

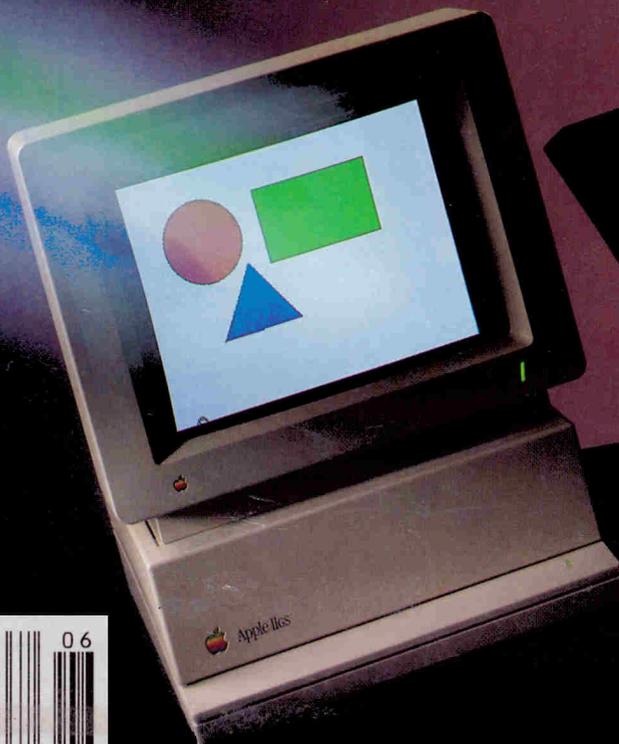
**inCider**



**Apple II / Macintosh**

# FRIENDS OR FOES? APPLE IIgs AND MAC LC

**46 SHAREWARE HITS FOR  
THE APPLE IIe, IIgs, AND MAC**

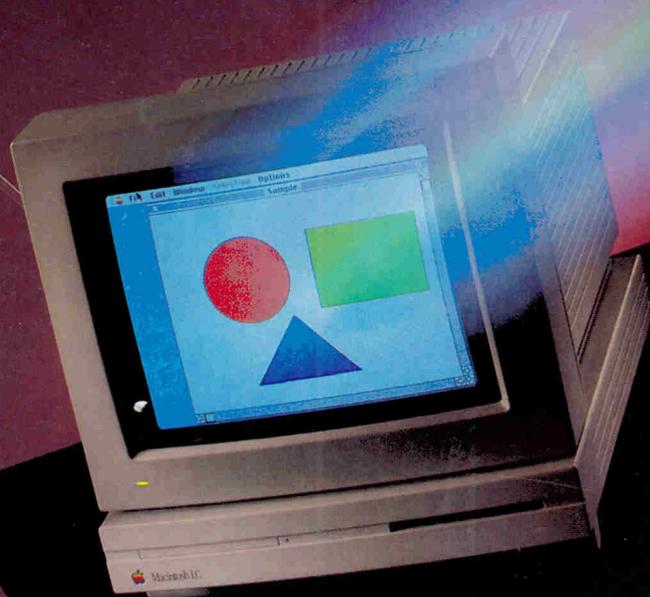


AN IDG  
COMMUNICATIONS  
PUBLICATION  
June 1991

**KIDPIX**  
The Best Paint  
Program  
You've Ever  
Heard

USA \$3.95  
Canada \$4.95

EDITORS' CHOICE P. 80



## REVIEWS

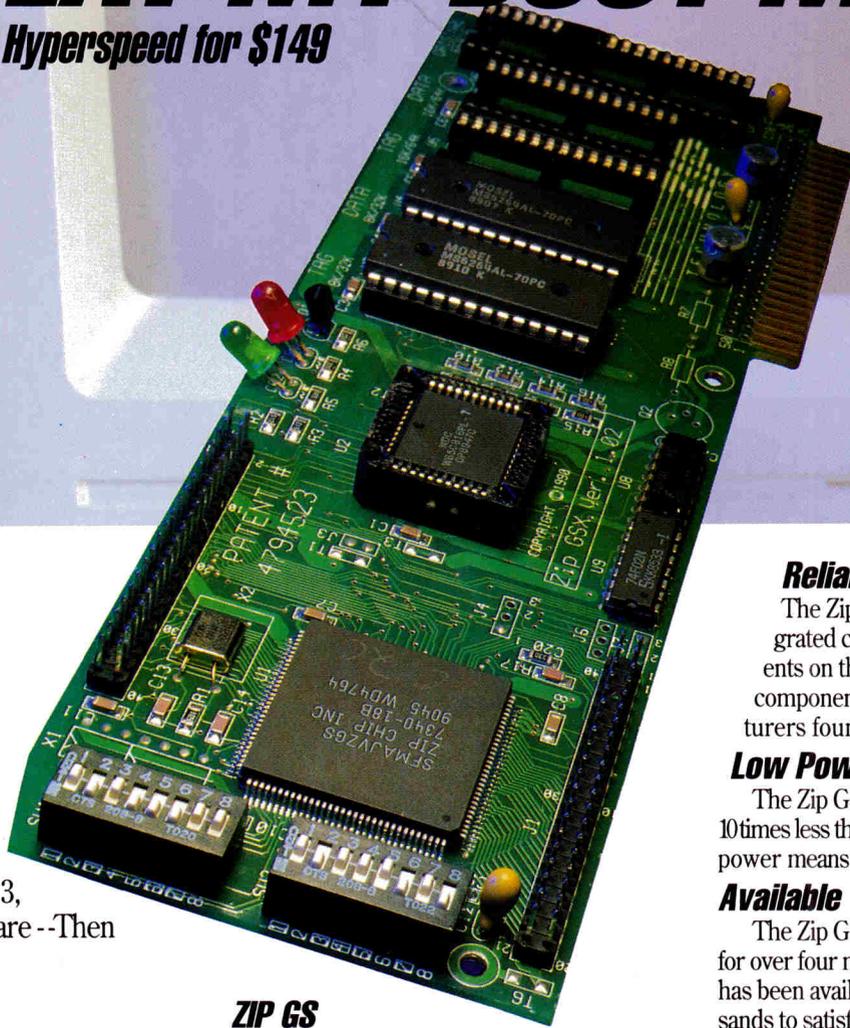
- ZipGS
- Mercury
- GeoQuiz
- Inside Information



# EAT MY DUST Mac...

Hyperspeed for \$149

GS+ Magazine



## If You Use...

- Appleworks GS
  - Managing your Money
  - Printshop GS
  - HyperCardGS
  - Springboard Publisher
  - DeluxePaint
  - Quicken • Publish it 3,
- or any other GS software -- Then you need a Zip GS.

## Here's Why...

To use powerful programs you need a powerful computer. Apple Computer left one thing out of the IIGS when they designed it...speed. The Zip GS puts the speed back in. The Zip GS comes standard with 8 K cache memory and runs at a very speedy 7 Mhz. The Zip GS gives you all the speed you need now and in the future because it's expandable. You will never have to buy another accelerator card again. All upgrades are available now.

Can you imagine the time you will save having your GS running up to 10 Megahertz faster. Appleworks performs like you always thought it should, recalculations in the blink of an eye. Word processing faster than on the new line of Macintosh computers. Nibble magazine said it this way "Apple Computer take note: this chip makes a full featured GS word processor faster than several Macintosh word processors running on a monochrome display." (monochrome display is the fastest) Hallelujah! **ZIP GS DELIVERS!**

## ZIP GS

- Is very easy to operate.
- Needs no special boot-up.
- Provides Macintosh speeds for your GS
- Is compatible with all GS hardware and software.
- Uses 1/10 the power of competing boards.
- Address all memory.
- Upgradable to 64 K cache memory.
- 16 variable speeds at the touch of a key.
- 30 day money back guarantee and a 1 year warranty.
- Upgradable to 10 megahertz.
- Fully DMA compatible.

## Installation

Anyone can install the Zip GS in a matter of minutes. To help with the installation, we include an animated pictorial instruction manual which gives detailed instructions on installation and operation.

## Upgradable

The Zip GS can be upgraded at any time. Zip Technology has available upgrade kits that boost the speed to 10Mhz.! We will be happy to do the upgrade labor for free within 48 hours.

## Reliable

The Zip GS has only one custom integrated circuit. The other three components on the Zip GS are the same reliable components from the same manufacturers found in your GS Computer.

## Low Power

The Zip GS requires only 120 ma of power - 10 times less than other accelerators. The low power means it will always run cool.

## Available

The Zip GS has been available and shipping for over four months. In the short time that it has been available, we have delivered thousands to satisfied customers around the world.

## Special Introductory Offer

The Zip GS is priced at \$199.00 retail. During this introductory offer the Zip GS is only \$149.00, a savings of \$50.00.

## ZIP GS Introductory Offer \$149.95

8Mhz upgrade	add only	\$29.95
9Mhz upgrade	add only	\$59.95
8K cache upgrade	add only	\$19.95
32K cache upgrade	add only	\$49.95

Zip GS--10 Ultra Fast 10 Mhz call

## Risk Free Offer/Money Back Guarantee

If you are not satisfied with the performance of your GS Plus, simply return it in the original box within 30 days for a refund.

Order Today Call Toll Free:

# 1 800-937-9737

Checks, VISA, Mastercard, American Express and Discovery cards accepted.

Now Shipping  
Standard Air By



5601 West Slauson Avenue, Suite #190 • Culver City, CA 90230 • Phone: (213) 337-1313 • FAX: (213) 337-9337

Circle 189 on Reader Service Card.

All product names are trademarks of their manufacturers

# Is Your Apple IIGS™ Already Obsolete?

WELL, DON'T RUSH OUT AND BUY A NEW MAC OR 386/PC JUST YET!

With a supply of good software, your Apple IIGS is still one of the best personal computers ever produced. Because we are actively developing new software for the Apple IIGS, a software subscription to SOFTDISK G-S™ can be very valuable to you.

## WHAT IS SOFTDISK G-S?

SOFTDISK G-S is a unique concept in Apple IIGS software. Every month we'll send you an 800K disk packed with an exciting assortment of software for your Apple IIGS. You'll get personal productivity programs, entertaining games, financial programs, Appleworks™ templates, fonts, clip art, desk accessories, hint and tips, and lots more all at a very affordable price.

## SOFTDISK G-S IS ORIGINAL SOFTWARE THAT IS UNIQUE AND COLLECTIBLE.

Don't confuse SOFTDISK G-S with "shareware" or "public domain software." There are no extra fees to pay for our programs or for your free technical support. It's all included in your software subscription.

## HERE ARE THE PROGRAMS, GRAPHICS, AND SOFTWARE FROM A SINGLE ISSUE OF SOFTDISK G-S.

### CONTENTS OF SOFTDISK G-S # 13

**REFLEXION** — Send your Alcorian Hyper-Marbles across the grid of Time and find the mysterious objects in Three-Space! A puzzle game with clean graphics and fun sounds.

**PS VIEWER-IMAGES** — This month's Print Shop Graphics features school images and some cool aliens.

**HACK ATTACK LEVEL SET** — Here's a new load of bricks to blast on your way to Doh! Load it into Arkanoid II and try to beat it!

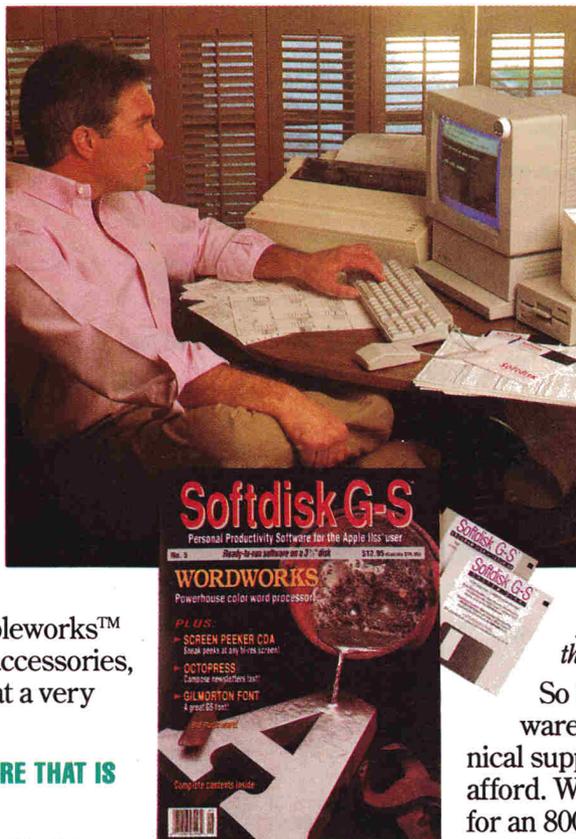
**JUKEBOX** — Three incredible new songs, each compatible with Music Studio 2.0™! Sit back and listen, or play any Music Studio songs.

**SPORTS CLIP ART** — Two pages of detailed 640 clip art just loaded with sports figures.

**FRESHSCRIPT FONT** — A great GS font in four point sizes for use with all GS word processing applications, including WordWorks™ and AppleWorks GS™!

**SPENCER'S PAGES** — A sensational seasonal page layout template, "Lantern Light." Just boot up your AppleWorks GS and use this fabulous document.

**G-ESSENCE** — A column about the current state of the Apple world and things to enhance your GS productivity.



## HERE'S WHAT THE EXPERTS ARE WRITING ABOUT SOFTDISK G-S:

"Programs, desk accessories, fonts, games . . . SOFTDISK G-S is a great value."

— InCider A+

"... this is a full-blown software package with beautiful graphics and an extensive help session . . . it's an economical way to add interesting software to your library."

— Apple IIGS Buyer's Guide

## HERE'S WHAT OUR SUBSCRIBERS ARE WRITING TO US:

"Dear Softdisk: Your Softdisk G-S is great! I am very impressed, the moving icons, interesting columns, matter-of-fact reviews, up-to-date system software, spiffy user interface, etc. I will definitely renew when the time comes."

So there you have it. Original software, outstanding quality, free technical support, and all at a price you can afford. Would you spend \$9.97 a month for an 800k disk packed with programs, postage free? If you're not sure, why not take advantage of this special offer and try just 3 issues — no risk. If you're not completely satisfied, we'll refund your money. No questions asked.

CALL FREE **1-800-831-2694** OR FAX THIS COUPON TO **318-221-8870** **SOFTDISK PUBLISHING** monthly software

**FREE**

YES! Rush my FREE bonus, 200 Printshop® Graphics for my IIGS, and start my three-month trial subscription to **Softdisk G-S** and/or **Softdisk**, postage paid. Make check or money order payable to **Softdisk Publishing** in U.S. funds. (LA residents, add 4% sales tax).

Check one:

- Softdisk G-S** (For the Apple IIGS) \$29.95, Can./Mex. \$34.95, Other For. \$37.95
- Softdisk** (For the Apple II) \$19.95, Can./Mex. \$24.95, Other For. \$27.95
- COMBO** — **Softdisk GS & Softdisk** \$39.95, Can./Mex. \$34.95, Other For. \$37.95

Check Disk format:  Two 5 1/4" disks  One 3 1/2" disk

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip +4 \_\_\_\_\_

Phone # \_\_\_\_\_

Discover  Visa/MC  AmEx  Payment Enclosed (U.S. funds only).

Card # \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_

**SOFTDISK PUBLISHING** • P.O. Box 30008 • Shreveport, LA 71130-0008  
318-221-8718 • **1-800-831-2694** IN061

# QUALITY COMPUTERS

# OVER-NIGHT!

School P.O.s  
Welcome!

# 1-800-443-6697

School P.O.s  
Welcome!

Only  
Quality Computers  
gives you  
**ENHANCE**



Enhance is Quality Computers bi-monthly informative-technical-entertaining newsletter. Enhance gives you the kind of information you need to make your Apple the effective work/educational tool it was designed to be, like product reviews and comparisons, new product announcements, news, and two special sections, Enhancing Education — written by teachers for teachers, and Computer Club Corner — designed to spark interest in User Groups across the country.

Enhance also includes our catalog — full of all the hardware and software you need for your Apple II. Quality Computers catalog includes detailed product descriptions and MONEY-SAVING COUPONS.

Quality Computers has been publishing Enhance for over 4 years. It's free to all QC customers, or you can call for your free subscription today!

"... an excellent publication."  
Wanda Bullion  
SJAUG User Group, Cherry Hill NJ

"I enjoy reading the articles and always learn something new."  
Charles S. Saunders  
Skokie, IL

Get your **FREE** subscription  
**TODAY!**  
**1-800-443-6697**

## HARD DRIVES

### QUALITY COMPUTERS (w/Apple SCSI)

40 MEG. (Conner Drive)	599.95
100 MEG. (Conner Drive)	849.95
200 MEG.	Call
Tape Backup	Call
CD ROM	Call

### CMS (Apple SCSI)

40 MEG. (Conner Drive)	649.95
60 MEG.	699.95
45 MEG. (Removable)	749.95

### APPLIED ENGINEERING

20 MEG. Vulcan (Ile, IIGS)	519.95
40 MEG. Vulcan (Ile, IIGS)	649.95
100 MEG. Vulcan (Ile, IIGS)	1,285.95

## SCSI INTERFACE CARDS

Apple High-Speed	109.95
RamFAST/SCSI (w/256K RAM)	179.95

## MEMORY CARDS

### AE RAMWORKS III

256K	133.95
512K	159.95
1 MEG.	199.95
RGB ColorLink Option	99.95

### AE RAMFACTOR

256K	169.95
512K	189.95
1 MEG.	229.95

### AE Z-RAM ULTRA II

256K	179.95
512K	199.95
1 MEG.	239.95

### AE RAM EXPRESS II

256K	149.95
512K	169.95
1 MEG.	209.95

### AE GS-RAM PLUS or ULTRA

1 MEG.	199.95
2 MEG.	259.95
3 MEG.	319.95

### AE GS-RAM II

1 MEG.	149.95
2 MEG.	209.95
4 MEG.	329.95

## CV TECH. GS MEMORY BOARD

1 MEG.	149.95
2 MEG.	209.95
3 MEG.	269.95
4 MEG.	329.95

### CHINOOK 4000 GS

1 MEG.	149.95
2 MEG.	209.95
4 MEG.	329.95

## MEMORY CHIPS

256K (bank)	19.95
256Kx4 (set of 2)	19.95
1 MEG. (bank)	69.95
1 MEG. SIMMS	59.95

## DISK DRIVES

AE 3.5"	199.95
AE 3.5" High-Density	239.95
AE 5.25"	129.95
AMR 1.4 MEG. 3.5"	199.95
AMR 5.25" Daisy chainable	129.95
Laser 3.5"	149.95
Laser 5.25"	99.95
Laser UDC	49.95
Apple 3.5" (Ile, II+)	309.95
Apple 3.5" (Ile Plus, IIGS)	319.95
Apple 5.25"	249.95
Apple Controller	49.95
Apple Unidisk Controller	64.95

## PRINTERS

ImageWriter II	459.95
Hewlett-Packard DeskJet 500	579.95
Panasonic 1180	199.95
Panasonic 1191	249.95
Panasonic 1124	329.95

## PRINTER INTERFACE CARDS

AE Parallel Pro	79.95
AE Serial Pro	109.95
Fingerprint GSi	89.95
Fingerprint Plus	89.95
Fingerprint G+ or SS w/cable	59.95
Grappler 9 Pin	84.95
Grappler Plus	79.95
<b>SPECIAL!</b> SuperWriter 924	64.95
<b>SPECIAL!</b> SMT Printech	29.95



## MEMORY CHIPS

Expand your RAM with these high-quality RAM chips. Fully Apple IIc, IIe and IIGS compatible. Easy to install on most RAM cards. Five year warranty.

256K	\$19.95/bank
256Kx4	19.95/set of 2
1 MEG.	69.95/bank

## ATTENTION PRICE- HUNTERS!

- We'll match any nationally advertised price!
- We have it in stock!
- Our service can't be beat!

PRICE MATCH POLICY AT MANAGER'S DISCRETION

## COMPLETE GS SYSTEMS



Let us put together an Apple IIGS system to fit your needs. Our knowledgeable sales staff can recommend a system designed for . . .

- the beginner
- extra storage
- extra speed
- the works!

. . . AT PRICES YOU CAN LIVE WITH!



Quality Computers

POWER FOR PERFORMANCE

## YOUR COMPLETE APPLE SOURCE

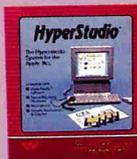
Quality Computers is one of the largest Apple mail order companies in the country. Why? We offer more: a staff of Apple sales experts; a complete product line; user-friendly Customer Service; the best Technical Support in the business; Q Labs, our own software development division; our own newsletter, Enhance; and special programs, like the Teacher Bonus Program. No other company offers all this at prices you can live with.

# QUALITY COMPUTERS OVER-NIGHT!

School P.O.'s  
Welcome!

## 1-800-443-6697

School P.O.'s  
Welcome!



### HYPERMEDIA

Your Apple II can become a hypermedia machine!

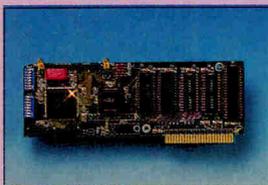
Integrate text, sound, and graphics to

create an interactive tutorial, computerized slide show, and more!

**HyperStudio** — Apple IIGS  
Requires 1.25 MEG. **\$82.95**

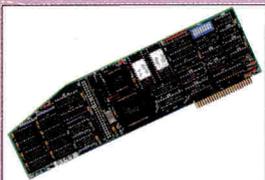
**Hypercard IIGS**  
Requires 1.5 MEG. **\$79.95**

**Tutor-Tech** — Apple IIe, IIc, IIGS  
Requires 128K **\$149.95**



### ZIPGS PLUS ZIP TECHNOLOGY

With a ZIPGS installed, you will never wait on your favorite programs again. GS/OS, AppleWorks GS and your favorite desk-top publisher become a joy to use. Features 8MHz speed, 16K cache, DMA compatibility, and is upgradeable to 12MHz+. **\$269.95**



### RAMFAST/SCSI CV TECH.

The fastest hard drive interface available. Just plug the card into your Apple IIe, or IIGS, and fasten your seatbelt. Features: SCSI compatibility, built-in configuration software, 256K RAM, 10MHz processor, cache-lookahead, built-in ROM disk, and more! **\$179.95**

### MODEMS

AE DataLink 2400 (Internal)	159.95
AE DataLink Express	159.95
AE DataLink Express w/MNP5	189.95
AE DataLink Express w/Send-FAX	Call
SupraModem 2400	99.95
9600 Baud	599.95

### MONITORS

12" Amber or Green Monochrome	99.95
Magnavox RGB	299.95
Custom Cable	24.95
Apple RGB	459.95

### INPUT DEVICES

AppleMouse IIe	119.95
A+ IIGS Mouse	79.95
Laser Mouse	49.95
Kensington Turbo Mouse	109.95
CH Mach III Joystick	29.95
CH Mach IV Plus Joystick	62.95
CH Flightstick	47.95
IBM-Compatible Keyboard	79.95
Cutting Edge ADB Keyboard	129.95

### SOUND & GRAPHICS HARDWARE

Quickie	199.95
LightningScan	199.95
ThunderScan	149.95
ComputerEyes IIe	99.95
ComputerEyes IIGS	195.95
Apple Video Overlay Card	429.95
AE Sonic Blaster	98.95
AE Audio Animator	179.95
Echo II	109.95

### ACCELERATORS

AE TransWarp GS	259.95
ZipChip 8MHz (IIe)	139.95
Zip GSX Plus	249.95

### COMPUTERS

Apple IIGS CPU (w/1 MEG. RAM)	799.95
Laser 128EX	387.95
Laser 128EX-2 (*5.25)	409.95
Laser 128 Color System	510.95

### ACCESSORIES

AE Conservor	77.95
AE PC Transporter	259.95
AE PC Transporter IIe Installation Kit	29.95
AE PC Transporter IIGS Installation Kit	39.95
AE Power Supply	64.95
AE Power Supply IIGS	79.95
AE TimeMaster	78.95
AE TransDrive	189.95
AE TransDrive (Duo)	289.95
Apple IIe Enhancement Kit	59.95
Cables (most)	14.95
Extended 80 Column Card (IIe)	27.95
Kensington Antiglare Filter (IIGS)	39.95
Kensington System Saver IIe	59.95
Kensington System Saver GS	69.95
Kensington Dust Covers	11.95
SMT No Slot Clock	29.95
Switchboxes	from 32.95

### HYPERMEDIA

HyperStudio GS	82.95
<b>NEW!</b> HyperCard IIGS	79.95
Tutor-Tech (IIe, IIc, IIGS)	149.95

### BUSINESS SOFTWARE

AppleWorks 3.0	
Consumer Version	169.95
10 Pack (3.5" or 5.25")	949.95
Appleshare Network Version	1,089.95
AppleWorks GS	
Consumer Version	199.95
10 Pack	1,139.95
AppleWorks 3.0 Companion	24.95
BeagleWrite	48.95
BeagleWrite GS	59.95
BusinessWorks Bundle	249.95
BusinessWorks Payroll	99.95
BusinessWorks System Manager	79.95
DB Master Pro	189.95
Managing Your Money 5.0	89.95
Quicken	38.95
ReportCard II	52.95
Sensible Grammar	52.95
Sensible Speller	79.95
WordPerfect IIe or IIGS	104.95

### COMMUNICATION SOFTWARE

Point to Point	59.95
ProTERM v.2.2	79.95
ProTERM School Pack	279.95
AE ReadyLink	59.95
TIC	39.95

### EDUCATIONAL SOFTWARE

<b>ORANGE CHERRY — TALKING SHOOHOUSE</b>	
Talking ABC's GS	38.95
Talking Addition & Subtraction GS	38.95
Talking Animals Activity Set GS	38.95
Talking Classroom GS	38.95
Talking USA Map GS	38.95

### THE LEARNING COMPANY

Reader Rabbit or Math Rabbit	24.95
Talking Reader Rabbit GS	34.95
Children's Writing & Publishing Center	32.95

### BRÖDERBUND

Where in the World is Carmen Sandiego?	25.95
Carmen USA, Europe, Time, or World GS	29.95
The Playroom	24.95
Geometry GS	54.95
Science ToolKit - Master Module	54.95
Science ToolKit - Modules 1, 2, or 3	27.95

### WEEKLY READER

Sticky Bear Numbers, ABC's, Opposites, or Shapes	24.95
Talking Sticky Bear ABC's, Opposites, or Shapes	29.95

### MECC

Calendar Crafter GS	32.95
Fraction Munchers or Number Munchers	24.95
Oregon Trail	24.95
USA GeoGraph GS	54.95
Word Munchers	24.95
World GeoGraph GS	54.95

### DAVIDSON

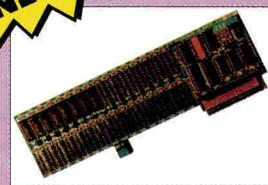
AlgeBlaster Plus	32.95
Grammar Gremlins	32.95
MathBlaster Plus	32.95
MathBlaster Mystery	32.95
Read & Roll	34.95
Spell It Plus	32.95
Spell It Data Disks	14.95
Word Attack Plus	32.95



### INWORDS

**WESTCODE**  
The revolutionary new way to enter text into your computer. With InWords

and a hand-held scanner, you can scan virtually any printed information — just as if you typed it from the keyboard — only faster. Ready to edit, analyze, calculate or print. Enters up to 500 words per minute. Requires Apple IIGS or enhanced IIe with 512K, and Quickie or compatible hand-held scanner. **\$79.95**



### GS MEMORY BOARD CV TECH.

Expand your RAM with this DMA compatible IIGS memory card. Its unique piggyback connector lets you use your existing 1 MEG Apple Memory Expansion card, 4 MEG GS Juice Plus, or 4 MEG Chinook RAM 4000 for added memory. 1 MEG. **\$149.95**

# SAVE \$

Ask about School Editions, Lab Packs, and Site Licenses.

Get your **FREE** Educational Software Catalog.

ASK ABOUT OUR  
TEACHER BONUS POINT  
PROGRAM!

Quality Computers

POWER FOR PERFORMANCE

### POLICY

- We ship via Airborne Express, UPS, DHL, and US Mail. Saturday deliveries available. If order is split, we pay freight on balance of items. Add \$3.95 for C.O.D. certified.
- RETURNS: All defective or mis-shipped items may be returned within 30 days for refund or replacement. Items returned with damaged or incomplete packaging will be charged replacement fees. No refunds on software items (unless otherwise specified).
- Prices subject to change without notice.
- We accept school P.O.'s by mail or FAX (313) 774-2698.



Circle 136 on Reader Service Card.



# SIMPLY THE BEST

**A**s the Apple hard drive leader, we've sold and serviced every hard drive on the market. We've shipped them out, and we've seen them come back - in droves. We've listened to thousands of complaints and processed hundreds of returns.

Finally, those days are over. We are proud to announce a hard drive we trust so much that we put our name on it - the Q Drive.

Why do we trust the Q Drive? Simply, we demanded the best, and we got it:

**THE BEST INTERNAL MECHANISM.** Other companies sell hard drives with poor quality internal mechanisms to keep their costs down. We didn't settle for that. That's why the Q Drive uses only top-quality Conner mechanisms. The Conner is fast (25ms), quiet, reliable, and uses the latest hard drive technology, including a voice coil actuator for faster head positioning, and track buffering for quick data access.

**THE BEST COMPATIBILITY.** We demanded SCSI compatibility. With SCSI you get complete compatibility with all present and future Apple products, as well as almost any new system you get, whether it's Apple, Macintosh, or IBM. The Q Drive comes with the Apple High-Speed SCSI card, standard, or the RamFAST/SCSI card on request.

**THE BEST DOCUMENTATION.** The Q Drive's plain-English manual is the most complete available. It not only covers installation and set up, but also hard drive basics, ProDOS, pathnames, subdirectories, GS/OS, the Finder, backups, maintenance, and troubleshooting. There's even a glossary of hard drive terminology.

**EASIEST TO USE.** The Q Drive's software makes setting up a breeze. It instantly determines which Apple it's running on and

configures the Q Drive appropriately. The latest system software is built-in, along with the Finder or ProDOS 8 Mini-Selector, and 15 MEG of the best public domain software available. The Q Drive even performs diagnostics, and can install EasyDrive for you, automatically.

**THE BEST SERVICE AND SUPPORT.** The Q Drive is backed by the Quality Computers Technical Support staff - the best in the business. It comes with a hassle-free 30-day money back guarantee, and a 1-year limited warranty. Plus, should your Q Drive ever fail, you can count on 72-hour average service time, and complete data recovery in most cases.

**THE BEST PRICE.** We priced the Q Drive to make it one of the most affordable hard drives available. Hardware, software, support, and price make the Q Drive the best Apple hard drive value. Take one for a test drive today!

### WHAT THEY'RE SAYING

"The Q Drive is fantastic! Super-fast, formats itself, and a super 15 MEG software base — what a bonus!

*Howard J. Dillon  
Las Vegas, NV*

"... the Q Drive software is so easy to use that it practically sets up the drive itself."

*inCider Magazine*

**40 MEG. .... \$599.95**

**100 MEG. .... 849.95**

**Includes the Apple High-Speed SCSI card.  
Add \$70 for RamFAST/SCSI card.**



Undecided about a hard drive? Get the Hard Drive Buyer's Guide. **ONLY \$6** (Shipped overnight to most locations — Refundable when you buy a hard drive from Quality Computers)



20200 Nine Mile Road • Box 665  
St. Clair Shores, MI 48080

**SALES: 1-800-443-6697**

Tech. Support: (313) 774-7740  
Cust. Service: (313) 774-7200  
FAX: (313) 774-2698

VICE PRESIDENT/GROUP PUBLISHER Paul Boulé  
EDITOR IN CHIEF Dan Muse  
EXECUTIVE EDITOR Eileen T. Terrill  
SENIOR EDITOR Paul Statt  
ASSOCIATE EDITOR Carla Barker  
ASSOCIATE EDITOR Cameron Crotty  
SPECIAL-PRODUCTS MANAGER Janet Cote  
WEST COAST EDITOR Jeff Cable  
CONTRIBUTING EDITORS Joe Kohn  
Gregg Keizer  
Ruth K. Witkin  
Cynthia Field

### DESIGN

ART DIRECTOR John Sizing  
ASSISTANT ART DIRECTOR Dianne K. Ritson  
PRODUCTION MANAGER/DESIGNER/AD GRAPHICS Elizabeth Auer

### ADVERTISING Eastern Sales Office

ASSOCIATE PUBLISHER/NATIONAL SALES MANAGER Dale Strang (800) 441-4403  
SALES REPRESENTATIVE Diane Maguire (800) 441-4403  
ADVERTISING COORDINATOR Mary Hartwell (800) 441-4403  
ADMINISTRATIVE ASSISTANT Lisa Benway-Caron

### Western Sales Office

WESTERN SALES MANAGER James Burns  
2421 Broadway  
Suite 200  
Redwood City, Ca 94063  
(415) 363-5230

### MARKETING SERVICES/PROMOTION

DIRECTOR OF MARKETING Peg Brown  
MARKETING ASSISTANT Rita Rivard

### CORPORATE PRODUCTION

PRODUCTION DIRECTOR Sue Gross  
MACINTOSH COORDINATOR Doreen Means

### IDG COMMUNICATIONS/PETERBOROUGH

PRESIDENT Roger Murphy  
VICE PRESIDENT Dennis Christensen  
MANUFACTURING/OPERATIONS Bonnie Welsh-Carroll  
VICE PRESIDENT Jeffrey D. DeTray  
CIRCULATION/PLANNING  
DIRECTOR OF TECHNOLOGY RESEARCH Linda Ruth (800) 343-0728  
SINGLE-COPY SALES DIRECTOR Debbie Walsh  
NEWSSTAND PROMOTION MANAGER Megan Lane  
CIRCULATION DIRECTOR Laurie K. Seamans (800) 343-0728  
ASSISTANT CIRCULATION MANAGER CUSTOMER SERVICE William M. Boyer  
DIRECTOR OF CREDIT, SALES AND COLLECTION Cecile Giguere  
FOUNDERS Wayne Green

*inCider/A+* supports a forum on America Online. For information on obtaining appropriate software, call Quantum Computer Services at (800) 227-6345 x5290 or 5291.



*Cider/A+* (ISSN #1054-6456) is published monthly by IDG Communications, 80 Elm Street, Peterborough, NH 03458. Phone: (603) 924-0100. Second-class postage paid at Peterborough, NH, and additional mailing offices. (Canadian second-class mail registration number 9590.) Subscription rates in U.S. are \$27.97 for one year, \$43 for two years and \$59 for three years. Foreign orders must be prepaid in U.S. funds drawn on a U.S. bank. One year only: Canada \$37.97 (price includes GST), Mexico \$37.97, foreign surface mail \$47.97, foreign air mail \$82.97. Nationally distributed by International Circulation Distributors. **Postmaster:** Send address changes to *inCider/A+*, Subscription Services, P.O. Box 58618, Boulder, CO 80322-8618. (Send Canadian changes of address to *inCider/A+*, P.O. Box 1051, Fort Erie, Ontario L2A 5N8.)

# QUALITY COMPUTERS OVER-NIGHT!

School P.O.s Welcome!

## 1-800-443-6697

School P.O.s Welcome!

### HARD DRIVE BUYERS' GUIDE

Base your decision to buy a hard drive on fact, not fiction. *The Hard Drive Buyers' Guide*,

exclusively from Quality Computers, is packed with the kind of information you need to make an intelligent hard drive purchase. It comes with a guide to ProDOS 8 & 16 and GS/OS, plus, the cost of the guide is refundable when you buy a hard drive from Quality Computers. Shipped overnight to most locations **\$6.00**

### OTHER TITLES

Crossword Magic	34.95
Katie's Farm	24.95
McGee	24.95
<b>NEW!</b> McGee at the Fun Fair	24.95
Mavis Beacon Teaches Typing	27.95
Mavis Beacon Teaches Typing GS	33.95

### ENTERTAINMENT SOFTWARE

Bard's Tale II	22.95
Battle Chess GS	32.95
Block Out GS	26.95
The Cyllian Mission	44.95
Crystal Quest	32.95
The Duel: Test Drive II	32.95
Grand Prix Circuit	28.95
Hunt for Red October	22.95
Immortal GS	34.95
Jack Nicklaus Golf GS	34.95
Tetris	27.95
Space Ace	36.95
Tunnels of Armageddon	29.95
Xenocide	32.95
Zany Golf GS	26.95

### SOUND & GRAPHICS SOFTWARE

Award Maker Plus	29.95
Bannermania	24.95
Dazzle Draw	33.95
Deluxe Paint GS	24.95
Design Your Own Home GS	59.95
Font Factory GS	25.95
GraphicWriter III	74.95
GS Font Editor	29.95
<b>NEW!</b> InWords (OCR)	79.95
Labels, Labels, Labels	28.95
Platinum Paint	59.95
PrintShop <b>NEW!</b> (3.5 or 5.25)	29.95
PrintShop GS	36.95
PrintShop GS Companion	32.95
PS Graphics Libraries	each 16.95
PS Graphics Libraries GS	each 24.95
PS Lover's Utility Set (11e or IIGS)	27.95
Publish It! 3	89.95
VCR Companion	34.95

### TIMEOUT SERIES — BEAGLE

DecisionPak	89.95
PerformancePak	69.95
StylePak	79.95
MacroEase	25.95
DeskTools, FileMaster, PowerPack, SideSpread, TextTools, or Thesaurus	32.95
QuickSpell, SpreadTools, or UltraMacros	40.95
SuperFonts, SuperForms or Telecomm	42.95
Outliner	42.95
ReportWriter	48.95
Graph	52.95

### UTILITIES & LANGUAGES

Apple IIGS System Software Update 5.04	44.95
Chinook SCSI Tools	29.95
Copy II Plus 9.0	25.95
CrossWorks	69.95
GS Desk Accessories	34.95
Micol Advanced BASIC IIe	59.95
Micol Advanced BASIC IIGS	89.95
Orca/M or DesignMaster	39.95
Orca/PASCAL or Orca/C	80.95
Orca Learn to Program	119.95
Q LABS	
RepairWorks or SuperPatch	34.95
RepairWorks/SuperPatch Combo	49.95
RAMUP, EasyDrive, or TIC	39.95
Ruth Witkin's Best New AW Templates	39.95
SALVATION	
Exorciser, Deliverance, or Harmonie	29.95
Independence	24.95
Guardian, or Renaissance	34.95
Wings	49.95
Supreme (5 modules)	119.95

### INSTRUCTIONAL MATERIAL

The Hard Drive Buyer's Guide	6.00
1001 Things to do with Your Apple IIGS	10.95
Using AppleWorks GS	15.95
AppleWorks Made Easy	15.95
Exploring MicroSoft Works	24.95
The Official Print Shop Handbook	15.95

30-DAY TRIAL



### EASYDRIVE Q LABS

The complete management system for your hard-disk. Includes a Launcher, Selector, File Maintenance Program, Image Backup/Restore (with compression), Disk Optimizer, Index Program, and an informative guide to ProDOS and GS/OS. **\$39.95**

30-DAY TRIAL



### TIC Q LABS

Enjoy a full-featured communication program at a price you can live with. TIC includes a comprehensive macro language (over 70 commands), dozens of terminal emulations, file compression, a non-nonsense command structure and GS/OS compatibility. **\$39.95**

30-DAY TRIAL



### REPAIRWORKS/SUPERPATCH

RepairWorks is the award-winning AW database/word processing recovery and repair program. SuperPatch is the AW customization program that lets you change AppleWorks in over a hundred ways. **\$34.95/ea. 49.95/combo**

## Get ENHANCE free!

Enhance is Quality Computers' bi-monthly technical-informative-entertaining newsletter. It is packed with the kind of information you need like technical tips, product reviews, classroom tips, new product announcements, classified ads where you can buy/sell used equipment, dollars-off coupons, and more. Plus, Enhance includes our complete catalog! Join the hundreds of thousands who have enjoyed Enhance for over 4 years. Get your free subscription today!

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( \_\_\_\_\_ ) \_\_\_\_\_

Clip and mail to: QUALITY COMPUTERS, P.O. Box 665, St. Clair Shores, MI 48080  
Or call 1-800-443-6697

Circle 165 on Reader Service Card.

Member Better Business Bureau

**OVERSEAS ORDERS  
VIA DHL  
3 DAY DELIVERY!**



Quality Computers

POWER FOR PERFORMANCE

### BUSINESS HOURS

SALES: 1-800-966-1508 or 1-800-443-6697 Mon.-Fri. 9AM-9PM Sat. 10AM-4PM (Eastern Time)  
TECHNICAL SUPPORT: (313) 774-7740 Mon.-Fri. 10AM-12/1PM-5:30PM (Eastern Time)  
CUSTOMER SERVICE: (313) 774-7200 Mon.-Fri. 9AM-5PM (Eastern Time)

20200 E. Nine Mile Road • Box 665 • St. Clair Shores, MI 48080  
Orders & P.O.'s by FAX (313) 774-2698

# Let's talk more about deals you can't refuse...

I'm gonna keep taking care of you and your Apple. So you check out the price of something you need with the other MOB's (*Mail Order Businesses*) and see what they gotta say. Then you give me a call. I'll beat the other MOB's best advertised price in this magazine, or I'm gonna send you a check for \$5.\* *How can you refuse?*

**Thousands  
of Apple  
Products in  
Stock and  
Ready to Ship.**

Featuring these  
manufacturers:

(along with hundreds of  
others too numerous to list)

Abbracadata • Accolade  
Addison Wesley • American  
Micro Research • Applied  
Engineering • Apricorn •  
Artworx • Beagle Bros •  
Broderbund • CH Products •  
Claris • CMS Enhancements  
• CV Technologies •  
Davidson & Assoc. • Digital  
Visions • Electronic Arts •  
Glen Bredon • Insync • Intuit  
Software • Kensington •  
Laser Computer • Lawrence  
Prod • Magnavox • Micro  
Revelations • Microsoft •  
Morgan Davis Group • Night  
Owl • Ohio Kache Systems •  
Orange Micro • Passport  
Designs • Progressive •  
Pygraphics • Readysort •  
Roger Wagner • Sensible  
Software • Seven Hills •  
Sierra On-Line • Softspoken •  
Strategic Studies • Supra  
Corporation • Thirdware •  
Timeworks Software •  
Victory Software • Vitesse •  
Westcode Software •  
Wordperfect Corp • Zip  
Technology

**Call today  
for a FREE  
catalog.**

**Still the No. 1 MOB  
and going strong.**

## HOW TO ORDER:

**Orders only: 1-800-438-2883**

**FAX: 1-619-274-2440**

15% (¢15/min. restocking fee on  
refunded items only)

**Price quotes & technical support:**

**1-619-274-1253**

**8am-5pm PST Monday-Friday**

• Committed to Value Since 1985 •

# Roger Coats

P.O. Box 171466  
San Diego, CA 92197

Circle 90 on Reader Service Card.

## OUR FINE PRINT:

\*Certain limitations apply to MOB offer:

1. Advertised price must be published in this magazine.
2. We reserve the right to question misprints.
3. Limited to items we carry & stock on hand, excluding games.
4. Management reserves the right to make final decision.

We accept the following methods of payment:

- School Purchase Orders • VISA & MasterCard
- Bank Wires • Certified Checks • Money Orders • NO C.O.D.s

• Sorry, No Software Refunds

• Not responsible for product compatibility

• Sorry, no shipping, handling, or insurance refunds

• FOB San Diego, CA • We really appreciate your business!



**ARTICLES**



p. 22

**22 LC vs. GS: Side by Side, Head to Head**  
 And in this corner . . . *inCider/A+* puts the Macintosh LC and the Apple IIGS through a tough software workout. Can a beefed-up GS hold its own against the newest contender for the home/school/small-business prize?

**34 Shareware: Bargains You've Never Dreamed Of**  
 It's no fantasy — if you're looking for well-stocked shelves and software savings, the best deal in town is shareware, a unique distribution system that lets you try before you buy. Thanks to user groups, on-line services, and specialized mail-order houses, you'll find thousands of public-domain and shareware programs within easy reach, ready to meet all your productivity and entertainment needs.

