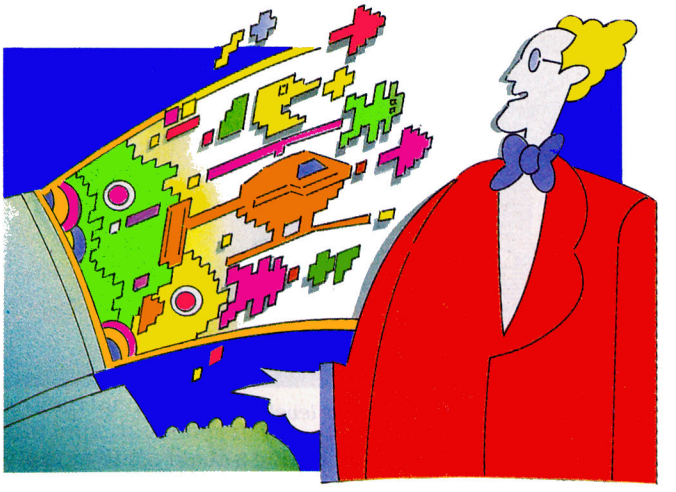

Photo 1. *Get a periscope's-eye view of your targets.*

Several aids make your mission easier. For example, a strategic grid map shows the locations of all the islands in the "world" of the game. It also indicates your current location and the location of your targets (except in difficulty levels 4–9).

You may also use a quadrant map (for difficulty levels 5 and under), showing the position of your boat and any enemy ships in the square. Radar finds any nearby islands and the bearing of the enemy craft. An accomplished commander can pilot the sub while looking at the radar screen and chasing a target.

Most of the time, however, you'll be using the command display screen (**Photo 1**), showing a simulation of the sea, the status of your torpedoes, the depth, and heading. You'll also use this screen with the periscope when you finally get a Japanese freighter in range.

Combat is exciting and challenging. After a long interval of searching for the enemy, you have to dive suddenly, switch on your electric engines, and frantically steer your sub to set up a torpedo run.

Torpedoing a ship takes skill. Having an enemy in the cross-hairs doesn't guarantee a hit. If you're too far from your target, it can sail out of the way before your torpedo even gets close. As your skills

by Brian J. Murphy

improve, however, you'll learn how to lead the slow-moving freighters and take the Japanese destroyers head-on.

Gato is a superb simulation with only minor flaws, such as lack of graphics detail. For instance, ships and islands are only outlines, not full-color illustrations. Realism falters there, but the rest of the hi-res color graphics are very good. Another problem is a limited variety of missions. For a real challenge, you must attempt them at increased levels of difficulty.

All in all, Gato is a superb submarine-warfare simulation. For me, the real trick was to stop playing sub captain so I could write about it—it's escapism at its best.

Dave Winfield's Batter Up!

Avant-Garde Publishing
37 Commercial Boulevard
Novato, CA 94947
Any Apple II, 64K,
one disk drive
$39.95

Now for all you Yankees fans, **Dave Winfield's Batter Up!** takes you out to the ball game. Winfield, the exceptionally well-paid outfielder and slugger, is the inspiration for this program, which I am sorry to say is not as big-league as he is.

Batter Up! comes in two parts. The first is a review of the science of hitting. You are shown the differences among even, closed, and open stances, a number of ways to grip the bat, and the hows and whys of various swings. It makes for interesting viewing and is likely to teach even ballpark veterans a few things.

You can apply some of this knowledge by selecting the batting style of your "player" in a simulated game. You will face your choice of eight pitchers, ranging from fastballers to knuckleball artists, all pitching to you at several levels of difficulty (**Photo 2**). At the sandlot level, even the fastball seems to float weightlessly on its way to the plate. As you progress through the semi-pros, minors, and majors, the ball moves faster and is harder to hit.

Photo 2. *Play ball at whatever level you choose.*

The problem for me was that the ball was never *too* hard to hit. About three hours after opening the game package, I was batting a steady .415 at the major-league level (and my arcade skills are painfully average). If I could do that in real life, I'd earn more than Dave Winfield.

For variety and challenge, you can engage in multi-player games, try to conquer all the pitchers, experiment with your stance, or try batting lefty. Those measures will postpone the moment you tire of the game, but not indefinitely. At least Batter Up! only costs $39.95, not $22,000,000 over ten years like the real Dave. Come to think of it, is either the game or the player worth as much as their respective price tags?