**42 Hard-Disk Drives Made Easy: Surviving the Crash**  
 Cure for the hard-disk blues: An ounce of prevention plus some simple repair strategies will keep your data in good working order and minimize information loss when disaster strikes. A wide selection of backup, recovery, optimization, and maintenance utilities can help you keep up with your "housekeeping" and clean up when things go wrong.



p. 34

**COLUMNS**

**inCider's View** \* *Dan Muse* ..... 8  
 Best Intentions? .....

**AppleWorks in Action** \* *Ruth Witkin*  
 On the Road Again..... 46

**Bridging the Gap** \* *Gregg Keizer*  
 The Developers' Platform ..... 52

**Press Room** \* *Cynthia E. Field*  
 Desktop Publishing Goes CAD ..... 61

**Learning Curve** \* *David D. Thornburg*  
 Education's New Order ..... 74

**DEPARTMENTS**

**Letters to the Editor** ..... 10

**What's New**  
 News, New-Product Focus, Notes from the  
 AppleWorks Programmers Association..... 12

**Apple Clinic**  
 Cache Bash: Handy Storage;  
 Skinny Platinum Paint;  
 RGB Colors for IIGe;  
 Add Memory to Memory;  
 AppleWorks Clinic  
 ..... 17

**Reviews**  
 ZipGSX; GeoQuiz;  
 Inside Information,  
 The Random House Encyclopedia;  
 Mercury..... 20

**Editors' Choice**  
 Kid Pix..... 80



p. 52



**INCIDER'S  
VIEW**

# BEST INTENTIONS?

By **DAN MUSE** \* EDITOR IN CHIEF

**T**hanks to its new Education Sales Consultant policy, Apple has once again ruffled a few feathers.

AT BEST, IT'S A RISKY MOVE. AT WORST, it could alienate hundreds of school administrators across the country. We're talking about the new Apple Education Sales Consultant (AESC) program. In short, Apple has cut back on the number of authorized education representatives, but by selecting the best of the lot, service and support theoretically should be better.

Regardless of what the end result is, right now educators, at least the ones who have contacted us, say they feel confused and abandoned. Given that educators have doubted Apple because of its lack of commitment to the II line, an uproar is the last thing the company needs.

Thanks to the new AESC policy, Apple has once again ruffled a few feathers. Educators and school administrators are upset over two issues.

The first is that by substantially cutting back the number of dealers in each region, educators in rural settings may have to travel great distances to visit their AESCs. As one educator in Indiana wrote, "This week several of my colleagues learned that Apple Computer canceled all its 'educational contracts' with local dealers. They told me that there would be two dealers handling educational accounts in the entire state of Indiana. This is the dumbest move we've ever seen. At a time when IBM is reaching out . . . Apple is disappearing into oblivion . . ." Libby Preble, Apple's manager of education-channel sales, says that Apple is aware of the potential inconvenience and is "working closely with AESCs to develop creative solutions for rural customers."

The second concern is that the new program assigns schools an AESC. Educators and administrators say they're no longer free to buy where they get the best deal. Mel Chafetz, principal of the A. Ward Spaulding Elementary School in West Suffield, Connecticut, was one of the first educators to call us regarding the new policy. He told us that he spoke for many other school administrators when he said, "Educators feel that their options have been taken away from them. They want to be free to buy from dealers who

give them the best prices and the best support."

Preble argues that the price issue isn't relevant because all educators pay the same price based on Apple's education price list. She adds that by selecting the dealers it believes are best able to supply support, Apple is providing a more "dedicated resource for education customers."

Curious types that we are, we wonder what the real story is. As with most stories, this one has two sides.

Apple says that changes in educational computing — greater focus on networking and integrated curricula — call for a higher level of support. Preble says that the AESC policy is a "more dedicated arrangement" — that AESCs will be more accountable and also able to invest more time and resources.

For a different perspective, we talked to a dealer on the East Coast who asked to remain anonymous. He said he believes Apple divided the country into regions, and that the dollar amount of Apple sales dictated the number of AESCs each region was allowed. "Apple seems to be operating under the premise that its products will sell themselves," he says. "It's a big mistake, though. Some schools are buying IBMs; others have decided to simply not buy at all."

Under the AESC program, dealers can sell other systems on the retail level, but sales to schools must be only Apple. Our dealer, however, says he believes he was actually penalized for being Apple-only. He says Apple used regional exclusivity as leverage to persuade nonexclusive dealers to turn Apple: "They were wooed with the carrot of an AESC contract if they dropped IBM."

Only Apple knows the motive behind the AESC program; it's easy for anyone to see, however, that the immediate impact on the educational community is decidedly negative. In the long run, the new program may be beneficial. If we listen to Apple, the program is intended to provide educators with better service and support. If we listen to educators, we wonder how Apple will survive its "good intentions." □



USA/CANADA TOLLFREE  
1-800-624-2926

IN ILLINOIS  
708-888-8300



YOUR SINGLE SOURCE SUPPLIER FOR COMPUTER SOFTWARE ■ DISKETTES ■ ACCESSORIES



APPLE  
MACINTOSH  
CD-ROM/LASERDISCS  
ACCESSORIES  
NETWORKING/SITE LICENSES

Visit  
Our

**NEW**  
Chicagoland  
SHOWROOM

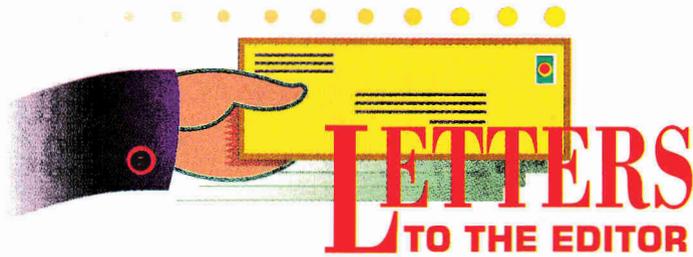
19  
91

Spring  
Catalog

# YOUR Single Source Multimedia Solution

CALL NOW FOR YOUR **FREE** 156 PAGE **COLOR** CATALOG

EDUCATIONAL RESOURCES • 1550 Executive Drive • Elgin • Illinois • 60123



## AE TRUE CONFESSIONS

I WONDER IF ANYONE ELSE IS MAD at Applied Engineering's effort to have each department show a profit. Their new tech-support 900 number is like a finger in the eye to those of us who have purchased so many of the company's peripherals.

I have a IIGs with several AE peripherals, including a RamKeeper. Two weeks ago, I purchased a TransWarp GS accelerator and an AE high-density drive. The TransWarp locked up my system when I moved files from one volume to another, so I paid for the first two long-distance calls to the company's technical-support staff. I tried several suggestions, including a chip update on the RamKeeper, but to no avail. On my next call, a sales-department representative informed me that it would cost me \$1.50 per minute to get a problem solved that should be covered by my warranty! AE has always provided quality products and top-notch service. A 900 number? Give us a break.

**Everett Brazelton  
Oroville, CA**

APPLIED ENGINEERING HAS DONE the unspeakable by abandoning its free tech-support line in favor of a 900 number. It may seem outrageous to charge \$1.50 per minute, but AE is deluged with hundreds of calls a week, making it nearly impossible to get through. I called twice this week concerning trouble I was having with my Vulcan hard drive, and the staff solved my problem over the phone. With both calls I got through on the first try — no busy signal, no long periods of being on hold, just quick, knowledgeable help. I'm glad Applied Engineering made the changes in its tech-support department.

**William Heckel  
Little Falls, NY**

## AE RESPONDS

AS THE MAJOR APPLE II VENDORS leave the market, Applied Engineering is being challenged with providing support to loyal Apple II customers who have nowhere else to turn. Even though these consumers purchase our competitors' products, they contact AE Technical Support for consultation.

Over the past couple of years, the company has continued to expand the Apple II Technical Support organization and it still hasn't been able to handle the increased volume of calls. This situation has occurred at a time when costs are increasing and Apple II revenues are diminishing, putting a financial strain on the company. Also, providing support to customers who'd rather call than read their manuals or who aren't even asking about an AE product ties up our phone lines so that customers and dealers with legitimate technical issues can't get through.

For 11 years, AE has designed, developed, manufactured, and marketed over 100 products for the Apple II. We continue to support the Apple II market and are committed to its success. This plan, however, would soon become impossible if we didn't offset the tremendous support costs, while providing a vehicle for customers who truly have AE technical issues to reach our support staff.

After several months of research, we decided to follow a growing industry trend and implement a 900 number. Some of the major companies that have implemented a 900 program include Microsoft, Lotus, Compaq, and Softwarehouse. Additionally, the big three distributors in the reseller channel, Ingram Micro, Merisel, and Tech Data, have initiated fee-based technical-support programs. AE's goal isn't to make the Apple II Technical Support department

a profit center, but to help offset some of the financial burden and let us continue providing support to the Apple II market. The \$1.50-per-minute charge is one of the lowest in the industry and includes the customer's long-distance charges.

Although 96 percent of continental U.S. telephone exchanges can access a 900 service, a number of schools and businesses are restricted from these numbers; the company is investigating methods to accommodate these customers. AE is continually refining the new support program, and makes every effort to phone or write to customers who contact our organization regarding AE's support.

We also recommend these alternatives to fee-based support:

- Customers may contact the authorized AE dealer from whom they purchased their products. Approximately 90 percent of AE revenues are generated by our dealers and we encourage customers to use this channel. Fortunately, the majority of these dealers don't ignore this technical responsibility.
- Customers with modems can call AE's bulletin-board system at (214) 241-6677. This service is available 24 hours a day, seven days a week, and is designed as a user-to-user support forum. The only costs are applicable long-distance charges.

I recognize that many people who received free technical consultation over the years will question fee-related services. AE sincerely believes that it's doing the right thing to stay financially viable, thus allowing the Apple II market to continue through the 1990s. I'm soliciting relevant input, ideas, and opinions, and welcome all related correspondence from you.

**Robert J. Carroll, President and CEO  
Applied Engineering  
P.O. Box 5100  
Carrollton, TX 75011**

# RamFAST / SCSI supports more devices than Apple™!



Introducing RamFAST/SCSI V2.00! The fastest hard drive controller for the IIgs is now even better! C.V. Technologies has enhanced RamFAST/SCSI with the following features:

- CD-ROM & Tape Drive support—Apple, NEC, Sider, & others
- Improved support for removable devices (Removable Hard Drives & CD-ROMs)
- Built-in tape backup software that runs in the background mode
- New mouse driven configuration program
- Supports up to 12 partitions even under Prodos 8
- Boot ANY partition
- Password protection
- Automatic lookahead for *unbeaten* performance (February InCider)
- Defect management for the ultimate in data integrity
- Only \$189 or **\$179 with the purchase of any drive!**

**TMS Pro R45 Removable, \$509\***  
20ms seek time, extra carts \$67 each  
**TMS Pro Series Drives\*, 10-12ms**

	Int.	Ext.
Pro 52 LPS	\$249	\$349
Pro 105	399	499
Pro 105 LPS	459	559
Pro 120	659	759
Pro 170	729	829
Pro 210	799	899

**TMS CD ROM**  
**TMS Pro 60 Tape Backup**  
(Please, call for prices!)

**C. V. Technologies**  
RamFAST/SCSI V2.00, \$189  
GS Memory Boards

0MB	\$89
1MB	\$142
2MB	\$194
3MB	\$246
4MB	\$299

**ZIP™ TECHNOLOGY\***  
ZIPGSX, Model 1500, 7 MHz  
8k Cache memory, \$139  
ZIPGSX, Model 1600, 8 MHz  
16k Cache memory, \$179  
ZIPGSX, Model 1800, 9 MHz  
16k Cache memory, \$229

TMS Peripherals offers a complete line of SCSI hard drives for Apple and Macintosh computers, from 40MB's to 210MB's, at incredible savings. But we're not just about great prices, we're about excellent service too! Each TMS drive is completely tested and verified by our technicians before it is shipped. Nevertheless, should you experience a problem with your drive (within the first 30 days) TMS will ship you a replacement and pick up your drive—at no cost to you, leaving you with virtually no down time! Each drive also carries a TMS Peripherals 2 Year Warranty. In the unlikely event that you experience problems, just call our Toll-Free Tech Support Line. If your problem persists after thorough troubleshooting by our technical staff—just ship us the suspect drive and we will send you a replacement unit within 48 hours!

Standard features include an International Auto-Switching Power Supply, Selectable Pushbutton SCSI ID Switch, 2 SCSI Ports (allowing Daisy Chaining), Shielded Power Supply, 2 A/C Outlets, VCA Mechanism, and all necessary hardware. Each drive comes preformatted, for either Apple or Macintosh computers, with the latest System Software! Of course, each drive also comes with TMS Toll-Free Tech Support and our enthusiasm for each of our products!

For your convenience, we're open 8 am-10 pm (EDT) 7 days a week. All products ship Federal Express. Visa, Master Card, American Express, Optima, C.O.D.'s and P.O.'s accepted. \*All prices subject to change.

## OUR CUSTOMERS HAVE THE LAST WORD...

"Great service—this is the first company to deliver on time. I was amazed."

—Mike Wyatt

"Great drive! Thanks for the excellent service. A pleasure doing business with you!!"

—Jim Sulsona

"I love the drive. Delivery and service are impressive. I had the equipment 26 hours after I ordered it. Thanks!"

—Mike Seaton

"Excellent product and service."

—Jim Maricondo

"Excellent service! Keep up the good work."

—Brian Clemmons

"If you need a hard drive, I highly recommend that you buy it from TMS. I was impressed with TMS's products and service...they truly deserve your business."

—Steven W. Disbrow, GS+ Magazine



Circle 56 on Reader Service Card.

### APPLIED ENGINEERING

AE PC Transporter 768K	\$249
AE 3.5"	\$195
AE 3.5" HD	\$235
AE DataLink 2400 Internal	\$155
AE DataLink 2400 External	\$155
AE DataLink 2400 w/MNPS	\$185
AE ReadyLink	\$57
AE Conserver	\$77
AE Power Supply GS	\$78

### VITESSE

Salvation Utilities	
Bakkup, Renaissance, or Deliverance	\$28
Exorciser	\$27
Wings	\$46
Supreme (all 5)	\$115
Quickie	\$195

### APPLE SOFTWARE

Apple Works 3.0	\$165
Apple Works GS	\$195



TMS Peripherals  
TMS Software

# WHAT'S NEW

## FIRST LOOK

### The IIfx Emulation Card for the Macintosh LC

Y

ou've heard about it, you've waited for it — well, we've seen it. We sent one of our agents on a commando raid and he came back from

California with a card, a cable fused with solder, and a manual of unbound pages. We threw the card into an LC, fired up the machine, and double-clicked on an application labeled *IIfx Emulation*. A few seconds later we were staring at the screen of our new IIfx.

You can configure the card through a Control Panel that's similar to the Macintosh version. The card offers seven slots and lets you set it up easily to handle a modem or a printer. As expected, the port uses a cable that splits into a "Y" to accommodate a joystick and a disk-drive daisychain.

But wait, there's more! We wanted performance, and Apple's engineers gave it to us. We matched the card up against a stock IIfx at 2.8 megahertz, ran some spreadsheet recalculations, and came out with a dead tie. The verdict? Text in IIfx emulation mode looks a little odd on the Mac's bit-mapped screen, but the LC/card combo looks like a viable alternative for someone who wants the best of both worlds. If Apple follows through on the noises it's making about a IIfx emulation board, we could soon see Task Force running alongside Microsoft Word.

For details contact Apple Computer at 20525 Mariani Ave., Cupertino, CA 95014, (800) 776-2333, or circle 352 on the Reader Service card. — C.C.

## APPLE'S LOW-COST PRINTERS

**M**ac owners calling for an affordable printer — but one that's better than Apple's dot-matrix ImageWriter — have gotten what they wished for. In fact, they've gotten double what they wished for in the Apple StyleWriter (suggested retail price \$599) and the Apple Personal LaserWriter LS (\$1299).

The StyleWriter, which is only \$4 more than the ImageWriter II, is a thermal ink-jet printer of the type popularized by Hewlett-Packard's DeskWriter. It prints high-quality images — 360 dots per inch — on plain paper. It isn't fast, printing about a half a page every minute, but it's incredibly small — only about half the size of a Mac LC monitor — and it's quiet. It's ideal for crowded places such as dorm rooms and dining-room tables. The StyleWriter, like the LaserWriter LS, also takes advantage of Apple's new TrueType font software. (See the story titled "What's TrueType?" on p. 15.)

The Personal LaserWriter LS is Apple's most affordable laser printer, and works

custom chip on the LaserWriter. Once that's done, the control of the Mac returns to you, and the printer does its business: printing.

The biggest advantage of the StyleWriter and the LaserWriter LS is that they plug into the printer port on any Mac and start printing. This kind of easy setup hasn't been available from Apple since the company began putting its laser printers on networks. More than one computer can't share *these* two printers, though; they're not "networkable." But everything, even the printer cable, is included when you buy either printer.

The old saw is: Watch what you wish for — you might get it. Apple's customers asked for inexpensive printers and got them. They aren't fast, and they can't work on networks, but that's not what the customer wanted. But the dreams of Apple IIfx owners — inexpensive laser-quality printers that plug directly into the Apple IIfx — remain unfulfilled. The custom circuitry on the Personal LaserWriter LS won't work with any computer but a Mac, and Apple



Apple's Personal LaserWriter LS and StyleWriter — what you've been waiting for?

with any Mac, but it'll probably see more action in small offices than dining rooms and colleges. It prints four pages a minute and uses a print-buffering system that employs QuickDraw, the built-in graphics language for every Macintosh. The condensed version of the story is that the print command in any Mac program takes a snapshot of what you want to print and communicates it over a serial cable to a

hasn't released or encouraged development of Apple IIfx GS/OS printer drivers for the StyleWriter. Apple II and IIfx users can choose either the ImageWriter II (\$595) or the Personal LaserWriter NT (\$2599), which both work on networks. For details, contact Apple Computer at 20525 Mariani Ave., Cupertino, CA 95014, (800) 776-2333, or circle 351 on the Reader Service card. — P.S.

## NEW SOFTWARE

◆ ■  
Dilemma II

Dilemma II is a new version of Educational Activities' Apple II reading-comprehension and vocabulary-development software that targets teenagers and adults who are at risk of dropping out of school. Because Dilemma II is for junior and senior high-school students and people in equivalency programs, the software helps teach reading skills by incorporating simple language into stories — no more "Dick and Jane" books for these folks.

Dilemma II supplies a number of different endings to encourage students to reread each story. Not only do multiple readings improve students' skills, but they force them to consider the consequences of different actions.

Dilemma II includes 16 stories, dictionaries, comprehension quizzes, and vocabulary questions. Disks are available for four reading levels; each costs \$49.95, but the complete set is only \$159. Contact Educational Activities at 1937 Grand Avenue, Baldwin, NY 11510, (516) 223-4666, or circle 354 on the Reader Service card.

◆ ■  
Number Squares

Phil Shapiro's Number Squares (distributed by Balloon Software) has been quietly charming teachers and students all over the country since its introduction last year. If you thought of Number Squares as a computerized

version of one of those hand-held plastic puzzles that challenge you to move the tiles around until the numbers are in order, you wouldn't be wrong, but you'd be selling the program short.

Number Squares offers 15 different puzzles, ranging in size from three-by-three squares to five-by-five. You play against the clock, so there's the thrill of

competition without the embarrassment of losing. You can attack the

puzzles without plan or pattern, but most people eventually adopt a logical strategy of

some sort — which is where this addictive little game becomes educational. Balloons Software — "a tradition since August 1990" — is committed to all Apple IIs, so Number Squares runs on everything from the Apple II Plus to the IIGs. It costs \$25. For more information contact the company at 5201 Chevy Chase Parkway NW, Washington, DC 20015-1747, (202) 244-2223, or circle 356 on the Reader Service card.

▲  
Desert Storm:  
The First Draft of History

**T**ime magazine's first CD-ROM product — one for a Mac and CD-ROM player — is a week-by-week look at what really happened in Operation Desert Storm. It uses an extraordinary collection of stories from the pages of Time, original and unpublished dispatches from Time's correspondents around the world,

audio recordings of pool reports and press briefings, and hundreds of maps and photographs. You have, at the command of a mouse click, all the materials that Time's editors had when they put together the magazine.

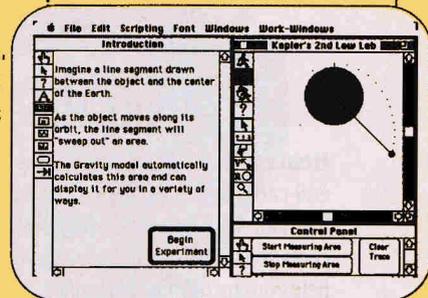
A feature of the Desert Storm CD that should appeal to teachers of writing and journalism is its ability to follow the progress of a story from the field to the magazine. History teachers will like the ability to call up all the events of a certain day.

Time and its partner, Warner New Media, publishers of CD-ROMs such as The Magic Flute and The String Quartet, are making Desert Storm: The First Draft of History available for the low price of \$39.95. For more information contact Time at the Time & Life Building, Rockefeller Center, New York, NY 10020, or circle 357 on the Reader Service card.

▲  
Physics Explorer

**W**ings for Learning, an offshoot of Sunburst Communications, has introduced the first in its projected series of 12 Physics Explorer software packages. The Physics Explorer series will eventually cover the breadth of the physical-science curriculum — from mechanics and waves, through electricity and magnetism, to modern physics.

Physics Explorer is software that encourages exploration. Physics Explorer: Gravity, the first program, simulates the motion of a body under the gravitational influence of a central planet. It's all but impossible to try this program



## You can observe Kepler's laws of motion in Physics Explorer: Gravity.

and not experiment by giving the satellite a stronger push or starting its journey a little closer to the planet.

But just because it's fun, don't assume that Physics Explorer: Gravity isn't serious: Students will actually observe Kepler's laws of motion and apply them to the solar system. Teachers can adapt Physics Explorer: Gravity to any high-school physics program.

Physics Explorer: Gravity runs on any Macintosh, and costs \$125. For details contact Wings for Learning at 1600 Green Hills Road, P.O. Box 660002, Scotts Valley, CA 95067-0002, (408) 438-5502 or (800) 321-7511, or circle 355 on the Reader Service card.

## NEW HARDWARE

▲ ■  
Harris Labs

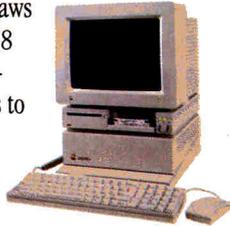
**M**any hardware developers are cashing in on the Apple II/Mac cross-market, and none more enthusiastically than Harris Labs. The company's memory card for the Apple IIGs is called **GS Sauce**, and it uses Mac SIMMs (single in-line memory modules) to add up to 4 megabytes of RAM in about half the space of other cards, and without the risk of bending the pins on



## Beat the heat

**Heat.** The computer user's most insidious enemy. Peripheral cards unavoidably produce heat inside your cpu. Heat that can devastate your whole system. Conserver™ effectively cools your IIGS while it protects against power surges and helps organize your workspace.

**A quiet but powerful** cooling fan draws air from the top of the IIGS at a rate of 18 cubic feet per minute, lowering the temperature inside by more than 20 degrees to offset the heat produced by expansion cards. The difference can be critical to the life of your computer.



**Power surges** also invisibly threaten your computer's well-being. They occur when voltage spikes surge through your wiring seeking a place to dissipate. If that place is inside your computer, you'll very quickly gain a greater understanding of the laws of electricity. It's not a pretty sight.

**Special line conditioning filters** and dual surge suppression circuitry protect against surges, reduce noise and provide "clean" power. Six switched AC power outlets line the rear of Conserver to accommodate your computer, monitor and four other peripherals. Thus protecting your computer *and* your peripherals from surges. The outlets are conveniently controlled by three front-mounted LED switches.

**For beauty**, we gave Conserver the same sleek lines of the IIGS and a perfectly matched platinum color. To reduce desktop clutter, the unit was cleverly designed to house two 3.5" disk drives, or one drive and the special diskette holder we include.

**Conserver** ..... \$99

### Order today!

To order or for more information, see your dealer or call (214) 241-6060 today, 9 am, to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7 ¼% sales tax. Shipping not included.



**Applied Engineering®**

*The Apple enhancement experts.*

A Division of AE Research Corporation

(214) 241-6060

P. O. Box 5100  
Carrollton, TX 75011



© 1990. AE Research, Inc. All rights reserved. Prices subject to change without notice. Brand and product names are registered trademarks of their respective holders

## WHAT'S NEW

### NEW-PRODUCT FOCUS

standard memory chips. On the Macintosh side, the company's latest offering is the **Turbo CL** accelerator, which it claims will double the processing power of the Mac Classic. Perhaps even more impressive is Harris Labs' lifetime warranty on its products. No need to worry about product support here! Contact the company at 7379C Washington Avenue South, Edina, MN 55439, (800) 783-DRAM, or circle 358 on the Reader Service card.

#### ▲ 1-Meg RAM Card

**R**odime Systems is also on the Classic upgrade bandwagon. In addition to a series of hard drives designed specifically for the infant Mac, Rodime is offering a RAM card with 1 megabyte soldered on. The card also has SIMM sockets that will accept an additional 2 megabytes. Contact the company at 901 Broken Sound Parkway, N.W., Boca Raton, FL 33487, (407) 994-5585, or circle 359 on the Reader Service card.

#### ▲ ◆ ■ TouchWindow

**E**dmark is expanding its line of TouchWindow touch-sensitive screens to include the Mac. Warren Buckleitner, editor of *The Survey of Early Childhood Software* for the High/Scope Educational Research Foundation, commented, "You can walk into any classroom and see computer screens covered with fingerprints. The TouchWindow works with the child's natural desire to reach out and select responses or move objects on screen."

The TouchWindow (\$275) plugs into the game port and is already in use on more than

25,000 Apple computers. An **Apple Adapter** (\$17.95) is required for use with the Apple II or II Plus. The Mac version is expected soon. Contact Edmark at P.O. Box 3903 Bellevue, WA 98009-3903, (800) 426-0856, or circle 360 on the Reader Service card.

#### ▲ ◆ ■ Model 510 Keyboard

**U**nicorn Engineering Inc., a manufacturer of peripherals and software for physically challenged and developmentally disabled persons, introduced recently the Model 510 Keyboard, a smaller version of the Unicorn touch-sensitive keyboard (\$250 for the Apple II interface, \$520 for the Mac version). The Model 510 is intended for users who need the versatility of the Unicorn Expanded Keyboard Model II, but don't have the range to use it, or for those who are familiar with the Expanded Keyboard and have refined their targeting skills. Model II overlays may be used with the Model 510 by reducing them by 50 percent.

Unicorn keyboards also require interface hardware from Don Johnston Development Equipment, Inc. (P.O. Box 639, 1000 N. Rand Road, Bldg. 115, Wauconda, IL 60084, 800-999-4660.) For the Apple IIGS and enhanced IIGS (128K) you need the **Model G32e Adaptive Firmware Card**, (\$520). For the Mac, you need **Ke:nx** (pronounced "connects"), an ADB device that requires at least a Mac SE with System 6.0.3 (\$780). Contact Unicorn at 5221 Central Ave., Suite 205, Richmond, CA 94804, (415) 528-0670 or (800) 899-6687, or circle 361 on the Reader Service card.

# WHAT'S TRUETYPE?

TrueType is Apple's name for its font format that lets Macs print what's on screen, and display on screen anything that it can print. TrueType fonts are *outline fonts*, a kind that Adobe Systems introduced in 1989 for its Adobe Type Manager (ATM), a type system like TrueType.

Outline fonts are designed for video monitors and computer laser printers, not printing presses. Unlike Benjamin Franklin's system of keeping the pieces of each type size in individual trays, called fonts, Apple's outline-font format doesn't store pictures of letters in various type sizes. Instead, this format uses the system file to store the *directions* for drawing each letter. The directions vary for different letters in different typefaces, but you no longer need to store every size of type you might someday want to use.

Apple's TrueType will be a part of the next Mac system software upgrade, System 7.0. TrueType also works with System 6.0.7; if you buy a TrueType printer such as the Personal LaserWriter LS or StyleWriter, make sure you receive the TrueType disks for the older system: You never know when you'll need them. Your TrueType printer will include the *Times*, *Helvetica*, *Courier*, and *Symbol* families of typefaces. Other typefaces will become available from third-party vendors, with whom Apple collaborated in the creation of TrueType. For more information contact Apple Computer at 20525 Mariani Ave., Cupertino, CA 95014, (800) 776-2333, or circle 350 on the Reader Service card. — P.S.

## TIMELY DTP PROGRAM

Timeworks' desktop-publishing program is now arguably the most up-to-date, best-supported program available for the Apple II. While the industry still raves about Publish It! 3, Timeworks has been working on Publish It! 4, which brings a slew of new features.

The new version offers the following improvements: automatic hyphenation; text autoflow; the ability to save a document as a template; the option to format a disk without leaving Publish It!; the ability to select all objects; support for New Print Shop graphics; improved font support; access to the Object Specifications dialog box by double-clicking on any object; and many other features. Also expect Timeworks to release a utility that lets its Mac program Publish It! Easy import page-layout documents from Publish It! for the Apple II.

Finally, Timeworks has made site licenses available for many of its products. According to the company, you can get licenses for Publish It! (Apple II) and Publish It! Easy (Mac). Schools that currently own at least one copy of a program can purchase site licenses for 10 or more computers. Publish It! 3, which has a retail price of \$149.95, is available for \$25 for each computer. Schools can order additional manuals for a small fee, which Timeworks hadn't announced at press time. According to the company, the site licenses will be handled primarily through its authorized education dealers. To receive the name of the nearest dealer or for other education-related questions call (800) 535-9497.

For more information on Timeworks products, contact the company at 625 Academy Drive, Northbrook, IL 60062, (708) 559-1300, or circle 353 on the Reader Service card. — D.M.



## Power to spare

With today's advanced peripherals and applications Apple didn't dream of a few years ago, it's easy to overload the standard Apple power supply. That's why Applied Engineering now offers a heavy duty power supply for the IIcs, IIe and II+. AE's Heavy Duty Power Supply more than doubles your Apple's power output.

Expansion cards, disk drives, accelerators, clock cards, modems, printer interfaces and the base computer itself all compete for the same power output. Expect to crank all of them up at once, and you can find yourself on the short end of the stick.

Apple's standard power supply provides only 25 amps, compared to our 6 amp output. AE's input voltage is 90 to 135 VAC/60 Hz or switchable to 180 to 270 VAC/50 Hz. Output is: +5V @ 6A, +12V @ 2A, -5V @ 5A, -12V @ 5A. Ripple is: 10mV typ. and full load operating temperature is: 32° to 122°F (0° to 50°C).

The AE Power Supply installs in minutes using the same four mounting holes and occupying the same space as Apple's power supply. Comes complete with a full one year warranty.

IIcs Power Supply .....\$119  
IIe, II+ Power Supply .....\$99

**Order today!** To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 7 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7 1/4% sales tax. Shipping not included.

**AE Applied Engineering®**  
*The enhancement experts.*

A Division of AE Research Corporation

(214) 241-6060

P.O. Box 5100  
Carrollton, TX 75011

Made  
in  
USA

©1990. AE Research, Inc. All rights reserved. Prices subject to change without notice. Brand and product names are registered trademarks of their respective holders.

## NOTES

USERS AND PROGRAMMERS  
Sharing the Power to Create

**AW Tip:** If you're an AppleWorks user who finds manipulating date/time-related data confusing and frustrating, here's some information that may help you. Recent versions of AppleWorks (especially version 3.0) have enhanced some of its date/time-handling functions. (Your system needs a clock to take full advantage of these date/time features, though.)

- Type an "@" (the *at* symbol) followed by a return to post the current date or time in a "date" or "time" category in the database.
- Select the *Print Date* or *Print Time* option in the word processor to print the current date or time. Using this feature with AppleWorks' *Mail Merge* function is especially handy for printing form letters.
- Use the Clipboard to transfer date/time information to the spreadsheet and preserve the original date/time formats as labels.
- Enhance your version with Beagle Bros' **TimeOut UltraMacros** (6215 Ferris Square, Suite 100, San Diego CA 92121, 800-345-1750) and you can add a function to post the current date or time anywhere in AppleWorks, in various formats, and with a single keystroke.

Handling date and time data in the spreadsheet requires carefully selecting the formats. You can sort this information in database format (Apr 15 91 or 10:45) alphabetically, but you'll have problems if you try to span more than one month. The YY.MMDD, MM.DD, or HH.MM numeric formats (91.0415, 4.15, or 10.45) sort easily in the spreadsheet and can be manipulated mathematically. A shortcoming of using the YY.MMDD numeric format is that it won't transfer to the database without help from UltraMacros enhancement. (See the accompanying macros.) Excluding or separating the year (YY) portion of the date into a separate spreadsheet column and using the MM.DD format is best. (Note: The MM.DD and HH.MM formats transfer easily from the spreadsheet to the database.)

Anniversary and birthday database lists need special treatment. Set up these files so that the month and day appear in a "date" category without including the year. The year may be in a separate category if you desire. Including the year with the month and day makes the list generally unusable for its intended purpose.

"Date arithmetic" (the ability to determine elapsed time or the number of days between two dates) isn't a built-in AppleWorks feature. Many users have requested it or have asked for help in handling these tasks. Date arithmetic is important for depreciation, accounts-receivable, payroll, financial, and other applications. Here are three helpful date-arithmetic tools and a calendar utility:

- **TimeOut ReportWriter**, by Dan Verkade, (Beagle Bros, 6215 Ferris Square, Suite 100, San Diego CA 92121, 800-345-1750) is an AppleWorks enhancement that provides at least 12 date functions that work within AppleWorks to perform date and time calculations.

- **Mastering AppleWorks** (second edition), by Elna Tymes, (distributed by Sybex, 2021 Challenger Drive, P.O. Box 4003, Alameda, CA 94501, 415-523-8233) provides instruction to create an Applesoft BASIC program that will manipulate date and time data from an AppleWorks database.

- Andreas Wennborg, an APA member, has created a concise spreadsheet application that will find the number of days between almost any two dates and determine the day of the week of each. In addition to this unique spreadsheet, Andreas has also created a macro that does date arithmetic. **COUNT.DAYS** and the macro are in the public domain; they're available from the APA and other public-domain sources.

- **FlexiCal**, by Lester Simpson and published by JEM Software (7578 Lamar Court, Arvada, CO 90003, 303-422-4766), provides practical daily, weekly, and monthly calendars that you print as needed. FlexiCal works from within AppleWorks and is automated by built-in macros that don't require a separate macro enhancement program.

**AW Macros:** The macros below convert and enter dates. The default date format (month dd, yyyy) in the AppleWorks *Other Activities* menu is assumed.

**Changes 'mmm dd yy' to a numeric 'yy.mmdd' format**

```
C:<all:cell:$4=$0:$1=left $4,3:$2=left $4,6:$2=right $2,2:$0=left $2,1:
if $0 = " ": $2=right $2,1:$2="0" + $2:endif : $3=right $4,2 :
if $1 = "Jan" $1 = "01":endif : if $1 = "Feb" $1 = "02" : endif :
if $1 = "Mar" $1 = "03":endif : if $1 = "Apr" $1 = "04" : endif :
if $1 = "May" $1 = "05":endif : if $1 = "Jun" $1 = "06" : endif :
if $1 = "Jul" $1 = "07":endif : if $1 = "Aug" $1 = "08" : endif :
if $1 = "Sep" $1 = "09":endif : if $1 = "Oct" $1 = "10" : endif :
if $1 = "Nov" $1 = "11":endif : if $1 = "Dec" $1 = "12" : endif :
oa-Y print $3 + "." + $1 + $2 : rtn>!
```

**Changes numeric 'yy.mmdd' to 'mmm dd yy' format**

```
R:<all:$4=cell:$3=left $4,2:$2=right $4,2:$0=left $2,1:if $0="0":
$2=right $2,1:$2=" " + $2:endif:$1= right $4,4:$1=left $1,2:
if $1 = "01" $1 = "Jan" : endif : if $1 = "02" $1 = "Feb" : endif :
if $1 = "03" $1 = "Mar" : endif : if $1 = "04" $1 = "Apr" : endif :
if $1 = "05" $1 = "May" : endif : if $1 = "06" $1 = "Jun" : endif :
if $1 = "07" $1 = "Jul" : endif : if $1 = "08" $1 = "Aug" : endif :
if $1 = "09" $1 = "Sep" : endif : if $1 = "10" $1 = "Oct" : endif :
if $1 = "11" $1 = "Nov" : endif : if $1 = "12" $1 = "Dec" : endif :
oa-Y print $1 + " " + $2 + " " + $3 : rtn>!
```

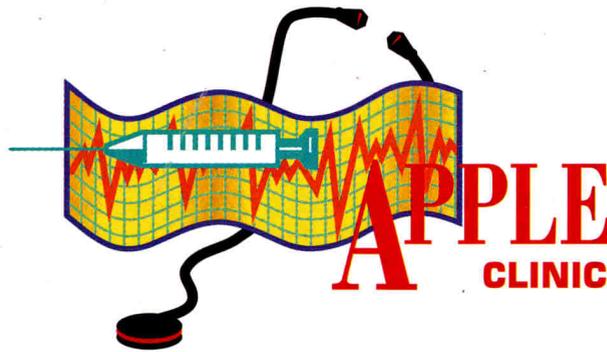
**Enters current date without year in 'mmm dd' format**

```
1:<all:$1=date:$2=left $1,3:$0=right $1,8:$1=left $0,1:$0=mid $0,2,1:
print $2 + " " + $1 + $0:rtn>!
```

**Enters current date without year in 'mm.dd' numeric format**

```
2:<all:$0=date2:$1=left $0,2:$2=mid $0,4,2:print $1 + "." + $2:rtn>!
```

FOR A 5.25-INCH DISK THAT INCLUDES TEMPLATES, MACROS, DETAILED DOCUMENTATION FOR TIPS DESCRIBED ABOVE, AND THE POPULAR "PATCHER" PROGRAM THAT FIXES SOME FLAWS IN VERSION 3.0 SEND \$4 SHIPPING TO APA AT THE ADDRESS BELOW. PLEASE INCLUDE THE *inCider/A+* ISSUE DATE WITH YOUR REQUEST. APA MAINTAINS FILES, TEMPLATES, AND INFORMATION THAT IT MAKES AVAILABLE TO APPLEWORKS CLASSIC USERS. IF YOU HAVE QUESTIONS OR REQUESTS, CALL WRITE, OR LEAVE A MESSAGE AT THE PRO-APA BBS. FOR MEMBERSHIP INFORMATION CONTACT THE APPLEWORKS PROGRAMMERS ASSOCIATION, 6531 LEXINGTON AVE, LOS ANGELES, CA 90038, MODEM APA@PRO-APA.CTS.COM (213) 463-9289, VOICE (213) 469-9916. THE APPLEWORKS PROGRAMMERS ASSOCIATION IS REGISTERED WITH THE APPLE USER GROUP CONNECTION.



# CACHE BASH

Learn about one way you can make  
your Apple II run a little faster.

By **CECIL FRETWELL**

## HANDY STORAGE

**W**HAT'S MEANT BY THE TERMS "cache memory" and "disk caching"? And how does a cache differ from other types of memory?

**Robert McQueen**  
Florence, SC

A cache is a holding tank in your computer's memory that increases the speed of operations. Your computer uses cache memory to store frequently used data or code. One kind of cache is a special type of high-speed RAM (random-access memory) found on accelerator cards.

When the computer needs data or fetches an instruction, it looks in cache memory before searching the regular memory. When the system finds the information, it stores the instruction in cache memory, then processes it. Not only is cache memory usually faster than normal RAM, it's often in a chip nestling close to the CPU, so there's minimal signal delay. If the hardware doesn't find the information in slow memory, it must go back to the source, usually a disk.

Another kind of cache is related to disk I/O operations. Let's suppose a program requires a record it must load from disk. Instead of pulling in just the record, the operating

system brings in a whole block of data, including the desired record, and stores it in an internal RAM buffer. When the program asks for the next record, very likely it's in the memory buffer, not on disk. With disks operating in milliseconds and the CPU running in nanoseconds, this operation, called disk caching, can result in some fast processing.

You can also disk-cache in the other direction. When a program writes a record, the operating system can put the record in an internal RAM buffer. The only time it'll write to disk is when the internal buffer is full, the data is "flushed," or the file is closed. Again your processing speed increases because the CPU operates in nanoseconds rather than milliseconds.

The problem is that if your computer crashes before the cache is dumped to disk, you'll lose your data. To avoid this disaster, after the program issues the write command, it can issue a flush command. "Flushing" means the buffer is written to disk and the internal structure of the file is updated. The most you could lose is one record.

## SKINNY PLATINUM PAINT

**I** RECENTLY RECEIVED MY COPY OF Platinum Paint from Beagle Bros. It's a nice application, but I don't like the swapping associated with having to use two disks.

Following your suggestions in "Hard-Disk Drives Made Easy: The Wizard of OS" (April 1991, p. 53), it seemed logical to take the System Disk from Beagle Paint, delete the CDEV files to gain 86K of memory (a manual Control Panel is fine with me), delete the Finder icon files to add another 26K, and trash the START application, which is worth 104K. Deleting these files and applications gave me plenty of room to put the Platinum Paint application (187K) on the disk, and even let me add my favorite font to the System file.

Now the program runs fine and loads faster than the Finder, but when I click on *Quit*, it apparently tries to quit to the Finder. When the program can't find the Finder, it returns to the beginning (first, or palette) screen. I have to use another disk to turn off my system or reset the computer.

I have the same problem with Font Factory GS. Would ProSel or another application dispose of this minor difficulty?

**Raymond L. Hussey**  
Indianapolis, IN

A spokesperson at Beagle Bros (6215 Ferris Square, Suite 100, San Diego, CA 92121, 619-452-5502) confirmed my suspicion that you're having this problem because you removed the START file under the System folder.

Glen Bredon's ProSel 16 should solve your problem (\$89.95; distributed by Charlie's Apple Seeds, 9081 Hadley Place, San Diego, CA 92126, 619-566-1297). This product replaces the GS/OS START file (renaming it OLD.START) with a smaller START file.

I've used ProSel quite a bit and firmly believe that if you don't like the shell, the rest of the package is well worth the money.

By the way, to run Platinum Paint the technical-support people at Beagle Bros recommend that you have at least 1 megabyte of memory.

Only \$3.33 Per Disk

APPLE IIGs, IIE, IIC

# Sizzling Summer Software Specials!

FREE IIGs Disk!

California Demo Disk With Any Order Over \$39!

60's Beachboys meets the Computer Age in this fantastic new demo featuring graphics, animation, and digitized music. A PDE EXCLUSIVE—A MUST HAVE!

(This special offer may only be used when ordering disks from this ad.)

## APPLE IIGs 3 1/2" DISKS

### Word Processing

GS229 Elfwrite Easy-to-use word processor, with instructions plus 117 fonts! ★Best Seller . . . . . \$9

### Print Shop™ IIGs Graphics - PDE Exclusives!

- GS155 100 color pictures of sports, hobbies, games\* . . . . . \$9
- GS156 100 color pictures of people, faces, clothing\* . . . . . \$9
- GS157 100 color pictures of animals of every kind! . . . . . \$9
- GS158 100 color pictures of symbols, emblems, & logos\* . . . . . \$9
- GS177 100 educational pictures, history, science, geog, flags\* \$9
- NEW GS254 55 black and white borders, the finishing touch\* \$9

\*Requires Print Shop™ IIGs to use.

### Graphics/Graphic Utilities

- GS63 Cheap Paint—full-featured color print prog (REQ. IIG) (SW) \$9
- NEW GS223 Larry's Theater—Science fiction movie on disk \$9
- NEW GS251 Whiplash—graphics utilities and converter, more \$9
- NEW GS253 Amazing 3200-color graphics like Classic Coke, Grand Canyon . . . . . \$9

### Games/Entertainment/Education

- GS206 Rush.Hour.GS+more new arcades+puzzles (SW) \$9
- GS216,217,218 Bouncing Bluster—like Brickout, with realistic sound/graphics. Best arcade ever! (SW) (3 DISKS) \$27
- GS221,GS222 Cosmocade—blow away aliens in the jungle and in space, along with music, joystick (2 DISK SET) (SW) \$18
- GS225 Card Games: Wisconsin Rummy, more (SW) . . . \$9
- GS231 Horoscope GS—interpret your stars! (SW) . . . . . \$9
- GS233 Columns—Addictive puzzle arcade w/music . . . \$9
- GS248 Star Trek Classic—game with stereo and great graphics. (REQ. 1.5 MEG, AND SYSTEM 5.0.4) (H/W) . . . . . \$9
- GS250 ZipFinder—find any US zip! (REQ. HYPERSTUDIO 2.1) \$9
- NEW GS252 Loderunner.GS—collect prizes, avoid monsters! \$9

### Adult Graphics

- NEW GS234, GS237 Gorgeous girls dazzle you in 3200-colors! (2 DISK SET) . . . . . \$18
- NEW GS255 thru GS262 Sizzling summer swimsuits & R-rated girls. Over 150, 3200-color graphics on 8 disks \$72
- ANY 10 DISKS FOR ONLY . . . . . \$59.95

## APPLE II 5 1/4" DISKS

### Apple II Print Shop™ Graphics

- 937 70+ b/w pictures of sports, hobbies, games\* . . . . . \$5
- 938 70+ b/w pictures of people, faces, clothing\* . . . . . \$5
- 939 70+ b/w pictures of animals of every kind! . . . . . \$5
- 940 70+ b/w pictures of symbols, emblems, & logos\* . . . \$5

\*Requires Print Shop™ to use.

### Games/Education

- 814 Monopoly: The popular board game . . . . . \$5
- 974 Flobynoid—great Tetris™ clone, more. (SHAREWARE) . \$5
- 976,977 World of Pinball—14 great pinball games. (SW) (2 DISKS) \$10
- NEW 985 Make your own Wordsearch puzzles, prints, w/doc \$5
- NEW 987,988,989,990 Study galaxies, clusters, and nebulae with Saguro's Deep Sky Database (4 DISK SET) . . . . . \$20

### Graphics

NEW 992 Fantasy Women—Comic book heroines come to life on your screen! . . . . . \$5

### Passion

- 190,800 X-Rated graphics for adults only (2 DISK SET) . . \$10
- 961,962 Beach Girl, more lovely ladies. (2 DISK SET) . . \$10

† The author requests a specified donation if you decide to use the program.

## SPECIAL!

Any 6 disks

(IIGs disks may be included)

plus 1 Yr. Membership

Only \$39.95 (plus \$4 s/h)

- One Yr. Membership (\$20 value):
- Complete fully-indexed directories of software
- Apple directory describing over 5000 programs, OR
- Apple IIGs directory describing 1000 programs
- 28 pg qtrly Magazines w/100's of new software selections
- Members-only discounts!
- Plus 6 Disks of your choice (ONLY \$3.33 each!—only as part of this special!)

Add \$4.50 US & \$5 Canada (\$15 foreign) shipping/handling for orders. CA orders add sales tax. If ordering a 6 disk Special, please check 1 box:

Apple II Membership  Apple IIGs Membership

Enclosed \$ \_\_\_\_\_ by  Check  VISA  MC

Card No. \_\_\_\_\_ Exp. \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

In California  
408-496-0624

**P.D.E.**  
2078-C Walsh Ave., #794  
Santa Clara, CA 95050

ORDER TOLL FREE 800-331-8125

Circle 269 on Reader Service Card.

18 • inCider/A+ • June 1991

# APPLEWORKS CLINIC

By Claris Corporation  
and the National AppleWorks Users Group

## LINING UP DECIMAL POINTS

**How can I line up the decimal points in a column of numbers in database reports?**

Line up your database's columns of numbers by "justifying" the column. Get the report-format definition on screen, move the cursor to the column you want to justify, and press Open apple-J (OA-J). A series of 9s will replace the actual numbers in the first three records at the bottom of the screen, indicating that the column is justified. Unlike most applications (which justify only numbers), OA-J lets you right-justify columns containing text, and columns that mix text and numbers.

Note that AppleWorks automatically right-justifies any column you total with OA-T. When you try to justify a totaled column, AppleWorks just beeps.

## HANDLING DOLLAR SIGNS

**My spreadsheets include columns of dollar values. I like to put a dollar sign in front of the first number in the column, but not in the following numbers. For example:**

\$12,300.30  
6,800.24  
8,120.60

**How can I format these numbers to get the output I desire?**

Comma format lets you line up these numbers. Format the first cell in the column in Dollar format with two decimal places. Then use Open apple-L or Open apple-V to format the remaining cells in Comma format with two decimal places.

## QUICK CLEANUP

**Is there any way to clean up my Desktop fast, then quit AppleWorks?**

The fastest way to clean up the AppleWorks 3.0 Desktop is to go to the Main Menu and select the fourth choice, "Remove files from Desktop." Now press Open apple-Right Arrow to select all files on the Desktop, then hit Open apple-Return. AppleWorks will save all changed files to their original disk or subdirectory, remove the

files from the Desktop, and return to the Main Menu. Finally, select the sixth choice, "Quit."

## THE COMPUTER ISN'T FROZEN

**Every once in a while my computer displays the message "Insert /APPLEWORKS Program Disk" at the bottom of the screen and my computer seems to freeze. No matter what I do, I can't get rid of that message. What's causing this problem?**

Here are the two common causes of this problem:

1. You may have named your data disk "/APPLEWORKS" when you formatted it. That title confuses AppleWorks because it expects to find program code, not data, on the /APPLEWORKS disk.

You should use the Apple II System Utilities or IIGs Finder, or a disk-utility program such as Central Point Software's Copy II Plus (\$39.95; 15220 NW Greenbrier Pkwy, #200, Beaverton, OR 97006, 503-690-8090) or Beagle Bros' TimeOut FileMaster (\$49.95; 6215 Ferris Square, Suite 100, San Diego, CA 92121, 619-452-5500), to rename all your data-disk volumes as anything other than /APPLEWORKS.

Meanwhile, if you get the message again, open the door on the drive containing your data disk and AppleWorks will "hunt" through your disk drives for the program disk. When it finds the disk it will resume normal operation until you access the /APPLEWORKS data disk again.

2. You may be having problems if you have a damaged copy of the AppleWorks Program Disk. Make another backup of your original disk and try running AppleWorks from the new copy. If you're using your original disk, make a backup and start using it now!

APPLEWORKS CLINIC IS A FORUM FOR ANSWERING YOUR QUESTIONS ABOUT THE POPULAR INTEGRATED PACKAGE APPLEWORKS — CLASSIC, 3.0, OR GS. ADDRESS YOUR CORRESPONDENCE TO APPLEWORKS CLINIC, INCIDER/A+, 80 ELM STREET, PETERBOROUGH, NH 03458. MENTION OF THIRD-PARTY PRODUCTS IN THIS COLUMN DOES NOT IMPLY ENDORSEMENT BY CLARIS CORPORATION.

## RGB COLOR FOR IIE

I HAVE AN APPLE IIE AND WANT TO attach an RGB (red/green/blue) color monitor. I've been told I can't do it and that I must buy a composite monitor. Is there an alternative?

**Andy Ziegler**  
Plant City, FL

Try adding Applied Engineering's **ColorLink RGB Option** (\$129) to the company's **RamWorks III** expansion card (P.O. Box 5100, Carrollton, TX 75011, 214-241-6060). If you don't have the **RamWorks III**, you're probably better off getting Apple Computer's **Color Composite** monitor for the Iie (\$310; 20525 Mariani Avenue, Cupertino, CA 95014, 408-974-0474). It has a text mode that connects directly to the monitor output of the Iie, good resolution, and a switch-selectable black-and-white text mode. (This monitor will probably cost less than buying **RamWorks III** with the RGB option.) Thanks to **Walt Roshon**, **Harold Hislop**, and **Fred Starkey** for their help answering this question.

## ADD MEMORY TO MEMORY

I'D LIKE TO EXPAND THE MEMORY on my IIGs beyond the 1-megabyte limit I already have on my Apple board, but I hate to get rid of my perfectly good card. I thought of using AE's **RamKeeper**, but the company no longer manufactures it. Is there another way to add memory without getting rid of my Apple card?

**Robert McQueen**  
Florence, SC

Applied Engineering has discontinued the **RamKeeper**, but some mail-order houses may still have it in stock. I talked to a spokesperson at **CV Technologies** (800 East Whipp Road, #200, Kettering, OH 45440, 513-435-5743) and found out you can purchase the company's **GS Memory Board** from **Quality Computers** (20200 E. Nine Mile Road, St. Clair Shores, MI 48080, 800-966-1508). For 1 megabyte of memory it costs \$149.95 and contains a slot into which you plug your existing memory card.

ADDRESS YOUR CORRESPONDENCE TO APPLE CLINIC, **inCIDER/A+**, 80 ELM STREET, PETERBOROUGH, NH 03458. BECAUSE OF THE VOLUME OF LETTERS, MOST WON'T APPEAR IN PRINT, BUT WE'LL TRY TO RESPOND IF YOU ENCLOSE AN SASE.

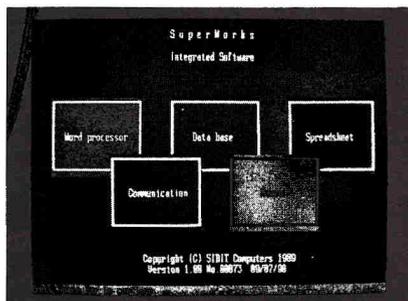
## OFFICIAL ANNOUNCEMENT TO READERS

# Breakthrough For AppleWorks Users!

The best integrated PC package yet!

Northvale, NJ

Remarkable Technologies announces a breakthrough product which delivers AppleWorks power on an IBM PC or compatible. **SuperWorks** allows AppleWorks users to step up to a PC along with all their AppleWorks files, utilizing AppleWorks work-alike integrated software.



SuperWorks Features Screen

New features provide complete and full integration of all its capabilities including; spreadsheet (with 3-D capability), database (the easiest to use and one of the most powerful anywhere), word processing (a dynamic and full capability communications package) plus

unlimited keystroke macro capability. It takes only 160K in RAM. In addition, **SuperWorks** allows you to work with your AppleWorks file on an IBM PC.

As a special introductory offer to **inCider** readers, **SuperWorks** will be made available at the special price of \$199.00 (plus \$5.00 for shipping and handling). **SuperWorks** has a regular retail price of \$400.00. Send your check or credit card information with order form below to Remarkable Technologies, 245 Pegasus Avenue, Dept. SW, Northvale, NJ 07647. Telephone: 201-784-0900. Fax: 201-767-7463

### PAYMENT MUST ACCOMPANY THIS ORDER

EXP. DATE \_\_\_\_\_ SWS

CARD NUMBER \_\_\_\_\_

SIGNATURE \_\_\_\_\_

COMPANY \_\_\_\_\_

ATTENTION \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_

### 30 DAY MONEY BACK GUARANTEE

Circle 33 on Reader Service Card.

## Never buy another ribbon!

**MacInker**

Over 175,000 sold since 1982



Free bottle of ink, reservoir cover, ink meter, and dispenser.

**\$45.00**

<b>Imagewriter I/II MacInker (mod 234im).....</b>	<b>45.00</b>	<b>Extra ink bottle .....</b>	<b>3.00</b>
<b>Multicolor Adaptor (mod M422).....</b>	<b>40.00</b>	<b>Pint .....</b>	<b>18.50</b>
<b>Epson MacInker (mod 271ep).....</b>	<b>42.00</b>	<b>Imagewr. I/II cartridges.....</b>	<b>3.15/ea</b>
<b>Universal MacInker (specify printer) .....</b>	<b>75.00</b>	<b>4-color cartridges .....</b>	<b>10.00/ea</b>
<b>Heat Transfer Adaptor .....</b>	<b>25.00</b>	<b>Heat Transfer cartridges .....</b>	<b>call</b>

### Apple Autoswitch - Data Switches - Modems

4 port 8 pin .....	50.00	Apple Autoswitch (4 to 1) .....	145.00
4 port 9 pin .....	50.00	cables any type.....	call



Best Buy among 2400 baud modems (*MacUser*, Dec. 90), MNP class 5 error correction, 2 yr warranty, 100% Hayes comp. **LightSpeed 2400LE .....**159.00



All the power of a high quality 2400 b modem in your pocket. AC & battery. 100% Hayes compatible. **Micromodem 2400 .....**149.00

### Order Toll Free (800)547-3303

Satisfaction or 30 day money back on all products. Major credit cards accepted. Shipping \$5.50 on most products

**Computer Friends, Inc.,**  
14250 NW Science Park Dr. Portland OR 97229  
tel. (503)626-2291 - fax (503)643-5379

Circle 288 on Reader Service Card.

# REVIEWS



## ZIPGSX

Zip Technology

5601 WEST SLAUSON AVENUE, SUITE 190, CULVER CITY, CA 90230, (213) 337-1313

Apple IIgs accelerator card; \$149 (7MHz, 8K), \$199 (8MHz, 16K), \$229 (9MHz, 16K); additional 32K RAM chips, \$49; upgrade to 10MHz, 64K, call for price



Flip through a few computing magazines at the newsstand and you soon realize that computer processing speed is one of this decade's hottest topics. While contemporary IBM PCs and compatibles typically boast speeds of 16MHz (megahertz) or more, the average Apple II slogs along at just 1MHz. (The Apple IIgs runs nearly three times faster than that, but the graphical nature of most GS programs slows

operations considerably.) Building a grade-book spreadsheet, painting a still life, or designing a sales brochure can sometimes seem like running in beach sand.

Until now the trade-off for some GS users has been to stick with 8-bit text-based products such as AppleWorks 3.0 or tightly written graphics programs such as Publish It! 3. For the most part, these programs work well, but using them may mean

depriving yourself of the many attractive features of GS/OS (the Apple IIgs operating system) — not to mention the colorful and powerful WYSIWYG (what you see is what you get) performance of authentic GS software such as AppleWorks GS.

Fortunately, there's a solution: the ZipGSX accelerator card from Zip Technology. This circuit board comes in three speeds: 7MHz, 8MHz, and 9MHz. Besides featuring a faster 65C816 microprocessor, or CPU (central-processing unit), each Zip card accommodates high-speed-caching random-access-memory (RAM) chips. Zip cards are equipped with either 8K or 16K of cache memory, an amount you can boost to a maximum of 64K with chips you purchase from the company. (A *cache* is a bit of RAM that automatically stores a temporary copy of your GS' memory; the larger the cache, the faster your machine runs.)

Moreover, you can upgrade your ZipGSX to 10MHz, the practical limit for the 65C816 microprocessor. In preparing this review we test-drove a 9MHz, 64K ZipGSX on a 1.25-megabyte GS for two weeks and experienced program speed improvements of up to about 300 percent.

At first glance a ZipGSX card might look like any other circuit board. Closer examination — aided in part by the cleverly conceived and executed HyperStudio-stack tutorial that accompanies the product — reveals the card's crystal oscillator clock; the ASIC (application-specific integrated circuit) that controls the card's functions; a high-speed 65C816 microprocessor; cache RAM chips; red (power) and yellow (caching) indicator LEDs (light-emitting diodes); two sets of DIP (dual in-line package) switches for customizing the card; a cable assembly for attaching the ZipGSX to your GS' motherboard (main circuit board); and a docking platform for storing the GS' original microprocessor chip.

Installation of our ZipGSX was straightforward, seemingly foolproof, and took less than 15 minutes. In a nutshell: Turn off

the power to your GS, remove its cover, touch the power supply to bleed off any static electricity on your body, carefully use the supplied chip puller to pry the original 65C816 chip from the GS' motherboard, insert the ZipGSX connector into the now-empty socket, and install the card in any of the first four expansion slots. That's all there is to it!

Some of the credit for ease of installation goes to the HyperStudio stack provided on the ZipGSX utilities disk. (You don't need to own HyperStudio to use the stack; a run-time version of the program is furnished.) The animated tutorial provides a detailed, step-by-step preview of the complete installation process. Progressing to each subsequent step is as easy as clicking on an arrow that points to the next card. When it's time to physically install your ZipGSX card, you can easily refer to the equally well-written instructions in the manual.

#### AS YOU LIKE IT

Benefiting from two forms of documentation (the HyperStudio stack and the printed guide) is appealing indeed, but imagine being able to choose from five alternate methods for customizing your ZipGSX card's operations! You can effect changes in the board's functioning through either the hardware DIP switches mentioned earlier or any of four software utilities provided.

If yours is a floppy-based GS system, space may be limited on the GS/OS System Disk. In that case, install only one or two of the software options on your startup disk. If your system's equipped with a hard-disk drive, however, you might want to install all four software utilities and experiment to determine the one(s) you prefer. According to a spokesperson at Zip Technology, all ZipGSX cards are compatible with DMA (direct memory access) devices such as CV Technologies' RAMFast SCSI (small-computer-systems interface) and Apple Computer's Apple II SCSI cards.

Among these four utilities is a CDA (classic desk accessory) such as the ones stored in the text-based Control Panel you access by pressing the control, open-apple, and escape keys simultaneously. This accessory's particularly handy when you're working with 8-bit programs such as AppleWorks 3.0.

When you work with newer GS programs such as AppleWorks GS, you may prefer to

## TO THE TEST

Working at a computer magazine can really make you a performance junkie, especially because you don't have to pay for any of the products you review. So our response at the *inCider/A+* tech labs to the Zip press release was "Yeah, but how fast will it really go?" We weren't going to be impressed with any half-measures; we called the company day and night until it sent us a loaded card, complete with 64K of cache memory and the 10MHz upgrade. Total list price: \$429. Then we put on our safety glasses, got out our stopwatches and fired up our experimental IIGs for some comparative lap times. Take a look at our results in the accompanying table.

Is the ZipGSX faster than the competition? Just by a hair. If AE ever offers its 10 MHz upgrade on the open market, Zip might find the already installed TransWarp GS base too hot to handle.

— **Cameron Crotty**

All times in seconds	IIGs (2.8 MHz)	TransWarp GS	ZipGSX
<b>Time to Finder from power off</b>	<b>40.58</b>	<b>32.45</b>	<b>30.71</b>
<b>Recalculate 143K AW 3.0 spreadsheet</b>	<b>39.47</b>	<b>17.43</b>	<b>12.70</b>
<b>AppleWorks 3.0 complete preload</b>	<b>8.11</b>	<b>6.40</b>	<b>5.84</b>
<b>Find primes up to 500 in Applesoft BASIC</b>	<b>136.87</b>	<b>60.83</b>	<b>47.64</b>

use the ZipGSX cdev (control-panel device) appearing in the *Control Panel* listed in the *Apple* menu. Either accessory lets you make real-time alterations in the ZipGSX card's speed and/or DIP-switch settings. For example, a ZipGSX card on an AppleTalk-networked GS requires a reduced speed and one DIP-switch modification.

From the Finder you can invoke either the supplied software INIT or the ZipGSX.Sys16 program to semipermanently override DIP-switch settings without opening up your GS and touching the switches. According to a Zip technical-support representative, INIT utilities were developed originally for the Macintosh, but have been implemented in GS/OS as a way of patching (altering) programs in ROM (read-only memory).

The ZipGSX card's INIT lets you override DIP-switch settings with changes that prevail even after you've turned the computer's power off. The ZipGSX.Sys16 program provides yet another way to customize your ZipGSX card by editing and saving modified INIT parameters (settings).

Thanks to ZipGSX software, you needn't ever open up the GS or fiddle with actual DIP switches if you don't want to. That's not to say you won't enjoy sneaking a peek inside once in a while to watch the flickering yellow LED, a visual indicator of the invisible tasks performed by the ZipGSX. Technically referred to as an "anticaching" indicator, the LED brightens whenever the GS is reading or writing data in the

computer's main memory, and dims when the computer's using cache memory.

If you're as intrigued by electronic gadgets as we are, you'll be fascinated watching the LED come to almost full brilliance whenever a disk-drive access occurs, and fade nearly completely when the computer's on but not processing information. What happens when cache memory's being put through its paces? The LED flickers like crazy! If only for entertainment value, we wish the ZipGSX's LEDs were visible without the GS' cover removed.

#### PERFORMANCE PLUS

With the 9MHz ZipGSX installed in our system we ran a wide assortment of both Apple IIe/c and GS programs. We created spreadsheet templates, worked on mailing-list databases, designed desktop publications, painted pictures, composed letters, wrote manuscripts, and played music. In the process, we encountered only one problem: When we started up 8-bit ProDOS programs such as AppleWorks 3.0 and Publish It! 3 from scratch instead of launching them from GS/OS, the programs would seize up after a short time. If we first set the Control Panel speed to *Normal*, no such lockup occurred.

Zip Technology's technical-support department notes that other owners of older (ROM 01) GSeS have experienced similar problems with early GSX cards because of an oversensitivity to electronic

Continued on p. 64

## LC vs. GS

And in this corner . . .

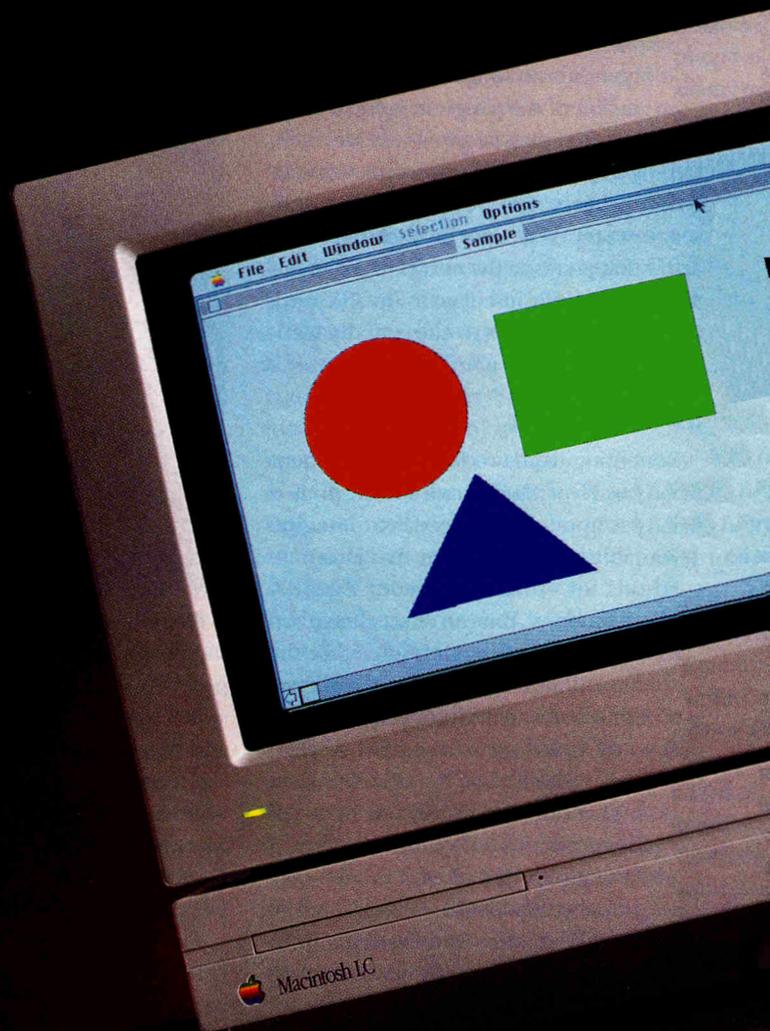
Can the ~~GS~~ hold its own against  
the newest Mac contender in  
*inCider/A+*'s tough software workout?

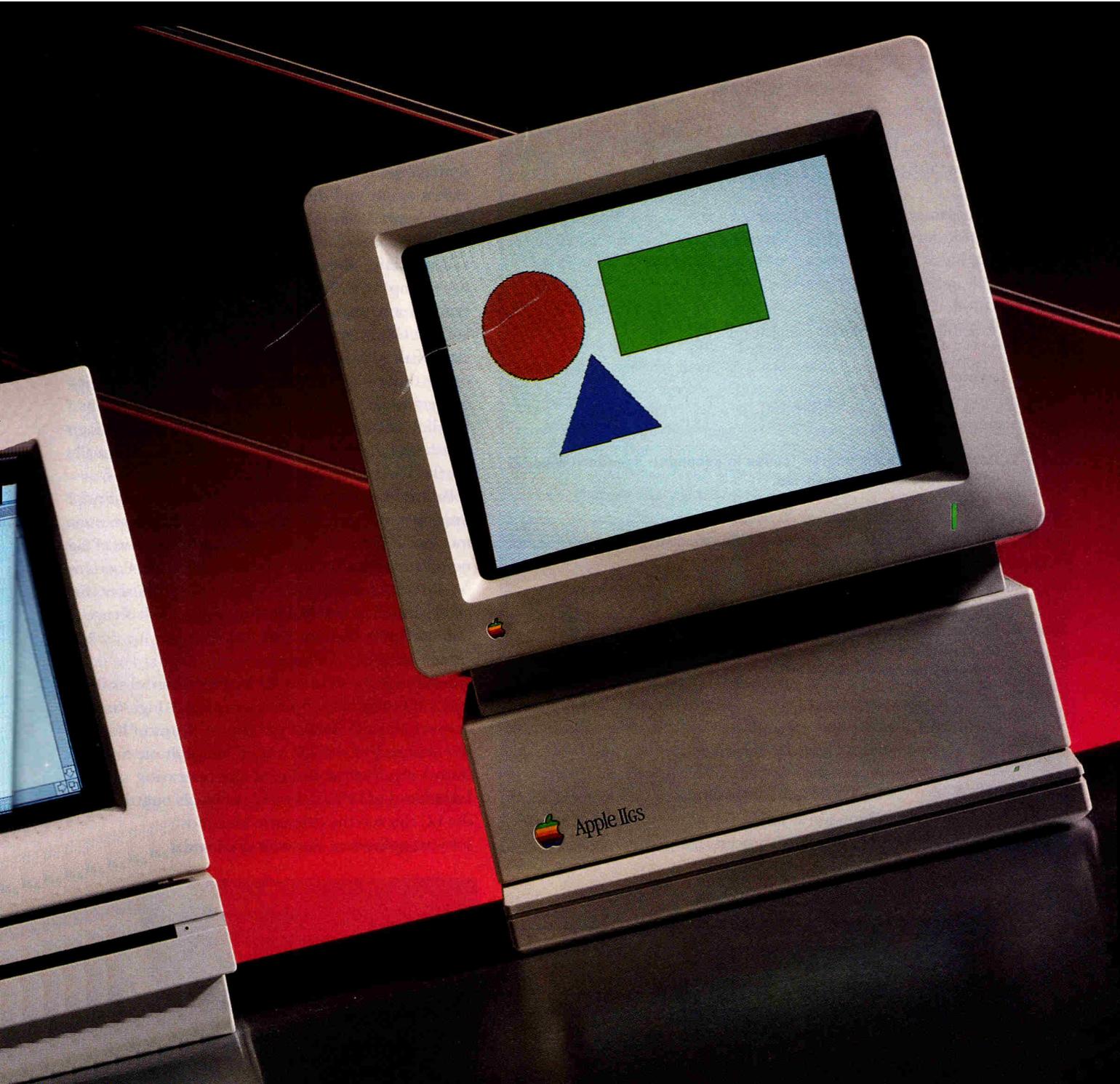
**N**o lynch mobs allowed — that's the first, and only, rule. When *inCider/A+* introduced its readers to the Mac LC last December, a howl of protest hit on-line services and mailboxes. Is it true? Is the LC really better and cheaper than the GS? Put the two machines in a ring and the LC should pummel the reigning champ, right? Or does the IIGS still have some wallop in its punch?

Let's find out. All you need are the two machines side by side. Add lots of software, a smattering of hardware, and enough time to shake up the systems. Let's live dangerously.

### BASHING HEADS

Comparison comes naturally to the GS and the LC. Though far from being twins, these computers share important





# SIDE BY SIDE, HEAD TO HEAD

By GREGG KEIZER \* CONTRIBUTING EDITOR

	Mac LC	IIgs
<b>Finder</b>		
Boot to Finder	17.72	24.08
Copy 4 files (56K) to hard disk	2.26	4.28
Copy 4 files (56K) to floppy	8.69	9.18
<b>Word Processing</b>		
Launch 16K document	8.65	20.22
Save 16K file as ASCII	2.09	3.44
Scroll through file	16.55	18.75
Print 16K document	69.40/92.94	83.4/100.22
*Time to free up computer/time to complete print job		
<b>Page Layout</b>		
Justifying one-page newsletter	1.41	2.63
Resizing page to fit	.81	2.21

**Table 1. Performance benchmarks (times in seconds): standard Mac LC versus IIgs with accessories.**

	Mac LC	Ile	IIgs standard	IIgs with accessories
<b>Apple IIe Emulation</b>				
Resizing page to fit	6.77	13.10	4.50	2.21

**Table 2. Performance benchmarks (times in seconds): Mac LC in Ile emulation mode versus stand-alone Ile, standard GS, and accessorized GS.**

characteristics, not the least of which is their intended market: Both the Apple IIgs and the Mac LC are most comfortable in the home, home office, and classroom. Moreover, they're comparably priced.

The Apple IIgs comes with 1.25 megabytes of RAM (random-access memory), a now-sluggish 2.8-megahertz 65816 microprocessor, and the standard Apple

suite of serial, SCSI (small-computer-systems interface), ADB (Apple Desktop Bus), and AppleTalk ports. Seven slots let you plug in cards (and thus capabilities), while a special memory-expansion slot helps fill the machine's 8-megabyte RAM capacity. You equip the GS yourself with monitor and disk drives; most people settle for Apple's own 12-inch RGB (red/green/blue) screen and a pair of drives, one 3.5-inch, one 5.25-inch. The GS' self-proclaimed expertise, graphics and sound, is backed up by 4096 colors and an 15-voice Ensoniq synthesizer chip, underutilized by most of the array of current GS programs. First available in 1986, the GS can't boast a huge software library. Relatively few developers these days produce GS-specific productivity, entertainment, and educational programs. Only a handful are still actively creating GS packages (although hundreds of 8-bit Apple II programs written originally for the IIe/IIc help fill the gap for GS users).

Pop the top on a Macintosh LC and you'll find 2 megabytes of RAM, a 16-megahertz 68020 microprocessor (not exactly state of the art, as it was previously part of the now-defunct Mac II), and nearly the same set of ports as on the GS. A single processor-direct slot (PDS) waits for an expansion board: Many Mac LC users will occupy it with the **Apple IIe Card**. (See the accompanying sidebar "Sure Fooled Me" for details.)

Also inside the LC are a 40-megabyte hard-disk drive and a 1.4-megabyte SuperDrive (Apple's high-density 3.5-inch floppy). Two of the potentially most impressive features of the LC are its microphone and the sound-input capabilities of the operating system. Introduced in 1990, but widely available only this year, the LC can run the extensive Macintosh productivity-software collection. Few education and entertainment

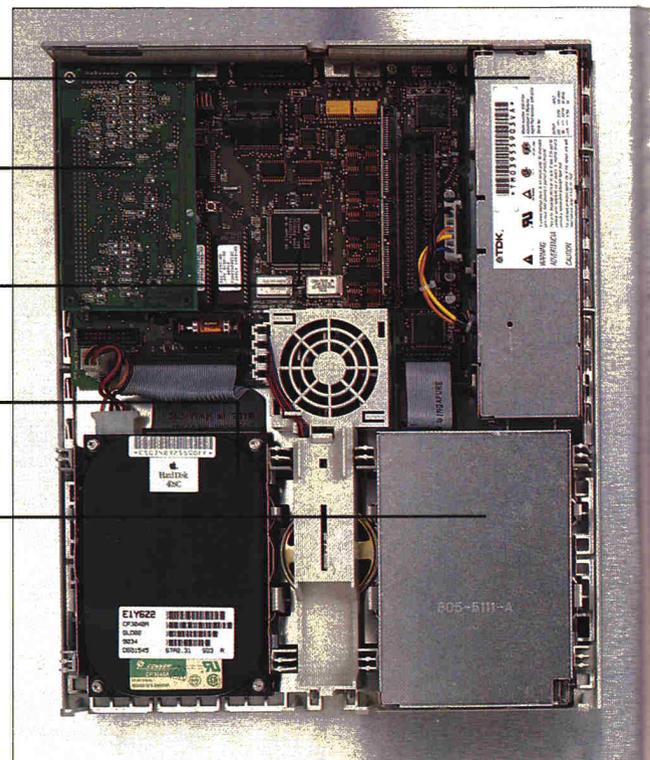
## POWER SUPPLY

processor-direct slot (PDS) with  
IIe EMULATION CARD installed

68020 MICROPROCESSOR  
running at 16 megahertz

built-in HARD-DISK DRIVE  
with 40-megabyte capacity

3.5-inch high-density SUPERDRIVE  
with 1.4-megabyte capacity



packages flash the Mac label, though Apple is now prodding developers in both camps.

### WEIGHING IN

No sorcerer's stone can transmogrify the Apple IIGs. You can't wave your hands and turn the GS into an LC — or an LC into a GS — even if you have deep, deep pockets. Feeling the pain as they look at their GS software and wonder why the LC can't run it, critics have taken Apple to task for this incompatibility. What you can do, of course, is beef up the GS to make it a better match hardware-wise for something like the Macintosh LC.

Shop for an internal 40-megabyte hard-disk drive first. Applied Engineering's **Vulcan** is really the only choice. You can save a bit by going external with something like Quality Computers' **Q-Drive** (which includes Apple's **High-Speed SCSI Card**), but you'll regret it later when your desk tries to crowd you out of a place to put your keyboard. An internal drive is out of sight, out of the way, and much more convenient. You'll need to add more memory, too. Move your GS to the 2.25-megabyte mark (comparable to the LC's 2 megabytes) by piggybacking your existing **Apple Memory Expansion** card to CV Technologies' 1-megabyte **GS Memory Board**.

Picking up the GS' speed can make all the difference if you're trying to compete with the LC and its 68020 microprocessor. Your best bet is Applied Engineering's **TransWarp GS**, an accelerator board that pushes the GS' CPU (central processing unit) to 7.4 megahertz. Applied's new **Cache Card** increases speed another 30 percent. You can duplicate some of the LC's sound input on the GS with Roger Wagner's **HyperStudio**,

Mac LC logic board (left); IIGs logic board (right).

## Price Wars

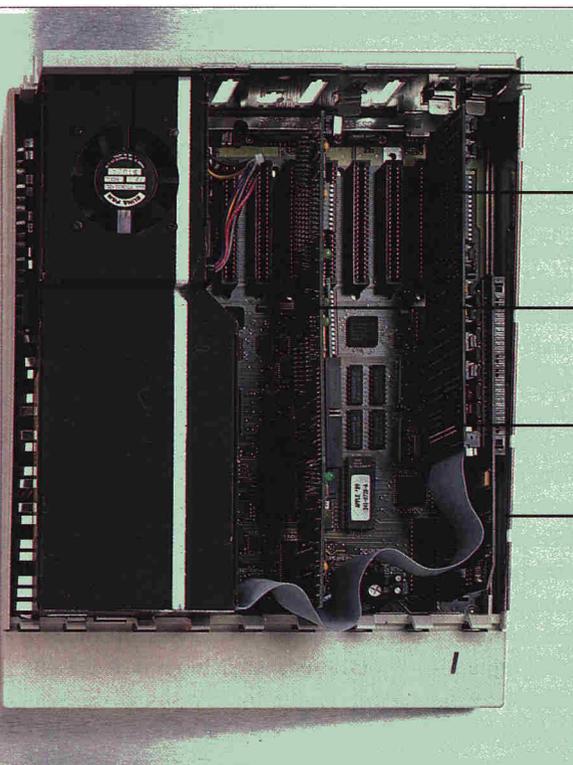
Apples don't come cheap. All the talk about low-cost Macs conveniently omits the fact that they're low-cost only when compared to higher-priced Mac models at the top of the line. Ranked against a similarly equipped and comparably quick PC compatible, any Apple seems overpriced. But you know that already.

Comparing the cost of the Macintosh LC versus that of the Apple IIGs is particularly difficult. At one end you can make a case that the standard GS (CPU, RGB monitor, two disk drives) might price out as low as \$1881. A bare-bones LC comes in at nearly \$600 more — \$2458 — and doesn't run Apple IIe software.

Comparable configurations, or as comparable as technology can make them, show a slightly different picture, though. You'll need to add such extras as a hard-disk drive, an accelerator, and additional RAM to bring the GS as close to the LC's specs as possible. Add Apple II emulation to the LC and its price rises, too. The results are detailed in the accompanying table. (With the exception of the Apple IIe Emulation Card, all prices are averages taken from direct and/or discount sources.) A stripped-down GS costs much less than the LC — but it does less, and does it less quickly, than an upscale GS.

— G.K.

GS	FEATURE	Mac LC
\$859	CPU	\$1999
459	Apple 12-inch RGB	459
315	Apple 3.5-inch drive	n/a
248	Apple 5.25-inch drive	248
648	Vulcan 40MB hard drive	n/a
259	AE TransWarp GS	n/a
149	2MB RAM	n/a
82	HyperStudio	n/a
n/a	Apple IIe Emulation Card	199
<b>\$3019</b>		<b>\$2915</b>



**VULCAN HARD-DISK DRIVE**  
with 40-megabyte capacity

general-purpose **EXPANSION SLOT**  
(one of seven in GS)

**TRANSWARP GS** with replacement  
microprocessor, 7.4 megahertz

**VULCAN CONTROLLER CARD**

**RAM CARD** installed in special memory-  
expansion slot. GS' total RAM capacity  
is 8 megabytes.

## Sure Fooled Me

Vital to the LC's acceptance among Apple II users, crucial to its approval by educators, the Apple IIe Card turns back the clock as it turns one of the newest Macintosh computers into an old machine. Unlike the Apple IIe emulation built into the GS, the LC's requires both extra hardware and another piece of software: a petite \$199 IIe-on-a-card connected to the LC's single processor-direct slot, with emulation software running from the Macintosh's 3.5-inch or hard-disk drive.

The result is striking. Once you launch IIe Startup, the Macintosh application, the LC's screen darkens and the familiar "Apple IIe" flashes across the display.

Stick a ProDOS 3.5-inch disk into the LC's internal drive or a 5.25-inch disk into an external drive connected to the port at the back of the card, and you can run just about any 8-bit program that works on an enhanced IIe. AppleWorks, BannerMania, The Print Shop, Publish It! 3, Math Blaster, and Where in the World Is Carmen Sandiego? were just some of the IIe programs that passed

inCider/A+'s tests with flying colors. Only America Online failed to function.

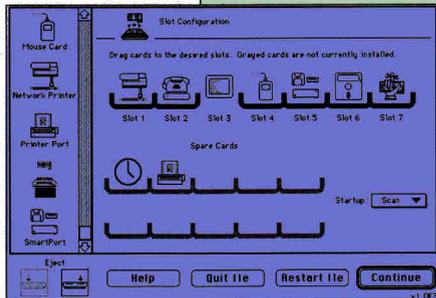
You can steal up to 1024K of the LC's RAM to apply to Apple II mode, a boon to AppleWorks users. Programs can run at double the speed of a real IIe (though only about 66 percent as fast as an Apple IIgs). And with an ingenious feat of software engineering, the LC mimics Apple IIe slots.

To ready the LC's printer and modem ports, mouse, 3.5-inch drive, and internal memory for IIe work, you simply drag icons on the Option Panel, accessed by pressing Open apple-Control-Escape. If the LC is connected to a network printer with LocalTalk cabling, for instance, you just pull the Network Printer symbol to Slot 1. (See the accompanying **Figure**.)

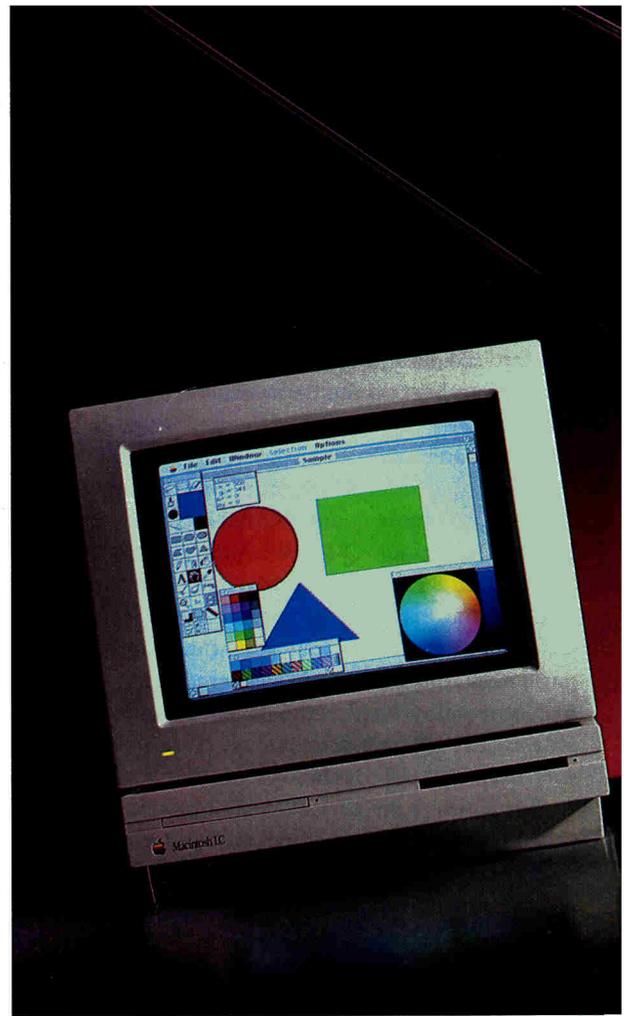
It's not perfect. You can't get to the LC's internal hard-disk drive within Apple IIe mode, nor can you access an AppleShare-run network while emulating the IIe. According to Brian Loucks, product marketing manager for the IIe Card, AppleShare compatibility is the highest priority: "We didn't get the AppleShare stuff done for the first version, but we're working on providing that in the future." Divvying up the LC's hard disk between ProDOS and the Macintosh is lower on the list, and "only in the investigative stages," adds Loucks.

Even with those omissions, the IIe Card is a well-designed, easy-to-use link with the countless 8-bit Apple II programs that home and classroom Macintosh users won't want to do without.

— G.K.



**Figure. Screen dump showing Mac LC's Apple IIe emulation Control Panel.**



**Left, Color MacCheese (Delta Tao) on Mac LC; right, Platinum Paint (Beagle) on IIgs. Note similarity of tool menus and color and pattern palettes. Gradient-tone color wheel for choosing palette is unique to Mac.**

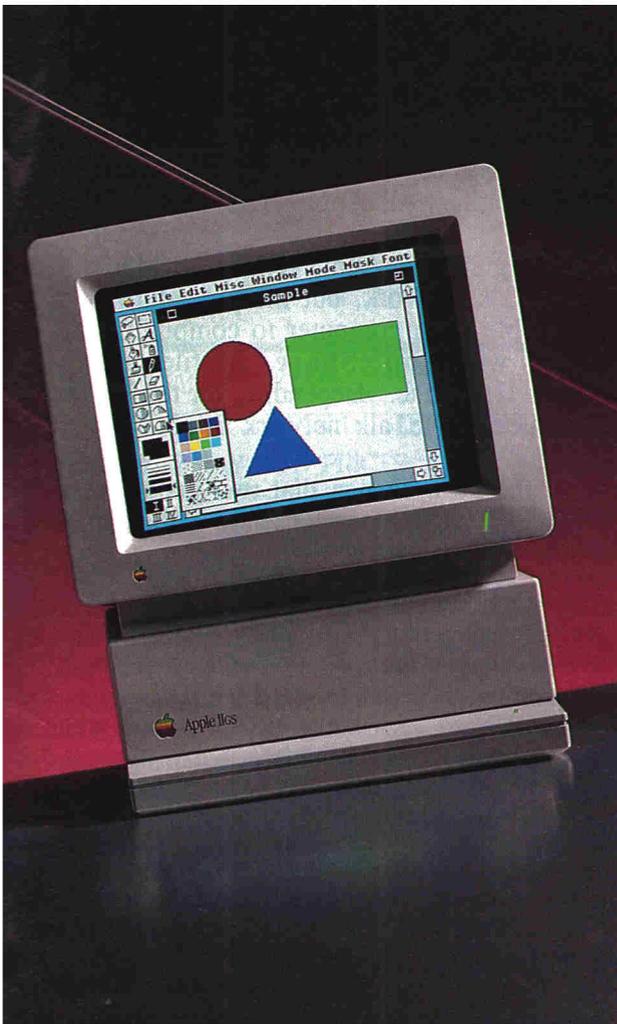
the interactive-multimedia maker that includes a microphone and digitizing software for inserting sound and music into stacks.

By the same token, the Macintosh LC can't revert to an Apple IIgs. The best it can do is mimic a IIe after you've plugged the **Apple IIe Card** into the LC's PDS connection. Add an **Apple 5.25-Inch Floppy-Disk Drive** and you're set. Everything else — the 40-megabyte hard-disk drive, the 2 megabytes of RAM, the fast microprocessor — is part of the LC.

### COMING OFF THE BENCH

You can't compare the GS and the LC feature for feature, capability for capability. They may look surprisingly alike, both on the desktop and when you're running certain kinds of software, but they are, after all, different machines. But you can compare their performance in several real-world applications, from startup and document launch to printing and page layout. Waiting for your computer, whatever the model, is dead time. If one of these two machines is decidedly inferior in day-to-day productivity tasks, it's a less-effective tool and a poor value.

All tests detailed below were conducted on a standard



Macintosh LC with 2 megabytes of RAM and a 40-megabyte hard-disk drive, and on a substantially enhanced GS that included 2.25 megabytes of RAM, an internal Vulcan 40-megabyte hard-disk drive, and a TransWarp GS card. Note that system costs are remarkably close. (See the accompanying sidebar "Price Wars.")

We began with operations conducted from the Finder, the first screen you see on either the GS or the LC. For most people, this file manager and program launcher is the operating system. You spend a lot of time working in the Finder as you organize files in folders, copy files from disk to disk, and run software with a double click. Take a look at **Table 1**, the time-trial results. Although the LC beat the beefed-up GS in every case, the only significant Mac advantage is in the time it takes to boot the machine and get to the Finder. Once there, similarities rule — no other application comes as close on both computers. If you're familiar with the Finder on the GS, you'll be comfortable with the Finder on the LC.