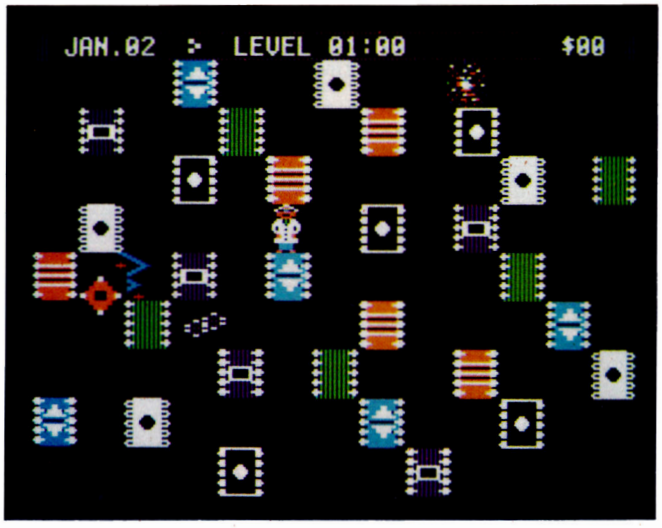

Photo 3. *Your hero, I.O. Silver, surrounded by chips.*

I.O. Silver

Beagle Bros
Micro Software
3990 Old Town Avenue
San Diego, CA 92110
Any Apple II, 48K,
one disk drive
Joystick optional
$29.95

I.O. Silver causes acute arcade addiction—the strongest recommendation for any game. Beagle Bros has built an enviable reputation for its extensive catalog of programming, DOS, and graphics programs. If I.O. Silver is any indication, it looks as if it will make it big in games, too. I.O. Silver is one of the most ruthlessly addicting games in years.

The object of the game is simple. Your on-screen hero, a computer scientist named I.O. Silver, is trying to build a fifth-generation microcomputer using the chips you see scattered around. All he has to do is push like-colored chips together. There are six colors, with five chips per color (**Photo 3**).

Once you have one color group together, you've made a circuit board. You can then hit the escape key and move to the next level, where you must build two boards, and so on through the various levels. At each level, the jumble of chips is a little different, so you start from scratch—and the cash rewards are greater.

When you have two circuit boards, you can combine them to make a calculator. A circuit board and a calculator make a microcomputer, a micro and a circuit board (or two calculators) make a minicomputer, and a mini and a circuit board (or a calculator and a micro) make a mainframe. Combine a mainframe and a circuit

board and you get a supercomputer. Creating each of these units means a cash bonus ($1,000,000 for the supercomputer).

You are working against a rapidly approaching, firm deadline. Time runs out even faster if your hero is intercepted by the roving hardware bugs—Softfail, Infinite Loop, Overflow, and the deadly Surge. Each one makes you lose a specific amount of time; crushing one between two chips will net you a cash bonus.

Another danger lies in pushing a chip with nothing to stop it. If that happens, you could cause the chip to wrap around and smash your hero. (You only get three I.O. Silvers per game, unless you earn more.) The arrangement of the chips makes it hard to put color groups together without trapping the needed components.

It takes a great deal of skill to put together a supercomputer. You can practice your moves in the Strategy Workshop segment of the program, where there are no bugs to pursue you. This eases the pressure and gives you a chance to plan your moves.

The game moves quickly as you frantically attempt to position your hero while avoiding the bugs. The action is machine-language fast, and the animation is smooth. Sound effects are minimal, but what effects there are enhance the game.

One last interesting aspect of the disk is that in addition to the game, it contains a number of "two-liners"—short programs Beagle Bros has collected for your entertainment—mostly graphics animations and computer movies. I'm still trying to build the supercomputer, and at the rate I'm going, I'll be finished around the end of the decade.

Imperium Galacticum

Strategic Simulations
883 Stierlin Road,
Building A-200
Mountain View, CA 94043
Any Apple II with 48K, Applesoft, and one disk drive, or any Apple ///
$39.95

Imperium Galacticum's main problem is that its concept is unoriginal. The notion of a strategy game of star empire-building has been around for quite a while, and Imperium adds nothing noteworthy to the genre. It features the usual competing empires, the usual emphasis on colonization as a prerequisite to acquiring new planets, and the usual simplistic simulation of diplomacy. (In this game it boils down to your side saying, "You wanna be friends or not?" to opposing empires.)