Integrated software — programs that do a lot of things for a relatively small amount of money — hold a special place in Apple II and Mac users' hearts. **AppleWorks GS** and **Microsoft Works** are fitting competitors on the two machines. Each outfits its computer with a word processor, database manager, spreadsheet, and telecommunications module; AppleWorks GS adds paint and page-layout programs. Both offer a what-you-see-is-what-you-get look at documents and forms, and both depend on a

graphics-based interface featuring a point-and-click approach. Though the difference in launching a document was dramatic, the times to perform other typical tasks were much closer. With a quick computer, AppleWorks GS is nearly a match for Microsoft Works and the LC. Both packages are easy to use and can turn out nearly identical documents. (See the accompanying **Figure**.)

The Mac made its reputation with desktop publishing — churning out good-looking documents with the right software and a laser printer. **Publish It! Easy** and **Publish It! 3** are more than just capable packages. The former is a simple-to-use but full-featured desktop-publishing program for the Mac, while the latter is the leading layout application for the Apple II. **Publish It! Easy** and the LC won the time trials handily, even though the accelerated GS flew through the chores when compared to an Apple IIe, a Mac LC in emulation mode, or even a standard GS (**Table 2**). **Publish It! Easy** has the edge not only in performance, but in tools and features as well. It's simpler to use and more flexible. But the final results — the printed pages — look uncannily alike, whether created on the GS or the LC, as long as both are connected to a capable laser printer.

### SPARRING PARTNERS

The LC's on top in the benchmarks. That's not unexpected — after all, it's competing against five-year-old technology. What is surprising is how close the GS comes to the LC in most of the performance tests. True, the GS wasn't an off-the-rack system — but it was comparably priced.

Other elements and features don't show up in simple timing tests. The GS' seven slots are a powerful argument for the machine. Adding another function, such as the **Apple II Video Overlay Card**, a genlock device that synchronizes video and computer-graphics signals so that you can combine the two in a single frame, is simply a matter of slipping in a new board. Compared to the GS, the LC is crippled with its single slot. Multi-function cards for the LC, some of which are already available, may divert some of that criticism, but it's going to be more difficult to add features to an LC than to a GS.

The counterweight lies in software. There's simply no comparison between the GS and the LC when it comes to productivity packages. From top-of-the-line spreadsheets like **Microsoft Excel** to word processors like **MacWrite II**, the Mac can match any computer when it comes to software. Games and educational software may be slow in coming to the Mac (look for that to change dramatically this year), but because many of the best of both are in 8-bit Apple II form, the LC can access them as easily (if not quite as cheaply) as the GS.

The real winner? That depends on what you plan to use the computer for. Strange as it may sound to hardcore Apple II owners, the GS and the LC are as much complementary as competitive. Both run with graphics-based interfaces and can print to PostScript printers; both can connect to an AppleTalk network; and the two

# Apples Share With (and With) (and Without) AppleTalk

Apple and Macintosh machines have a built-in printer sharing capability that other computer computers -- even those that cost thousands of dollars more -- lack. That capability is AppleTalk, the network specifications that link Apples, and their peripherals. All Apple IIGS and Macintosh Apple IIGS and Macintosh computers come equipped with AppleTalk.

Don't let the word *network* scare you. Linking several Apple IIGS and Macintosh Macintosh computers with a printer does, in fact, create an AppleTalk network, but the procedure is little more than plugging connectors into ports and trailing cable from computer to computer. If all you're doing is printing, you don't need to mess with AppleShare, the file-sharing software you need to send files from Apple II to Mac. Depending on the distance between the two computers, a simple two-computer-one-printer AppleTalk network might snap together (see 1).

When several computers use one laser printer, there's a chance that two people will be printing at the same time. AppleTalk handles that adequately, if not elegantly, by simply...

Figure. Laser-printed documents prepared with Mac Microsoft Works (left) and AppleWorks GS (right).

machines even share some similarities on the software side. Yet each has strengths you can play from.

The GS, for instance, is still the better all-around, low-cost interactive-multimedia platform. Whether you're dabbling at home with HyperCard IIGs or producing full-fledged extravaganzas in the classroom, the GS is the best pick. Surprised? Most of the credit goes to the relatively inexpensive Apple II Video Overlay Card, which makes possible all kinds of video/graphics combinations. Though the Mac's no multimedia slouch, similar video boards for that machine cost three to four times as much; no such board exists for the LC yet (and may never, owing to its single and unique slot).

Then, too, although the LC may be poised to leap into classrooms, for many schools the GS is still the best choice. Curricula that depend on Apple II software running from an AppleShare file server across an AppleTalk network simply won't work with the LC. Because the Apple IIe Emulation Card fails to deliver AppleShare connectivity, you can't use an LC to run a

network's II software. (You can connect an LC to an AppleShare file server and run Macintosh programs, but that's not the point here.) Many schools have a considerable investment in networked software; they won't give up that software easily. Until the Iie Card can connect to an AppleShare file server, the GS remains a more flexible and less expensive AppleTalk workstation than the LC.

But if you're looking for a bridge between the past and the future of Apple computing, the LC is your choice. The Apple Iie Card keeps ties alive to the classic software you just can't give up yet, such as **AppleWorks**, **The Print Shop**, and **Math Blaster**. The GS can do that, too, but with the LC you can dive into a much bigger native software pool at the same time. Music software, for instance — for professionals and amateurs both — abounds for the Mac. The pickings are slim for the GS. Ditto with Mac desktop-publishing software, where you select from three times the choices — including the powerful **PageMaker** and **Quark Xpress**. And if you like to write, the LC lets you

## PRODUCT INFORMATION

**Apple High-Speed SCSI Card**, \$129  
**Apple Memory Expansion**, \$229  
**Apple 5.25-Inch Floppy-Disk Drive**, \$329 list, \$248 mail-order sources  
**Apple IIe Card**, \$199  
**Apple II Video Overlay Card**, \$549  
**HyperCard IIGs**, \$99  
 Apple Computer  
 20525 Mariani Ave.  
 Cupertino, CA 95014  
 (408) 252-2775

**AppleWorks 3.0**, \$249  
**AppleWorks GS**, \$299  
**HyperCard 2.0**, \$199  
**MacWrite II**, \$249  
 Claris Corp.  
 P.O. Box 58168  
 5201 Patrick Henry Drive  
 Santa Clara, CA 95052  
 (408) 727-8227

**Cache Card**, \$109  
**TransWarp GS**  
 \$349 list, \$269 mail-order sources  
**Vulcan**  
 \$899 list, \$648 mail-order sources  
 Applied Engineering  
 P.O. Box 5100  
 Carrollton, TX 75011  
 (214) 241-6060

**GS Memory Board**  
 CV Technologies  
 1800 East Whipp Road  
 Kettering, OH 45440  
 (513) 435-5743  
 \$119

**HyperStudio 2.1**  
 Roger Wagner Publishing  
 1050 Pioneer Way  
 Suite P  
 El Cajon, CA 92020  
 (619) 442-0524  
 \$149.95 list, \$82 mail-order sources

**LightningScan**  
 Thunderware Inc.  
 21 Orinda Way  
 Orinda, CA 94563  
 (415) 254-6581  
 \$295

**MacLinkPlus/PC**  
 DataViz  
 35 Corporate Drive  
 Trumbull, CT 06611  
 (203) 268-0030  
 \$199

**Math Blaster**  
 Davidson & Associates  
 3135 Kashiwa St.  
 Torrance, CA 90505  
 (213) 534-4070  
 \$49.95

**Microsoft Excel 3.0**, \$495  
**Microsoft Word 4.0**, \$395  
**Microsoft Works**, \$295  
 Microsoft Corp.  
 16011 NE 36th Way  
 Redmond, WA 98073  
 (206) 882-8080

**The New Print Shop**  
 Broderbund Software  
 17 Paul Drive  
 San Rafael, CA  
 94903-2101  
 (415) 492-3200  
 \$49.95

**PageMaker 4.0**  
 Aldus Corp.  
 411 First Ave. South  
 Seattle, WA  
 98104-2871  
 (206) 622-5500  
 \$795

**Publish It! Easy**, \$249.95  
**Publish It! 3**, \$129.95  
 Timeworks Inc.  
 625 Academy Drive  
 Northbrook, IL 60062  
 (708) 559-1300

**Quark Xpress 3.0**  
 Quark Inc.  
 300 South Jackson St.  
 Denver, CO 80209  
 (303) 934-2211  
 \$795

**Q-Drive**  
 Quality Computers  
 20200 E. Nine Mile Road  
 St. Clair Shores, MI 48080  
 (313) 774-7200  
 \$599.95 direct

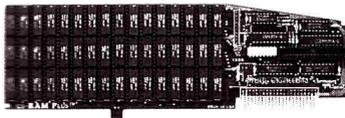
**Quickie**  
 Vitesse Inc.  
 13909 Amar Road  
 Suite 2  
 La Puente, CA  
 91748-1669  
 (818) 813-1270  
 \$299

**WriteNow 2.2**  
 T/Maker Co.  
 1390 Villa St.  
 Mountain View, CA 94041  
 (415) 962-0195  
 \$199

# FROM HOME TO SCHOOL AND BACK AGAIN, FAS-TRACK DELIVERS!

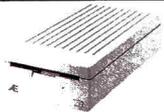
- NEARLY A DECADE OF SERVICE TO OUR CUSTOMERS
- TOLL-FREE SUPPORT—BEFORE AND AFTER THE SALE
- EVERYDAY LOW PRICES
- WE WELCOME SCHOOL PURCHASE ORDERS
- ALL SCHOOL ORDERS ON APPROVAL
- CALL FOR FREE 72 PAGE CATALOG

## Applied Engineering



GS Ram II w/1 Meg	\$149.95
GS Ram II w/2 Meg	\$199.95
GS Ram Plus w/1 Meg	\$199.95
GS Ram Plus w/2 Meg	\$249.95
TransWarp IIgs	\$254.95
TransWarp IIe (4 mhz)	\$96.95
RamWorks III w/256K	\$144.95
DataLink 2400B Modem	\$169.95
w/Sendfax (IIgs)	\$204.95
DataLink Express Modem	\$164.95
w/MNP5 & sendfax(IIgs)	\$224.95
Vulcan 20 Meg Drive	\$499.95
Vulcan 40 Meg Drive	\$649.95

## AE 3.5" Daisy-Chain Drive



800K **\$194.95**  
1.6 Meg **\$254.95**

## Laser 128 Computers

Laser 128 w/RGB mon	\$499.95
Laser 128EX w/RGB mon	\$579.95
Laser 190A Printer	\$194.95
Laser 190M Printer	\$224.95

(Computer prices include freight)

## Accessories



IW Black Ribbon  
1-5 **\$2.95** 6+ **\$2.50**  
IW 4-Color  
1-5 **\$6.50** 6+ **5.75**

10 DS/DD 3.5" Disks	\$5.50
10 High Density 3.5" Disks	\$10.50
25 DS/DD 5.25" Disks	\$8.75
Locking 3.5" or 5.25" Case	\$7.95

## Memory Chips

256K x1 Drams (8 - 120ns)	\$19.95
256 x 4 Drams (2 - 120ns)	\$19.95
1 Meg x 1 Drams (8 - 10ns)	\$59.95

## Vitesse Quickie Scanner

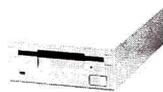


Quickie 400DPI  
Handscanner for  
Apple IIe & IIgs  
includes new 16  
gray shade  
software  
**\$194.95**

InWords OCR(Req. Quickie)\$79.95

Quickie Update	\$79.95
Harmonie	\$30.95

## AMR AS1.4K 3.5" Drive



IIc+, IIgs 800K;  
Macintosh 1.4 Meg  
**\$189.95**  
IIgs 5.25" **\$139.95**

Apple IIe UDC Card **\$39.95**

## Zoom 2400B Modem Package



Package includes Zoom MX 2400 baud external modem, Beagle Brothers Point-to-Point Communications software, Compuserve and Genie starter Kits and more. Compatible with Apple IIe, IIc, IIgs, and Laser 128 series **\$139.95**

## Digital Vision

ComputerEyes IIe	\$99.95
ComputerEyes IIgs	\$194.95

## Other Hardware

Thunder Scan	\$154.95
FingerPrint GSI	\$89.95
IIe 80 Column 64K Card	\$24.95

## Print Shop Companion IIgs



Apple IIgs  
**\$29.95**

## DTP and Graphics Software

Publish It!3	\$79.95
4 in one Graphics Pack	\$74.95
Educational Graphics	\$25.95
Children's Writing & Publishing Center	\$36.95
Children's Writing & Publishing Center Graphics Pack	\$46.95
Mickey's Crossword Maker	\$24.95
VCR Companion	\$29.95

## Beagle Brothers Software

Platinum Paint (IIgs)	\$61.95
AW 3.0 Companion	\$24.95
T.O. Style Pack	\$81.95
T.O. Decision Pack	\$93.95
T.O. Performance Pack	\$68.95
T.O. TextTools, Thesaurus	\$30.95
T.O. Superfonts	\$42.95
T.O. Desktools I or II	\$30.95
T.O. Sidespread	\$30.95
T.O. ReportWriter	\$49.50
T.O. SuperForms, Outliner	\$43.95

## Entertainment Software

Chessmaster 2100 (IIe or IIgs)	\$31.95
The Immortal (IIgs)	\$32.95
Pipe Dream (IIe and IIgs)	\$17.95
Task Force (IIgs)	\$24.95
Prince of Persia	\$20.95
Hunt for Red Oct(IIe or IIgs)	\$21.95
Zany Golf (IIgs)	\$26.95
Maniac Mansion	\$14.95
Tetris (IIe and IIgs)	\$24.95

## The New Print Shop



Apple 128K  
**\$29.95**  
Print Shop IIgs  
**\$35.95**

Sampler Graphics IIe	\$19.95	IIgs	\$19.95
Party Graphics IIe	\$19.95	IIgs	\$19.95
School & Business Graphics IIe	\$19.95		

## Productivity Software

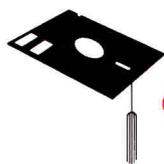
AppleWorks 3.0	\$169.95
AppleWorks GS 1.1	\$199.95
Design Your Own Home Architecture, Interior, Landscape each (IIe) \$44.95 (IIgs) \$55.95	
HyperStudio 2.1 (IIgs)	\$89.95
Quicken	\$37.95
ProTERM	\$79.95
My MailList, LabelMaker ea	\$14.95

## Utility Software

Copy II Plus 9.1	\$24.95
Prosel 16 (IIgs)	\$54.95
Cross-Works	\$69.95
Vitesse Salvation Series(IIgs)	\$119.95

## Educational Software

Where in Time	\$27.95
Where in the World	\$25.95
Where in the USA	\$27.95
Where in Europe	\$27.95
Oregon Trail	\$24.95
McGee or Katies Farm(IIgs)	\$26.95
McGee Fun Fair (IIgs)	\$26.95
GeoQuiz	\$24.95
GeoPuzzle (IIe or IIgs)	\$24.95
Think Quick	\$29.95
Mavis Beacon Typing (IIe)	\$25.95
Mavis Beacon Typing (IIgs)	\$31.95
Computer SAT or ACT	\$30.95
The Playroom	\$25.95



**FAS-TRACK**  
COMPUTER PRODUCTS

ALWAYS CALL  
TOLL-FREE



**1-800-272-1600**

**1-614-847-4050** (Central Ohio)

**1-614-847-4180 FAX**

Business Hours: Mon—Fri 9 AM to 8 PM/Sat 10 AM to 5 PM (EST)

We accept MasterCard, VISA, and Discover Card—no extra charge. We accept school purchase orders. Continental U.S., F.P.O., and A.P.O. add 4% (minimum \$4.00 for each shipment). AK, HI, PR, VI, and Canada, add 5% (minimum \$10). International orders, except Canada, will be shipped priority mail insured and charges will be added to your order. No C.O.D. Ohio residents add 5.75% Sales Tax. Absolutely no returns without prior authorization. Schools have 30 days to approve software ordered on a purchase order. Personal orders: We can only accept returns within 45 days on defective merchandise for replacement. Shipping charges are not refundable. Prices and availability are subject to change without notice.

7 0 3 0 C H U N T L E Y R O A D • C O L U M B U S , O H I O 4 3 2 2 9

Circle 85 on Reader Service Card.

explore everything from **WriteNow** to **Microsoft Word**. Compared to that array of sophisticated packages, GS writing tools seem few and far between.

In addition, a Mac LC may make more sense as a home-office machine. If you use a Mac at the downtown office, putting one in your home is an easy decision. But even if you work 9 to 5 with IBM PCs, it's much easier to share their files with an LC than with a GS because of a wider selection of conversion software, such as **DataViz's MacLinkPlus/PC**. The LC's library of productivity software also commends it for home-office applications: You're more likely to find a package that meets your needs exactly when you're scanning the Mac shelf at the store. Hardware add-ons recommend the Mac, too. If you work as a desktop publisher from home, for instance, you have dozens of hand-held scanners to choose from, not just the few available for the GS (primarily **Quickie** and **LightningScan**).

### THE DECISION

Performance versus application: Evaluated strictly on performance, the Mac LC outweighs a standard Apple IIGs; stack it up against a comparably priced GS system that includes some heavy-duty hardware, though, and the gap narrows. If you're willing to let a few seconds slide by, the GS will suit you fine.

It's the software that really tells, though. Both the GS and the Mac LC can run Apple II programs, but the

Mac's collection of software written specifically for the machine is broader and deeper than the GS'. The Mac's program count grows rapidly; the GS' choices increase slowly. Is the Mac LC a better computing value than the Apple IIGs? If you're watching the Apple market you'd say that dollar for dollar, the LC is a smarter investment, both in the short term and over the long haul.

But the LC isn't perfect. The machine's single slot and lack of AppleShare compatibility within Apple IIe emulation mode are telling weaknesses that may swing a purchase decision to the GS. Chances are both problems will be solved in time with various multifunction PDS cards and an upgrade to the IIe Card's software — but some people won't wait.

Who's the winner? Primarily because of the Mac LC's software, partially because of its performance, and despite its shortcomings, the decision between the LC and the GS is a close call. Tomorrow — unless Apple Computer changes its marketing strategy and takes a long, hard look at beefing up the GS and supporting the machine's software developers — it'll be a TKO. □

GREGG KEIZER WAS THE FOUNDING EDITOR OF *COMPUTE!'S APPLE APPLICATIONS*, A BIMONTHLY PUBLICATION, AND IS CURRENTLY THE AUTHOR OF *BRIDGING THE GAP*, OUR COLUMN ON APPLE II/MAC CONNECTIVITY. WRITE TO HIM AT 614 LINDEN STREET, SHREVEPORT, LA 71104. ENCLOSE AN SASE IF YOU'D LIKE A PERSONAL REPLY.

# TOTAL SUPPORT FOR YOUR APPLE II

Dedication to the Apple II and You    Great & Products    Great Service    Unbeatable Prices.

TransWarp Cache Upgrades  
**\$89.00**  
Drastic Performance Increase!  
Call for Speed Upgrades!

DataLink SendFAX/MNP  
**\$239.00**  
Includes GS SendFAX software

### Vitesse

Harmonie .....	\$ 32.00
Wings .....	\$ 47.00
Deliverance .....	\$ 28.00
Renaissance .....	\$ 28.00
Exorciser .....	\$ 28.00
Bakkup.....	\$ 28.00
Salvation-Supreme.....	\$115.00
(SAVE \$44 - All 5 Salvation Utilities in one box)	
Harmonie + BJ-10e.....	\$399.00
(Same mechanism as StyleWriter - 360x360 res.)	

Limited Supply!

2 MB OCTORAM  
**\$145.00**  
Upgradeable to 8 MB for IIGs

The Really Small Print

9MHz ZIP 1800  
**\$219.00**  
Now Faster Than Ever!

We will meet or beat any nationally advertised prices on AE RAM products!

Q: "Is that 40 MB for \$359?"



A: Yes! The top drive is the super compact NC PRO ranging in sizes from 40MB to 120MB. The PRO uses the floppy port for power, giving you maximum portability and cool looks at one great price. Besides, they're neat!

### RAM Expansion

SIMM (1MBx8).....	\$ 49.00
DRAM (1MBx8).....	\$ 49.00
GS QuickPack (Apple Mem. card)...	\$ 52.00
(adds 3 sets of 256K DRAMs to your Apple card)	

### PRO Drives

Pro 40 .....	\$ 359.00
Pro 100.....	\$ 539.00
Pro 120.....	\$ 589.00

### StorMate Drives

StorMate 40.....	\$ 359.00
StorMate 80.....	\$ 499.00
StorMate 100.....	\$ 549.00
StorMate 185.....	\$ 759.00
StorMate 200.....	\$ 859.00

### Applied Engineering

Vulcan 20.....	\$ 499.00
Vulcan 40.....	\$ 649.00
Vulcan 100.....	\$1,289.00

### SCSI Cards

Apple SCSI.....	\$ 105.00
RAMFast SCSI ....	without drive \$ 179.00 with drive \$ 169.00

**LRO**  
COMPUTER  
SALES

CALLNOW • TOLL FREE

**(800) 869-9152**

Illinois Residents Call (815) 338-8685

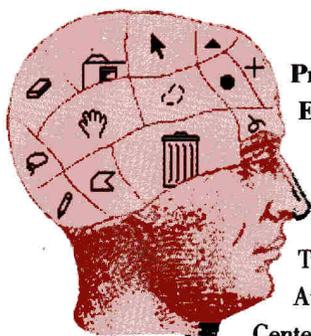
No surcharge for Visa/MC. Add \$5 for FedEx COD Service. Add \$4 for UPS COD Service. Illinois residents add 6.5% sales tax. No sales tax for out of state purchases. All Hardware may be returned within 15 days of receipt with no restocking fee. Shipping charges vary. Prices & availability subject to change. So There!

©1991 OCP Marketing Group

# Your ticket



# to information, innovation and incredible savings.



**Preregister now for MACWORLD Expo/Boston and get \$10 to \$15 off your ticket price.**

The largest Macintosh event in the world will be in Boston Tuesday, August 6 through Friday, August 9, 1991, at the World Trade Center and Bayside Exposition Center.

This year's MACWORLD Expo/Boston will fill you with information on the latest hardware, software, peripherals and services. It will thrill you with innovations that make the Macintosh easier to use. It will stir your imagination with new ways to put your Mac to work.

And that's not all. Return the attached preregistration card with your payment by July 1, and you'll receive incredible savings — \$15 on all Conference Sessions\* and Exhibits (\$65 now, \$80 cash at the door), or \$10 off Exhibits-only admission (\$15 now, \$25 cash at the door).

When you preregister, you'll save time as well as money. We'll send your admission badge early, so you can walk right into MACWORLD Expo, right past the long lines at the door. With 50,000 people expected to attend this world-class event, preregister now and maximize your time on-line at the exhibits, not in line.

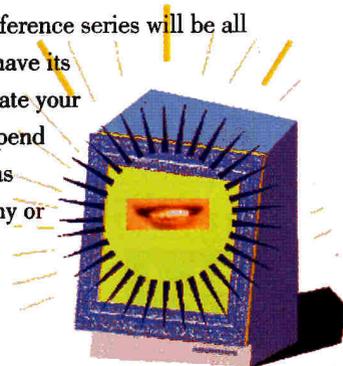
**If you go to one computer show this year, make it MACWORLD Expo.** Whether your Mac is in your office, studio, home, lab or classroom, you'll find something new at MACWORLD Expo. And if you don't have a Mac yet, come and see what you've been missing.

Networking. Spreadsheet analysis. Databases. Education. Research. Word processing. Accounting. Law. CAD-CAM. Forecasting. Design. Publishing. Illustration. Animation. Music. Programming. Entertainment. You'll see it all.

More than 400 companies will be exhibiting in two locations, spread over 300,000 square feet. And for your convenience, there's free shuttle service connecting the World Trade Center and the Bayside Expo Center during show hours.

## **Ten conferences in one.**

This year, MACWORLD Expo/Boston is bigger than ever with ten conferences in one. Each conference series will be all inclusive and have its own focus. Create your own agenda. Spend as much time as you'd like at any or all of them.



## **MACWORLD Expo Boston Show Hours**

### *Exhibits and Conference Programs*

Tuesday, August 6  
10 a.m. to 6 p.m.

Wednesday, August 7  
10 a.m. to 6 p.m.

Thursday, August 8  
10 a.m. to 6 p.m.

Friday, August 9  
10 a.m. to 3 p.m.



PREREGISTER FOR

MACWORLD  
EXPOSITION<sup>®</sup>

B O S T O N

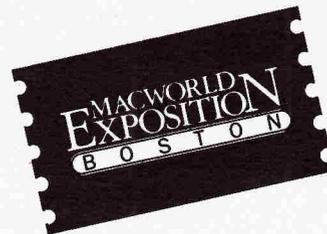
BY JULY 1 AND TAKE

**\$10 - \$15 OFF**

YOUR TICKET PRICE

# Use this ticket to preregister for MACWORLD Expo/Boston by July 1 and save \$10 to \$15.

The largest Macintosh event in the world will be in Boston from Tuesday, August 6 through Friday, August 9 at the World Trade Center and the Bayside Expo Center. And when you preregister by July 1, you'll save time and money.



Please choose your package and fill out the form completely. Incomplete forms will be returned. One form per person; make photocopies for additional people. Please do not staple check to form. Send completed forms to:

**MACWORLD Expo/Boston,  
P.O. Box 4010, Dedham, MA 02026.**

Registration forms received after July 1 will be returned. Purchase orders cannot be accepted. Registration fees are nonrefundable. Call the MACWORLD Expo/Boston Hotline at (617) 361-3941 for more information.

**Please register me for:**

**Package One \$65**

Conference sessions\* and exhibits. Preregister by July 1 (\$80 cash only at the door).

**U.S. Attendees:** You will be mailed your badges on or about July 24. Be sure to check box indicating where badge should be sent. All other badges will be held at the Preregistration Counter at the Bayside Expo Center for pick up beginning Monday, August 5.

**International Attendees:** If you're preregistering from outside the U.S. and want your badge sent to you instead of picking it up at the Bayside Expo Center, check the appropriate box below and add \$45 to your preregistration fee. Fill in your exact street

**Package Two \$15**

Admission to exhibits only. Preregister by July 1 (\$25 cash only at the door).

address (no P.O. boxes) and include your telephone number and country code. We will Federal Express your badge directly to you.

**Bonus for All Attendees:** All registration fees include a 6-month, \$7.50 paid subscription to MACWORLD Magazine. (The basic subscription rate is \$30 for 12 issues.) We'll include a subscription request form in the preregistration package we return to you in the mail.

(Check if applicable.) I'm an International attendee and would like my badge shipped by Federal Express. Enclosed is an additional \$45.

**Please send my registration badge and further information to:**

Please check one:  Home Address  Company Address

Last Name \_\_\_\_\_ First Name \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Country (Other than U.S.) \_\_\_\_\_ Telephone \_\_\_\_\_

If mailing to company address:

Title \_\_\_\_\_

Company \_\_\_\_\_

Check enclosed (make payable to MACWORLD EXPOSITION) Amount \$ \_\_\_\_\_

Master Card  Visa  American Express Amount \$ \_\_\_\_\_

Account Number \_\_\_\_\_ / Expiration Date (include all numbers) \_\_\_\_/\_\_\_\_/\_\_\_\_

Card Holder Signature (Signature necessary to be valid) \_\_\_\_\_

If card holder is other than registrant, please print cardholder's name below:

Last Name \_\_\_\_\_ First Name \_\_\_\_\_

**Cash only at the door. After July 1, you must register at the show.**

**Please check the appropriate information:**

- 01.  Manufacturer (non-computer)
- 02.  Manufacturer (computer industry)
- 03.  Distributor/dealer/retailer/service
- 04.  Business
- 05.  Legal services
- 06.  Communications/publishing
- 07.  Education
- 08.  Government
- 09.  Consultant
- 10.  Transportation
- 11.  Information services
- 12.  Utilities
- 13.  Engineering
- 14.  Health services
- 15.  Other (specify) \_\_\_\_\_

- Your Title**
- 16.  CEO/president/owner
  - 17.  DP/MIS manager
  - 18.  Manager/department head
  - 19.  Network manager
  - 20.  Programmer/analyst
  - 21.  Engineer/research & development
  - 22.  Consultant
  - 23.  Marketing/sales
  - 24.  Educator
  - 25.  Art director/graphics
  - 26.  Editor/writer
  - 27.  Other (specify) \_\_\_\_\_

**Size of Your Organization (number of employees national and international)**

- 28.  Under 50
- 29.  50-99
- 30.  100-499
- 31.  500-999
- 32.  1,000-5,000
- 33.  Over 5,000

**Which personal computer(s) do you own/use?**

- 34.  Macintosh Classic
- 35.  Macintosh Plus
- 36.  Macintosh SE
- 37.  Macintosh II
- 38.  Macintosh
- 39.  Macintosh LC
- 40.  Macintosh IIfx
- 41.  Macintosh IIfx
- 42.  Macintosh IIfx
- 43.  Apple II Series
- 44.  IBM PC (or clone)
- 45.  None
- 46.  Other (specify) \_\_\_\_\_

\*MACWORLD Expo conference sessions are on a first-come, first-served basis with no guaranteed seating and are subject to change without notice. All registration fees are nonrefundable. Do not staple check to form. Send completed form, with check or money order to: MACWORLD Expo, P.O. Box 4010, Dedham, MA 02026.

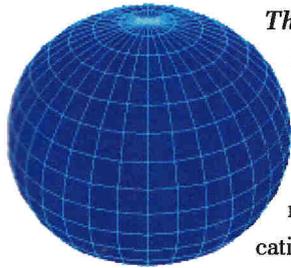
**The Designer Mac.** The latest trends and tips for graphic artists, ad agencies, architects and engineers.



**The Macintosh in Multimedia.** The dazzling developments surrounding the exciting integration of video, sound, animation, and graphics.

**Mac Programmer/Developer Forum.** The place for novice and veteran techies to meet, learn and brainstorm.

**Future Technologies on the Mac.** Cutting edge innovations destined to make the Mac even more powerful and versatile.



**The Mac in Entertainment.** Demonstrations, trends and how-to's for this fascinating new application area.

**The Business/Professional Macintosh.** Solid advice and case studies for corporate, small business, legal and health care users.

**The Mac in Education.** How teachers and administrators — from kindergarten through college — can use the Mac to great advantage.

**Maximizing your Macintosh.** Share experiences, get new ideas and insider's tricks at these advanced insider workshops.

**Getting Started with Mac LC.** A brand-new conference for those who are brand-new to the Mac.

**You-Asked-For-It.** Special requests, newest market developments and the perennial favorite, Mac User Group Extravaganza (MUSE).

**MACWORLD  
EXPOSITION**

**UGWUMP (User Group Welcoming/Unwinding/Meeting Place).** "People networking parlor" for user groups. Share success stories, exchange newsletters and literature. Learn how to start a user group in your area, and more!

**Save 5% to 45% when you fly American Airlines.**

MACWORLD makes it possible to save money getting to and around Boston. American Airlines will automatically discount your fare from 5% to 45% when you call 1-800-433-1790 and ask for Star File #S0580AL.

**Reduced rates for hotels and cars.**

What's more, you'll get a reduced rate when you book your reservation directly at one of the hotels listed here. Just mention you're coming to MACWORLD Expo. But hurry, these rooms fill up fast.

And if you plan to rent a car, you'll receive a great rate from Avis when you tell the reservations operator that you're a MACWORLD Expo attendee. Just call 1-800-331-1600 and ask for Worldwide Discount #B136000.

**Don't miss out on incredible preregistration savings.**

The deadline to receive your preregistration discounts of either \$10 or \$15 is fast approaching. So fill out the attached form today and send it in with your payment (check or credit card). And if the form is missing from this ad, or if you have any other questions, just call the prerecorded MACWORLD Expo information hotline at **617-361-3941.**

**MACWORLD Expo.** For all that's new in the world of Macintosh, it's just the ticket.



**Hotels**

**57 Park Plaza**  
482-1800; \$100/\$110

**Back Bay Hilton**  
236-1100; \$150/\$170

**Boston Marriott Copley**  
236-5800; \$165/\$185

**Charles Hotel**  
864-1200; \$168/\$178

**Colonnade**  
424-7000; \$150/\$170

**Copley Plaza**  
267-5300; \$175/\$195

**Four Seasons**  
338-4400; \$205/\$225

**Guest Quarter Suites**  
783-0090; \$145/\$165

**Hilton at Dedham Place**  
329-7900; \$125/\$135

**Holiday Inn/Boston**  
277-1200; \$110/\$120

**Holiday Inn/  
Government Center**  
742-7630; \$131/\$147

**Holiday Inn/Randolph**  
961-1000; \$87/\$95

**Howard Johnson/South**  
288-3030; \$75/\$85

**Hyatt Regency**  
492-1234; \$165/\$185

**Inn at Children's**  
731-4700; \$99/\$109

**Lafayette Hotel**  
451-2600; \$160/\$180

**Lenox Hotel**  
536-5300; \$145/\$165

**Logan Airport Hilton**  
569-9300; \$135/\$155

**Marriott Long Wharf**  
227-0800; \$215/\$235

**Meridien**  
451-1900; \$185/\$205

**Midtown Hotel**  
262-1000; \$99/\$109

**Omni Parker House**  
227-8600; \$145/\$165

**Park Plaza**  
426-2000; \$120/\$140

**Ritz Carlton**  
536-5700; \$185/\$205

**Royal Sonesta**  
491-3600; \$140/\$140

**Sheraton Boston**  
236-2000; \$135/\$155

**Sheraton Tara  
Braintree**  
848-0600; \$130/\$130

**Tremont House**  
426-1400; \$110/\$125

**Westin Copley**  
262-9600; \$170/\$190

All phone numbers are 617 area code. Rooms are priced for single and double occupancy.

\* All conference sessions are on a first-come, first-served basis with no guaranteed seating. MACWORLD Expo is sponsored by Macworld, the Macintosh™ Magazine, an IDG Communications publication. MACWORLD Exposition is an independent trade show produced by World Expo Corporation, and managed by Mitch Hall Associates and not affiliated with Apple Computer, Inc. MAC and MACINTOSH are trademarks of Apple Computer, Inc. World Expo is an IDG company, the world's leader in information services on information technology.



# SHAREWARE

## Bargains You've Never Dreamed Of

**P**icture this: You decide to visit what you think is a typical software store. As you enter, you see aisle upon aisle of new software for the Apple II, IIGS, and Macintosh. You quickly gather up the latest utilities, games, educational and productivity applications, fonts, and clip art. When you reach the counter, you realize you've picked up more than 100 "must have" programs. "What's this going to cost me?" you think to yourself. It's too late to turn back now. Then you notice that for some reason the salesperson is dividing your software into two large stacks. When he finishes adding up your purchases, you're pleasantly surprised to see that you're paying only \$3 to \$5 for each program. The salesperson explains that the store charges only to recoup expenses for disk duplication. He goes on to tell you that all software in the first stack is free; software in the second stack is yours to try for a few weeks. If you like the software, he says, just send a check to the author of the program. You walk out of the store confused. Free software? Disks that cost \$5? Buying on the honor system? Then you gaze up at the sign and see that this isn't a typical computer store at all — it's the Shareware Solutions Software Supermarket.

If this scenario sounds implausible, welcome to the wonderful world of shareware and freeware. Thousands of high-quality programs are distributed this way. Shareware and freeware represent some of the best software bargains available — viable alternatives to software you buy in a computer store or through the mail. Programmers who have no financial backing or interest in marketing release their products in this try-before-you-buy fashion. If you like the stuff, you must send the specified fee to the author. (The programs are copyrighted.) After paying the shareware fee, you're entitled to upgrades and technical support.

The Shareware Solutions Software Supermarket is only

mythical, of course, so savvy shoppers have to be a bit more resourceful tracking down bargains. In general, you have three alternatives for finding shareware: user groups, on-line services, and mail-order catalogues.

### USING USER GROUPS

Today more than 1300 Apple user groups exist, and virtually all of them maintain a large library of low-cost software. Chances are there's an Apple computer club near you. You can find out by calling Apple's **User Group Locator** service at (800) 538-9696, extension 500.

Joining your local user group is generally the least-expensive way to obtain public-domain or shareware



software. Some user groups will let you copy software freely if you supply the disks. Others may charge a few dollars to cover expenses, with the proceeds typically going toward the group's operating expenses. Many clubs also operate electronic bulletin-board systems (BBSes) to which you can connect if you own a modem and telecommunications software, and most maintain an on-line electronic library, so that you can transfer files from the user group's computer system to your machine by a procedure called *downloading*. It's the quickest way to acquire public-domain or shareware software; you can download a relatively small file in a matter of minutes, and a full 800K disk usually takes less than an hour.

What do you do if you don't own a modem and there's no local Apple user group? No problem — a number of Apple clubs cater to people in rural or remote locations. Some of the larger organizations are the **Boston Computer Society** and **Washington Apple Pi**, with separate special-interest groups (*SIGs*) for Apple II and Macintosh users; the **National AppleWorks User Group** (NAUG) and the **Big Red Computer Club** (BRCC), geared specifically toward the Apple II; and the **Berkeley Macintosh User Group** (BMUG) and **New York Macintosh User Group** (NYMUG).

### MODEM MADNESS

Commercial on-line services, such as **America Online**, **GEnie**, and **CompuServe**, maintain huge areas for information exchange, called *forums* or *roundtables*, devoted to the Apple II and the Mac. In addition to providing subscribers with features such as up-to-the-minute news and the ability to make airline reservations from the comfort of your own computer keyboard, these areas are also devoted to sharing information and software among members. All three of these international networks let members discuss computer-related topics within the message system, access direct technical support from third-party hardware and software companies, and browse through on-line electronic libraries. The size of these collections is enormous — some contain up to 10,000 files available for downloading.

If there's an Apple-oriented BBS in your area, you'll avoid the expense of long-

distance dialing. If you don't have local access to a free BBS, you can still benefit from on-line software libraries without incurring outrageous long-distance charges. The nation is crisscrossed by several long-distance telephone systems designed to be accessed only by computers equipped with modems. Two such systems are **Tymnet** and **Telenet**. You pay long-distance charges only for the call to the nearest city hosting the Tymnet or Telenet number; if you have such a service in your own town or city, you don't pay long-distance fees at all, although you must still pay access charges for the on-line services to which the system connects you. (Tymnet and Telenet work invisibly: The phone number the on-line service assigns you includes the Tymnet or Telenet hookup.) So although using on-line networks is the quickest way to get software, it's also among the more expensive, owing to membership and connect-time fees.

### MADE TO ORDER

Still other sources of quality public-domain and shareware programs are mail-order houses specializing in this type of software. Because most shareware authors state explicitly that no one can sell their software in the traditional sense, firms such as the **Public Domain Exchange** (Apple II and Mac), **The Diskette Gazette Library** (Mac only), **EduCorp** (Mac only), **Christella Enterprises** (Apple II only), and **Computer Budget Shopper** (Apple II only) charge only a small disk-duplication fee. Because many of these companies publish attractive catalogues, pay to advertise, and provide technical-support phone lines, they do ask a little more than nonprofit user groups, but not much more.

If your appetite for public-domain and shareware software borders on the insatiable, you'll be pleased to know that the same compact-disc technology that brought us digital-quality music has been adopted by the computer industry. (See "CD-ROM Comes of Age," May 1991, p. 44.) A CD can store more than 500 megabytes of software: That's the equivalent of 625 3.5-inch disks or 3500 5.25-inch disks on a single CD.

At the 1990 National Apple User Group Convention, two program-packed CDs were offered for \$80 each — one for the

Apple II, the other for the Mac. Called **GEM** (*Generous Efforts of Many*), these two discs are packed with thousands of public-domain and shareware applications, AppleWorks templates and HyperStudio stacks (II only), fonts, graphics, clip art, animations, utilities, and demos. The Apple II GEM CD is one of only two CDs available for that machine. You'll need a CD player with a SCSI connection and an Apple II SCSI interface card to access this version. In addition, the large Mac user groups — NYMUG, BMUG, and BCS — have all produced CDs. In fact, the discs have become so popular that BCS and BMUG release yearly updates. To give you an idea of just how comprehensive these discs are, the BCS CD contains every version of every program ever entered into the BCS/Mac library. It comes with a HyperCard "front end" to make searching relatively simple. The only caveat is that CDs are notoriously slow at data retrieval. But when you can get thousands of programs for pennies apiece, who cares?

Several companies specialize in producing Mac CDs. Among them is **Wayzata Technology**, which is now distributing the GEM discs for \$119 each and has compiled **CD Fun House**, a \$65 disc with more than 300 games. **EduCorp** is also prominent in this field; it produces a \$59.95 disc filled with HyperCard stacks and a CD simply named **5.0**, containing more than 11,000 files of games, HyperCard stacks, graphics, clip art, and applications.

### PAY THE FIDDLER

Shareware is a method of distribution unique to the software industry. What's great about shareware is that you don't get stuck paying for software that's not good or useful to you. To whet your appetite, we've put together a listing of some of the best public-domain and shareware programs for the Apple IIe/c, the IIs, and the Mac. The information is designed to acquaint you with the kinds of products available. It's by no means a complete survey; it's merely an overview.

Contact your local user group, buy a modem, or send away for a catalogue from one of the mail-order public-domain houses. Chances are good you'll find what you're looking for.

# APPLE IIe/IIc

## MACRO LIBRARY INTEGRATOR

Developed by Ira Lieberman, Macro Library Integrator (MLI) is a complete set of nearly 120 shortcuts for use with AppleWorks 3.0 and Beagle Bros' TimeOut UltraMacros 3.1. Included are macros to control cursor movement, document format, find and replace functions, text highlighting, deletion and restoration, printing, TimeOut SuperFonts features, and subroutines. Complete documentation is included with the files, and each macro has a purpose and comment area, describing the shortcut and how to use it.

## APPLEWORKS PAYROLL CALCULATOR

Developed by F. Dean Baird, the spreadsheet template files on the double-sided AppleWorks Payroll Calculator (APC) disk let you compute and post recurring payroll expenses for a small business (up to 25 employees). Functions include gross earnings, FICA (Social Security) taxes, FIT (federal income tax) withholding, two user-defined withholding amounts (deductions 3 and 4), total payroll expense per period (gross earnings plus employer FICA), and FTD (federal tax deposit) coupon amount (FICA multiplied by 2, plus FIT). A sample payroll file and instructions come with the program. The author requests a \$25 shareware fee if you use APC in a business setting. If you use it at home or in the classroom, the templates are freeware. AppleWorks 3.0 is required.

## APPLEWORKS CHECKWORKS

The spreadsheet templates on the two-sided AppleWorks CheckWorks disk are designed for version 3.0 and UltraMacros 3.1. It's a complete check-printing and -management system that works entirely within AppleWorks. The program assumes little or no knowledge of UltraMacros, and contains detailed step-by-step instructions on setting up the system, compiling the macros, and creating and working with task files. The flip side even includes an annotated set of macros, with every line of instructions described and illustrated. The author, Dan Crutcher, requests a \$10 shareware registration fee.

## SCHOLASTIC PRACTICE

Scholastic Practice, an innovative shareware educational program (no set fee specified), was written by Kyle Hasselbacher, a high-school student, for use by other students. It provides a learning environment for more than a dozen subject areas, including literature, biology, history, government, chemistry, grammar, geometry, earth science, computer science, physics, and math, plus a miscellaneous area containing questions in art, religion, and geography. A total of 1420 questions are stored on disk, loaded in groups of 12; each time you run the program, the questions appear in a different, random order. If your answer is incorrect, the software displays the right response. The program keeps track of correct and incorrect answers, and supplies a percentage at the conclusion of each session.

## YO YO DUCK

Yo Yo Duck, by Michael Coffey, is a \$5 shareware program that every Apple II user should have (although you'll hope you never need it): It provides a number of diagnostic tests to locate your system's hardware problems, including monitor, disk drives, printer, joystick, speaker, keyboard, RAM and ROM, and RAM-expansion cards. Detailed instructions and a troubleshooting guide come with the software.

## DB MASTER 5.0

For many years, DB Master 5.0, by Barney Stone of Stone Edge Technology, was a commercial program that many users considered the best and most powerful database-management system available for the Apple II series. It's now a \$45 shareware program. A 58-page introductory tutorial is included on disk to help you get started creating your personalized database record-keeping system. Each DB Master database file you create can be up to 10 megabytes in size and can span numerous disks, overcoming many of the limitations imposed by other database systems. DB Master allows for maximum flexibility in its report-generation module, so that you can present information in any number of ways. DB Master requires a 128K enhanced IIe, IIc, IIc Plus, or IIGs with two 5.25-inch drives, a

single 3.5-inch drive, or a hard disk. If you've outgrown the AppleWorks database module, or simply want the most powerful flat-file database system available for the Apple II, DB Master will meet all your requirements.