It is no coincidence that the game's programmer is Paul Murray, who wrote SSI's Warp Factor and Cosmic Balance—just as it is no coincidence that such elements as ship construction and combat in Imperium Galacticum resemble, to a small degree, those of Murray's previous games.

Imperium is very hard to learn, and the rule book is not much help. Then again, SSI rule books as a group are seldom any help. For the most part, they are modeled after the stiff, unfriendly manuals supplied with board strategy games—the "conventional" simulations you encounter at classier toy and hobby stores.

Broderbund, Penguin, Avalon Hill, and any number of other manufacturers of fantasy, adventure, and war-game simulations supply user-friendly manuals—SSI should follow suit.

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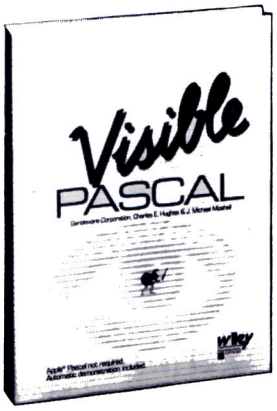

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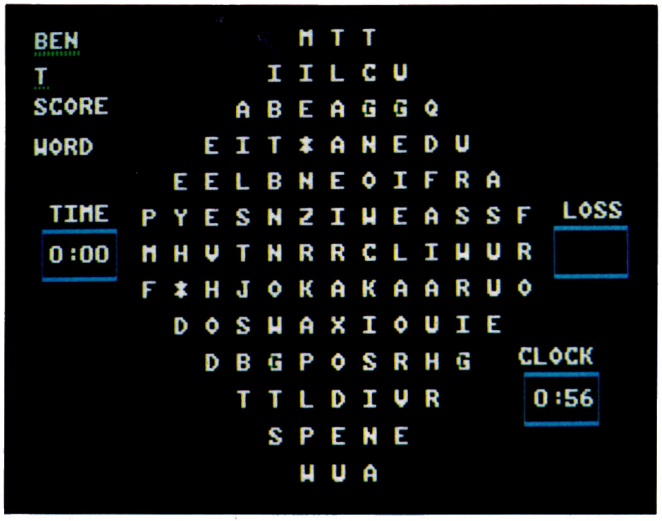

Photo 4. *Make the longest words you can to win.*

So away with Imperium Galacticum's impenetrable rule book and its myriad of unanswered questions—and away with the game itself, which covers old, familiar ground we've seen before.

Pathwords

CBS Software
One Fawcett Place
Greenwich, CT 06836
Any Apple II, 48K,
one disk drive
Joystick optional
$34.95

It's really amazing how much boredom $34.95 will buy. For example, there's **Pathwords**, an unexciting game from CBS Software, in which players form words out of adjacent letters placed randomly in a diamond-shaped grid. You can use keyboard commands or a joystick to move the cursor from letter to letter to construct the words. The longer the words, the more points you win (**Photo 4**). With one or two players, you make ten words each; with three and four players, you make five words each. The skill comes in finding and building words with the letters adjacent to your cursor at the start of play and after every completed word.

A good vocabulary helps if you want to challenge an opponent's selections. Your opponents may be tempted to construct imaginary words and only your alertness can protect your interests, as in Scrabble. Challenges are important, as they provide almost all of the action.

Pathwords is colorless and unchallenging. It is a little more interesting if you play with a friend—the human element adds a sense of competition. If you play alone, the game seems quite pointless. I found it deadly dull—you can skip this game without any regrets.

SC Fixes Game Disk

The Simulations Canada war game, Battle of the Atlantic (see July's *inCider*), has turned out to be incompatible with some versions of the Apple II because SC used a new Apple language and compiler to program the game.

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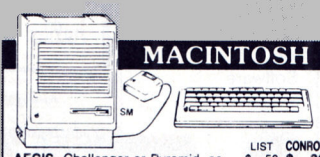

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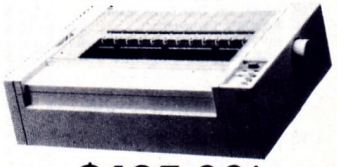

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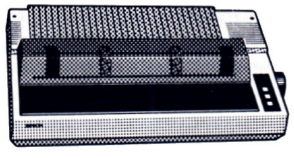

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If you have a question, our technical editor has the answer. Send your queries about Apple computing to Bob Ryan, Ask inCider, 80 Pine Street, Peterborough, NH 03458.