## COMMAND.COM

Do you use an IBM at work and wish you knew the Apple II as well as you do MS-DOS? Are you interested in learning about MS-DOS, but don't want to purchase an IBM or compatible? If you answered yes to either question, take a look at Command.Com, a \$45 shareware program by David Sugar and Les Kay. Command.Com is an MS-DOS work-alike environment that insulates users from the ProDOS interface, and replaces it with a shell environment that works just like MS-DOS. With extensive on-line help readily available, Command.Com will be an MS-DOS education for some users. With more than 100 utilities included, those already familiar with MS-DOS will have some powerful resources at



their fingertips. For those of you who telecommunicate, the included Xterm terminal program will provide you with lots of features not commonly found in other Apple II applications of that type. Although MS-DOS may not be the most user-friendly operating system, it's the one most widely used, and Command.Com will teach you all about it.

## SUNRAYCER SERIES

Since 1987, an annual "Solar Challenge" auto race has captured the world's imagination, as all cars entered in the race are 100 percent powered by the rays of the sun. Each year, General Motors enters its sleek SunRaycer, and



to commemorate the annual event, the company sponsored the development of this three-disk series that teaches you all about solar energy and the harnessing of its power to fuel automobiles. Using a combination of interactive text, music, animation, and simulations, the SunRaycer series is among the best public-domain educational programs in existence.

## NEWTON'S APPLE

Developed in association with the long-running PBS series of the same name, Newton's Apple is a series of educational programs that use real-world examples to teach common scientific principles. Specifically geared toward elementary-school students, Newton's Apple lets kids learn about compression and tension, for example, by studying how bridges are built. Other modules cover cocaine and the dangers of drug abuse, probability, tooth decay and dental hygiene, and neon lighting. Available on five double-sided 5.25-inch disks or a single 3.5-inch disk, the Newton's Apple series is a wonderful example of how computers can enhance classroom learning.

## FINANCIAL WIZARD

Financial Wizard, by Brian Winn, is a \$20 shareware program that helps you figure amortization, depreciation, deposits, interest, investments, and loans. Each module can perform up to four different financial analyses. Financial Wizard operates in some ways like a graphics-oriented spreadsheet; you enter variables and figures, and the program prints either summary or detailed reports and tables.

## UTILITIES FROM KARL BUNKER

Karl Bunker's freeware programs may have funny names, but the programs themselves are no laughing matter:

**\*Sneeze** is a sophisticated ProDOS-based program launcher, letting you navigate easily through disks, directories, and subdirectories of Applesoft BASIC programs, system files, and GS/OS applications. It serves as a text-file reader, and can display on screen or print any ASCII file or AppleWorks word-processing document.

**\*Many authors use Dogpaw**, a program for displaying and or printing text files, to present the on-screen documentation you see when you first run a public-domain disk. It works with either the 40- or 80-column screen and

lets you page forward and backward. A word-search option is also included.

## IIGIF

The Graphic Interchange Format (GIF) standard was developed by CompuServe to let people with different computer types use the same graphics. Although there are no 8-bit Apple II programs that convert hi-res or double-hi-res images to GIF format, IIGIF, a freeware program from Jason Harper, lets Apple II users decode, view, and save GIF graphics created on other computers, including Macs, Amigas, IBM PCs, and other incompatible systems.

## AGATE

Agate, from Tony Marques, is a freeware program that lets Apple II users view double-hi-res animated ANSI graphics on line. It's not a full-featured terminal program; add it to your collection only if you call BBSes that operate on MS-DOS computer systems. If you do, Agate will double your pleasure. The program requires an enhanced 128K IIe, IIc, IIc Plus, or IIGS and a Hayes-compatible modem.

## SHRINKIT

At the December 1990 AppleFest in Long Beach, California, Apple Computer instituted the first annual Apple II Achievement Awards, and chose Andy Nicholas as the recipient of the prize for Best Shareware Program of the year for his freeware utility ShrinkIt. Since its release, Shrink It has become the most widely used file-compression program available, and is now the standard in its field for the Apple II. File compression is most useful in telecommunications, as it lets you transfer files from computer to computer in smaller form — down to 50 percent of their original size — therefore saving time. ShrinkIt can even decompress files created with some of the popular compression programs on the market for other computer systems, making it possible to download text files generated on incompatible machines. It's also a convenient method of storing little-used programs to disk. Separate versions exist for II Plus, IIe/IIc, and IIGS computers.

## SOUTH PACIFIC QUEST

South Pacific Quest is a fast-action, joystick-controlled freeware arcade game from Peter Ward. The scenario pits you against the evil

Futz empire on a desert island in the South Pacific. Your goal is simple: Take over all four bases on the island, capture the flags, and eject the intruders. It's a cross between Super Mario Brothers and Lode Runner — you'll be running up and down ladders in hot pursuit of the Futzers, and ducking their deadly fireballs and other instruments of mayhem. It doesn't take much to get killed off, so you're sure to come back for more and more pleasurable frustration month after month.

## APPLE CONFERENCE TERMINAL

If you're thinking of purchasing a modem and subscribing to one of the on-line information networks, check out Apple Conference Terminal (ACT), a full-featured freeware telecommunications program by Bob Garth. ACT uses standard Xmodem and Ymodem protocols to transfer files, but also has a number of features not included in even some of the more expensive programs available commercially. Although you can call local BBSes via ACT, the program excels when you use it to connect to large networks running on mainframe computers, such as GENie. A popular feature of large multi-user systems such as GENie is the "chat," or conferencing (or "CB"), function: People from around the country can meet in a particular on-line area and hold the equivalent of a conference call. Whatever you type on your keyboard is seen by everyone in attendance, and vice versa. ACT has a conference module built in. In addition, a game module lets you play long-distance chess and reversi in colorful double-hi-res graphics screens with others who also use ACT. ACT is in a class by itself.

## PROTREE ELITE

If the idea of public-domain and shareware programs excites you, you may want to consider setting up a BBS of your own. Thanks again to Bob Garth, you can now do just that — elegantly — with his ProTree Elite freeware BBS program. It's flexible, and includes built-in support for on-line games. It supports protocol uploads and downloads, provides all users with electronic mailboxes, and sets up numerous message sections. Once you've established your own Elite BBS system, you can get technical support from Bob Garth via his own ProTree Roundtable on GENie, accessible through the A2 Roundtable.

# APPLE IIGS

## ANISHOW

Anishow is a freeware gem from Jason Harper, the author of the now-commercial GS program SuperConvert. Anishow displays animation files created with Mediagenic's Paintworks Plus or Paintworks Gold. A number of dazzling public-domain animation files are available, including an Escher waterfall flowing into infinity, a *Star Trek* clip showing the *Enterprise* warping out of orbit, and a file called *Chasers*, which shows two paper airplanes flying through an ancient Greek temple.

## GREENSTONE GAMES

The name Brian Greenstone is synonymous with high-quality shareware games for the Apple IIGS. Greenstone, author of the commercially available hit game *Xenocide*, offers a whole series of \$5 and \$10 shareware games, and every one of them is fantastic:

\***Grackle** gives you amusing shoot-'em-up arcade fun, in which your goal is to drop attacking birds before they drop on you.

\***Copy Killers** offers fast action within a tight joystick-controlled maze game.

\***Quadronome** is a three-dimensional one- or two-player game that's similar to racquetball.

\***Senseless Violence I** is a variation of the old classic Frogger.

\***Senseless Violence II** gives you outer-space navigation on your own small screen.

\***Cosmocade** is two games in one: **Naxos**, similar to those old-time shooting galleries found at amusement parks, and **Journey to Calibus**, sort of a top-down-view Nintendo shoot-'em-up.

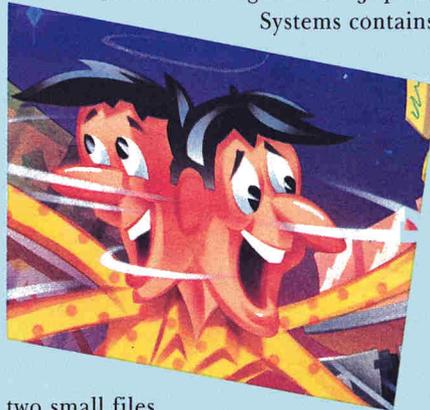
## CO-PILOT

If you're a member of CompuServe or GEnie, you can save a lot of time and money with Ken Gluckman's \$25 shareware program Co-Pilot. As a "front end" for the commercially available telecommunications programs Talk Is Cheap and Point-to-Point, Co-Pilot serves as a super-hi-res, mouse-driven, off-line message processor. Co-Pilot lets you log on to either service, retrieve electronic mail and messages from forums, download software programs, and then log off, all in the shortest time possible. You read all messages off line, when

you're no longer connected to the network and no longer paying connect charges.

## FINDER VIEW

Wouldn't it be nice to just double-click on a GS graphic and see it displayed? With Finder View, that's exactly what happens. This \$5 shareware gem from Jupiter Systems contains



two small files — one that goes into your Icon folder, and one you tuck into your System folder. Do away with the bother of loading graphics into a paint program just to view them.

## FIND FILE

If you use a high-capacity hard-disk drive, chances are you're always trying to remember exactly where you stored a particular file or program. With Find File, a freeware new desk accessory from Stephen Chick, you'll never have to search again. Just access *Find File* from the *Apple* pull-down menu, and enter a full or partial filename; Find File will display, in a matter of seconds, every file on your hard drive containing that sequence. Indispensable!

## MILESTONES 2000

Dr. Ken Franklin has devised a wonderful way for you to play a fabulous, highly addicting GS game while helping to solve one of society's most pressing problems. Unlike shareware, the \$15 "ReliefWare" fee for *Milestones 2000* is donated to a nonprofit organization working to feed the hungry and care for the homeless. *Milestones* is based on the classic French card game *Milles Borne*. It's you versus the computer in a mouse-driven car race. The first to drive 2000 kilometers wins. It only sounds easy — the

computer throws obstacle after obstacle in your path, including flat tires, speed limits, and empty gas tanks. Packed with more than 500K of amusing digitized sounds, *Milestones* is one of the finest GS games available.

## PHOTONIX

Written by the French Free Tools Association (FTA), *Photonix 1.46* is a fast disk-copy program that all GS owners should have in their software collections. For a \$20 shareware fee, it comes complete with animation and rock 'n' roll music. *Photonix* copies 3.5-inch floppies in one pass, so disk swapping becomes a thing of the past. One other extra is that if you're copying from a disk with an incorrect interleave ratio, *Photonix* is the only program available that will change the interleave while copying to the target disk. Previously, FTA's claims to fame were its programs *Nucleus* and *Modulae*, dazzling demonstrations of the best the GS has to offer.

## SHOWPIC

If you like GS graphics, *ShowPic* is an indispensable freeware new desk accessory. Written originally by Bruce (Lunatic) Mendez, recent versions have been enhanced by Dave Leffler with the help of Jonah Stich. *ShowPic* lets you view any type of super-hi-res GS graphic, and save it in a couple of different formats. In addition to displaying standard GS graphics files created with paint programs, *ShowPic* also works with Print Shop GS graphics, GIF graphics, and a special type of graphic containing 3200 different colors. You can convert color graphics to gray scale, 320-mode images to 640 mode, and Print Shop GS graphics to 640-mode clip art for HyperCard GS, HyperStudio, or AppleWorks GS.

## UTILITYWORKS

Written by George Wilde, *UtilityWorks* is a \$20 shareware program that includes just about every utility a GS owner could want. It displays any one of a variety of file types, from ASCII text to AppleWorks word processing to Paintworks Gold animation to super-hi-res graphics to Applesoft BASIC. A built-in text editor lets you work on AppleWorks or other



## SHAREWARE

word-processing documents. Utility Works also displays all fonts in your system, and lets you load desk accessories "on the fly." It catalogs any directory and creates a database of your files. It backs up and restores your hard-disk drive. It purges your computer's RAM in low-memory situations and includes a find function to locate files stored in subdirectories.

### GRAPHICS AND SOUND FROM PETER BRINKLEY

Peter Brinkley is obviously fascinated by scientific discovery and by the GS' ability to produce beautiful graphics and music. He has produced a series of stunning freeware programs that take advantage of the machine's most prominent attributes:

\***MatheMusic** simulates two large pendulums swinging in unique orbits, with accompanying musical interpretation of the constantly changing kinetic images.

\***PlasmaLab** includes five fractal-like cellular-automata generation programs that produce graphics you can stare at in wonder for hours.

\***PhotoLife** produces constantly changing graphics displays with any GS image you designate as background.

\***Powerplay** contains four games: **Four Play** and **Gridlock**, two Tetris imitations; **Pig N Bull**, a number-guessing challenge; and **Tron**, an arcade strategy theme that has you trying to box in your opponent.

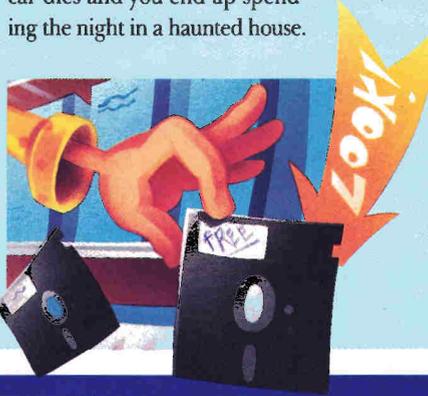
### TRAVELWARE

Created by Duane Gossett, a fifth-grade social-studies teacher in Tennessee, Travelware is a series of first-rate HyperStudio stacks:

\***Colonial Experience** is a simulated visit to Williamsburg, capital of Virginia from 1699 to 1780. Complete with maps and scanned photographs, Gossett's two-disk tour of Williamsburg is so thorough it's the next best thing to being there. Colonial-era music is included.

\***A Capital Experience** is a simulated trip to Washington, with a few twists and turns along the way just for fun. Actual photographs, imported with a Quickie hand-held scanner, show you the Capitol, the Washington Monument, the Lincoln Monument, and many other popular tourist attractions. Detailed maps are included.

\***Mr. Jefferson's Country** is a simulated tour of Monticello, the third president's Virginia estate. Humorous touches enliven this stack: Before you ever arrive at Monticello, for instance, your car dies and you end up spending the night in a haunted house.



\***The Civil War** contains a detailed summary of the causes of the War Between the States and introduces you to the political and military leaders on both sides. You'll get a glimpse into what life was like during that period, and learn about major battles, the end of the war, and the assassination of Lincoln. Scanned photographs and digitized battle sounds are included.

All four programs are distributed by the Big Red Computer Club. The tours of Washington and Williamsburg are freeware; the trip to Monticello and the Civil War stack carry a shareware fee of \$5 each. All stacks come with HyperStudio's run-time module.

### WRITE IT

Write It, from Apple employee Chris Haun, is an effective, yet simple, word-processor new desk accessory. It's shareware, yet no specified fee is suggested. This is real honor-system software, as you pay the author what you think the program is worth.

You can use Write It within GS/OS applications such as AppleWorks GS, HyperCard GS, and HyperStudio. Although nowhere near as full-featured as a standard stand-alone word processor, Write It is perfect for reading documentation for shareware or freeware programs. It excels particularly when you want to cut text from one document and paste it into another, as it supports and works with the standard GS clipboard.

## MACINTOSH

### BILLIARD PARLOUR

Freeware from R. Crandall, Billiard Parlour puts the game right on your Mac screen, with snooker, 8/9 ball, and many more variations. With great graphics and lots of options, it'll challenge even the best pool sharks out there!

### BIPLANE

BiPlane 1.02 is a full-featured \$40 shareware spreadsheet-modeling program from Alan Porter, with the ability to execute spreadsheets and cut and paste the results instantly into your word processor or graphics product. BiPlane worksheets are compatible with those developed with other spreadsheet programs and saved in SYLK (Mac text-file) format.

### COMPACT PRO

With the right utility you can reduce the sizes of many of your files by compressing the data within them, and that's just what Compact Pro, a \$25 shareware utility from Bill Goodman, does. Making files smaller can free up valuable space on your hard disk and reduce the number of floppies you'll need for backups. If you transfer files via modem, you can save time and money by compressing them first.

### COMPUGRAPH

CompuGraph, a \$40 shareware program from Klex Software, is a three-dimensional conceptual-design system — an electronic modeling system sophisticated enough for

engineers and designers to use to illustrate complex wireframe images, yet simple and versatile enough for artists to use to manipulate images into masterpieces. The program provides multidimensional spatial design features that simulate those found on industry's high-end professional graphics systems — among them, dynamic rotation and perspective in real time, animation capability, floating-point accuracy, and compatibility with all Mac applications that can read MacPaint or PICT files.

### CONVERSION DA

Version 1.5.2 of the freeware desk accessory Conversion DA from Rick Johnson calculates equivalents for various English and metric

units, including length, weight, temperature, dry and liquid measures, fractions and decimals, numerics, angles, model-railroad scales, area, and more.

### DISINFECTANT

Disinfectant, a public-domain utility by John Norstad and a supporting cast of dozens, is the one program all Mac owners should have. It's quite possibly the best virus-detection and -eradication application available for the Macintosh at any price — and it's free! This beauty does a very thorough search-and-destroy of all ten known Mac viruses.

### FEDIT

Fedit Plus, a commercial program that lets you inspect and edit raw data within a file, evolved from Fedit 3.1, a shareware offering from John Mitchell. It's a disk and file editor that will let you take a look at the inner workings of a computer program. If the hacker spirit lives within you, Fedit's for you.

### FILEMASTER

FileMaster is one utility the power user is lost without. A \$25 shareware gem from Alexander Falk, it's a desk-accessory version of Apple's ResEdit, letting you modify the attributes of a file without launching the larger program. It's great for changing file types, displaying files, searching for and deleting files, and modifying Finder information and flags.

### FLOPPY FIXER

Floppy Fixer 1.0 is a utility for recovering files from damaged Mac disks. It runs on a Mac 512, 512E, Plus, SE, or II, and requires at least two disk drives (one of which can be a hard disk). The author, Frank Beatrous, requests that you donate the \$20 shareware fee directly to the Lupus Foundation of America.

### GIF CONVERTER

GIF Converter 2.2d3 is a marvelous \$40 shareware graphics package from Kevin A. Mitchell. Thanks to this handy utility, Mac users can access graphics created on Apple IIGs, Amiga, IBM, and other incompatible computer systems.

### IMAGE

Image 1.33, a freeware utility by Wayne Rasband for the Mac II family (8-bit display required), lets you edit digitizations, including

gray-scale scans, before output on a laser printer. It offers many of the same capabilities you'll find in expensive graphics applications.

### INIT CDEV

Init Cdev 3.0, a freeware INIT Manager by John Rotenstein, comes to the rescue — now you can keep a whole lot of INIT and cdev files in your System folder without having to remove them whenever their services aren't required.

### McSINK

McSink, a \$45 word-processor desk accessory from Dave McWherter, got its name from the proverbial kitchen sink: It includes almost every feature you can think of. You can access it from the Finder or within an application program; it includes simultaneous open windows plus utilities for cleaning up text files created on other computers, adding or stripping linefeeds, and many more operations.

### MULTISPOOL

Multispool, a freeware utility by Giuseppe Carnevale, lets you print a document and work on your computer at the same time. You can also configure the spooling parameters: size, priorities, single- or multi-user, and network-friendly.

### STUFFIT CLASSIC

StuffIt, a \$25 shareware utility program by Raymond Lau, is the standard for Mac archiving and compression. Compact Pro may be faster and more efficient, but StuffIt was the first Mac compression utility to gain wide acceptance and is used to compress virtually every file on every Mac BBS or network.

### SYSTEM ERRORS DA

System Errors DA, a freeware desk accessory by Bill Steinberg, helps you make sense of the ID number when your system crashes. It's handy for tracking down those nagging system problems that plague every user occasionally.

### ZTERM

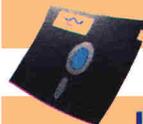
ZTerm is a full-featured \$30 shareware telecommunications program by Dave Alverson. It's elegant and easy to use, yet powerful. ZTerm supports the popular Xmodem, Ymodem, and Zmodem protocol transfers, and offers VT100 terminal emulation and a scrollbar buffer for rereading previous material. □

## MAIL-ORDER HOUSES

**Computer Budget Shopper**  
2203 Park Ave. #20  
Cheyenne,  
WY 82007

**Christella Enterprises**  
P.O. Box 483  
St. Clair Shores,  
MI 48080

**Diskette Gazette Library**  
International Datawares  
2278 Trade Zone Blvd.  
San Jose,  
CA 95131  
(408) 262-6660



**EduCorp Computer Services**  
7434 Trade St.  
San Diego, CA  
92121-2410  
(619) 536-9999

**Public Domain Exchange**  
2078C Walsh Ave.  
Dept. 931  
Santa Clara,  
CA 95050  
(408) 496-0624  
\$20/year membership

**Wayzata Technology**  
16221 Main Ave.  
P.O. Box 87  
Prior Lake,  
MN 55372  
(612) 447-7321

## USER GROUPS

**Berkeley Macintosh User Group**  
1442A Walnut St.  
#62  
Berkeley, CA  
94709-1496  
(415) 549-2684  
\$40/year

**Big Red Computer Club**  
423 Norfolk Ave.  
Norfolk, NE 68701  
(402) 379-4680  
\$19.95/year membership

**Boston Computer Society**  
One Kendall Square  
Cambridge,  
MA 02139  
(617) 252-0600  
\$39/year,  
\$49/year family,  
\$28/year students, seniors

**National AppleWorks User Group**  
P.O. Box 87453  
Canton, MI 48187

(313) 454-1115  
\$29/year membership

**New York Macintosh User Group**  
688 Sixth Ave.  
New York,  
NY 10010  
(212) 691-0496  
\$40/year,  
\$60/year family,  
\$100/year corporate,  
\$20/year student

**User Group Locator**  
Apple Computer  
(800) 538-9696  
x500

**Washington Apple Pi**  
7910 Woodmont Ave.  
#910  
Bethesda,  
MD 20814  
(301) 654-8060  
\$39 new,  
\$32/year renewal,  
\$6 BBS option

## INFORMATION SERVICES

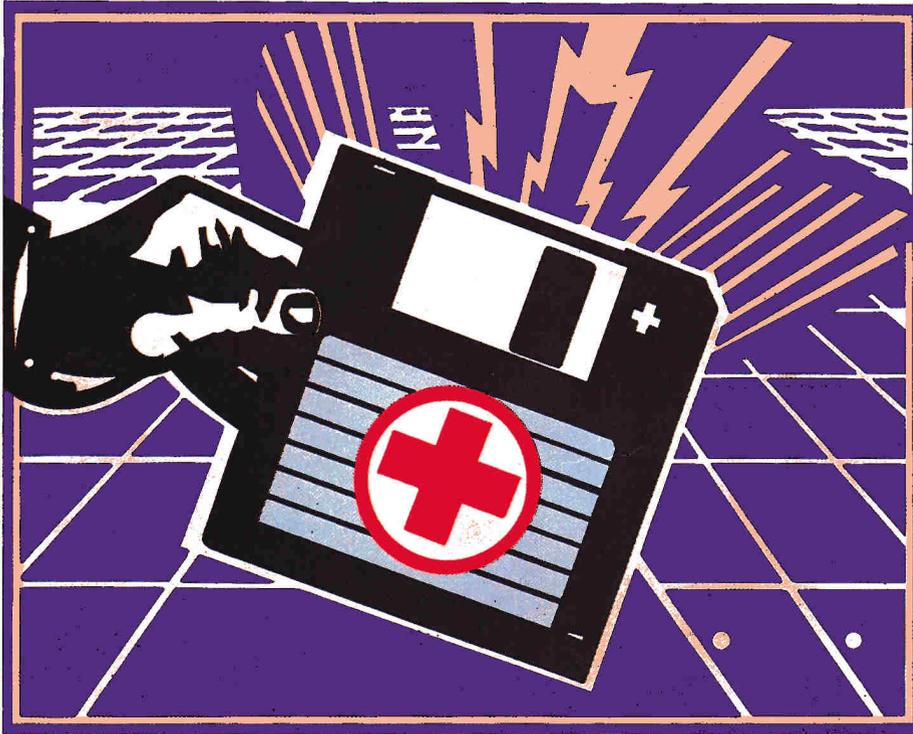
**America Online**  
Quantum Computer Services  
8619 Westwood Center Drive  
Vienna, VA 22180  
(800) 227-6364  
\$5.95/month membership  
\$5-\$10/hour connect time

**CompuServe**  
P.O. Box 20212  
Columbus,  
OH 43220  
(800) 848-8199

\$39.95 membership  
\$6-\$12.50/hour connect time

**Genie**  
General Electric Information Services  
401 North Washington St.  
Rockville,  
MD 20850  
(800) 638-9636  
\$29.95 membership  
\$5-\$18/hour connect time

# SURVIVING THE CRASH



Cure for the hard-disk blues: An ounce of prevention plus some simple repair strategies will keep your data in good working order.

By Gary R. Morrison and Walker Archer

**T**here's an old computer adage that goes, "There are two kinds of hard-drive users: those who have experienced a disk crash, and those who are about to experience a disk crash." Too fatalistic a view, to be sure, but it does point up the importance of being prepared. After all, hard drives are mechanical objects and can fail at the most inconvenient moment.

Because your hard drive's innards are put together in a "clean room" environment and sealed to avoid contamination by dust, there's virtually no physical or electronic maintenance you can perform to keep your drive running. You can, however, practice some preventive medicine on your data — and, with the right utility software, maybe even resuscitate a file that's been corrupted by a hard drive gone astray.

## BACK UP A MOMENT

You've heard it before: Whether you're working with a hard drive or floppies, if your data's

important to you, save it again on another disk. The only safe way to use a disk drive — particularly a hard-disk drive, with which you stand to lose megabytes' worth of information — is to "back it up" (copy everything to a safe place) on a regular basis.

Just how often is that? Ask yourself how many days of work you can afford to lose. Some people copy every file every time they open it; others use special backup utilities once a day to copy a whole group of files at the same time; others need to do it just once a week. If you use your computer primarily for playing games, you might want to back up only on a monthly basis, because most of this kind of information would still exist on the original disks that came in the package. If you use your hard drive in a small business that generates a large amount of important data, however, you might want to back up your orders and books even twice a day.

It's also a good idea to keep at least two sets of disks as backups. A tradition among mainframe users is to keep at least three copies, called "son," "father," and "grandfather" backups according

to their ages. Why so many? If your hard drive crashes while you're copying over an old backup file, you may be left with no backup at all — some or all of the backup data would be gone along with the original. If you keep at least two separate sets of backups and rotate the sets of disks you use, you'll always have at least one good set of backups. (Just keep track of which set contains the most up-to-date information.)

If copying your data each time you open a file is inconvenient, get a good backup utility program and learn how to use it. (Examples include special modules in **Copy II Plus**, **EasyDrive**, and **ProSel** for the Apple II, **TimeOut FileMaster** for the Apple II running AppleWorks, and **Copy II Mac**, **Fastback II**, **HFS Backup**, **Redux**, and **Retrospect** for the Mac.) But know what you're buying: There are two primary backup strategies — *image* and *incremental* — and the difference is fundamental.

Image-backup programs simply copy every hard-disk block containing data, no matter what file it belongs to. It saves an entire picture of the hard drive fast, but in a format that's completely unusable from the backup medium — floppy disks or tape. When you "restore" the backup, the image program puts the blocks back on the hard disk in exactly the same order in which it found them.

An incremental-backup program copies files one at a time, a slower method. Although such programs can perform "full" backups — copy all files on your drive — you'll more likely use it to copy only the files that have changed since the last backup. And how does the backup program know which ones to copy? Your computer's operating system sets a *backup flag* — an extra bit of information — for each file whenever it's written to disk; a backup program scans through your hard drive's directory in search of files with their flags turned on. After the backup is finished, the program turns the flag off in the directory.

### WHEN GOOD DRIVES GO BAD

Short of crashing, what else can go wrong with your hard drive? Sometimes the damage isn't physical destruction of your data — it may get scrambled

instead. Special utilities called *file-recovery* programs can often restore order to corrupted data and "bad blocks" — areas of the disk that won't accept data your application program tries to save to them or areas from which you can't retrieve your data when you want it.

Running a file-recovery program is a little risky in itself. Because of what it has to do to fulfill its function — altering information on disk one bit at a time, when it's easy to make inadvertent changes — it may end up jumbling your data more or even destroying it. In most cases, though, you'll retrieve your information as intended. It is a good idea to run one of these programs in test mode occasionally just to make sure everything is operating smoothly on your drive.

Examples of file-recovery utilities include **RepairWorks** and **Change-a-File** (for AppleWorks word-processor and database files) and modules within **ProSel** and **Copy II Plus** for the Apple II; if you own a Mac, check out **SUM II**, **Complete Undelete**, **1stAid Kit**, or **Sector Collector**, which attempts to head at least part of the problem off at the pass by rounding up your disk's questionable areas into a file of their own so that your application won't be able to access them for storage.

### GET IT TOGETHER

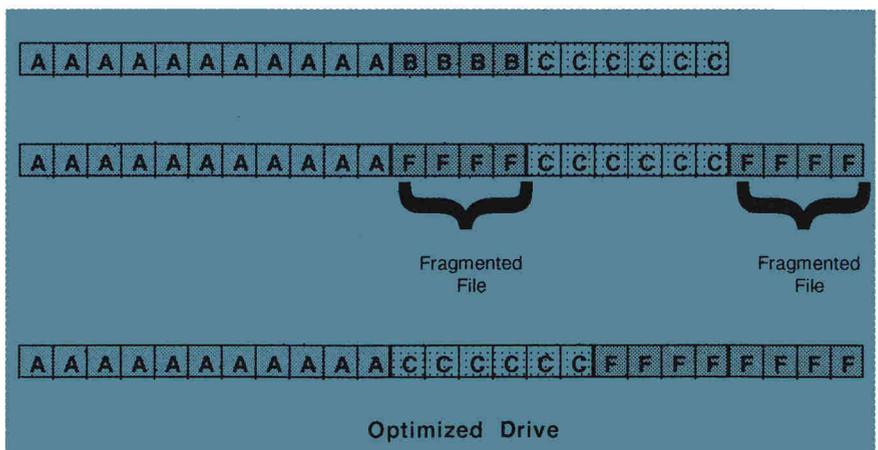
There's another kind of wear and tear you may run into when you've had your hard drive for a while. After considerable use, the files can become *fragmented*. It's not dangerous in terms of loss of data,

but it's an example of the second law of thermodynamics at work in an organizational sense: If left to their own devices, most systems will become less and less ordered. Normally, your hard drive stores a file in a series of sequential blocks. As you begin to add data to your disk and delete some of the old material, the new blocks may show up just about anywhere.

Say, for example, that you decide to delete a short letter, which will leave four empty blocks on your disk. (See the accompanying **Figure**.) The next time you save a file, the operating system will use those four blocks and then save the remainder of the new data in the next available blocks; the file is then scattered, or fragmented, across the disk. As you delete and add more files, your disk becomes more and more fragmented, and your drive's performance deteriorates because the heads must be repositioned farther to read all blocks of the file.

You can correct this problem with a type of utility commonly called an *optimizer*. Optimizer programs search through your disk for fragmented files and rearrange them so that each one occupies contiguous blocks. (Examples of optimizer utility programs include special modules within **ProSel** and **EasyDrive** for the Apple II and **DiskExpress II** and **SilverLining** for the Macintosh.)

Because optimizer programs essentially play a "shell game" with the blocks on your disk to obtain their results, you could have a disaster on your hands if the process is interrupted by a power



**Figure.** Your hard disk saves large files in pieces wherever it finds room to tuck them; an optimizer utility can rearrange those fragments into continuous files.

outage — so remember to back up your drive before running the utility.

Your hard disk's enhanced performance may be quite impressive, however — well worth the risk involved — and most users need to optimize their drives just three to six times a year.

Here's a tip: Format at least one volume on your drive to hold your application programs, which you alter very rarely and which therefore tend to not fragment; put changeable data into other partitions, so that you'll save time and trouble by optimizing only the volumes that need it.

## LET'S DO LAUNCH

What about day-to-day routine maintenance? Sometimes hard-drive users lose data not because of damage or fragmentation, but because they simply can't find what they're looking for and can't remember where they put it.

As you add more and more files, you'll need to keep track of their organization — to catalog directories, create new subdirectories, map disk structure, resurrect accidentally deleted files, and lock, unlock, and rename files, as well as sort through the drive as you delete old files or copy them to a floppy to prevent cluttering.

You'll find utilities to help you perform such housekeeping chores, along with a booting application — the most basic computer task you need to perform — in programs known as *launchers*.

One of the biggest advantages of having a hard drive is that you don't have to change floppy disks and reboot your computer when you want to switch between applications: If they're on your hard disk, you don't have to insert a program disk for each application you want to start up. But how do you get to that program you want to run? The most convenient way is to use a launcher, also called a *program selector, shell, or menu system*.

The original ProDOS operating system came complete with its own program launcher of sorts. When a program passed control back to ProDOS, the operating system presented you with two fill-in-the-blank prompts; you typed both the

pathname to the application's directory and the filename of the program to execute. This launcher had two distinct problems: The prompts didn't appear the first time you booted — only if you were exiting a program — and you had to remember long, involved pathnames and type them correctly.

With access to 800K floppies and still larger hard drives, a new market sprang up for programs that would let you switch easily between applications — execute a program from a list you create. In the latest version of ProDOS 8 (1.9),

for instance, Apple has replaced the old fill-in-the-blank prompts with a text-based launcher, an extension of the old "quit code" that works even if it finds no boot application on disk.

The **ProDOS System Disk** that came with your computer includes the other utilities you'll need for file maintenance (rename, copy, lock, and unlock files, for instance, and work on the entire disk).

In GS/OS and on the Mac, the **Finder** is the launcher portion of the operating system. It uses *icons* (small representative pictures) to indicate the various applica-

## PRODUCT INFORMATION

**Bird's Better Bye**  
freeware  
available from BBSes  
and user groups

**Change-a-File**  
AppleWorks Programmers  
Association  
6531 Lexington Ave.  
Los Angeles, CA 90038  
(213) 469-9916  
\$10

**Complete Undelete 1.0,**  
\$49.95

**1stAid Kit 2.8,** \$99.95  
**Sector Collector 1.0,**  
\$49.95

1stAid Software  
42 Radnor Road  
Boston, MA 02135  
(617) 783-7118

**Copy II Mac 7.2**  
**Copy II Plus v. 9**  
Central Point Software  
15220 NW Greenbriar  
Parkway #200  
Beaverton, OR 97006  
(503) 890-8090  
\$39.95 each

**DiskExpress II 2.04**  
ALSoft Inc.  
P.O. Box 927  
Spring, TX 77383-0927  
(713) 353-4090  
\$89.95

**DiskTools Plus 1.03**  
Electronic Arts  
1820 Gateway Drive  
San Mateo, CA 94404  
(415) 572-2787  
\$49.95

**DiskTop 4.0**  
CE Software  
P.O. Box 65580  
West Des Moines,  
IA 50265  
(515) 224-1995  
\$99.95

**EasyDrive,** \$39.95  
**RepairWorks,** \$34.95  
Quality Computers  
20200 East Nine Mile Road  
Box 666  
St. Clair Shores, MI 48080  
(313) 774-7200

**Fastback II 2.01**  
Fifth Generation Systems  
10049 North Reiger Road  
Baton Rouge, LA 70809  
(504) 291-7221  
\$189

**HFS Backup 3.0**  
Personal Computer  
Peripherals  
4710 Eisenhower Blvd.  
Building A4  
Tampa, FL 33634  
(813) 884-3092  
\$99

**JumpStart**  
Mainframe Software  
255 Mitchell Road  
Cape Elizabeth, ME 04107  
\$25 shareware

**On Cue 1.3**  
ICOM Simulations  
648 South Wheeling Road  
Wheeling, IL 60090  
(708) 520-4440  
\$59.95

**ProSel**  
Charlie's Apple Seeds  
9081 Hadley Place  
San Diego, CA 92126  
(619) 566-1297  
\$40 (8), \$89.95 (16)

**Redux 1.62**  
Microseeds Publishing  
7030-B West  
Hillsborough Ave.  
Tampa, FL 33634  
(813) 882-8635  
\$99

**Retrospect 1.2**  
Dantz Development  
1510 Walnut St.  
Berkeley, CA 94709  
(415) 849-0293  
\$249

**SilverLining 5.22**  
La Cie  
16285 SW 85th  
Suite 306  
Tigard, OR 97224  
(503) 684-0143  
\$99.95

**Squirt,** \$8.50 shareware  
**Squirt-16,** \$20 shareware  
Synesis Systems  
P.O. Box 1308  
Gilbert, AZ 85234

**SUM II 2.0**  
Symantec  
10201 Torre Ave.  
Cupertino, CA 95014  
(408) 253-9600  
\$149.95

**TimeOut FileMaster**  
Beagle Bros  
6215 Ferris Square  
Suite 100  
San Diego, CA 92121  
(619) 452-5500  
\$49.95



tions and files on your disk; to execute a program or open a file, just double-click with your mouse. (If you have the Mac's **MultiFinder** option, you can have more than one program open on your desktop at the same time, switching quickly from one to another with a single mouse click.)

Other Finder functions include file transfer, deletion, and a number of other maintenance tasks. The **GS/OS 5.0.4 System** and **System Tools** disks contain extra utilities, as well, such as the *Installer* program that sets up the operating system and its accompanying device drivers on your hard drive, and Apple's *Advanced Disk Utilities*, which erase and initialize your hard drive.

In addition, several commercial packages on the market can substitute for your machine's own launcher, or bypass it by letting you switch applications without returning to that screen first. They offer a variety of interfaces and maintenance utilities; some users enjoy colorful graphics displays, while others prefer the speed of a text interface.

Finding an interface with which you're comfortable is an important part of choosing this type of program, but be sure to check each candidate's range of functions and features, as well.

Combination launcher/maintenance programs include **Copy II Plus**, **ProSel**, **EasyDrive**, and **JumpStart** for the Apple II and **DiskTop 4.0** and **DiskTools Plus** for the Mac. There's also **TimeOut FileMaster**, which lets you perform various housekeeping tasks without leaving AppleWorks.

On the other side of the fence — program selectors without maintenance modules — you've got **Bird's Better Bye** and **Squirt** for the Apple II and **On Cue** for the Macintosh.

A hard drive is an invaluable investment — if you're willing to learn how to take care of it, it'll pay off in terms of both increased speed and decreased frustration. Like owning a car, however, owning a hard drive means you must perform regular preventive maintenance — change the oil, tune up the engine, so to speak — or you could suffer a breakdown at the worst possible time.

For many computer users, a hard-disk drive is as big a necessity as an automobile. Just don't forget to treat it with as much respect — because if your hard-disk drive crashes at 1 a.m., not even AAA can help. □

GARY R. MORRISON IS AN ASSOCIATE PROFESSOR IN THE DEPARTMENT OF CURRICULUM AND INSTRUCTION AT MEMPHIS STATE UNIVERSITY, WHERE HE TEACHES COURSES IN INSTRUCTIONAL DESIGN AND TECHNOLOGY. HE'S THE AUTHOR OF THE PROGRAM REPAIRWORKS, PUBLISHED BY QUALITY COMPUTERS, AS WELL AS *THE APPLE II HARD-DISK PRIMER*, PUBLISHED BY NAUG, THE NATIONAL APPLEWORKS USERS GROUP. WALKER ARCHER IS MANAGER OF SOFTWARE DEVELOPMENT AT QUALITY COMPUTERS, AND HAS BEEN WORKING WITH APPLES SINCE 1980. HE'S THE DEVELOPER OF THE PROGRAMS EASY-DRIVE AND RAMUP. GARY MORRISON AND WALKER ARCHER ARE ALSO THE AUTHORS OF AN ON-LINE COURSE IN C PROGRAMMING FOR THE GS. WRITE TO THEM C/O INCIDER/A+, 80 ELM STREET, PETERBOROUGH, NH 03458. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

## FURTHER READING

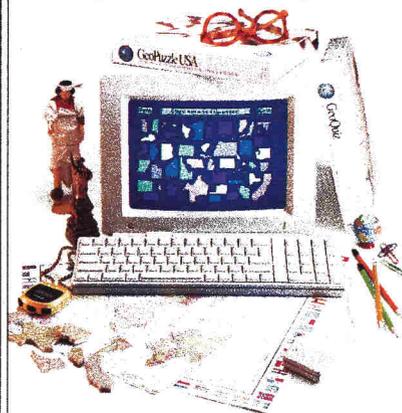
- "FileMaster, Graph, QuickSpell," Reviews, May 1988, p. 29
- "Simple Solution: EasyDrive 1.5," Reviews, April 1989, p. 94
- "Do You Know Where Your Data Are?" May 1989, p. 54
- "Salvaging Sunken Files," Editors' Choice, October 1989, p. 124
- "A Hard Drive Is Good to Find," July 1990, p. 42
- "Copy II Plus Version 9," Reviews, August 1990, p. 30
- "Family Ties: A Striking Resemblance in System Software," February 1991, p. 52
- "AW Tip/Notes from the AppleWorks Programmers Association,"  
What's New, March 1991, p. 12
- "AW Enhancements/Notes from the AppleWorks Programmers Association,"  
What's New, March 1991, p. 12
- "Hard-Disk Drives Made Easy: Off the Beaten Track," March 1991, p. 88
- "Hard-Disk Drives Made Easy: The Wizard of OS," April 1991, p. 53
- "Hard-Disk Drives Made Easy: It Pays to Be Organized," May 1991, p. 57

**TO YOU IT'S  
GEOGRAPHY. TO THEM,  
IT'S A TOTALLY "RAD"  
ALTERNATIVE.**

Getting kids to learn about the world is no simple task. The future is what happens a moment from now. Geography is what lies between home and school. The world seems relatively small.

### **APPLE® II SERIES SOFTWARE, TO COVER MORE GROUND.**

Introducing easy-to-use geography programs that help stimulate learning, while still entertaining.



### **GEOPUZZLE USA, \$39.95.**

Questions, puzzles and data make the entire country and its history as familiar as your own backyard.

### **GEOQUIZ, \$49.95.**

An absorbing game, dynamic educational tool and global travelogue all in one. For the Apple® IIGs only.

### **DESKTOP GEOGRAPHY FOR AN EVER-CHANGING WORLD.**

Simple-to-use products for global understanding. Because knowing what's where is just as important as knowing what's what.

**AT YOUR LOCAL RETAILER,  
OR CALL 1-800-255-2789.**



**PC Globe, Inc.**

4700 South McClintock Drive, Tempe, Arizona 85282  
(602) 730-9000 Facsimile (602) 968-7196

**SOFTWARE FOR EVERYWHERE.™**

© 1991 PC Globe, Inc. All rights reserved. "GeoPuzzle USA" and "GeoQuiz" are trademarks of PC Globe, Inc. PC Globe, Inc. software, patent pending.

**Circle 35 on Reader Service Card.**



# ON THE ROAD AGAIN

For the record, for fun, and for  
future planning, use this spreadsheet  
to track vacation expenses.

By RUTH K. WITKIN

ON THE ROAD AGAIN — YEAH, MY spreadsheet and me. You'll think I'm crazy, but I enjoy keeping logs of vacation trips. Scribbling on a spreadsheet makes long lulls between sightseeing stops pleasurable.

The spreadsheet in **Figure 1** is the kind I take with me. Vacation expenses are split into three categories: transportation, living, and entertainment, with a slew of items in each category. I simply jot down numbers and notes on a paper spreadsheet, then enter them into AppleWorks when I return home. This spreadsheet contains lots of fancy stuff that takes time to create, but hang in there. When you're done you'll have something that not only looks good, but is fun and easy to use.

Create a new AppleWorks spreadsheet file named *VACATION*. You should now see the spreadsheet *Review/Add/Change* screen with the cursor in cell A1. Use the following summary to start the spreadsheet.

**Long Lines.** Enter a double line across row 2 in columns C through O: Place the cursor on C2 and type quotation marks. Hold down the equal-sign key until the sign reaches the right edge of H2, and press Right Arrow 12 times to bring the cursor to column O. Now move the cursor back to I2, type quotation marks again, hold down the equal-sign key until the sign reaches the right edge of O2, and press Return.

Leave the cursor on I2 and copy the entire row to the clipboard: Press Open apple-C (OA-C) to start the *Copy* command. Type T to select *To clipboard*, hit Return to confirm Rows, and hit Return again. Next, copy the row containing the line from the clipboard to row 8: Place the cursor on I8, press OA-C, and type F to select *From clipboard*. Place the cursor on I43 (yes, 43 — your row numbers won't match those in **Figure 2** until you enter all long and short lines). Again, press OA-C and type F. Do the same with the cursor on I46.

Now enter a line across row 10 in columns C through O: Place the cursor on C10 and type quotation marks. Hold down the minus-sign key until the sign reaches the right edge of H10, and press Right Arrow 12 times to bring the cursor to column O. Move the cursor to I10, type quotation marks again, hold down the minus-sign key until the sign reaches the right edge of O10, and hit Return.