Date-Stamping ProDOS Files

Dear *inCider*:

I have a question about something that has puzzled me for some time. I use ProDOS, and have added a number of programs to my ProDOS disks and updated them. When I catalog these disks, I get the notation <NO DATE>. When I save a program, ProDOS never asks me to input a date. How can I date my files when I use my //c?

I've contacted my computer dealer, and he sold me a DOS 3.3 System Master. Obviously, this did not solve the problem. Then he tried to sell me a System Utility disk. Since this came with my //c, I knew that it was not useful for date-stamping my files. My dealer finally gave up and said that date stamping is "not really necessary when writing or editing programs." I agree that it isn't necessary, but can you tell me how I can date-stamp my program files?

William Bowen
42 Warren Lane
Brownsburg, IN 46112

Dear William:

The obvious solution is to buy a clock/calendar card. Apple II Plus and //e owners have a wide variety of clock/calendar boards from which to choose, but the only one I know of for the //c is included with The Cricket, a speech- and music-synthesis module made by Street Electronics, 1140 Mark Avenue, Carpinteria, CA 93013. The Cricket attaches to the modem port of the //c and has a built-in clock/calendar that lets you date-stamp your ProDOS files.

If you don't want to invest in a clock/calendar for your Apple, you can still date-stamp your files. This method takes time, but it's not difficult to implement.

"How can I date-stamp my program files when I use my //c?"

ProDOS stores the date and time in four memory locations on the System Global Page: the date in locations $BF90 and $BF91 (49040 and 49041) and the time in locations $BF92 and $BF93 (49042 and 49043). If you have a hardware clock, a special routine reads the clock and deposits the date and time in these locations. If you don't have a clock, ProDOS sets these locations to zero, resulting in a <NO DATE> message when you catalog your disk.

To date-stamp your files, you have to manually deposit the date and time in the appropriate locations. This is not as easy as it sounds, because the date does not fit neatly into two memory locations. A date has three components—day, month, and year—and fitting three data items into two memory locations requires bit-level manipulation.

Each memory location in your Apple contains 8 bits, numbered 0–7. ProDOS uses 16 bits to store the date and another 16 to store the time. It stores these data in the following configuration:

Date:
Day—bits 0–4 in location $BF90
Month—bits 5–7 in location $BF90 and bit 0 in location $BF91
Year—bits 1–7 in location $BF91
Time:
Minute—bits 0–7 in location $BF92
Hour—bits 0–7 in location $BF93

As an example, I'll show you how to store 10:45 pm, December 31, 1985, in a form you can use with the date-stamping function of ProDOS. By plugging in the proper time and date, you can date-stamp your files, just as if your computer contained a clock/calendar card.

First, boot any ProDOS disk containing BASIC.SYSTEM. Once you get the BASIC prompt, you are ready to set the time and date with a series of POKEs you enter directly from the keyboard. The first POKE puts the hour into location $BF93.

Since Applesoft BASIC is a decimal language, you must POKE the decimal value for 10:00 pm into the decimal equivalent of location $BF93—49043. To do this, type in POKE 49043,22 and hit the return key. (Note that 10:00 pm is the 22nd hour of the day.) POKEing the minutes into memory is just as easy. POKE the value into $BF92 (decimal 49042). Using my example, type in POKE 49042,45 and hit the return key.

The going gets tricky from here on, so pay close attention. The problem is that the month is split between two memory locations. To get the proper values to POKE into the proper locations, you have to convert your values into bits, construct a 16-bit word describing the date, and convert the 16-bit word into 2 eight-bit bytes. You then POKE these byte values into memory.

In our example, the day is 31. The easiest way to convert this to its bit equivalent is to first convert it to hexadecimal notation. Divide 31 by 16—the answer is 1 with 15 left over. Since 15 is F in hexadecimal, decimal 31 works out to be hexadecimal 1F, or $1F. Looking at the accompanying chart, you find that $1F is 0001 1111 in binary notation.

The month in our example is 12 (December), which converts to C in hexadecimal, or binary 1100. The year is 85 (1985). Divide 85 by 16 to get 5 with 5 left over; therefore, 85 decimal equals 55 hexadecimal.

by Bob Ryan, inCider Technical Editor

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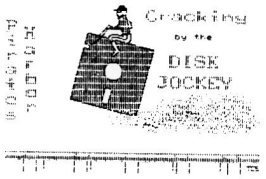

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Cracking Techniques, full of tips and tricks of disk copying and cracking, which are complete sell outs at the many computer shows, are now being made available through mail order.

These highly specialized disks contain tips and techniques provided by the top crackers of the world. Anyone who has traveled the vast electronic highways of the computer bulletin boards will easily recognize these famous names: Apple Bandit, Disk Zapper, Red Rebel, Long John Silver, Axe Man, The Burglar, Captain Nibble, Mr. Xerox, Lockbuster, The Colossus, Mister C, Richard Brandow, Bozo NYC, Clone Man, Reset Vector, Woodpecker, The Beast, Trystan II, the Fongus, Jim Phelps, The Marauder, and the Disk Jockey. Some of these famous software pirates have been featured on ABC's NIGHTLINE, NBC's TODAY, in Newsweek, Infoworld, Tech Weekly, and in the New York Times. Now find out why all these people have earned their heavy reputations! Here now are the techniques that made them famous.

Included on the disks are full descriptions on the use and applications of DEMUFFIN and DEMUFFIN+, techniques for modifying a 16k RAM card into a fake ROM, a dissertation on special techniques, Non Maskable Interrupts, Boot Tracing, Brute Force, and several sections on handling Foreign DOS. The internationally famous Axe Man has several detailed sections on different techniques including "How to use a RAM card as a major cracking tool." Also included are the complete programming codes for building your own copies of the legendary Bozo's Cracker ROM and the Lockbuster's F8 ROM. Contains seven (7) Apple Bandit files including how to really use Copy][+ and the super COPYB from the Disk Jockey.

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inCider

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hexadecimal AB. Converting this value to decimal, you get:

$(11 \times (16^0)) + (10 \times (16^1)) =$
$(11 \times 1) + (10 \times 16) = 171$

Put this into memory by entering POKE 49041,171 and hitting the return key.

The right half of the date word consists of 1001 1111, which converts to $9F. Converting it to decimal, you get:

$(15 \times (16^0)) + (9 \times (16^1)) =$
$(15 \times 1) + (9 \times 16) = 159$

Enter this value by typing POKE 49040,159 and hitting the return key.

Now when you create or change a file, it will be date-stamped with 31-DEC-85 22:45. The date will stay in effect until you turn off your system. Using the method described here, you can put any date you like into ProDOS.

Printing to Disk

Dear *inCider*:

I need a sanity saver. I run a word-processing service [using Apple Writer] from my home. Can you tell me how I can print to disk (PD8) to review formatted text before printing a hard copy? I have used PD0 to view the printed work on screen, but I understand that PD8 is a better procedure.

Nancy C. Marks
2592 60th Avenue, South
St. Petersburg, FL 33712

Dear Nancy:

You print to disk the same way you print hard copy, by typing control-P to access the Apple Writer print module. When you see the "[P]rint/Program:" prompt, type a question mark and press return. Now type PD8. This changes your print destination to slot 8 (which, of course, doesn't exist), thereby telling Apple Writer that you want to print to disk. When you type NP to begin printing, Apple Writer prompts you to enter a file name, then prints the file in memory to disk.

The PD8 option is not normally used to preview hard copy, but to send Apple Writer-formatted documents to people who do not have this word-processing program. ■

inCider's

DATA-GRAM

A COLLECTION OF FREE OR INEXPENSIVE DATA BASES AND MONEY-SAVING TIPS FOR GOING ON-LINE.

by Matthew Lesko

Electronic Mailman

MCI Mail subscribers can now locate the electronic addresses of friends or clients. A special FIND command lets you access the MCI directory, as long as you provide the person's full name, name and organization, name and location, or name, location, and address. For 45 cents, you can send a 500-character message that may help you find a job, sell a product, or stay in touch with a friend. For details, contact MCI Mail, 1900 M Street N.W., Washington, DC 20036, (800) MCI-2255.

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The National Library of Medicine (NLM) offers health professionals free training in searching 16 data bases available through MEDLARS, a computerized system of six million references to health science-related journals and books. To obtain an on-line access code, health professionals must complete the three-day initial training class. Those not in the health field can take the short course, Basics of Searching MEDLINE.

Both the NLM and Regional Medical Libraries across the country conduct these courses, along with a five-day advanced training session. The waiting list grows longer daily, so contact Carolyn Tilley, MEDLARS Management Section, NLM, 8600 Rockville Pike, Bethesda, MD 20209, (301) 496-6193.