Other rows need the line, so leave the cursor on I10 and copy the entire row to the clipboard: Press OA-C, type T, and hit Return twice. Now copy the row containing the line from the clipboard to row 24: Place the cursor on I24. Press OA-C and type F. Now place the cursor on I35, press OA-C, and type F. Do the same with the cursor on I56.

**Column Width.** Each column is now nine characters wide. Use the *Layout* command (OA-L), *Columns*, and *Column width* to reduce column A by seven characters (to

two characters), reduce column B by eight characters (to one character), increase column C by eight characters (to 17 characters), and increase column O by one character (to ten characters).

**Short Lines.** Enter a short line that separates a list of items from its total: Place the cursor on D22, type quotation marks, press the spacebar once, type seven minus signs, and hit Return. Now copy that line into the columns to the right: Leave the cursor on D22 and press OA-C. Press Return twice, move the cursor to E22, type a period, move the cursor to O22, and hit Return.

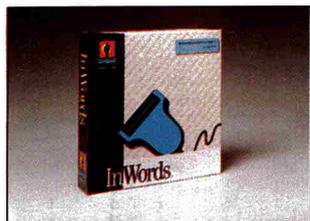
Instead of repeating these steps, copy this row of short lines to the clipboard: Leave the cursor on D22 and press OA-C. Type T and hit Return twice. Now copy the row from the clipboard to row 34: Place the cursor on D34. Press OA-C and type F. Place the cursor on D45. Again, press OA-C and type F. The lines on your spreadsheet should now match the ones in **Figure 2**.

**Recalculation.** To keep things moving at a rapid pace when you enter labels, numbers, and formulas, turn off automatic recalculation: Press OA-V and type **RFM** (for *Recalculate, Frequency, Manual*). Now press OA-S to store the spreadsheet on disk.

Referring to **Figure 2**, enter all labels in rows 3 through 9 and columns A (vertical category names) and C (category items). Enter the numbers in row 7 only; ignore the others for now. So AppleWorks doesn't think you're entering formulas in row 6, type quotation marks before each date. The label in C9 is *PEOPLE: 4*. You can edit it later to agree with the number of people in your vacation party. Don't bother to press Return after typing each entry; moving the cursor away from the cell serves the same purpose. After you type the last entry hit Return.

You'll soon enter the sample numbers. It can get mighty confusing doing this in the □

# Preferred Products, Preferred Prices



**New! InWords by WestCode.**  
Text scanning software that adds OCR to the Quickie scanner. With InWords, you can scan any printed text into a word processor, data base, or desktop publishing file - without typing a single word. Scans up to 500 words per minute. Requires Quickie scanner and IIGS or 512k Iie ..... \$78

## Memory Expansion

### Applied Engineering

GS-Ram II 1 Meg (GS) .....	\$147
GS-Ram II 2 Meg (GS) .....	\$219
GS-Ram II 4 Meg (GS) .....	\$366
GS-Ram Plus 1 Meg (GS) .....	\$205
GS-Ram Plus 2 Meg (GS) .....	\$292
GS-Ram Ultra (GS) .....	\$ Call
RamWorks III 256k (Iie) .....	\$139
RamWorks Plus 1 Meg (Iie) .....	\$227
RamFactor 256k (Iie,II+) .....	\$175
RamFactor 1 Meg (Iie,II+) .....	\$264
RamCharger .....	\$139
Ram Express II 256k (Iie,IIc+) ..	\$146
Ram Express II 1 Meg (Iie,IIc+) ..	\$205
Z-Ram Ultra Series (Iie) .....	\$ Call

### Communications

#### Applied Engineering

**Special!** FREE ReadyLink software w/purchase of DataLink 1200 ..... \$95

DataLink 2400 bps (int.) .....	\$160
DL 2400 w/SendFAX! (GS) .....	\$199
DL/X 2400 (ext.) .....	\$169
DL/X 2400 w/MNP-5 .....	\$199
DL/X 2400 w/MNP-5 & FAX .....	\$239
ReadyLink Communications .....	\$59

#### Morgan Davis Group

ModemWorks .....	\$49
ProLine BBS (Apple II BBS) .....	\$165

#### ZOOM Modems

Zoom MX 2400 (ext) .....	\$99
Zoom/Modem V.42bis .....	\$199
Modem Cables .....	\$15

## Accelerators/Co-Processors

TransWarp GS .....	\$259
TransWarp (Iie,II+) .....	\$99
FastMath (GS,Iie,II+) .....	\$131
PC Transporter 768k (GS,Iie,II+) ..	\$239
IIGS Installation kit .....	\$36
Iie/II+ Installation kit .....	\$29
MS-DOS v4.01 .....	\$85

### Honeywell

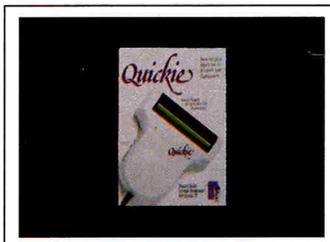
**New!** Keyboard w/cable (PCT) .... \$89

### KeyTronics

**New!** ADB Keyboard (PCT/GS) .. \$139

### TransDrives

Combo 5.25" & 3.5" .....	\$289
Dual 5.25" .....	\$284
Single 5.25" .....	\$189
3.5"-720k Add-on drive .....	\$99



### Quickie Scanner by Vitesse.

The Fast, Smooth, uncomplicated hand-held scanner that made InWords possible. Scan true grey, B&W, or text into your IIGS, Iie, or Laser 128. Features include 320/640 mode, landscape & portrait scan, cut/paste, fat bits, resize, rotate, flip, NDA, multiple windows and much more! ..... \$199

## R.G.B. Monitors/Video

### Applied Engineering

ColorLink RGB (for Ram Works) \$103

### Digital Vision

Computer Eyes GS (color) .....	\$199
Computer Eyes (B&W) .....	\$108

### HeadStart

**New!** M1152C Digital Monitor for Iie and/or PCT (includes cable) ..... \$159

### Leading Technology

**New!** 1452C Digital Monitor for Iie and/or PCT (includes cable) ..... \$229

### Magnavox

CM135 Analog/Digital RGB monitor (includes digital cable - Iie,GS) ..	\$289
IIGS Analog Cable .....	\$25

## Accessories

### Applied Engineering

TimeMaster HO (GS,Iie,II+) .....	\$77
Serial Pro (GS,Iie,II+) .....	\$109
Parallel Pro (GS,Iie,II+) .....	\$77
Buffer Pro 32k .....	\$85
Buffer Pro 128k .....	\$95
Buffer Pro .....	\$109
Sonic Blaster (GS) .....	\$95
Audio Animator (GS) .....	\$160
Phasor (GS,Iie,II+) .....	\$77
Conservar Fan (GS) .....	\$77
Conservar drive cable .....	\$17
Iie/II+ Power Supply .....	\$77
IIGS Power Supply .....	\$89

### CH Products

MACH III joystick .....	\$39
MACH IV Plus .....	\$69
<b>Special!</b> Mirage ADB/Quad .....	\$29

### Kensington

System Saver (II+,Iie) .....	\$69
System Saver GS .....	\$75
Turbo Mouse ADB (GS,Mac) ....	\$124

### Ribbons

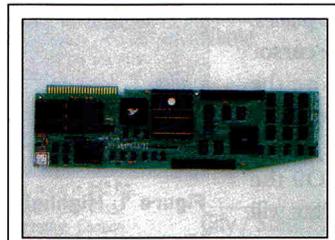
ImageWriter I/II (black) .....	\$3.50
ImageWriter II (4-color) .....	\$5.99

### Seiko

**Closeout!** DataGraph 2001 scheduling system. Includes Seiko watch and ProDOS compatible clock. Originally \$189! (II+,Iie,IIc only) ..... \$39

### Vitesse

Quickie Scanner (GS, Iie) ..... \$199



### TransWarp GS by AE

The original and best Accelerator for the Apple IIGS computer. More than doubles the speed of your IIGS. Built in diagnostics assures trouble free operation. IIGS speed is easily adjustable from a CDA. TransWarp GS ..... \$259  
32k Cache upgrade ..... \$85

## Storage Devices

### Applied Engineering

Vulcan Hard Drives include controller card and come pre-formatted with the latest system (specify machine).

Vulcan 20meg .....	\$499
Vulcan 40meg .....	\$639
Vulcan 100meg .....	\$1299
<b>New!</b> 3.5" 1.6meg (GS) .....	\$248
3.5" 800k (GS,Iie,IIc+) .....	\$189
3.5" Controller card (Iie,II+) .....	\$65
5.25" disk drive (all Apple IIs) ....	\$124
5.25" Controller Card (Iie,II+) .....	\$55

### AMR

GS Partner Hard Drives ..... \$ Call

### Apple

High Speed SCSI (GS,Iie) ..... \$109

### EMAC

**Special!** Impact 20meg FAST SCSI Hard Drive - 2 year warranty! .. \$359  
w/Apple SCSI ..... \$459  
**New!** Impact 80 meg SCSI ..... \$699  
w/ Apple SCSI ..... \$799

## Apple II Software

### Apple Computer

**New!** HyperCard GS ..... \$89

### Broderbund

Bank Street Writer Plus .....	\$59
Print Shop .....	\$35
Print Shop GS w/G.L. .....	\$45
Print Shop Companion .....	\$35
Carmen Sandiego Series .....	\$ Call

### Central Point Software

Copy II+ v9.1 ..... \$29 |

### Claris

AppleWorks v3.0 .....	\$179
AppleWorks GS .....	\$219

### Morgan Davis Group

MD-BASIC ..... \$49 |

### Roger Wagner

HyperStudio (GS) ..... \$89 |

### TimeWorks

Graph It! (128k) .....	\$53
Publish It! 3 (128k) .....	\$77

### WestCode Software

**New!** InWords (512k) ..... \$78 |

### Word Perfect Corp.

Word Perfect GS .....	\$119
Word Perfect Iie .....	\$119

### Why buy from us?

15 day money back guarantee on hardware. If it doesn't meet your needs, we'll refund the purchase price. No hassles.

We handle only the industry's best hardware and software.

All memory cards come with factory installed & tested RAM.

We're nice guys that want to help. We want our business to grow because of repeat customers & word of mouth.

UPS and Federal Express Next day service available.

To Order, Call Toll-Free **1-800-327-7234**

FAX your Order: 214/247-8151

Questions and Customer Service Call **214-484-5464**

VISA, MasterCard and COD orders accepted. Order by phone, mail or FAX. School and Government Purchase Order's welcome. Special and Sale items may be limited quantities. Prices and Specifications are subject to change without notice. Please verify product compatibility before ordering. Texas residents add 7.25% sales tax.

**Preferred Computing**

P.O. Box 815828 Dallas, Tx 75381

dark, which is what you have when labels at the left disappear a few days into the week and headings at the top disappear a few items into the categories. AppleWorks has a solution: Anchor the labels and headings so that you can roam through the spreadsheet to your heart's content and still have signposts along the way. Here's how.

Place the cursor on D9, press OA-T to start the *Titles* command, and type **B** to select *Both*. Move the cursor to the right. As *Tuesday* appears, you can see that the labels in each row are fixed firmly in place. Move the cursor downward and you can see that the headings are also fixed firmly in place. Referring to **Figure 2** again, enter all numbers. When you finish, return the screen to normal by pressing OA-T and confirming *None*. Press OA-S to save the spreadsheet.

Now format the entries: Leave the cursor where it is and press OA-V to start the *Standard Values* command. Confirm *Value format*, then type **C2** (for *Commas, 2 decimal places*), and hit Return. Next, place the cursor on D7, press OA-L to start the *Layout* command, type **B** (for *Block*), move the cursor to O7, and hit Return. Confirm *Value format*, type **C**, and press Return to confirm 0 for the number of decimal places.

Format the labels next: Place the cursor on C3 and press OA-L, type **B**, move the cursor to C50 and hit Return. Type **L** (for *Label format*), and type **R** (for *Right justify*). Use OA-L to center D9 through O9 the same way. Next, enter the formulas that will perform your calculations. Place the cursor on the cell receiving the formula. Move the cursor to the cell locations shown in the formula and type everything else. When the formula is complete, press Return.

Now move the cursor to each cell location listed below, type the formula shown, and press Return. The SUM formulas include the line immediately above the list of items and the line immediately below, which sets up a range of cells. If you insert rows within this range later, AppleWorks will adjust the formula to add the new entries.

**FORMULA 1: Total Transportation Expenses** adds the list of transportation expenses (D21 through D11) paid in cash and enters the result in D23.

Cell location: D23

Formula: @SUM(D22.D10)

Copy Formula 1 to the other cells in the row: Leave the cursor on D23 and press OA-C.

VACATION TRAVEL EXPENSES													
STARTING POINT:	PLEASANTON	SAN FRANCISCO		MONTEREY		SAN LUIS OBISPO		LOS ANGELES		NEW YORK			
DESTINATION:	SAN FRANCISCO	MONTEREY	SAN LUIS OBISPO	LOS ANGELES	NEW YORK								
DAY:	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY								
DATE:	16/21/91	16/22	16/23	16/24	16/25							TOTAL	
MILEAGE:	75	122	149	189	2,500							MILES:	
													3,025.6
PEOPLE:	41												
CASH													
CHARGE													
Airfare									978.00	0.00			978.00
Airport taxes													0.00
Visa/Passport									176.50				176.50
Car rental			27.99			27.99			27.99		27.99		111.96
Gas/Oil			12.87				18.90		5.50				37.27
Car Repair/Maint													0.00
Parking/Tolls	7.80	1.50		12.75									22.05
Bus/Train	9.60												9.60
Taxi/Limo							28.50		9.85				38.35
Tips	2.00			5.00			8.00		4.00				19.00
Other													0.00
Transportation	19.40	1.00	14.37	27.99	17.75	27.99	55.40	204.49	19.35	1,005.99		126.27	1,266.46
Room		224.56		80.60					230.00				535.16
Breakfast				7.25	16.40							16.40	7.25
Lunch		64.78		37.14					42.00				143.92
Dinner		98.00		87.00					76.70				261.70
Phone		12.00											12.00
Laundry/Valet													0.00
Babysitter													0.00
Tips		7.00	3.00					5.00					15.00
Other													0.00
Living	19.00	237.34	3.00	211.99	16.40	0.00	5.00	348.70	0.00	0.00		43.40	948.03
Admissions	24.00	28.00	32.00	16.00		3.00	12.00					68.00	47.00
Tours		16.00						20.00					36.00
Memorabilia		57.00		18.00				54.00					129.00
Night Life		28.00		44.00						36.00			108.00
Photo Supplies								8.00					8.00
Shipping													0.00
Currency Exch													0.00
Other													0.00
Entertainment	24.00	3129.00	32.00	78.00	0.00	3.00	12.00	82.00	0.00	36.00		68.00	328.00
TOTALS:	62.40	4516.34	49.37	317.98	34.15	30.99	72.40	635.19	19.35	1,041.99		237.67	2,542.49
													BRAND TOTAL: 2,780.16

511 | Picked up car in Pleasanton 6/21 AM, dropped off LAX 6/25 AM  
521 | On 6/24, stayed with Aunt Lidia in San Luis Obispo  
531 | With Mom and Dad in New York for 5 days (see page 2)  
541 | On to Washington DC for 2 days (see page 3)  
551 |  
561 |  
571 |  
581 |

**Figure 1. Highlighted cells in this vacation-travel spreadsheet are formula locations.**

Hit Return twice, move the cursor to E23, type a period, move to M23, and press Return. Tell AppleWorks both cell references are relative by pressing OA-R. Press OA-K to calculate each formula, and compare with **Figure 1**.

**FORMULA 2: Total Living Expenses** adds the list of living expenses (D33 through D25) paid in cash and enters the result in D35.

Cell location: D35

Formula: @SUM(D34.D24)

Copy Formula 2 to the other cells in the row: With the cursor on D35, press OA-C and hit Return twice. Move the cursor to E35, type a period, and move the cursor to M35. Press Return, then OA-R, then OA-K.

**FORMULA 3: Total Entertainment Expenses** adds the list of entertainment expenditures (D44 through D37) paid in cash and enters the result in D46.

Cell location: D46

Formula: @SUM(D45.D36)

Like the first two formulas, copy Formula 3 to the cells in the row as far as column M. **FORMULA 4: Cash Expense Totals by Day** adds the cash spent in each category and enters the amount in D48.

Cell location: D48

Formula: @SUM(D46.D35.D23)

Copy Formula 4 to the other cells in the row as far as column M.

**FORMULA 5: Cash Expense Totals by Item** adds the cash spent on every item each day and enters the amount in N11.

Cell location: N11

Formula: @SUM(L11.J11.H11.F11.D11)

Copy Formula 5 to the other cells in the transportation category: With the cursor on N11, press OA-C and hit Return twice. Move the cursor to N12, type a period, move the cursor to N21, and press Return, OA-R, then OA-K. In the same way, copy Formula 5 to the following cells: N23, N25 through N33,

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
11															
21															
31	I	STARTING POINT:	PLEASANTON	SAN FRANCISCO	MONTEREY	MONTEREY	SAN LUIS OBISPO	LOS ANGELES							
41	I	DESTINATION:	SAN FRANCISCO	MONTEREY	MONTEREY	SAN LUIS OBISPO	LOS ANGELES	NEW YORK							
51	I	DATE:	SATURDAY	SUNDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY							
61	I	DATE:	6/21/91	6/22	6/22	6/23	6/24	6/25							
71	I	MILEAGE:	75	122	149	149	189	2500							TOTAL MILES:
81															
91	I	PEOPLE:	4	CASH	CHARGE	CASH	CHARGE	CASH	CHARGE	CASH	CHARGE	CASH	CHARGE	CASH	CHARGE
101															
111	I	Airfare												978	
121	I	Airport taxes													
131	I	Visa/Passport						176.5						27.99	
141	I	Car rental				27.99		27.99							
151	I	Gas/Oil			12.87			18.9		5.5					
161	I	Car Repair/Maint													
171	I	Parking/Tolls	7.8		1.5		12.75								
181	I	Bus/Train	9.6												
191	I	Taxi/Limo						28.5		9.85					
201	I	Tips	2				5	8		4					
211	I	Other													
221															
231	I	Transportation													
241															
251	I	Room		224.56		80.6				230					
261	I	Breakfast				7.25	16.4								
271	I	Lunch		64.78		37.14				42					
281	I	Dinner		98		87				76.7					
291	I	Phone		12											
301	I	Laundry/Valet													
311	I	Babysitter													
321	I	Tips	7		3			5							
331	I	Other													
341															
351	I	Living													
361															
371	I	Admissions	24	28	32	16		12							
381	I	Tours		16						20					
391	I	Memorabilia		57		18				54					
401	I	Night Life		28		44								36	
411	I	Photo Supplies								8					
421	I	Shipping													
431	I	Currency Exch													
441	I	Other													
451															
461	I	Entertainment													
471															
481	I	TOTALS:													
491															
501															
511															
521															
531															
541															
551															
561															
571															
581															

Figure 2. Labels, lines, and practice entries for the vacation-travel spreadsheet.

N35, N37 through N44, N46, and N48, pressing OA-K to recalculate after each copy.

Next, copy all formulas in column N to column O: Place the cursor on N11, press OA-C, hit Return once, move the cursor to N50, and hit Return again. Press Right Arrow to move the cursor to O11 and hit Return. Every cell reference in each formula is relative, so press OA-R. Press OA-K.

**FORMULA 6: Miles Traveled** adds the miles traveled daily and enters the amount in O7.

Cell location: O7

Formula: @SUM(L7,J7,H7,F7,D7)

**FORMULA 7: Grand Total** adds total cash spent (N48) and total charges (O48) to produce the grand total in O49.

Cell location: O49

Formula: +N48+O48

Chances are you'll need more than a one-page spreadsheet for most vacations. Simply

change this formula to include the cash and charge totals from other pages, or enter a new formula somewhere on the spreadsheet to take all such page totals into account.

Vertical lines will divide your spreadsheet into days and make it look like the one in **Figure 1**: First, place the cursor on B2, type quotation marks and an equal sign, then press Return. Now do the vertical lines: Place the cursor on B3, type quotation marks again, type the vertical line (it shares the backslash key), and hit Return again. Leave the cursor on B3, press OA-C, and hit Return twice. Move the cursor to B4, type a period, move the cursor to B48, and press Return.

You can now insert this vertical line anywhere on the spreadsheet: Leave the cursor on B3 and copy the entire column to the clipboard: Press OA-C, type T, type C, and hit Return. Now copy the column

containing the vertical line from the clipboard to the left of column D: Place the cursor on D2, press OA-C, and type F. Place the cursor on G2. Again, press OA-C and type F. Do the same in J2, M2, P2, S2, and V2. Now use the *Layout* command (OA-L), *Columns*, and *Column width* to reduce each vertical-line column by eight characters (to one character each). Press OA-S to save.

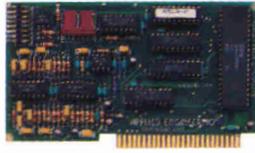
You're in the home stretch now, so refer to **Figure 1** and type the spreadsheet title in I1, leaving one space between characters and two spaces between words. Then type quotation marks in R49, press the spacebar six times, type **GRAND TOTAL:**, and hit Return. Enter a vertical line in B49 through B58 and V49 through V58, then eliminate the gaps in rows 50 and 58 by entering equal or minus signs. Edit (OA-U) another minus sign into O22, O34, and O45 to make the short lines one character longer. Lastly, type the notes in C51 through C54.

Leave the cursor where it is and press OA-O to bring up *Printer Options*. Type TM (to change the top margin) and press Return. Type .2 and hit Return again. Type CI (for *Chars per Inch*), press Return, type 17, and hit Return. All other print settings remain at AppleWorks standards. Press OA-S to save and return to the spreadsheet screen.

Now print your spreadsheet: Leave the cursor where it is and press OA-P. Hit Return to confirm *All*. Press Return to select the printer (or type a printer number; then press Return), type the date (if you have a computer clock, type @), and hit Return twice.

If you're taking more than a five-day trip, you'll need to add columns: Copy one day's worth of columns with their formats, formulas, and lines to the clipboard, then copy them back into the spreadsheet once for each extra day. To add a day, place the cursor on Q1 and copy columns Q, R, and S to the clipboard. Move the cursor back to column Q1 and copy from the clipboard, choosing *Formulas and values*. Reduce the width of column S and edit the formula in W11 to include the new cash cell, Q11. Copy the formula into other cells in column W, then as a group from column W to column X. Blank out *GRAN* in row 49 and make other touchups. Save this new version under another filename. Have a great vacation! □

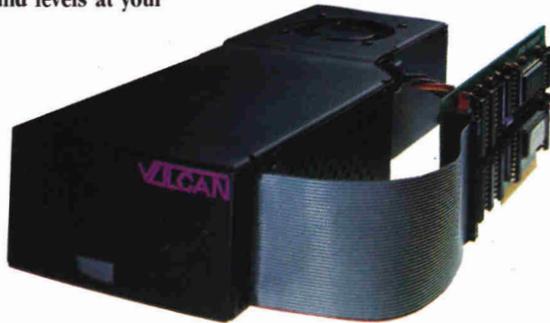
WRITE TO RUTH WITKIN AT 5 PATRICIA ST., PLAINVIEW, NY 11803. ENCLOSE AN SASE FOR A REPLY.



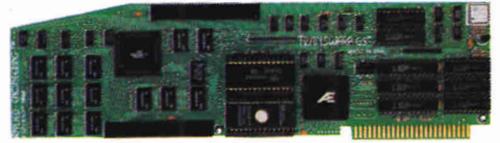
Audio Animator unleashes the sound potential your IIGs was born with. Complete MIDI interface, software and external mixer. \$219



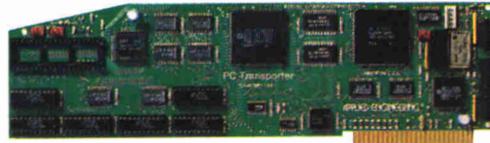
External mixer (included with Audio Animator) places precise control over sound levels at your fingertips.



Vulcan internal hard disk replaces the Apple power supply with 70 watts of pure power and up to 200 MEGs of storage capacity. From \$699.

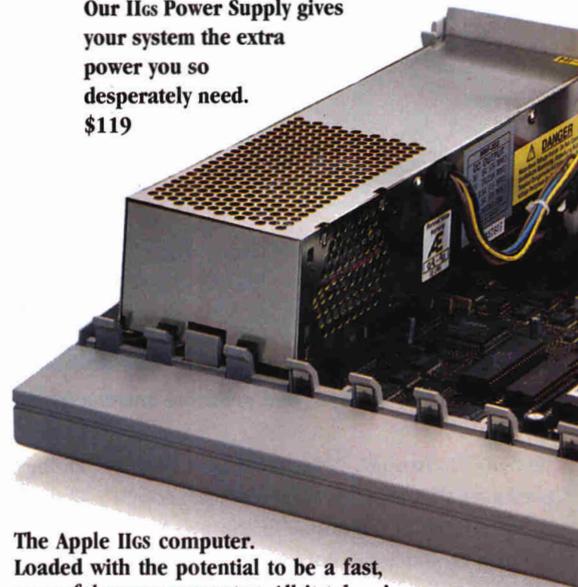


Compute at Warp speed with TransWarp GS. More than doubles processing speed and it's upgradable. \$349



PC Transporter lets your IIGs run IBM's MS-DOS. Shop both sides of the software aisles. \$349

Our IIGs Power Supply gives your system the extra power you so desperately need. \$119



The Apple IIgs computer. Loaded with the potential to be a fast, powerful super computer. All it takes is a lot of love and a little help from Applied Engineering.

# Super System IIGs

For ten years, Applied Engineering has set the Apple II industry standard for quality and reliability. We do it with top-notch tech support, innovative new products and a commitment to design and build the best products possible. To receive your free 32-page Applied Engineering product catalog, see your dealer or call (214) 241-6060 today, 9 am to 6 pm, Monday through Friday. To place an order, send check or money order to Applied Engineering. MasterCard, VISA, and C.O.D. welcome. Texas residents add 7.25% sales tax. Shipping not included.



P.O. Box 5100 • Carrollton, TX 75011 • (214) 241-6060

© Copyright 1991. AE Research, Inc. All rights reserved. Prices subject to change without notice



The AE 3.5" Disk Drives are completely Apple compatible. The AEHD can store 1.44 Mb per disk! 800K - \$279  
1.44Mb - \$339

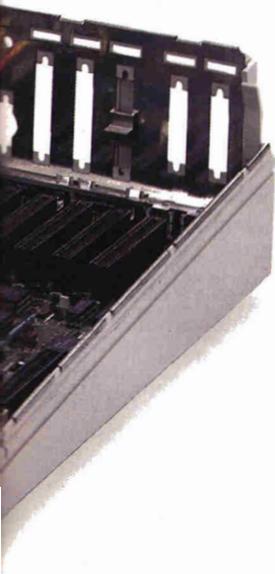


Applied Engineering's 5.25 disk drive (top) features a new design for virtually flawless performance. \$169

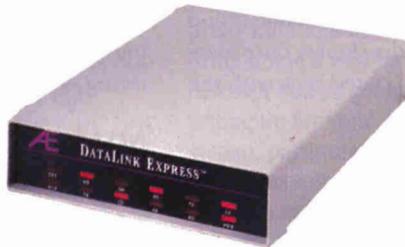
MS-DOS compatible 5.25 Drive System (bottom) allows MS-DOS programs on 360K disks to boot from PC Transporter. From \$259



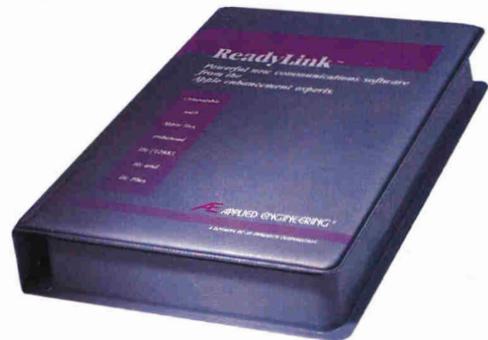
The GS-RAM Plus memory card grows from 1 to 6 Mb, with full compatibility. From \$189.



Conservator effectively cools your IIs while it protects against power surges and helps organize workspace. \$99.



Our modems, both internal and external, are upgradable, Hayes compatible and now have a Send-Fax option. Complete with software and free online time. From \$219.

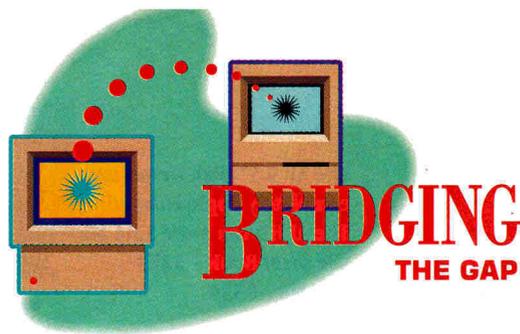


The easiest, most complete, most popular communications software available. It's ReadyLink. \$99.



**Applied Engineering®**  
*The Apple enhancement experts.*

A Division of AE Research Corporation



# THE DEVELOPERS' PLATFORM

**Five Apple II/Mac developers comment on their strategies for handling a mixed market — after all, no one computer has the lock on everyone's desk.**

By **GREGG KEIZER**

YOU'RE NOT THE ONLY ONE BRIDGING the gap. Not only are there thousands of other people out there, all of them, like you, trying to live in two computer worlds at once, there are dozens of software publishers and hardware manufacturers simultaneously struggling to meet the needs of established Apple II customers as they reach out for new Macintosh markets.

Most of these vendors started out their corporate lives

as Apple II developers. They all continue to put out at least some products for the Apple II line (as well as MS-DOS titles, too).

Now, with combined sales of the Mac Classic and LC projected to breach the one-million mark in 1991, these publishers and manufacturers see the Mac market as an addition to the Apple II audience and as an alternative to the PC for home, home-office, education, and entertainment applications.

It's no surprise that name-brand developers once associated only with the

Apple II — from Broderbund and The Learning Company to Applied Engineering and Timeworks — are rolling out Mac programs as they continue to sell and support their Apple II lines. You see, publishers and manufacturers must bridge the gap, too.

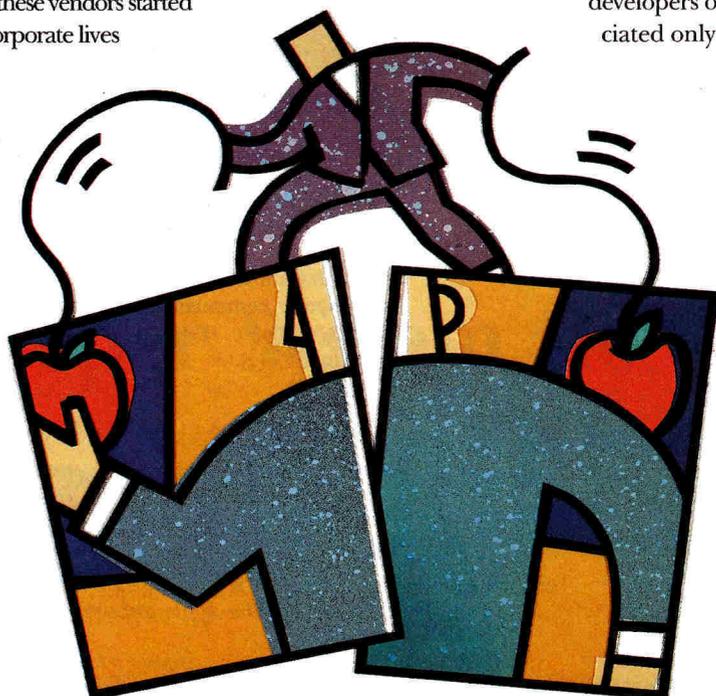
These connectors aren't always elegant and transparent, with versions that make switching systems a pleasure. Often the links are crude and simple, maybe only sharing a name with something Apple II owners have known and loved for years. Sometimes the bridges are more sophisticated, where function and form are nearly identical.

Several prominent developers comment here on how they're spanning the chasm between the Apple II and the Mac. Their remarks range from what they think of the low-cost Macs to how they'll continue to support and create for the Apple IIe/c and IIGs. They may not share state secrets (no one likes to give the competition advance warning), but their comments are always interesting, and sometimes even illuminating.

## NOT PUBLISH? PERISH THE THOUGHT!

"We're committed to the Apple II line," **Timeworks'** Bill Sickle says firmly. Sickle is product manager for Timeworks' desktop-publishing packages, and is responsible for *Publish It!*, one of the best-known Apple II programs. And he's not about to give up on a good thing: "We had an Apple II line long before the Macintosh, we're working hard on Publish It!, and someday soon you'll see *Publish It! 4* for the Apple II."

Bridging the gap, claims Sickle, is a phrase often used in the Timeworks' offices: "Like many other publishers we see this migration to the Mac. The Apple II is a shrinking market rather than a growing one, but we're trying to make the migration as easy as possible for the user, to ensure



# We don't recommend plucking your Vulcan™ off a table and dragging it along the ground. But it's nice to know you could.

October 30, 1990

Gentlemen:

*I use my Apple IIGS with a Vulcan and an AE A/D converter at professional waterski tournaments to measure jump distances. I wish to commend you on the durability of your Vulcan Hard Drive.*

*I was using the computer at the U.S. National Waterski Championships in August when a gust of wind picked up the canopy under which we were operating. Wires running to my system were attached to the canopy and when the canopy blew away, it pulled the computer with the Vulcan off the table and onto the ground, dragging it along the ground some twenty feet. I was actually in the process of writing data to the hard disk at the time.*

*Even though the incident pulled many of the attaching wires out of the computer, no damage occurred to the computer or the hard drive. I subsequently verified all of the data on the hard drive and found no errors and no bad or damaged blocks in either ProDOS or MS-DOS (I use half my storage for my PC Transporter's MS-DOS files and half for ProDOS).*

*Needless to say, I am very grateful for a soundly built and well-engineered product.*

*Sincerely yours,  
Roger Dilling  
Milledgeville, Georgia*

**We hope you never** drag your hard disk through the dirt, but can appreciate the engineering required to make the above letter possible. Until recently, if you wanted a hard disk for your Apple, you had to add an outdated, external box to your desktop clutter. Now, with Vulcan™ on the scene, you have an internal to consider. One that's lightning fast, clean, powerful and affordable.

**A glance at the other** computer manufacturers; IBM, Compaq, Dell, Mac, tells



you something. They're all very different systems, but all come with internal hard disks (it's hard to even find a Mac these days without an internal hard disk). The reason? Internals are the latest advance. The modern storage solution. They become a transparent part of your system, and in the case of Vulcan, actually enhance the rest of your system.

**Enhancing the rest of your system.** Many feel Apple's standard power supply is insufficient. Add a Vulcan and you make a significant improvement to the rest of your system. The high efficiency power supply in Vulcan is rated in excess of 70 watts, nearly double the capacity of Apple's standard power supply and that of other drives. Vulcan power supply components are heatsinked to the aluminum case for cool operation and long life. And we added an ultra-quiet, flush-mounted cooling fan to keep things cool inside. Vulcan actually beefs up your power supply. External hard disks drain it.

**Ease of use.** Most hard disks are pretty intimidating. It's frustrating to bring home a new hard disk, only to discover you've got to spend a lot of time setting up for your particular operating system, partitions and formatting. Vulcan comes pre-formatted, pre-partitioned and includes the latest Apple Operating System. You'll be using your Vulcan within minutes. Just pull out your old power supply, plug the Vulcan in it's place, insert the card and turn on the computer. Vulcan will boot to your familiar Apple Finder in a few seconds. Now *that's* ease of use.

**Incider/A+ Magazine put it simply** in their "Best of the Best" Holiday Shopping Guide: *"The best internal hard disk is the Vulcan from Applied Engineering - you can use it with DOS 3.3, ProDOS or GS/OS, and it comes with its own fan and power supply"*. Vulcan incorporates the most popular standard protocols for a hard disk and includes an ultra-fast 16-bit data bus controller, not

the less expensive 8-bit others use. And since Vulcan is fully compatible with our PC Transporter, you can create ProDOS or MS-DOS storage space, in addition to GS/OS, DOS 3.3, CP/AM or Pascal 1.3. No



other hard disk works with all these operating systems.

**Vulcan gives your Apple IIGS, IIe, II+ or II upgradeability (20-100 MB), useable speed, safe power (its FCC certified and works on 110/220 VAC, even European 115/230 VAC at 50-60 Hz), practically unlimited size and AE's famous tech support and one-year warranty.**

**Order today!** To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7 1/4% sales tax. Shipping not included.

**Vulcan 20 MB.....\$699**  
**Vulcan 40 MB.....\$899**  
**Vulcan 100 MB.....\$1795**



**Applied Engineering®**

*The enhancement experts.*

A Division of AE Research Corporation.

(214) 241-6060

P.O. Box 5100  
Carrollton, TX 75011



©1990. AE Research, Inc. All rights reserved. Prices subject to change without notice. Brand and product names are registered trademarks of their respective holders.

that the years of data they've invested in the Apple II aren't lost. We're very concerned about that."

Timeworks demonstrated this concern last October when it released *Publish It! Easy*, an entry-level desktop-publishing package for the Mac. Publish It! Easy directly imports AppleWorks, AppleWorks GS, and Apple double-hi-res graphics files into its Mac documents. Although Sickle stops short of promising a future with complete and transparent Publish It!-to-Publish It! Easy file compatibility, he says instead, "We'd be fools not to take advantage of our market share. It's obvious that it's file sharing between Apple II and Mac versions." And he promises other interesting products to help users bridge the Apple II-to-Mac gap.

"I'm very happy to see a lot of Apple II users move over to the Mac. We're just trying to ease their transition," says Sickle. "People will find that the transition time is very short — they'll like the Mac. But we won't forget the Apple II users. We'll continue to publish Apple II software as long as people buy it. When you have an enormously successful product and very loyal users, it's like having a full house and quitting the poker table. For the foreseeable future we'll publish for the Apple II."

#### LEARN ON THE LC

**The Learning Company** sees things a bit differently. "The school markets are particularly excited about the LC," says Sharyn Fitzpatrick, The Learning Company's corporate communications director. "The LC's features give Apple II users another outlet. Eventually the Mac part will become the primary part of the machine." As for the Apple II's future in The Learning Company's plans, Fitzpatrick will only say, "That's up for discussion. We've not made a decision yet."

Clearly, The Learning Company is looking hard at the LC. According to Fitzpatrick, its color, relative affordability, and other bells and whistles make it an attractive machine, particularly for schools. "We're trying to create a whole new prod-

uct line," says Fitzpatrick. Software such as *The Writing Center*, an announced-but-not-yet-released word-processing and desktop-publishing program, will be joined by Mac versions from the *Super Solvers* series, the company's very successful PC line.

"Whether we take existing titles and move them to the Mac depends on what they are," says Fitzpatrick. "That's dictated by the market. But we're looking at taking successful titles from the Apple II and moving them to the Mac. We're announcing *Reader Rabbit* for the Mac, in color, and we should ship it [this spring]."

As for Apple II users, Fitzpatrick sympathizes with their anxieties about being left behind, but she doesn't have an easy answer. "The technology is what will leave them [Apple II users] behind. The technology is what's deserting them, not the publishers," she says. "We need to give kids animation, and we need 512K to do it. We're dealing with Nintendo kids. We can't get them excited on a 128K Apple II."

#### ON THE MAC ALL ALONG

**Davidson & Associates** has been bridging the gap for years. Now the company's refining its future vision of Apple computers in the classroom and at home.

"I had no idea it would be five years before they [Apple] brought out a [Macintosh] product for homes and schools," says Jan Davidson, president of Davidson & Associates. "I loved the Macintosh interface. I thought it was great for education, even though Apple didn't know then if it was going to fit into education."

So Davidson pushed for Macintosh development, and pushed hard. Work on the company's first Mac package was begun only months after the machine's introduction in 1984; a year later *Math Blaster* was on the shelves. At the same time, Davidson's Apple II products took on a distinctive Mac look and feel. "The [Macintosh] interface was so perfect for learning that we tried to make the Apple II [products] look like the Mac," Davidson says.

"We've already got our Apple II users comfortable with the Macintosh interface," she says, pointing out that running Davidson Apple II software on a Macintosh LC under the Apple IIe Emulation Card will be an especially easy transition. "They'll actually use the mouse and pull-down menus just as they do with Mac software."

At Davidson, as at most software publishing companies, the Apple II's future isn't crystal clear. Although there are several Apple II products under development, including a IIGS version of *English Express*, a comprehensive English-as-a-second-language program on laser disc, Davidson notes, "We're making development decisions based on the features of the machine and the objectives of the program. We try to meet the needs of the marketplace. People want more and more from a software product."

But what of Apple II owners? Davidson declined to comment directly, but gave this analogy instead: "I bought a refrigerator a couple of years ago. A few months later, a better one came along. Why is it that people feel that computers should be any different?"

"I'd be buying Mac LCs," she advises, putting herself in an educator's shoes. "If I felt a real need to use [Apple II] software, I'd buy the Apple IIe Emulation Card and make use of it. We're really quite excited about the LC, because of the speech-input capabilities. I think that the Mac Classic and LC are going to be very successful."

#### THANKS FOR THE MEMORY

**Applied Engineering** may be the preeminent maker of Apple II add-on cards, but like its software counterparts, it too is moving into the Macintosh market.

"We have a number of products we see as bridging the gap," says AE's Tom Milks. "We think that the majority of Apple II users looking for their next computer will stay with Apple, and will decide on the Classic and the LC. Those machines represent the kind of price range that most consumers can afford. So we've designed products for those computers."

#### COMPANY ADDRESSES

**Applied Engineering**  
P.O. Box 5100  
Carrollton, TX 75011  
(214) 241-6060

**Broderbund Software**  
17-Paul Drive  
San Rafael, CA 94903-2101  
(415) 492-3200  
(800) 521-6263

**Davidson & Associates**  
3135 Kashiwa Street  
Torrance, CA 90505  
(213) 534-4070  
(800) 556-6141

**The Learning Company**  
6493 Kaiser Drive  
Fremont, CA 94555  
(415) 792-2101  
(800) 852-2255

**Timeworks Inc.**  
625 Academy Drive  
Northbrook, IL 60062  
(708) 559-1300

Some of these products, such as the external *Datalink* modem, which sports ports for the Mac, IIGs, and IIE, and an external 3.5-inch disk drive, which you can use with either Mac or IIGs computers, can flip-flop between worlds or make the transition when you do. Other products, such as a memory-expansion card for the bargain-basement priced Classic, and a multifunction board for the LC, are Mac specific.

"We're noticing an increase in the Macintosh product sales," says Milks. "A lot of the same loyal customers that knew us as an Apple II company are looking at and buying Macintoshes. They trust the Applied Engineering name." Playing off that name is a big part of AE's strategy.

But according to Milks, Applied Engineering will continue to be a major member of the Apple II universe. "We'll always support the Apple II and we'll continue to introduce products for the II. We'll present at least two products within the next 60 days. We'll offer an upgrade for the *Trans-Warp GS* to make it even faster, and we'll offer an upgrade to the *Vulcan* hard-disk drive to increase its performance."

AE admits that some Apple II users may take its entry into the Mac market as an abandonment of the faithful: "We have to grow with the market. We're moving into the Mac market so we can continue to support the Apple II market." That reasoning, though good business sense, may sound disingenuous to Apple II loyalists. "By the end of the year, our development should be more on the Mac side than the Apple II side," says Milks. "Let's face it, a company can't stay in business without a market."

#### HOME AT SCHOOL, NOT AT HOME

Other than Apple itself, no company has sold more copies of its software to the Apple II community than **Broderbund**. And though the company is nowhere near calling it quits on the II, it sees the machine in a narrower, more focused light.

"We're continuing to publish in both Apple II and Macintosh formats," says Francesca Sterling, Broderbund's public-relations manager. "But for the Apple II we're only converting those products that fit in the educational market." At first glance that may sound warning bells in Apple II users' heads, but Broderbund's big sellers are aimed at the classroom, even

if they sometimes end up in the home. Veterans such as the *Print Shop* and *Carmen Sandiego* lines are cases in point.

"We're constantly evaluating it [the Apple II market]," says Sterling. "We see the market weakening. But the schools still have a lot of Apple IIs, so anything new that they can use, we'll continue to convert to the Apple II." As proof, Sterling offers up *Treehouse*, a *Playroom* sequel for older kids. Although it will hit the Mac first, an Apple II version is in the works. Ditto with *Where in America's Past Is Carmen Sandiego?*, another episode in the seemingly endless tales of crime, geography, and history.

Still, Broderbund is noticing an Apple II-to-Mac transition: "We're seeing the impact of the new systems [the Classic and LC]. We've noticed a significant increase in Mac product sales during the last two months." Ascribing the jump in sales to the low-cost Macs, Sterling promises that all future Broderbund Mac software will be written for color.

As to what to say to diehard Apple II fans, Sterling is at a loss for words. "I'm not sure

what to tell them," she says. "It's the evolution of the computer market. We all have to go in that direction."

#### DIFFERENT ARCHITECTS . . .

One thread that runs through every conversation with old-line Apple II developers is that business is business. The market demands, or it doesn't demand. And then it decides. Companies that don't react to change and make the transition risk disappearing. And a company long gone doesn't do anyone any good, whether that's a user needing technical support, a developer needing work, or a stockholder needing dividends.

Businesses make tough choices on the basis of cold facts, not hot emotions. Sometimes that's the hardest thing for any computer user — no matter what machine he or she uses — to understand. □

WRITE TO CONTRIBUTING EDITOR GREGG KEIZER AT 614 LINDEN STREET, SHREVEPORT, LA 71104. ENCLOSE AN SASE IF YOU'D LIKE A PERSONAL REPLY.

## DESIGN YOUR OWN HOME™

with your IBM, Macintosh, Apple II, or Apple IIGs

### Architecture Program

Draw floor plans, side views, and structural details. Calculate dimensions (feet/inches or metric), area & lumber. Use 154 architectural symbols, text, icons, pull-down menus.

### Interiors Program

Arrange a room from the top, try different color schemes, then automatically view it from the side. Over 100 furniture pieces, each with 8 rotations: text, on-screen measurements, pull-down menus.

### Landscape Program

Create a full-color plan of your property. Create a top view and use the auto side view feature to view your plan from any direction. Includes slopes, scaling, and plant "aging," plant identification, and shopping lists.

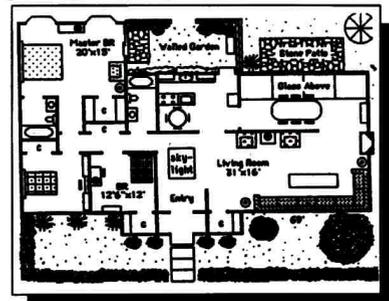
Ask about our **LIBRARIES**.

### NEW! The Instant Decorator

This never-fail design coordinating method lets you analyze your interior decor. The program analyzes the compatibility in each room of furniture and other elements and determines the degree of harmony or disharmony. Become an expert interior decorator overnight!

Apple II, Laser 128 (64K)  
Macintosh (512K); IBM (256K)

**Instant Decorator . . . ONLY \$49.95**



### Architecture, Interiors or Landscape System Requirements and Prices

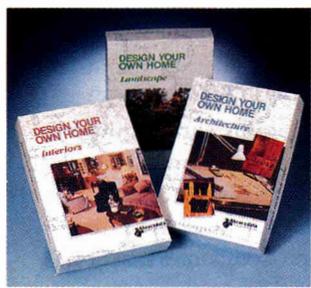
Apple II/Laser 128, 64K . . . . .	\$69.95 ea.
Apple IIGS, 1 MB . . . . .	\$89.95 ea.
Macintosh, 1 MB . . . . .	\$99.95 ea.
IBM, 640K . . . . .	\$99.95 ea.

To order call  
**800-451-4871 or**  
**FAX (503) 683-1925**

By Mail: Add \$7 shipping first program, plus \$2 ea. additional. Send Visa/MasterCard number with expiration date or check.

**Abacadata**  
the source of plan-making software  
Dept. D  
P.O. BOX 2440  
EUGENE, OR 97402  
(503) 342-3030

# Programs, Peripherals



**HOME DESIGNER'S DREAM**  
**Design Your Own Home Architecture, Landscape or Interiors by Abracadata.** Now you can have a designer home with a most prestigious name: yours. Draw floor plans, elevations, structural details the way you want them. Build interior and landscape designs with separate packages. All packages come with pre-drawn shapes.  
 Suggested Retail GS .....\$89.95  
**Programs Plus Price.....\$47.**  
 Suggested Retail .....\$69.95  
**Programs Plus Price.....\$37.**

## ACCELERATORS /RAMCARDS

<b>American Micro Research (Micro Sci)</b>	
80/64E 80 Column 64K	
Card (Ile only) .....	49
<b>Apple Computer</b>	
Apple IIe Enhancement Kit .....	58
Apple IIe Extended 80 Col. Card .....	89
<b>Applied Engineering</b>	
GS-Ram Plus 1MG .....	199
GS-Ram Plus 2MG .....	293
GS-Ram Plus 3MG .....	379
GS-Ram II 1MG .....	142
GS-Ram II 2MG .....	219
GS-Ram II 4MG .....	369
GS-Ultra 1MG .....	212
GS-Ultra 2MG .....	279
GS-Ultra 512K .....	159
PC Transporter (768K) .....	255
PC Transporter Installation Kit GS .....	37
PC Transporter Installation Kit IIE .....	29
Ram Express II 1024K .....	174
Ram Express II 256K .....	141
Ram Express II 512K .....	156
RamFactor 1MG .....	229
RamFactor 512K .....	189
RamWorks III 1MG .....	220
RamWorks III 256K .....	133
RamWorks III 512K .....	160
TransWarp Accelerator (GS) .....	260
TransWarp Original Accelerator .....	88
ViewMaster 80 (II+) .....	124
Z-Ram Ultra 2 1MG .....	277
Z-Ram Ultra 2 256K .....	191

Z-Ram Ultra 2 512K .....	220
Z-Ram Ultra 3 1 MG .....	292
<b>Chips</b>	
Chips Set 256K 120 or 150 NS .....	19
<b>CV Technologies</b>	
GS Memory Board .....	89
<b>Harris Labs</b>	
GS Load 256K (3 pack) .....	69
GS Sauce 1MG .....	132
GS Sauce 2MG .....	169
GS Sauce 4MG .....	307
GS Sauce Card "O" K (GS) .....	75
<b>Zip Technology</b>	
Zip Chip 4 MHZ .....	98
Zip Chip 8 MHZ .....	139
Zip Chip Model 1600 (GS) <b>SPECIAL</b> .....	239

## ACCESSORIES

<b>Advanced Gravis</b>	
Advanced Gravis' Joystick	
(AP & GS) .....	39
MouseStick ADB (GS) .....	59
<b>Apple Computer</b>	
Apple Mouse IIe .....	118
Disk Controller Card .....	68
Extended Keyboard ADB .....	175
Video Overlay Card .....	428
<b>Applied Engineering</b>	
Audio Animator (GS) .....	155
Conserver (GS) .....	73
High Output Power Supply .....	59
IIGS Heavy Duty Power Supply .....	77
Sonic Blaster (GS) .....	94
TimeMaster .....	77
Transporter Keyboard .....	100
<b>CH Products</b>	
Flight Stick .....	46
Mach III Joystick .....	29
Mach IV Joystick .....	62
Roller Mouse ADB (GS) .....	83
<b>I/O Design</b>	
Imageware II-Case Black, Navy,	
Platinum .....	45
<b>ICMS, Inc.</b> MousePen ADB .....	89
<b>Kalmar</b>	
Kalmar Roll Top 3.5 (holds 135) .....	26
Kalmar Roll Top 3.5 (holds 45) .....	14
Kalmar Roll Top 3.5 (holds 90) .....	21
<b>Kensington, Inc.</b>	
A/B Box .....	63
AntiGlare Filter GS .....	34
Apple Security System .....	33
Mouse Pocket (Reg. or ADB) .....	8
Mouseway (MousePad) .....	8
Turbo Mouse (Reg. or ADB) .....	108
Printer Muffler 80 .....	47
Printer Muffler 80 Stand .....	22
Space Saver Printer Stand .....	19
System Saver (Platinum or Beige) .....	58
System Saver GS .....	68
Universal Copy Stand .....	22
Universal Printer Stand .....	19
<b>Koala Technologies</b>	
Koala Pad Plus w/Graphics Exhibitor .....	79

**Check our low prices. Most of our prices are the lowest in this magazine. If we don't already have the lowest price, WE WILL TRY TO MATCH AND BEAT ANY ADVERTISED PRICE\***

\*"Advertised price" does not include typographical errors on the part of other vendors or prices that do not reflect higher shipping costs, credit card charges, or membership fees. Final judgement remains with the manager on duty.

<b>Kraft Floppy Disk Notcher</b> .....	4
<b>Kraft Universal 3 Button Joystick (Ile, IIC)</b> .....	29
<b>Laser Computer Inc.</b>	
Laser 128 2 Slot Expansion Box .....	55
<b>Lynn Products Cables (Specify)</b> .....	13
<b>Lynx Computer Turbo Trackball (GS)</b> .....	59
<b>Maxell Maxell 3.5 DS, DD (10)</b> .....	14
Maxell 5.25 DS/DD .....	9
<b>Mouse Systems</b>	
Littlemouse APlus .....	78
Littlemouse ADB .....	78
<b>MousTrak MousePad 7"x9" Size</b> .....	8
MousePad 9"x11" Size .....	9
<b>Northgate Computer Systems</b>	
OmniMac Ultra Keyboard (IIGS) .....	94

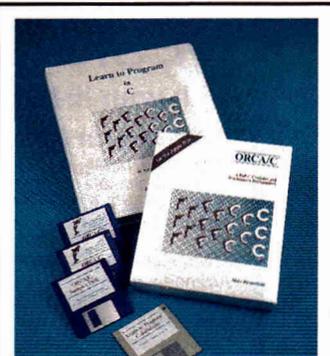
<b>Orange County Speaker</b>	
OCS 2-40 (Stereo Amplifier) .....	125
<b>RC Systems Double Talk</b> .....	183
<b>Ribbons</b>	
ImageWriter Ribbons available in orange, purple, black, blue, brown, green, red, yellow or silver .....	3
ImageWriter II-4 Color Ribbon .....	7
ImageWriter Rainbow Pack (6 Colors) .....	19
ImageWriter Ribbon-Black (6 pack) .....	19
<b>Sony Sony 3.5 DS, DD (10)</b> .....	12
<b>Sopris</b>	
Imagewriter II Case Navy, Platinum .....	42
<b>Street Electronics</b>	
Echo II (AP & GS) .....	99
<b>Targus Imagewriter II Case Black</b> .....	44

## APPLE COMPATIBLE COMPUTERS

<b>Apple Computer</b>	
IIGS Computer 1MG CPU .....	799
<b>Laser Computer Inc.</b>	
Laser 128 800K 3.5" Drive w/Controller .....	199
Laser 128 Cables (Parallel, Serial, RGB or Modem) .....	13
Laser 128 Computer .....	325
Laser 128 Mouse .....	44
Laser 128 System w/Amber Monitor .....	380
Laser 128 System w/Color Monitor .....	490
Laser 128EX Computer .....	369
Laser 128EX II Computer (3.5) .....	429
Laser 128EX II Computer (5.25) .....	399
Laser RGB Monitor .....	215

## BACKUP UTILITIES

<b>Alpha Logic LockSmith v6.0</b> .....	33
<b>Apple Computer</b>	
GS/OS v5.0.2 (GS) .....	39
<b>Central Point Software</b>	
Copy II Plus v9.0 .....	24

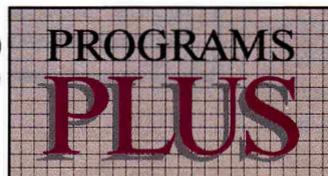


### THE ANSI C COMPILER ANSWER

**ORCA/C™ with Learn to Program by The Byte Works** comes with complete C libraries and extensions for IIGS toolbox. Combines pro power with easy-to-use pull-down menu environment. Beginners learn fast. Source-level debugger saves time. Optimizations enhance speed of programs, compact code. Work in Mac style desktop or UNIX style shell. Disks with sample code.  
 Suggested Retail .....\$200.00  
**Programs Plus Price .....\$119**

# Programs Plus

# 1-800-832-3201



Fax: 203-381-9043  
 Inquires: 203-378-3662  
 Canada: 1-800-344-7753  
 75 RESEARCH DRIVE  
 STRATFORD, CT 06497

# & Phenomenal Prices

## Vitesse, Inc.

Salvation: Deliverance (GS)	29.
Salvation: Exorcisor (GS)	24.
Salvation: Backup (GS)	29.
Salvation: Renaissance (GS)	29.
Salvation: Supreme Pack	119.
Salvation: Wings (GS)	47.

## BUSINESS SOFTWARE

<b>Abrcadata</b> Everybody's Planner	49.
<b>Actsoft</b>	
Alpha Check Plus	34.
Alpha Check v3.1	26.
<b>Beagle Brothers</b>	
AW v3.0 Companion	23.
Beagle Bros. Clip Art 1 (GS)	26.
Beagle Bros. Desk Accessories (GS)	34.
Beagle Write	45.
Beagle Write Desk Accessories or Font Pack 1 or 2	26.
Beagle Write Font Lib. 1 (GS)	31.
Beagle Write Picture Manager	25.
Beagle Write (GS)	57.
GS Font Editor or Program Writer	29.
Outliner for Appleworks 3.0	41.
Superfonts Activity Guide	29.
Timeout Decision Pak (Graph, SpreadTools & SideSpread)	85.
Timeout Graph	49.
Timeout MacroEase	23.
Timeout Performance Pak (DeskTools I, II & PowerPack)	65.

Timeout QuickSpell	40.
Timeout ReportWriter	42.
Timeout SideSpread, FileMaster, or DeskTools	30.
Timeout Style Pak (SuperFonts, Thesaurus & FileMaster)	79.
Timeout SuperFonts	40.
Timeout SuperForms	39.
Timeout TextTools	29.
Timeout Thesaurus, DeskTools II or PowerPack	29.
Timeout UltraMacros or SpreadTools	34.

## Big Red Software

Labels, Labels, Labels	22.
------------------------	-----

## Broderbund

Bank Street Writer Plus (AP or C+)	47.
------------------------------------	-----

## Claris

Apple Works v3.0	168.
Apple Works (GS) v1.1	192.

Intuit Quicken v1.0	37.
---------------------	-----

## Manzanita

BusinessWorks Bundle AP & GS	
------------------------------	--

(Sys. Manager, G/L, A/P, A/R, Inventory)	248.
---	------

BusinessWorks Payroll (AP & GS)	98.
---------------------------------	-----

## Meca Software

Managing Your Money	
---------------------	--

v4.0 (AP & GS)	88.
----------------	-----

## Micca Soft

Invoice w/A/R & Sales	
-----------------------	--

Tracking/Inventory	125.
--------------------	------

Milliken Publishing Medley (GS)	74.
---------------------------------	-----

Nolo Press Will Maker v3.0	33.
----------------------------	-----

Seven Hills Software	
----------------------	--

Graphicwriter III (GS)	72.
------------------------	-----

Sierra On-Line Smart Money (GS)	45.
---------------------------------	-----

Stone Edge	
------------	--

DB Master Professional (AP & GS)	179.
----------------------------------	------

<b>Timeworks, Inc.</b>	
------------------------	--

Art Portfolio 4 in 1	69.
----------------------	-----

Graph It!	43.
-----------	-----

People, Places and Things, Design Ideas	25.
--	-----

Publish-It v3.0 (AP & GS)	73.
---------------------------	-----

Swifttax	45.
----------	-----

Symbols and Slogans, Education	
--------------------------------	--

Graphics, Font Pack 1 or 2 (AP & GS)	25.
---	-----

<b>WordPerfect Corp.</b>	
--------------------------	--

WordPerfect (AP or GS)	104.
------------------------	------

## COMMUNICATION SOFTWARE

Applied Engineering ReadyLink	57.
-------------------------------	-----

<b>Beagle Brothers</b>	
------------------------	--

Point-to-Point	58.
----------------	-----

TimeOut TeleComm	41.
------------------	-----

<b>Compuserv</b>	
------------------	--

Compuserve Membership Kit	23.
---------------------------	-----

<b>InSync</b> Proterm	77.
-----------------------	-----

<b>Morgan Davis Group</b>	
---------------------------	--

ModemWorks	29.
------------	-----

**DISCOUNTS BY MAIL.** Circle the items in our ad you want, send the ad in with the coupon below and receive \$.50 off each item! (subject to the conditions below)

**If Ordering At The Last Minute, Our Air Express Service Can Rush Your Software/Hardware To You.**

Send Coupon and List of Items Desired To:

**Discounts By Mail Department  
Programs Plus, 75 Research Drive, Stratford, CT 06497**

**TO BE ELIGIBLE FOR THE \$.50 PER ITEM DISCOUNT YOU MUST:**

1. Fill out all items.
2. Send in our ad with the items you desire circled.

Name \_\_\_\_\_

Address (include company name) \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Phone No. at above address \_\_\_\_\_

Check form of payment:

VISA  MasterCard  DISCOVER  C.O.D.

Personal Check  Certified Check  Money Order

Card No. \_\_\_\_\_

Exp. Date \_\_\_\_\_

Personal and company checks allow 3 weeks to clear. For faster delivery, send cashier's check, certified check, or money order. Shipping - Software (\$5.00 minimum). Shipping - Hardware (please call 203-378-3662 or 800-832-3201). COD - Add an additional \$3.50. Alaska, Hawaii, Canada, PO, APO, and FPO \$6.00 minimum. Foreign orders - \$15.00 minimum and 15% of all orders over \$100. MasterCard, VISA and DISCOVER (please include card no. and expiration date). Connecticut residents add 8% sales tax. Prices subject to change without notice. All returns must have a return authorization number. Call 203-378-3662 to obtain one before returning goods for replacement. Defective merchandise replaced with same item only. We do not guarantee compatibility. All sales are final.

ProLine	95.
Softspoken Crossworks	67.

## DISK DRIVES & HARD DISK SUB-SYSTEMS

<b>American Micro Research (Micro Sci)</b>	
--	--

A.5 Half Height (II+ & IIE)	129.
-----------------------------	------

A.5C Half Height (IIC)	129.
------------------------	------

A5 D Half Height 5.25" Drive	
------------------------------	--

(IIGS Daisychain)	135.
-------------------	------

AMR 800k Drive w/Controller	215.
-----------------------------	------

AS800k 3.5 Ext. Drive	168.
-----------------------	------

GS Partner: Quick 20MB	515.
------------------------	------

GS Partner: Quick 40MB	585.
------------------------	------

GS Partner: Quick 60MB	665.
------------------------	------

<b>Apple Computer</b>	
-----------------------	--

Apple 3.5 Drive (GS & C+)	309.
---------------------------	------

Apple 3.5 Unidisk	315.
-------------------	------

Apple 5.25 Drive (IIE, GS, C+)	248.
--------------------------------	------

High Speed DMA SCSI Card	105.
--------------------------	------

Unidisk 3.5 Controller	58.
------------------------	-----

<b>Applied Engineering</b>	
----------------------------	--

AE 3.5" Drive	199.
---------------	------

AE High Density Drive (GS)	152.
----------------------------	------

AE 5.25" Drive	121.
----------------	------

Controller Card for 3.5" Drive	
--------------------------------	--

(IIE or II+)	62.
--------------	-----

Disk II Style Controller Card	49.
-------------------------------	-----

Transdrive 360K Dual Drive	289.
----------------------------	------

Transdrive 360K Single Drive	185.
------------------------------	------

Transdrive Additional Drive	
-----------------------------	--

(for TD single)	130.
-----------------	------

Vulcan 100 Meg (AP or GS)	1279.
---------------------------	-------

Vulcan 20 Meg (AP or GS)	498.
--------------------------	------

Vulcan 40 Meg (AP or GS)	639.
--------------------------	------

<b>CMS Enhancements</b>	
-------------------------	--

20 MB w/SCSI II card	459.
----------------------	------

30 MB w/SCSI II card	492.
----------------------	------

60 MB w/SCSI II card	569.
----------------------	------

CMS 45 Removable w/A2S	799.
------------------------	------

Cartridge for 45 Removable	99.
----------------------------	-----

SCSI Rom Upgrade	23.
------------------	-----

MC20-Classical, IIsi	280.
----------------------	------

MC40-Classical, IIsi	370.
----------------------	------

MC100-Classical, IIsi	610.
-----------------------	------

<b>CV Technologies</b>	
------------------------	--

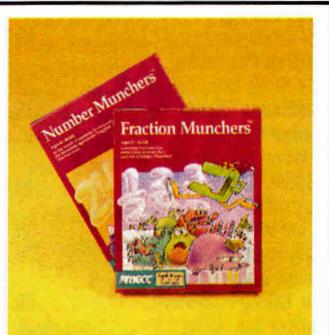
Ramfast SCSI Card w/256K Ram	178.
------------------------------	------

<b>Laser Computer Inc.</b>	
----------------------------	--

Laser 128 5.25 Disk Drive	88.
---------------------------	-----

Laser 800KB Drive	175.
-------------------	------

Laser 800KB Drive w/controller	205.
--------------------------------	------



**JOIN THE MUNCHERS FOR A MATH ADVENTURE**  
With MECC's *Number Munchers* and *Fraction Munchers*, hungry Munchers are out to make a meal of tricky math challenges before they become a meal for the mischief-making Troggles. They're counting on your quick thinking and math skills to reach the Muncher Hall of Fame safely. No matter what your age or skill level, *Number Munchers* and *Fraction Munchers* are gobbling-good fun for the entire family.  
Suggested Retail .....\$39.95  
**Programs Plus Price .....\$24**

# Programs Plus

# 1-800-832-3201



**Free Freight -  
Ask Operators  
For Details**

# We Carry A Full Line of

**We sell more Apple II  
Software than anyone else!**

**Mac LC (has Series II card)**

**MacClassic 240**

**Mac II SI • Mac II CI • Mac II FX**

**CALL**



**SUPER SPEED UP YOUR  
IIGs FOR LESS!**

**Patented model 1600 GSX Board by Zip Technology** has super deluxe features for less. *Safe* and *easy* to install, it will speed up all major hardware and software to 8 MHz Plus. Comes standard with 16K memory and is DMA compatible. The GSX is fully upgradeable to 64K of cache memory and 10 MHz with up-grade kit. **Suggested Retail .....\$350.00**  
**Programs Plus Price .....\$239**  
Also available:  
4 MHz .....\$98.  
8 MHz .....\$139.

Universal Disk Controller ..... 44.  
**Omnishore**  
Sider D2 20MB HD ..... 419.  
Sider D4/T 40MB HD ..... 789.

## EDUCATIONAL SOFTWARE

**A.E.C.**  
Spanish Vocabulary  
or Spanish Grammar ..... 16.

**SPECIAL EDITION PRODUCTS  
WITH TEACHER'S GUIDES**  
Return of the Dinosaurs:  
Teacher's Edition ..... 39.  
Lab Pack ..... 68.  
Super Lab Pack ..... 105.  
Excel-A-Read:  
Teacher's Edition ..... 39.  
Lab Packs ..... 89.  
Spanish or French Vocabulary  
& Grammar:  
Teacher's Pack ..... 39.  
Lab Packs ..... 74.

**AEC Management Systems**  
Phonics ..... 31.  
U.S. History ..... 16.  
World History ..... 16.  
**Activision**  
Music Studio v2.0 (GS) ..... 43.  
**Advanced Idea**  
Audubon Wildlife Adventures:  
Grizzly Bears (5.25) ..... 32.  
Audubon Wildlife Adventures:  
Whales (5.25) ..... 32.  
Audubon Wildlife Adventures:  
Grizzly Bears (GS) ..... 38.  
Audubon Wildlife Adventures:  
Whales (GS) ..... 38.  
Stars & Planets (GS) ..... 27.  
Wizards of Words ..... 25.

**Barron's**  
Computer SAT Revised Version ..... 31.  
**Britannica**  
Algebra 1: 1st & 2nd Semester ..... 46.  
Algebra 1: 1st or 2nd Semester ..... 27.  
Designasaurus or Revolution (3.5) ..... 27.  
Spellicopter ..... 22.  
**Broderbund**  
Geometry (3.5) ..... 49.  
McGee or Katie's Farm (3.5) ..... 25.  
Playroom ..... 24.  
Playroom (MAC) ..... 29.

Science Tool Kit Module I or II ..... 25.  
Science Tool Kit Master Module ..... 49.  
Type! ..... 17.  
Where in Europe  
is Carmen Sandiego? (AP or C+) ..... 27.  
Where in the USA  
is Carmen Sandiego? ..... 27.  
Where in the USA  
is Carmen Sandiego? (GS) ..... 29.  
Where in the World  
is Carmen Sandiego? ..... 25.  
Where in the World  
is Carmen Sandiego? (GS) ..... 29.  
Where in Time  
is Carmen Sandiego? (AP or C+) ..... 27.

**Computeach**  
Stepping Stones 1 & 2 ..... 29.  
Studymate-The Grade  
Booster (3.5 or 5.25) ..... 26.

**Davidson & Associates**  
Alge-Blaster Plus (AP or GS) ..... 28.  
Math Blaster Plus (AP or GS)  
or Grammer Gremlins ..... 28.  
Math Blaster Plus (GS) ..... 28.  
Read 'N' Roll ..... 29.  
Reading & Me ..... 25.  
Speed Reader II  
(Consumer Version) ..... 25.  
Speed Reader II (School Version) ..... 42.  
Spell-It Plus (AP or GS) or  
Math Blaster Mystery (AP or C+) ..... 29.  
Talking Math & Me (GS)  
or Talking Reading & Me (GS) ..... 28.  
Word Attack Plus (AP or GS) ..... 29.  
Word Attack Plus  
Spanish or French ..... 29.

**Fisher Price**  
I Can Remember  
or Firehouse Rescue ..... 9.  
Little People Bowling ..... 9.

**Garnetek**  
School Bus Driver or  
Chutes & Ladders ..... 9.

**Grade Busters Corp.**  
Grade Busters 1, 2, 3 ..... 69.

**Great Waves Software**  
Kidstime II (GS) ..... 22.

**Learning Company**  
Magic Spells (3.5 or 5.25)  
or Gertrudes Secrets (3.5) ..... 22.  
Math Rabbit (3.5 or 5.25) ..... 22.  
Reader Rabbit (5.25) ..... 22.

Talking Reader Rabbit (3.5) ..... 32.  
Think Quick (3.5 or 5.25)  
or Writer Rabbit (3.5 or 5.25) ..... 29.  
Writing and Publishing  
Center (3.5 or 5.25) ..... 31.

**MECC**  
Arithmetic Critters (3.5 or 5.25) ..... 22.  
Calendar Crafter  
Home Edition (3.5) ..... 29.  
Calendar Crafter  
School Edition (3.5) ..... 33.  
Counting Critters (3.5 or 5.25) ..... 22.  
First Letter Fun (3.5 or 5.25) ..... 24.  
Fraction Munchers (3.5 or 5.25) ..... 24.  
Fun from A to Z (3.5 or 5.25) ..... 24.  
Number Munchers or Word Munchers  
(3.5 or 5.25) ..... **SPECIAL** 24.  
Oregon Trail or Patterns  
(3.5 or 5.25) ..... 22.  
Paint with Words (5.25) ..... 24.  
Spellevator (3.5 or 5.25) ..... 24.  
USA Geograph (3.5)  
or World Geograph (3.5) ..... 49.

**Milliken Publishing**  
The Story Teller (GS only) ..... 32.  
**Mindscape** Crossword Magic ..... 33.

**Orange Cherry**  
Addition & Subtraction, ABC's,  
Speller, Clock or Money ..... 38.  
Animals, Dinosaurs, Numbers,  
First Writer, First Reader ..... 38.  
Childrens Newspaper Maker (GS) ..... 38.  
Jungle Safari  
or Talking First Words (GS) ..... 38.  
School Bus, Alpha Chimp, Colors &  
Shapes, Reading Railroad ..... 38.  
Talking Multiplication &  
Division (GS) ..... 38.  
Talking Speller II (GS) ..... 38.

**Queue**  
Dinosaur Days ..... 21.  
Facemaker Gold Edition ..... 31.  
Kidwriter (5.25) ..... 25.  
Kidwriter Gold Edition (3.5) ..... 39.

**Sensible Software**  
Report Card II (AP & GS) ..... 37.  
Sensible Grammar (AP & GS) ..... 52.

**Simon & Schuster**  
Typing Tutor IV (AP or GS) ..... 26.

**Software Toolworks**  
Mavis Beacon Typing (5.25) ..... 25.  
Mavis Beacon Typing (3.5) ..... 31.

cepted, based on credit approval. To submit purchase orders, call our business office at 203-378-1926 or 800-832-3201, 9am-5:30pm EST. Shipping on corporate and school orders billed at cost.

### SHIPPING

- **Continental U.S.** Add \$7.00 minimum per order to cover DHL Overnight Service, unless UPS ground delivers next day. Some areas require an additional day. (UPS ground service available at reduced rate per customer request.) Saturday delivery available to many areas upon request.
- **Order by 5:30pm EST Monday-Friday** and all (in-stock items) will ship that evening for overnight delivery, barring system failure, etc.
- **Alaska, Hawaii, outside Continental U.S., APO and FPO:** call (203) 378-3662 or write for shipping information.
- **Mail-in orders** (especially from foreign countries), please furnish telephone or fax number.

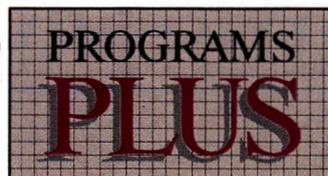
### 7 POINT POLICY BENEFITS YOU



1. VISA, MASTERCARD or DISCOVER accepted. No surcharge. Your card is not charged until we ship.
2. If we send a partial order, there's no second shipment charge.
3. All shipments insured at no extra charge.
4. No sales tax charged for out of state shipments.
5. COD maximum \$1,000, cash or certified check. COD orders ship via UPS Blue Label unless UPS Ground delivers next day.
6. 120-day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. Prices subject to change without notice. All items subject to availability.
7. Corporate and school purchases ac-

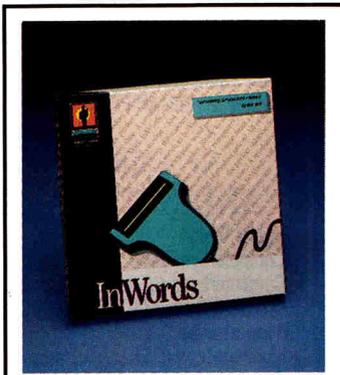
# Programs Plus

# 1-800-832-3201



Fax: 203-381-9043  
Inquires: 203-378-3662  
Canada: 1-800-344-7753  
75 RESEARCH DRIVE  
STRATFORD, CT 06497

# Software for Apple & Mac



**TEXT SCANNING SOFTWARE**  
**InWords** by WestCode is OCR software for the Apple IIe and IIgs. With InWords and a hand-held scanner, you can scan in virtually any printed information - articles, books, contracts, lesson plans, and more - into a file for your word processor, data base, spreadsheet or desktop publishing program. Scans up to 500 words per minute. Requires 512K and Quickie.  
 Suggested Retail .....\$129  
**Programs Plus Price .....\$77**

- Mavis Beacon Typing (MAC) ..... 32.
- Terrapin** Logo Plus ..... 75.
- TimeWorks, Inc.**
- Evelyn Wood: Dynamic Reader ..... 25.
- Weekly Reader**
- New Talking Alphabet (3.5) ..... 27.
- New Talking Opposites (3.5) or Sentence Fun (3.5) ..... 27.
- New Talking Shapes (3.5) or Spelling Rules (3.5) ..... 27.
- StickyBear Punctuation (5.25) ..... 27.
- StickyBear Vocabulary (5.25) ..... 27.
- StickyBear Series:  
 Full Line Available ..... CALL

## ENTERTAINMENT SOFTWARE

- Accolade**
- 4th & Inches (GS) or Fastbreak ..... 27.
- Bubble Ghost (GS) ..... 21.
- California or European Challenge (GS) ..... 15.
- Cycles (MAC) ..... 31.
- Grand Prix Circuit (GS) ..... 27.
- Ishido (MAC) ..... 34.
- Jack Nicklaus 1990 Courses (GS) ..... 15.
- Jack Nicklaus Course Disk Vol. 1 or 2 (GS) ..... 15.
- Jack Nicklaus Golf (GS) ..... CALL
- Jack Nicklaus Golf (MAC) ..... CALL
- Jack Nicklaus Course Vol. IV (GS) ..... 15.
- Jack Nicklaus Course Vol. IV (MAC) ..... 15.
- Mean 18 (GS), Hardball (GS) ..... 27.

- Muscle Cars or Supercars (GS) ..... 15.
- Serve and Volley (GS) ..... 25.
- Stratego (MAC) ..... 31.
- Test Drive II (GS) ..... 28.
- Test Drive II (MAC) ..... 29.
- Third Courier (GS) ..... 30.
- Sky Travel (AP & GS) ..... 30.

### Artworx

- Bridge 6.0 (AP or GS) or Strip Poker II (GS) ..... 25.
- Kaleidokubes (GS) ..... 14.

### BlueLion

- Ticket to Hollywood or London ..... 25.
- Ticket to Spain ..... 25.
- Ticket to Washington D.C. .... 28.

### Britannica

- Gnarly Golf (GS) ..... 17.
- Great Western Shoot-Out (GS) ..... 17.
- JigSaw (GS) ..... 23.
- Laser Force (GS) ..... 17.
- Task Force (GS) ..... 23.

### Broderbund

- Ancient Art of War ..... 28.
- Ancient Art of War at Sea ..... 28.
- Centauri Alliance or Jam Sessions (GS) ..... 30.
- The Dark Heart of Uukrul ..... 30.
- VCR Companion ..... 30.
- Wings of Fury (AP & GS) or Prince of Persia ..... 22.
- ByteWorks** Ugly Duckling (GS) ..... 25.

### California Dreams

- Block Out (GS) ..... 26.
- Tunnels of Armageddon (GS) ..... 26.
- Vegas Gambler (GS) ..... 26.

### Casady & Greene

- Crystal Quest (GS) ..... 29.

### Cinemaware

- Star Saga 1 (AP or GS) or Star Saga 2 (GS) ..... 32.

### Compu-Teach

- Once Upon a Time ..... 26.
- Once Upon A Time (GS) or Once Upon A Time II (GS) ..... 33.
- Puppet Playhouse (AP, C+ or MAC) ..... 28.
- See the U.S.A. .... 26.

### Datasoft

- Hunt for Red October (AP or GS) ..... 21.

### Electronic Arts

- Bards Tale (GS) ..... 14.
- Bards Tale II ..... 14.
- Bards Tale III or John Madden Football ..... 31.
- Cartooners (GS), Bards Tale II (GS) ..... 20.
- Earl Weaver Baseball ..... 14.
- Instant Synthesizer (GS) ..... 32.
- Marble Madness (GS) ..... 14.
- Skate or Die (GS) ..... 14.
- The Immortal (GS) ..... 32.
- Zany Golf (GS) ..... 26.

### FTL

- Dungeon Master (GS) ..... 23.
- oids! (MAC) ..... 25.

### GameTek

- Double Dare or Press Your Luck ..... 9.

### Infocom

- Battle Tech ..... 19.

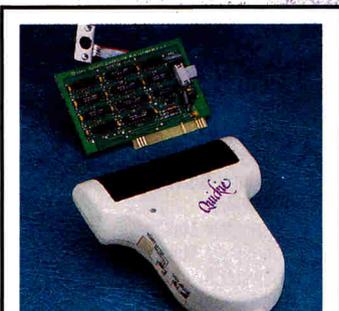
■ **24-Hour Fax Line 203-381-9043**

■ **DHL Overnight Delivery**

■ **Packing Materials**

**100% Safe for the Environment**

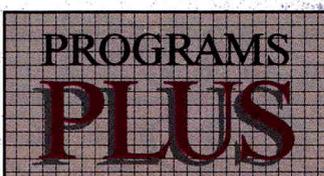
- Journey ..... 19.
- ShoGun or Zork Zero ..... 12.
- Interplay**
- Battle Chess ..... 27.
- Battle Chess (GS) or DragonWars (AP & GS) ..... 29.
- Neuromancer (GS) ..... 14.
- Interstel** Empire ..... 26.
- Leisure Genius**
- Clue, Risk, or Scrabble ..... 26.
- Lucasfilm Games**
- Maniac Mansion ..... 15.
- Task Force (GS) ..... 17.
- Melbourne**
- Quarterback (AP or GS) ..... 14.
- War in Middle Earth (GS) ..... 27.
- Micro League Sports**
- Micro League Baseball w/General Manager & Stats ..... 24.
- Micro Revelations** Xenocide (GS) ..... 28.
- Microillusions** Firepower (GS) ..... 21.
- Microprose**
- F-15 Strike Eagle ..... 12.
- Pirates (GS) ..... 28.
- Miles Computing, Inc.**
- Questmaster ..... 22.
- Questmaster (GS) ..... 26.
- Mindscape**
- Balance of Power 1990 (GS) ..... 32.
- Gauntlet (GS) ..... 12.
- Hostage (GS) or Captain Blood (GS) ..... 26.
- New World Computing**
- Kings Bounty ..... 26.
- Might & Magic ..... 18.
- Might & Magic II ..... 32.
- Origin Systems**
- Space Rogue, Knights of Legend or Omega (AP or GS) ..... 30.
- Times of Lore (AP & GS) or WindWalker ..... 25.
- Ultima IV, Ultima V ..... 37.
- Ultima Trilogy (I, II & III) ..... 37.
- WindWalker (GS) ..... 25.
- Polarware** Transylvania 3 (GS) ..... 15.
- Ready Soft** Space Ace (GS) ..... 33.
- Sierra On-Line**
- Gold Rush (AP or GS) or Black Cauldron (GS) ..... 25.
- Kings Quest I, II, III or IV ..... 29.
- Kings Quest I, II, III or IV (GS) ..... 29.
- Leisure Suit Larry (AP or GS) ..... 25.
- ManHunter New York (AP or GS) or Police Quest (AP or GS) ..... 29.
- Mother Goose (AP or GS) ..... 19.
- Space Quest or Space Quest II (GS) ..... 29.
- Thexder (AP or GS) or Silpheed (GS) ..... 22.
- Sir-Tech Software**
- Wizardry Trilogy (includes I, II, III) ..... 29.
- Software Toolworks**
- Chessmaster 2100 ..... 26.
- Chessmaster 2100 (GS) ..... 31.
- Cribbage/Gin King (GS) ..... 25.
- Keef the Thief (GS) ..... 14.
- Life and Death (GS) ..... 33.
- Spectrum Holobyte**
- Solitaire Royale (GS) ..... 20.
- Tetris (AP & GS) ..... 23.
- Strategic Simulations**
- AD&D Champions Krynn or Overrun ..... 32.
- AD&D Pool of Radiance ..... 30.
- Curse of the Azure Bond (GS) ..... 33.
- War of Lance ..... 27.
- SSG**
- Gold of the Americas (GS) ..... 28.
- Gold of the Americas (MAC) ..... 32.
- Halls of Montezuma (GS) ..... 29.
- Halls of Montezuma (MAC) ..... 26.
- Panzer Battles (GS) ..... 32.
- Panzer Battles (MAC) ..... 32.
- Reach for the Stars (GS) ..... 28.
- Reach for the Stars (MAC) ..... 32.
- Rommel (MAC) ..... 32.
- Victory Software**
- 2088: The Cryllan Mission: The Second Scenario ..... 33.



### QUICKIE - FIRST HAND SCANNER FOR YOUR APPLE II COMPUTER BY VITESSE, INC.

Allows you to scan in true grey or B&W, 320/640 mode. Features include Landscape/Portrait Scan, cut/paste, open multiple windows, fat bits edit, resize, rotate, flip, direct print, save to six formats, NDA and MORE! **ONLY** scanner that's Inwords OCR Software compatible.  
 Suggested Retail .....\$299.  
**Programs Plus Price .....\$191**

**Programs Plus**  
**1-800-832-3201**



Fax: 203-381-9043  
 Inquires: 203-378-3662  
 Canada: 1-800-344-7753  
 75 RESEARCH DRIVE  
 STRATFORD, CT 06497

# Programs Plus is the best value for all your Apple & GS needs!



**LIGHTNINGSCAN GS MAKES STRAIGHT SCANNING EASY**  
**LightningScan® GS by Thunderware.** Scan photos, drawings and text instantly! Only LightningScan GS lets you change contrast and brightness, colorize images and view a histogram. The only hand-held scanner with SnapGuide, the guide that makes straight scanning easy. Runs on any Apple IIgs with 512K. Can be upgraded to work on the Macintosh. Includes new NDA to scan and paste images into GS/OS programs.  
 Suggested Retail .....\$295.  
**Programs Plus Price .....\$194.**

2088: The Cryllan Mission (GS) .... 32.  
 Secrets of Bharas ..... 36.  
**Walt Disney**  
 Mickey's Crossword Puzzle Maker .. 24.

## GRAPHICS PACKAGES

**Abracadabra**  
 Architecture Library 1, 2, 3  
 or 4 (AP or GS) ..... 19.  
 Design Your Own Home:  
 Architecture (3.5) ..... **SPECIAL** 47.  
 Interiors (3.5) ..... **SPECIAL** 47.  
 Landscape (3.5) ..... **SPECIAL** 47.  
 Architecture (5.25) ..... **SPECIAL** 37.  
 Interiors (5.25) ..... **SPECIAL** 37.  
 Landscape (5.25) ..... **SPECIAL** 37.  
 Design Your Own Home: (MAC)  
 Architecture, Interiors, Landscape ..... 59.  
 Design Your Own Railroad ..... 32.  
 Design Your Own Train ..... 32.  
 Electronic Drawing ..... 32.  
 Interiors Library 1, 2 (AP or GS) ..... 19.  
 Landscape Library 1 ..... 19.  
**Baudville**  
 816/Paint ..... 42.  
 Award Maker Plus (AP & GS) ..... 28.  
**Beagle Brothers**  
 Beagle Draw (GS) ..... 53.  
 Platinum Paint (GS) ..... 58.  
**Berkeley Geoworks**  
 GEO Publish ..... 58.  
 GEOS V2.1, GEOCalc  
 or GEOFile ..... 43.

**Big Red Software**  
 PS Lover's Utility Set.(3.5) ..... 26.  
 PS Lover's Utility Set (5.25) ..... 26.  
**Broderbund**  
 Bannermania (AP or GS) ..... 22.  
 Dazzle Draw ..... 33.  
 New Print Shop (AP or C+) ..... 29.  
 New Printshop Graphics Party (AP) .. 22.  
 New Printshop Graphics Party (C+) .. 18.  
 New Printshop Graphics  
 Sampler Ed. (AP) ..... 19.  
 New Printshop Graphics  
 Sampler Ed. (C+) ..... 19.  
 New Printshop School &  
 Business Ed. (AP or GS) ..... 19.  
 Print Shop Companion  
 (GS Specific) ..... 29.  
 Print Shop Graphics Library  
 Party Edition (GS) ..... 17.  
 Print Shop Graphics Library  
 Sampler Edition (GS) ..... 19.  
 PrintShop(GS) ..... 30.

**Creative Pursuits**  
 Clip-Art for Writing & Publishing Center  
 Combo Pack (AP) ..... 48.  
 Holiday Disk (AP) ..... 20.  
 Nature Disk (AP) ..... 20.  
 People, Places Disk (AP) ..... 20.  
**Eclat** Fractal Explorer (AP or GS) .. 26.  
**Electronic Arts**  
 DeluxeWrite w/DeluxePaint II (GS) .. 26.

**EI Kassir Software**  
 COLOR+ (GS) ..... 42.  
 Supergraphix II (GS) ..... 52.  
**Hitech** Super Mario Print Kit ..... 13.  
**Orange Cherry**  
 Super GS Award Maker ..... 49.

**Roger Wagner**  
 Graphic Exchange (GS) ..... 29.  
 Hyper Studio (GS) ..... 82.  
**Saddleback** My Paint (GS) ..... 32.  
**Seven Hills Software**  
 Font Factory (GS) ..... 22.  
 SuperConvert (GS) ..... 22.

**So What Software** Iconix (GS) ..... 26.  
**Spinnaker**  
 Certificate Maker ..... 24.  
 Certificate Maker Library #1 ..... 19.  
 Newsroom ..... 19.  
 Newsroom Clip Art Collection  
 Vol. 1, 2 or 3 ..... 14.  
**Triad Venture**  
 GDL Graphic Disk Labeler  
 (GS v2.0) ..... 24.  
 The HYPERSTUFF Collection:  
 Cliptunes ..... 25.  
 Clipart Plus ..... 25.  
**VersaCAD Corp.** CADapple (3.5) .. 199.

## MODEMS & MONITORS

**Anchor Automation** 2400E ..... 129.  
**Apple Computer**  
 Apple Color Composite Monitor ..... 325.

Apple GS Color Monitor ..... 454.  
**Applied Engineering**  
 DataLink Express (ext. 2400) ..... CALL.  
 DataLink Express w/MNP 5 ..... CALL.  
 DL-X WMNP-5 &  
 Send FAX Option (GS) ..... 230.  
 DataLink Modem 2400B  
 (Int AP & GS) ..... 158.  
 Datalink LC Modem w/Send FAX .. 260.  
**Hayes MicroComputing**  
 Hayes 2400 SmartModem ..... 335.  
**Practical Peripherals**  
 Practical Modem 1200 SA Mini ..... 80.  
 Practical Modem 2400 MNP ..... 219.  
 Practical Modem 2400 SA ..... 185.  
**Prometheus**  
 Pro Modem 2400A Internal  
 w/Software ..... 122.  
**Supra Corporation**  
 SupraModem 2400  
 (Hayes Compatible) ..... 99.  
**U.S. Robotics**  
 Courier HST 9600 ..... 599.