It's All in Your Mind

Maintained by practicing psychologists, the free American Psycho/Info Exchange bulletin board contains literature reviews, articles, bulletins, conferences, and self-help material dealing with subjects such as child abuse and neglect, drug addiction, eating disorders, neuropsychology, and sexuality. The bulletin board is also a clearinghouse for those conducting research in related fields. Call (212) 662-7171 with your modem, or contact The American Psycho/Info Exchange, P.O. Box 20533, New York, NY 10025.

Did You Hear the One About. . .

What do you get when you call (415) 364-4339 with your 300- or 1200-baud modem? The Truly Tasteless Jokes Bulletin Board. It's a free BBS located in the San Francisco area, and it's set to tickle your funny bone.

Editor's note: If you can't connect with one of these data bases, it may be temporarily—or permanently—off the air. Many data bases are non-commercial ventures and can encounter financial difficulties. Feel free to contact Matthew Lesko if you continue to run into obstacles.■

Matthew Lesko is the founder and president of Information USA, Inc., a computer data-base consulting and publishing company. He is the author of seven information books—two of which made the New York Times *best-seller list. For a free copy of his newsletter on computer data bases, write to Information USA, Inc., 4701 Willard Avenue, #1707, Chevy Chase, MD 20815, or call (301) 657-1200.*

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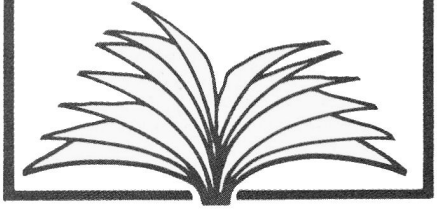
Coming Attractions

- **RGB monitors: A special report by Bill O'Brien. He checks out screen size, connectors, resolution, price, and the bottom line—color quality.**
- **Games: Three articles to teach you how to design adventure, strategy, and arcade games**

  Matchbox gaming: Teach your computer to win, lose, or draw with MENACE.

  Adventure-game design: Improve your programming skills while you learn how to create your own game in this step-by-step tutorial.

  Shape creation: Create and manipulate shapes for your own arcade games.
- **Right of Assembly: A new monthly column on assembly language by Roger Wagner, popular *Softalk* author**
- **A new look for *inCider*: BackTalk, our BBS (bulletin-board system) poll, asks what you think of our new image.**



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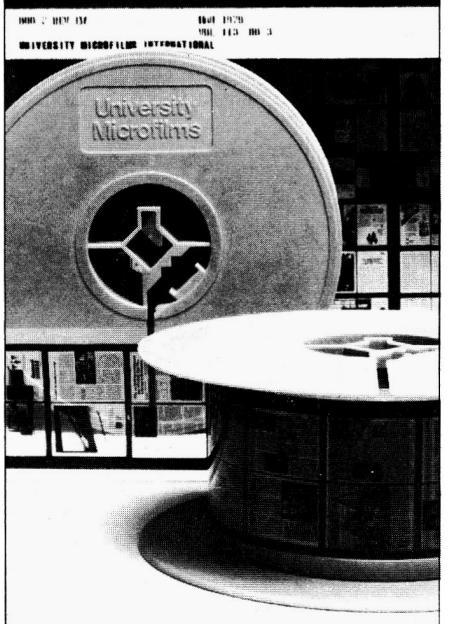

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International Apple Core™ is a non-profit organization of Apple users and user groups. We are dedicated to providing education, information and support to users of Apple and Apple-compatible products.

We aren't just for clubs. An individual can enjoy all the special benefits we have been providing user groups since 1979. You may share information on new applications. Or learn the latest on products. Or keep up on Apple events. Even receive specialized training.

If you'd like to join a local user group or contact other Apple enthusiasts, we can help you find them.

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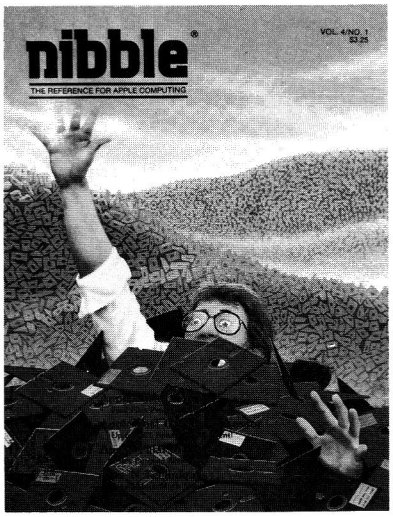

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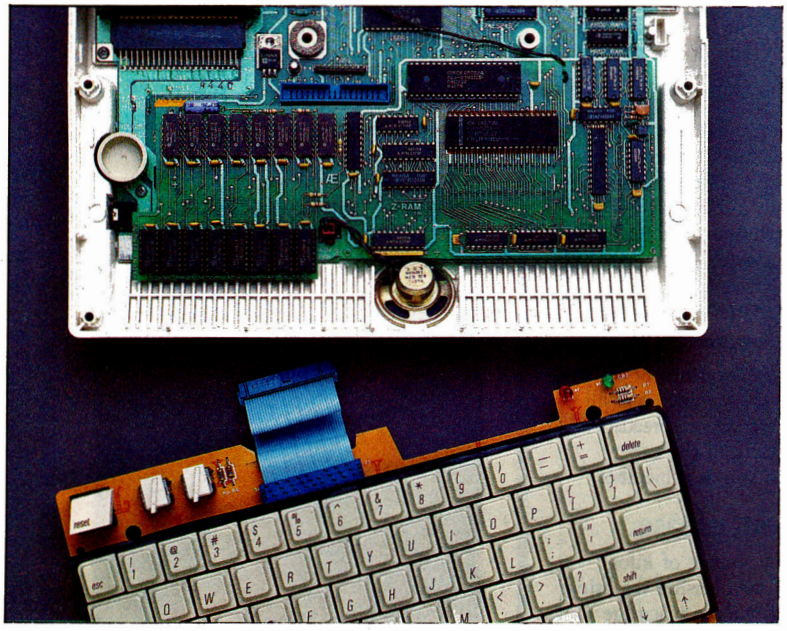
Editors' CHOICE

Every month, hardware and software manufacturers release dozens of new products into the Apple II market. The Editors' Choice singles out one product each month that the inCider *editors feel is a significant addition to the Apple II family of products.*



Applied Engineering's Z-RAM expansion board gives you extra memory and the ability to run CP/M.

The most radical difference between the Apple //c and its older brethren is the fact that the //c is a closed machine. It doesn't have any expansion slots and, consequently, is limited to the hardware in its original design. For many people, this configuration is adequate. If you're dissatisfied with a machine you can't expand, however, take a look at Applied Engineering's Z-RAM expansion board, this month's Editors' Choice.

Z-RAM increases your //c's internal memory to 640K and, at the same time, lets you run CP/M programs. Z-RAM doesn't plug into a slot. Instead, you install Z-RAM by opening your //c, extracting the 65C02 CPU and the memory-management unit, placing these chips on the Z-RAM board, and plugging Z-RAM into the now-empty sockets on the motherboard.

"Z-RAM was a breeze to install," Technical Editor Bob Ryan says. "The entire procedure took less than half an hour. In fact, the hardest part was getting the cover off the //c." Ryan adds, "I have yet to encounter any difficulties in the operation of the board."

Paul Statt, *inCider*'s Review Editor, also appreciates Z-RAM's effortless set-up: "The instructions are clear, and the photographs in the documentation are very helpful."

Editor in Chief Susan Gubernat is impressed with the power of Z-RAM. "For more than a year," Gubernat notes, "the //c has been limited by its lack of expansion slots. Now, with Z-RAM, you can run thousands of CP/M programs on your //c *and* take advantage of all that extra RAM."

The benefits of additional RAM include a much larger desktop (that is, workspace) for AppleWorks and other extensive programs, AppleWorks' accelerated speed achieved by placing more of the program in memory, and the ability to create a RAM disk. A RAM disk is particularly useful in applications requiring constant disk access, such as data-base management.

Z-RAM is available from Applied Engineering, P.O. Box 798, Carrollton, TX 75006. With CP/M 4.0B and RAMdrive software, Z-RAM with 256K sells for $449. The 512K version retails for $549. ■

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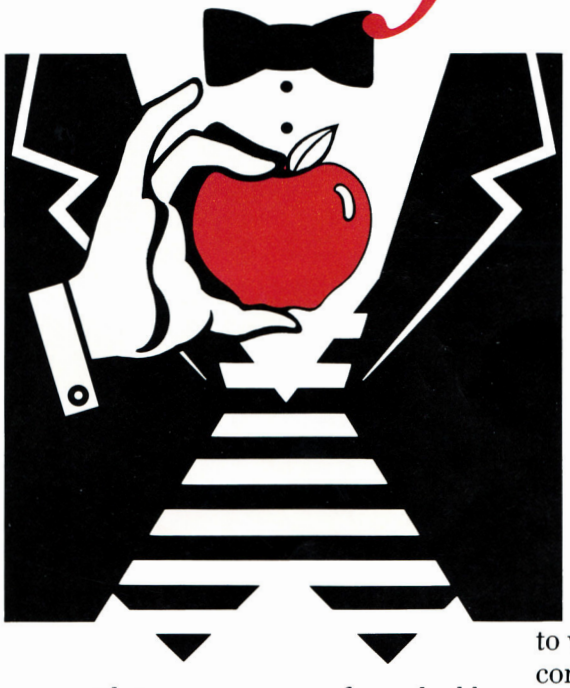

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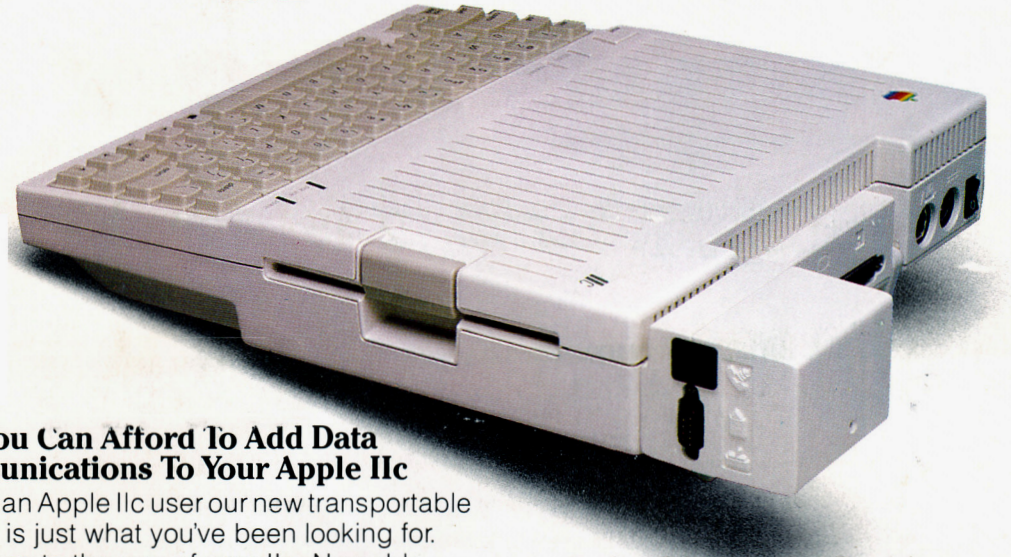

Now You Can Afford To Add Data Communications To Your Apple IIc

If you're an Apple IIc user our new transportable modem is just what you've been looking for. It attaches to the rear of your IIc. No cables or separate interface cards are needed. It's priced right, too. Just $199!

A Modem With A High I.Q.

Our transportable ProModem 300c is a 300 baud intelligent Hayes compatible modem that attaches to the game port and modem connectors at the rear of the IIc. Small yes, but mighty intelligent, thanks to the microprocessor that allows the ProModem 300c to have all the capabilities you would expect in expensive standalone modems, including a built-in speaker and call progress detection.

Convenient Communications And Word Processing Software Included

ProModem 300c comes with ProCom-A communications and word processing software written by Prometheus especially for the Apple IIc. This software supports mouse control and provides capture mode, line by line or XMODEM transfer and buffered printer support. ProModem 300c is also compatible with other communications software written for Apple IIc.

Adaptive Dialing and Positive Dial Tone Detection

ProModem 300c automatically switches from tone to pulse dialing as needed, and waits for dial tone detection before continuing. Compare this with modems using "blind dialing" that don't recognize the difference between tone and pulse, and don't wait for dial tones. ProModem 300c gets through long distance systems where others often fail.

Powered By The Apple IIc

Our transportable 300c uses very low power CMOS microcircuits. No external power supply or interface cables are needed. Just attach your ProModem 300c, plug in the phone cord and start communicating.

For more information visit your local dealer and ask to see the ProModem 300c, the first transportable modem for the Apple IIc.

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