## PRINTER INTERFACES

**Apple Computer**  
 Apple Super Serial Card ..... 105.  
**Applied Engineering**  
 Parallel Pro ..... 74.  
 Serial Pro ..... 97.  
**Orange Micro**  
 Grappler 9 pin ..... 79.  
 Grappler Plus (AP & GS) ..... 69.  
**Seven Hills Software**  
 Independence (GS) ..... 23.  
**SMT**  
 Envoy ..... 53.  
 No Slot Clock ..... 29.  
 Print Tech II ..... 29.  
**Thirdware**  
 Finger Print GSi verIII (Includes  
 Desktop Accessories-GS) ..... 83.  
 Finger Print Plus (Parallel, Serial,  
 or ImageWriter II) ..... 83.  
 Upgrade Kit (FingerPrint I & II) ..... 29.  
**Vitesse, Inc.** Harmonie V2.0 (GS) .. 29.  
**Xetec Inc.**  
 Superwriter 924 (GS, C+, C) ..... 44.

## PRINTERS

**Apple Computer** ImageWriter II ..... 455.  
**Brother** M1109-AP Printer ..... 179.

## SCANNERS AND SOFTWARE

**Digital Vision**  
 ComputerEyes (GS) ..... 193.  
 ComputerEyes (IIE) ..... 99.  
 ComputerEyes (MAC II) ..... 348.  
**Thunderware**  
 Lightningscan (GS) ..... **SPECIAL** 194.  
 Thunderscan (AP & GS) ..... 139.  
 Thunderscan 5.0 (MAC) ..... 169.  
**Vitesse, Inc.**  
 Quickie (AP & GS) ..... **SPECIAL** 191.  
 Quickie Update ..... 79.  
**WestCode** Inwords ..... **SPECIAL** 77.

## UTILITIES AND LANGUAGES

**Absoft** AC/BASIC (GS) ..... 79.  
**ByteWorks**  
 ORCA C  
 w/Learn to Program ..... **SPECIAL** 119.  
 ORCA/DeskTop (GS) ..... 34.  
 ORCA/C (GS) ..... 79.  
 ORCA/Design Master (GS) ..... 39.  
 ORCA/Disassembler (GS) ..... 32.  
 ORCAM Assembler (GS) ..... 39.  
 ORCA/Pascal (GS) ..... 80.  
 ORCA/Pascal w/Learn to Program .. 119.  
**Micol Systems**  
 Micol Advanced Basic IIE ..... 59.  
 Micol Advanced Basic (GS) v3.0 .. 89.  
**Morgan Davis Group** MD-Basic ..... 25.  
**Roger Wagner**  
 Macro Mate (GS) ..... 35.  
 Merlin 8/16 (AP & GS) ..... 75.  
 SoftSwitch (GS) ..... 34.  
**Seven Hills Software**  
 Disk Access (GS only) ..... 32.  
**So What Software** Call-Box (GS) .. 69.  
 Disc Commander (GS) ..... 29.  
 Hyper Launch (GS) v3.0 ..... 35.  
 Sonix (GS) ..... 34.  
**Zedcor** ZBasic v4.21 ..... 39.

## 100% Applied Engineering Memory Board with Factory Installed Chips

Some mail-order companies buy AE memory boards and install their own RAM chips. *Programs Plus* sells only genuine AE memory boards with factory installed RAM. Sure we might be able to sell our boards less expensive than our already low price but we don't want our customers to go through any hassles should an unlikely failure occur within AE's 5 year warranty period. With *Programs Plus*, you won't have to remove all of your chips before sending your memory board to AE for service. Your entire AE board (including RAM chips) will be backed with AE's 5 year warranty for parts & labor!

# Programs Plus

# 1-800-832-3201



Fax: 203-381-9043  
 Inquires: 203-378-3662  
 Canada: 1-800-344-7753  
 75 RESEARCH DRIVE  
 STRATFORD, CT 06497



# DESKTOP PUBLISHING GOES CAD

**There's no need to buy a dedicated program for many computer-aided-design projects — a DTP program will do fine.**

By **CYNTHIA E. FIELD, Ph.D.**

A RECESSION'S A GOOD TIME TO squeeze additional productivity out of every software dollar, and desktop-publishing (DTP) programs are a perfect place to start. Most DTP products can easily tackle everyday computer-assisted-design (CAD) projects that might otherwise require an outlay of \$100 or more for special software. Certainly, DTP programs can't boast the wealth of design features that professional drafting software does, but for uncomplicated applications, try drafting with the layout rulers, shape tools, and fill patterns your DTP program provides. Getting started is easy — just take a few cues from this month's project, a boat-dock template designed by reader Alan Krause. (See the accompanying **Figure**.)

Krause belongs to the Easthampton Rod & Gun Club, a 250-member sporting club that's located on the Oxbow section of the Connecticut River in western Massachusetts. Among other services, the club provides boating facilities for its members.

"Because the Oxbow freezes in the winter," Krause explains, "we're forced to remove our docks or risk having them damaged severely by ice. Armed with photocopies of the template, committee members inspect each section of the dock as it's removed from the water and note

the repairs (if any) that are required. The filled-in templates then tell us at a glance the materials we need to purchase in order to do the work."

Krause's template also lets members add to the dock or experiment with different arrangements. Because it's composed of design objects, Krause can select and drag part of it to another location, or copy and

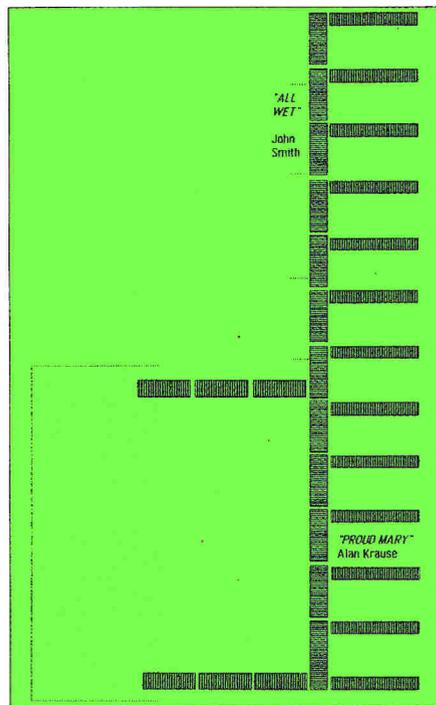
paste sections wherever he wants. Strategic placement of text frames lets him keep track of boat names and owners. As Krause points out, a marina owner could give handouts of a dock template to boat owners seeking a berth at the facility.

Krause's template sports more than three dozen objects, yet it's a snap to set up — particularly if you use **Publish It! 3** as we demonstrate here (\$149.95; Time-works, 625 Academy Drive, Northbrook, IL 60062, 708-559-1300). Although you'll want to switch viewing modes from time to time during the design process, start with *Size to Fit* mode by pressing Open apple-4 (OA-4) or *Show Half Size* mode by pressing OA-3. When it's time to type boat names, press OA-1 for *Show Full Size* mode.

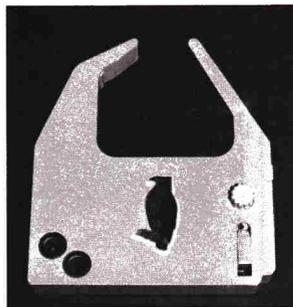
The 12 "mains" in the club's dock are represented by vertically oriented, filled rectangles. Pull down the *Objects* menu, select *Set Line Weight*, and choose the narrowest one. Pull down the menu again, select *Set Fill Pattern*, and choose the fourth pattern in the top row of the pattern palette. Select the box tool and *rubber-band* a vertical rectangle that's about one-quarter of an inch wide by three-quarters of an inch high. To *rubber-band*, hold down the mouse button, drag the mouse diagonally, and release the button when the rectangle looks correct. Use the screen rulers as guides.

Now make sure the rectangle's selected. If it is, it displays four corner "handles." If it's not, click on it with the pointer. Press OA-M. Check the dimensions that appear in the pop-up dialog box and edit them as required to conform to the specifications for the first object under *Mains* in the accompanying **Table**.

Unlike a CAD program, **Publish It! 3** can't scale components automatically for you. Depending on the precision your drawing requires, you may need to do a



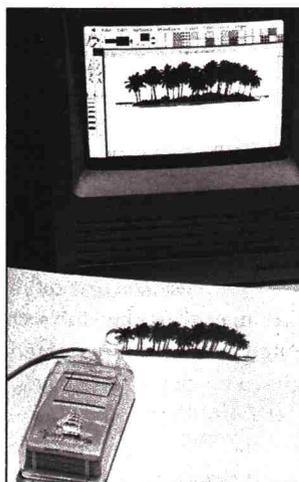
**Figure. Krause's boat-dock template.**



**DON'T THROW IT AWAY  
RE-INK IN THE PRINTER**

**THE FALCON**

- \* Two drops in each inking port re-inks the cartridge while it is in the printer (less than 2 min.)
- \* Cheaper than a regular cartridge because it lasts a guaranteed 10 times longer (normal usage 1800-2000 pp)
- \* Cheaper and easier than an external re-inker
- \* Fits Imagewriter I + II, DEC LA-50, most C. Itohs, NEC 8023 etc.
- \* Ribbon cartridge and a supply of ink included for **\$18.95**



**TRACE DRAWINGS, LOGOS,  
DIAGRAMS, ARTWORK, ETC.**

**SHARP TRACER**

- \* Fits over all Apple and Macintosh Mouse Models
- \* Forward extending arm that has 2x lens with a bulls-eye
- \* Works on any Paint / Draw program where the mouse can be used
- \* Changes the mouse into a drawing tool **\$19.95**

\$3 Shipping Overseas add \$6  
Order Both U.S. Shipping FREE  
Orders: (800) 451-3589

Questions: (504) 845-3188  
Fax: (504) 845-4429  
Write: Mando Products  
803 Bocage Lane  
Mandeville, La. 70448

little arithmetic ahead of time. For instance, Krause wanted his dock template to be drawn to scale, and chose one-sixteenth of an inch to one foot. That means each sixteenth of an inch on the page represents a foot of actual dock.

After selecting the scale, convert one-sixteenth to a decimal (0.0625) by dividing the numerator (1) by the denominator (16). Then multiply the decimal by the actual number of feet in the width of each dock component, and write down the result. Next, multiply the decimal by the number of feet in the actual length of each dock component, and write down that number. The two numbers you calculate constitute the size of the rectangle you need to create. Thus, Krause's 4-by-12-foot rectangular main scales to 0.250 by 0.750 inch (one-quarter by three-quarters of an inch) on Publish It!'s page, as shown in the accompanying **Table**. Depending on the orientation of the object you draw on screen, the DTP program will refer to one of the two calculated dimensions as the width and the other as the height.

After creating and, if necessary, resizing and reorienting the first main, select it and press OA-C to make a copy. Paste the copy (OA-V) and drag it under the original. Check the copy's specifications in the accompanying **Table** and edit as required to align the two objects properly. Continue pasting and placing copies until you've superimposed a dozen mains. Note that the last (bottom) main is longer than the others; it has to accommodate two dock "fingers."

When you're creating designs composed of a series of objects such as mains, remember that you can line them up precisely with the *Align* function in the *Objects* menu. In his

Object	Left Start	Top Start	Width	Height
<b>Mains</b>				
1	3.933	0.516	0.250	0.750
2	3.994	1.316	0.250	0.750
3	3.994	2.093	0.250	0.750
4	3.994	2.911	0.250	0.750
5	3.994	3.706	0.250	0.750
6	3.994	4.501	0.250	0.750
7	3.994	5.298	0.250	0.750
8	3.994	6.079	0.250	0.750
9	3.994	6.854	0.250	0.750
10	3.994	7.631	0.250	0.750
11	3.994	8.444	0.250	0.750
12	3.994	9.229	0.250	1.000
<b>Fingers</b>				
1	4.283	0.518	1.250	0.186
2	4.283	1.338	1.250	0.186
3	4.283	2.115	1.250	0.186
4	4.281	2.926	1.250	0.186
5	4.283	3.745	1.250	0.186
6	4.275	4.504	1.250	0.186
7	4.291	5.301	1.250	0.186
8	4.291	6.116	1.250	0.186
9	4.291	6.875	1.250	0.186
10	4.291	7.652	1.250	0.186
11	4.301	8.468	1.250	0.186
12	4.291	9.245	1.250	0.186
13	4.291	10.043	1.250	0.186
<b>Ramps</b>				
1	1.534	5.794	0.750	0.250
2	2.356	5.794	0.750	0.250
3	3.180	5.794	0.750	0.250
4	1.606	9.979	0.750	0.250
5	2.411	9.979	0.750	0.250
6	3.200	9.979	0.750	0.250
<b>Docking Area for Small Boats</b>				
1	3.711	1.541	0.241	n/a
2	3.711	2.820	0.241	n/a
3	3.719	4.312	0.241	n/a
4	3.737	5.479	0.241	n/a
<b>Patio</b>				
	0.018	5.583	1.813	4.815
<b>Text Frames</b>				
"All Wet"	3.451	1.656	0.480	1.073
"Proud Mary"	4.373	7.983	1.750	0.441

**Table. Template specifications (inches); n/a = not applicable.**

original design Krause lined up the dock's mains by selecting the objects with the lasso and activating the *Left Edges* and *No T/B Alignment* settings in the *Alignment* dialog box. Publish It!'s lasso is an invisible tool (it's not displayed in the program's toolbox) so its function is built into the pointer. To lasso objects, choose the pointer; hold down the mouse button, and drag the arrow cursor around any objects you want to capture. Lassoing is a fast way to select a group of objects, but it's also perfect for selecting single objects, such as thin lines, that are sometimes maddeningly hard to select by clicking.

The 13 fingers that jut out from the right

# APPLE IIe-IIc-IIgs-II plus OWNERS!

## SAVE \$\$\$ ON YOUR PERIPHERALS!

### UNIV & SCHOOL P.O.'S WELCOME!

#### GS RAM UPGRADES

**4 MEG GS RAM BOARD.** DMA compatible. Expands IIgs to 4.25 Meg. w/1 MEG .. \$119  
**AE GS-RAM Plus 6 MEG RAM board.** DMA comp. Expands GS to 6.25 Meg. w/1 MEG .. \$189  
 Above w/2 to 6 Megabytes ..... Call  
**256K RAM Set (8pc)** 120ns 5 Yr Wty ..... \$25  
**1 MEG RAM Set (8pc)** 100ns 5 Yr Wty ..... \$65  
**TRANSWARP GS** by Applied Engineering . \$285

#### SOUNDSYSTEM 2 For IIgs

**New 2-Way Stereo Amplified Speaker Pair!** These thunder pods put the S in your GS operations, at one third the cost of Bose ... \$89

#### AE RAM BOARDS

**RAMWORKS III w/256K** ..... \$129  
**RAMFACTOR w/256K** ..... \$166  
 Above w/512K or 1 Megabyte ..... Call

#### IIe/IIc MEGABYTE RAM

**Super Expander E** for U.S. & European IIe. Licensed by Applied Engineering. A 100% replacement for Extended 80 Card. Expands Appleworks desktop to 998K and allows instant switching between modules. w/ØK .. \$69  
 Above w/256K ..... \$98  
 Above w/512K or 1 Megabyte ..... Call  
**Super Expander C** Expands IIc to 1152K. Appleworks desktop to 1052K & allows instant module switching. w/ØK ..... \$79  
 Above w/256K ..... \$108  
 Above w/512K or 1 Megabyte ..... Call

#### QUIET COOLING FANS

**SUPERFAN II** for II+/IIe. Kensington Style w/surge protect & twin rear AC outlets ... \$27  
**Super Cooler GS** for your IIgs. No audio line interference. Internal Mount ..... \$24

#### PRO-KEYPAD for IIe/IIc/IIc+

Numeric data entry made simple. Includes mathematic, decimal & RETURN keys.  
**PRO KEYPAD for U.S. & European IIe** .... \$34  
**PRO KEYPAD for U.S. & European IIc** .... \$39

#### APPLE II Plus OWNERS!

**Run Appleworks on your II+ or Franklin Ace!** Plusworks will configure you A.W. startup & program diskette to run on your computer. One time configure package. Not a preboot! (Req. 80 Columns, 64K, and Shift key Mod) ..... \$35  
**Plusworks II** (A.W. ver 1.0 thru 2.1) ..... \$35  
**Plusworks III** (A.W. 3.0 only/128K req) .... \$34  
**16K RAM BD.** Expands II+ from 48K to 64K ..... \$64  
**128K RAM BD.** Legend/Titan Compatible . \$24  
**DOS/ProDOS Emulator** for above 128K BD ..... \$48  
**80 Column II+ Board** Videx compatible ... \$7  
**Shift Key Modification** ..... \$12  
**Lower Case Adapter.** Rev. 7 & up ..... \$12

#### NO SLOT CLOCK IIe/IIc

Fits underneath your CD or CF ROM. Appleworks compatible. Free software ..... \$39

#### FALL SPECIALS

**PBC EXTENDED 80 COLUMN CARD** for Apple IIe. Expands IIe to 128K (Appleworks desktop to 56K). Super sharp 80 column display, soft switch select 40/80 columns, & Double Hi-res graphics, all built-in! ..... \$35  
**PBC 256K/80 COLUMN BOARD IIe.** All above features, plus expands your Appleworks 3.0 desktop to 137K ..... **INTRO \$79**  
**Super Serial Board** 100% replacement for Apple Super Serial Card, this versatile RS232 board can be used for all modems and serial printers. For II+/IIe/IIgs ..... \$48  
**SSB to Imagerwriter I cable 10'** ..... \$11  
**SSB to Imagerwriter II cable 10'** ..... \$11  
**SSB to Modem (Standard RS232) 10'** ..... \$11

#### MORE SUPER SPECIALS!

**Graphic Parallel Board** w/6ft cable. Text & graphic screen prints. Versatile graphics including inverse/normal, enhanced, 90 degree rotate & double size print. II+/e/g.s. \$44  
**Parallel Printer Board** w/cable. Text print only. Used where graphics is not required. \$35  
**Z80 CP/M Board** Opens the CP/M world for II+/e/g.s. Microsoft & Turbo Pascal Comp .. \$34  
**Joystick III** Similar to the Hayes Mach III, with large fire button on stick ..... \$24  
**5 AMP Power Supply.** Drop in replacement for II+/IIe supply. Double the amp power! . \$49  
**TV Modulator** Connects your Apple II+/IIe to any color or black/white TV ..... \$15  
**Serial/Parallel Converter.** Connects your IIc to any parallel printer ..... \$49  
**AE Transwarp** 3.6Mhz accelerator. II+/e ... \$99  
**ZIPCHIP 8Mhz** by Zip Tech. IIe/IIc ..... \$169

#### DISK DRIVES

**Disk Drive H/H** for Apple II+/IIe ..... \$119  
**Disk Drive H/H** for Apple IIc/IIc+IIgs ..... \$119  
**Disk Drive H/H Dsy** Chainable IIc+/IIgs ... \$139  
**Disk Controller BD 5.25" II+/IIe/IIgs** ..... \$34  
**AMR 3.5" Drive** ..... \$194  
**A.E. 3.5" Drive** ..... \$199  
**Disk Controller BD 3.5" II+/IIe** ..... \$49  
**AE VULCAN HARD DRIVES** ..... Call  
**CMS20MEG EXT. W/SCSI CARD** ..... \$399

#### APPLETALK TO PHONE NET

Localtalk Replacement kit w/balanced RS422 transformer & 25 foot cable ..... \$25

#### COPY II PLUS

The ultimate copy program. For 5.25"-3.5"-Hard drives.  
 8.4 w/5/8 diskette ..... \$15  
 9.0 w/5/8 & 3/8 diskettes ..... \$25

#### APPLEWORKS CLOSEOUTS!

**COMPLETE PACKAGE:** Startup/program diskette, tutorial diskette, sample templates, & A.W. manual.  
**Appleworks Version 1.2 Package** ..... \$59  
**Appleworks Version 1.3 Package** ..... \$79

side of the mains are horizontal, filled rectangles, as are the six ramps leading to the dock. For these objects, use the eighth pattern in the top row of the pattern palette. Create the first finger or ramp, copy and place it, then create the next object, and the next, and so on.

The club's patio is represented by the large, filled rectangle in the layout's lower-left quadrant. Krause used the 10-percent fill pattern to simulate concrete. Drawing the patio after creating the ramps means covering up part of the leftmost ramp sections. To handle this kind of situation, select each affected object and invoke the *Move to Front* command from the *Objects* menu. You can correctly relayer each of the two affected ramps separately, or you can coselect them (click the first and OA-click the second), then place both of them on top of the patio simultaneously.

The four docking areas for smaller boats (including the fictitious "All Wet") are indicated by short dotted lines. Use the line tool and the eighth pattern in the top row of the pattern palette.

Using the text tool, rubber-band appropriately sized text frames into the docking areas on the template. Insert the I-beam tool into a text area, select a suitably sized typeface from the *Font* menu (or press OA-W), and type the name of the boat and its owner. Krause chose the *Desplaines* font in 12 points, then italicized the name of the boat (*Font* menu or OA-I), typed it in uppercase, and enclosed it in quotation marks. He entered the owner's name in plain upper/lowercase letters.

#### BRANCHING OUT INTO CAD

Whatever desktop-design projects you have in mind, set sail with a desktop-publishing program such as Publish It! 3. Most of the tools you need are accessible and easy to use. Just imagine the time you'll save not having to learn new CAD-program commands! Perhaps best of all, you'll save money discovering new ways to use the software you already know. Recession or not, that's a wise investment. □

CONTRIBUTING EDITOR CYNTHIA E. FIELD IS A FREELANCE JOURNALIST SPECIALIZING IN COMPUTER-RELATED TOPICS. WRITE TO HER AT 60 BORDER DRIVE, WAKEFIELD, RI 02879. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

**5 YEAR NO HASSLE WARRANTY ON ALL PC BOARDS!**  
**CALL or WRITE FOR OUR COMPLETE PRICE LIST!**  
**ADD \$4 SHIP-C.O.D. OKAY-VISA/MC NO EXTRA FEE!**



**PRICE BUSTERS (619) 589-0081**

4233 Spring St., Ste. 402, La Mesa, CA 92041  
 Monday-Friday 10 a.m.-6 p.m. Pacific Time

# REVIEWS

Continued from p. 21

"noise." Zip says that if you're handy with a soldering iron, there's a simple cure: Solder a small piece of wire between the two pads in the lower left-hand corner of the ZipGSX card. Even better, return the card to the company (call first for a returned-merchandise authorization number) and it'll perform the fix for you. At press time, the company says it has had no reports of similar problems in GSes with ROM 03 motherboards. In addition, Zip says that the problem is now being taken care of in production; current ZipGSX cards won't need the fix.

No question about it: We noticed immediate improvements in program performance with the ZipGSX installed. To quantify this subjective perception we selected four Apple II programs: AppleWorks 3.0, Publish It! 3, AppleWorks GS, and Platinum Paint. Then we grabbed a stopwatch.

We ran each program first with the 9MHz ZipGSX installed and again without the accelerator. We kept the GS Control Panel in *Fast* mode throughout. In each trial, we performed precisely the same steps: We recalculated a 9K spreadsheet, spell-checked a 13K word-processing document, sorted a 97K database, flood-filled a painting's background, brushified patterned shapes, and switched viewing modes in page-layout documents. We performed each test three times, calculated an average, and converted that value to a percentage speed increase.

With the 9MHz ZipGSX installed, speed improvements ranged from 101 percent to 321 percent with an average boost of 145 percent. Garnering the most benefit were 8-bit programs, but AppleWorks GS and Platinum Paint both worked twice as fast as usual. A Zip spokesperson later explained that programs such as Publish It! 3 tend to show the greatest speedup because "tight loops in their programming code are easy to cache." Operations involving copious disk access were hastened only 20 percent, because the 3.5-inch drive we were using during our tests incorporates 1MHz timing cycles.

## FATAL (NOT REALLY) DISTRACTIONS

Although we've nothing but praise for the ZipGSX card, we're not as enthused about the documentation that accompanies this otherwise outstanding product. We like the HyperStudio stack and we're aware that the company intends you to use the tutorial

before you work with the card itself. But some liberties its author took with verb tense are a little disconcerting.

For example, when you finish the installation section of the tutorial, the screen reads "Congratulations! You have successfully installed a Zip GSX." Of course, you haven't actually installed the card — you've only simulated its installation. At another point the text reads, "Did the machine power up as usual?" If the GS hadn't, you wouldn't be able to read the message, right?

If you're installing ZipGSXes in a series of computers (in a classroom or computer lab, say), then the HyperStudio stack is perfect as is. You can run the tutorial on one machine while you upgrade the others. But for those of us with a lone GS, some of the phrasing seems incongruous.

Major criticism, however, must be leveled at the printed documentation. We have no misgivings about the manual's format: 8 stapled pages. For a product like this, spiral or comb binding would probably be overkill. What disappoints us is the fact that even the latest revision (version 1.04) continues to mention two socket-only products that aren't (and apparently were never) available. You may have seen the "ZipChip" models we're referring to featured in the company's earlier advertising. Moreover, while the latest version of the manual is a bit less technical than earlier versions, some information might still be largely inaccessible to inexperienced GS users. For example, the section explaining the classic desk accessory reads, "The CDA is very straightforward," but the paragraph that follows doesn't define a CDA or explain its installation and use.

Technical information about DIP switches is sometimes presented in daunting terms, too. For example, in describing one particular switch the manual says, "If a program flips a 65C816 bank between 'shadow' and 'non-shadow' in this address area, it is possible to confuse the cache memory." Relief comes a few lines later: "There is no known software requiring this switch change." Whew!

Another confusing point that's not addressed anywhere is that the DIP-switch parlance used in the documentation is exactly opposite to the syntax used in the CDA and cdev. For instance, a given DIP switch might be considered off in "DIP

switchese" but on in a dialog box's English translation. The reason: The DIP switch that's off electronically is "enabled" or on as far as humans are concerned. This syntactical switcheroo certainly threw us at first.

There were a few other editorial fly specks that we hope the next revision cleans up, but we're more interested in seeing a manual that's written on a level the average consumer will understand.

## ZIPPING ALONG

The folks at Zip Technology will probably be glad to read that we didn't submit the ZipGSX to our customary free-fall test (just kidding). But we did use the card continuously during the two-week trial period for workdays typically extending ten hours or more. Although we usually power down our GS system at the end of each day, we left everything up and running for 36 hours on one occasion to see what would happen. Nothing did. We can't say that all ZipGSX cards will perform as reliably as the test unit did, but the company's generous 30-day money-back guarantee period should give you enough time to decide if the ZipGSX in one of its three basic configurations is right for you.

**Cynthia E. Field, Ph.D.**  
Wakefield, RI

## GEOQUIZ

**PC GLOBE, Inc.**  
4700 South McClintock, Tempe, AZ 85282,  
(602) 730-9000

Educational geography game; 512K IIGs; color monitor; no copy protection; \$49.95



**D**id you know that English is the official language of Kiribati and Vanuatu? Are you aware that Porto-Novo is the capital city of Benin? Can you tell us how to pay for goods and services in Lesotho? What's the population of Unified Germany? Can you locate Burkina Faso, Comoros, Nauru, or Tuvalu on a world map?

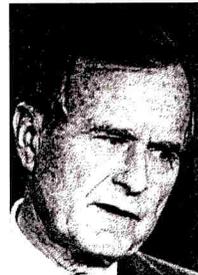
If these questions ring of nothing familiar, you're not alone. In fact, recent surveys have shown that our country's classrooms may be experiencing a geography crisis — many high-school students can't even locate foreign countries on a world map. □

# READER SERVICE INDEX

Reader Service	Page	Reader Service	Page
40 Abracadata .....	55	128 Programs Plus.....	56,57,58,59,60
103 Alltech Electronics Co.Inc.....	70	269 Public Domain Exchange.....	18
* Applied Engineering.....	CV3,CV4	136 Quality Computers.....	2,3
* Applied Engineering.....	14,15,50,51,52	165 Quality Computers.....	5
179 Beagle Bros inc.....	79	155 Quality Computers.....	4
87 Bible Research Systems.....	76	7 Ramco Computer Supplies.....	76
9 CDA Comp Sales.....	67	33 Remarkable Products.....	19
21 Co-Du-Co.....	77	90 Roger Coats.....	6
288 Computer Friends.....	19	29 Shreve Systems.....	75
80 Dandam Software.....	75	291 Softdisk.....	1
134 Dayton Computer Supply.....	75	127 Softspoken, Inc.....	76
220 Educational Resources.....	9	23 Software of the Month Club.....	77
85 Fas-Track Computer Prods.....	29	18 Sports Software Assoc.....	76
31 FrankSoft Publishing.....	75	60/3 Springbranch Software, Inc.....	76
* inCider.....		49 Techware, Inc.....	65
AppleWorks GS Productivity Pak.....	69	30 The Next Classic.....	75
44 LRO Computer Sales.....	30	56 TMS Peripherals, inc.....	11
* Macworld expo Boston.....	31,32,33	231 Tulin Corp.....	72
150 Mando Prods LTD.....	62	297 USA Micro.....	71
248 Memory Plus Distribution.....	73	* Ulilico.....	77
55 National AW User Group.....	76	290 Vizi Flex Seels.....	75
173 New Science Prospects.....	76	17 VMC Marketing.....	75
35 PC Globe.....	45	189 Zip Technology.....	CV2
59 Perfect Solutions.....	75		
121 Power Industries Inc.....	66		
78 Pre-Engineering Software.....	77		
* Preferred Computing.....	47		
105 Price Busters.....	63		

This index is provided as an additional service. The publisher does not assume liability for errors or omissions.

Teachers - Parents - Hobbyists - War buffs



## WAR WITH IRAQ



Introducing the first software on the Middle East Crisis: **"IRAQ STACK"**

Created by a team of educators and software experts, **IRAQ STACK** is a complete hypermedia course designed to help adults and children cope with the issues and information involved in the War with Iraq.

**IRAQ STACK** begins on August 2 with the invasion of Kuwait and includes:

- ★ Timeline of events
- ★ The U.S. involvement
- ★ The Draft rumor
- ★ Background on leaders
- ★ Financing the war
- ★ Prisoners of war
- ★ Maps of the Middle East
- ★ Minorities in the military
- ★ War technology
- ★ Index of key terms
- ★ The Role of the Media
- ★ Class activities and much more!



Comes with a colorful, detailed,  
**WALL-SIZE MAP**  
of the entire Middle East region!

Introductory price **\$39<sup>00</sup>**

Suitable for all ages and grade levels.  
Disks are **not** copy-protected. Retail \$59<sup>00</sup>

Works on **Apple IIe, IIc, Laser**  
128K required. Joystick / mouse optional.

Works on **Apple IIGs**  
No extra memory required.

Works on **Macintosh**  
HyperCard and 800K drive required.

Call Toll-Free



**1-800-34-REACH**  
Orders only-USA and Canada  
**1-407-695-9000**

Questions & Overseas Orders  
9am-5pm Eastern Time, Monday-Friday

**Mail Orders** add \$5.00 shipping and make check or purchase order payable to:  
Techware Corporation, Box 151085, Dept. G  
Altamonte Springs, FL 32715-1085 USA

Techware and IRAQ STACK are trademarks of Techware Corporation. Copyright 1991 by Techware. All rights reserved.

Circle 49 on Reader Service Card.

# REVIEWS

How do we combat this lack of knowledge? By booting up GeoQuiz on our IIGses at home and in the classroom, we can gain access to a world of information.

This educational program masquerades as a game to bring you facts and statistics from 170 countries around the globe. GeoQuiz includes detailed information from the U.S. Department of State, the World Bank, the United Nations, and the Central Intelligence Agency (from the CIA's *World Fact Book*). To ensure accuracy as of December, 1990, all data has been

corroborated by the Encyclopedia Britannica's *World Data Annual*.

GeoQuiz is filled with colorful world and regional maps that help make geography come alive as you learn to identify countries and capital cities around the world. An on-line atlas contains a wealth of statistical data on each country — some information even takes form in graphs. Just click on an area of the world and one of 35 regional maps will appear. Click on a particular country and data will pop up in a window. You'll find colorful flags for each



**GeoQuiz: Take the global challenge.**

country, along with information on population, gross national product, area, date of independence, national holidays, currency, official languages, and religious background. Adjustable skill levels let you customize each session — as your knowledge of the world increases so will the challenge.

### THE VALUE OF "EDUTAINMENT"

Although some of you may be content relying on the atlas to learn your geography lessons, the young (or young at heart) will want to head straight for the games. Get ready for a challenge, though, because each of the three games present questions randomly so that no two GeoQuiz sessions are ever the same. In *Name It*, you must identify a country that flashes on the regional map — your only clue is the name of the capital city. *Recognize It* is *Name It* with a twist — you must identify the country without knowing its capital city. In *Locate It*, you must find the area on the regional map where the country at the bottom of the screen is located.

Whichever game you choose, you determine the ground rules. For instance, you can choose a multiple-choice format or elect to type the countries' or capital cities' names. And depending on how much coaching you think you'll need, the program can give you up to three hints. (Every hint displays pertinent data from the atlas.)

Each time you answer correctly you'll earn points — and the fewer mistakes you make, the more points you accrue. Be careful about asking for hints; the game will take it out of your score. Although it's appealing to select your answer from a multiple-choice list, typing the answer will score higher. At any point during the game, you can see a score board that shows how many questions you've answered correctly, how much time you've used, and

# Learning Fast is a Blast!

**NEW!**

*"They're willing to take risks, the simplicity gives them courage. The results are positive there is nothing to be afraid of...an easy threshold to step across."*

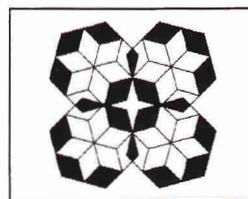
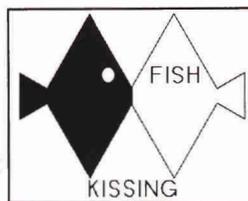
John B. Bishop, Judge Baker Children's Center, Boston

New! **Delta Drawing Today** is the best software written for PreK-3. Self-paced for individualized learning, it's so easy that users create successful drawings with their first keystrokes. The more Delta Drawing is used, the more skills are acquired:

- ▶ Basic concepts of left, right, up, down
- ▶ First phonics with simple letter commands
- ▶ Shapes, colors, patterns and mathematical logic
- ▶ Letter and word recognition
- ▶ Beautiful designs and drawings

Delta Drawing Today works on all Apple II/IIGS and Mac LCs with the Apple II board.

**Order Now: 800-395-5009**



# Delta Drawing™

*Software for Exploration and Discovery Today*

Delta Drawing is a Trademark of Power Industries LP. © Power Industries LP, 1991. All rights reserved.

Circle 121 on Reader Service Card.

# CDA Offers You Complete Apple/Mac Solutions

Since 1980, CDA has worked to create something unique in the field of computer mail order. A company that could provide customers with the support they would expect from a local computer dealer, along with the convenience and economy of direct-order, by mail, fax or phone. To offer a customer-oriented purchasing solution we have built a talented staff who are knowledgeable in Apple/Mac and many vertical markets. And, all products purchased from CDA are backed by our 30 Day Money Back Guarantee as well as a One Year Performance Guarantee!



## Apple Computers

Apple IIGS w/1 Meg ..... \$879  
 Macintosh Classic w/1 Meg ..... \$899  
 Macintosh LC 40/2 ..... \$1979  
 (all include keyboard & mouse)

## Monitors

Apple IIGS RGB Color Analog .... \$465  
 Magnavox Color RGB IIGS ..... \$299  
 Magnavox Color RGB (Mac) ..... \$459  
 Apple (Mac) 12" RGB ..... \$469

## Drives and More

Apple 3.5 Disk Drive ..... \$349  
 Applied 3.5" Disk Drive ..... \$209  
 Apple 5.25 Disk Drive ..... \$259  
 AE Vulcan HD/20 Mb ..... \$519  
 AE Vulcan HD/40 Mb ..... \$659  
 Microtech Europa  
 20MB Hard Drive (Mac) ..... \$399  
 Microtech Classic 50 Mb HD  
 w/3 Mb RAM Bundle ..... \$579  
 PC Transporter 768K ..... \$269  
 IIGS Installation Kit ..... \$39  
 IIe Installation Kit ..... \$32  
 TransDrive Single 360K ..... \$185  
 Crossworks by SoftSpoken ..... \$69

## AE 3.5" Disk Drive

This drive offers all the reliability and performance of Apple's 3.5 drive but at a more affordable price. The 1.4 Mb upgrade allows for future enhancements & Mac compatibility. .... \$209  
 3.5" High Density Drive (GS) ... \$259  
 3.5" High Density Drive (Mac) \$229



## Apple IIGS Power System

- Apple IIGS CPU w/1 Mb RAM
- AppleColor RGB Monitor
- Applied 3.5" Disk Drive
- 20Mb Vulcan Hard Drive
- System Dust Cover Set
- 6 Outlet Surge Protector
- 10 Diskettes w/Storage Box
- ImageWriter II w/cable
- Mouse Pad

Ask for Package #9160  
 CDA System Price \$2,679

## Macintosh LC System

- Mac LC w/Apple 40Mb HD, Apple SuperDrive, 2 Mbs of RAM, Microphone, Keyboard and Mouse
- Apple 12" Color Monitor
- **Free!** Personal Training Tutorial
- Adobe Type Manager
- 6 Outlet Surge Protector
- Mouse Pad
- Fuji High Density Disks (10)
- Diskette Storage Case

Ask for Package #9152  
 CDA System Price \$2,569

## Memory Upgrades

GS-RAM II - 1 Meg ..... \$159  
 GS-RAM II - 2 Meg ..... \$229  
 GS-RAM II - 4 Meg ..... \$389  
 GS-RAM Plus - 1 Meg ..... \$219  
 GS-RAM Plus - 2 Meg ..... \$309  
 RamWorks - III 256K ..... \$149  
 RamWorks - III 1 Meg ..... \$239  
 256K 120ns Chipset ..... \$23  
 Mac Classic Upgrade (1 Mb) .... \$119

## Macintosh Classic System

- Macintosh Classic w/4 Mbs & Apple SuperDrive
- Apple 40Mb Hard Drive
- **Free!** Personal Training Tutorial
- Adobe Type Manager
- 6 Outlet Surge Protector
- Fuji High Density Disks (10)
- Diskette Storage Case
- Mouse Pad

Ask for Package #9106  
 CDA System Price \$1,599

## ImageWriter II Package

- ImageWriter II Printer
  - 6 ft Printer Cable
  - Printer Dust Cover
  - Extra Black Ribbon
  - Rainbow Ribbon
  - Package of Paper (500 sheets)
- IIGS/Mac - \$475 Package #9171  
 IIc - \$475 Package #9172  
 IIe - \$529 Package #9173  
 (SMT Envoy interface card included)

## Printers/Scanners

**New!** Apple StyleWriter ..... \$499  
 HP DeskWriter w/Harmony GS .. \$809  
 Olympia NP-80 w/cable ..... \$389  
 Olympia NP-60 w/cable ..... \$269  
 ThunderScan (Apple II) ..... \$159  
 Quickie Scanner w/Inwords ..... \$279

## Surge Protection

Kensington System Saver (GS) .... \$65  
 Conserver (GS) ..... \$75  
 6 Outlet Surge Protector ..... \$29  
 Heavy Duty Power Supply (GS) ... \$79

## Sound & Music

AE Audio Animator ..... \$174  
 Apple MIDI Interface 1x1 ..... \$79  
 Bose Apple Video Roomates ..... \$299  
 Opcode MIDI Translator 1x3 ..... \$49  
 Opcode EZ-Vision (Mac) ..... \$99  
 Passport MasterTracks Pro GS .. \$245  
 Pyware MusicWriter Ltd GS ..... \$89

## Accelerators

TransWarp GS ..... \$269  
 Zip Chip IIe, IIc (8 Mhz) ..... \$145  
 Zip 1600 GSX Board ..... \$249

## Input Devices

Mach IV Plus Joystick/Mouse ..... \$52  
 Mach III Joystick ..... \$31  
 Kensington Turbo Mouse ..... \$108  
 Koala Pad Plus Tablet ..... \$89  
 Kurta 8.5 x 11 Tablet (GS) ..... \$319

## Modems

AE DataLink 2400 ..... \$169  
 DataLink Express w/cable ..... \$197  
 DataLink LC w/9600 SendFax .... \$229  
 Zoom 2400 w/cable ..... \$109

## Freight!

Stock items under 15 lbs. shipping to any destination in the continental US, ship via UPS Ground for \$3. For Hawaii, Alaska, APO/FPO, foreign orders, systems and items over 15 lbs, please call for rates.

Order via Fax # (908) 832-9740  
 Hours: Mon-Fri 8-10, Sat 9-6 EST  
 1 CDA Plaza, P.O. Box 533  
 Califon, New Jersey 07830

All prices subject to change. CDA is not an authorized Apple dealer. Apple & Macintosh are registered trademarks of Apple Computer, Inc. \*Some items may be subject to restocking fees.

Ad #16-06

US/Canada  
 800-526-5313

The Magic of Mac, The Power of People  
**CDA Computer Sales**

NJ/Outside US  
 908-832-9004

the point value of the game. You can also suspend play temporarily to access the atlas. Sure, that's cheating, but after all, the object of GeoQuiz is to teach world geography.

If you want to resume playing another day, you can save to disk both the game in progress and the ground rules you've set up. You also can save any regional or country maps (or any GeoQuiz screen) as a standard Apple IIgs graphic file that you can then load into a IIgs paint program, incorporate into an AppleWorks GS graphics-based database, or use as the foundation for a HyperStudio or HyperCard IIgs interactive stack.

## SYSTEM QUIRKS

As for technical details, the operating system supplied with GeoQuiz is ProDOS-16, so when you first run the product the ProDOS-16 program launcher dialog box appears and you need to double-click on the GeoQuiz program file. (PC Globe elected to use ProDOS-16 so that the operating system and program could reside on a single 3.5-inch disk.) Had the GeoQuiz disk booted directly into the program, young children could've used the program with less teacher or parent supervision. GeoQuiz is 100 percent compatible with the current version of GS/OS and is hard-drive installable. Using GeoQuiz from the Finder is by far the fastest and easiest method.

Our only other complaint is that the resolution of some regional maps, such as those of the Caribbean, Oceania, and Micronesia makes lining up the mouse cursor with their small island groups difficult. If the cursor comes to rest on the water instead of the island itself, a somewhat misleading error message that says "information on this country can't be seen in this map" appears. Future revisions would benefit from a feature that lets you zoom to an island group and display an island as larger than a dot. (PC Globe hopes to release updates to the program once a year; it also wants to supply registered owners with a single file that contains any changes to the countries.)

GeoQuiz provides a wonderful learning experience that will hopefully find its way into all classrooms. It just might make the geography crisis a thing of the past.

**Joe Kohn**  
San Rafael, CA

## INSIDE INFORMATION

**MICROLYTICS, INC.,**  
2 TOBEY VILLAGE OFFICE PARK, PITTSFORD, NY  
14534, (800) 828-6293, or (716) 248-9150

Reverse dictionary in desk-accessory format;  
1-megabyte Macintosh; System 6.0 or later;  
hard-disk drive; \$119



## THE RANDOM HOUSE ENCYCLOPEDIA

**MICROLYTICS, INC.,**  
2 TOBEY VILLAGE OFFICE PARK, PITTSFORD, NY  
14534, (800) 828-6293, or (716) 248-9150

Electronic encyclopedia in desk-accessory  
format; 1-megabyte Macintosh; System 6.0 or  
later; hard-disk drive; \$119



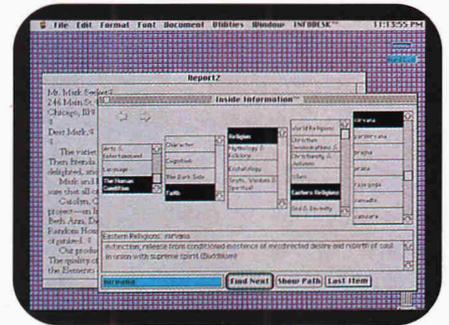
**H**ow many times have you been working at your computer and wished you had your reference volumes at your fingertips instead of across the room or downstairs in the den? Well, with two applications from Microlytics' INFODESK series — Inside Information and The Random House Encyclopedia — accessing information is as easy as pulling down the *Apple* menu.

Each INFODESK reference set delivers a wealth of information at the point and click of a mouse. After you've loaded the programs (see the installation section below), select *Switch Reference Sets* from the INFODESK menu and choose either *Inside Information*, a hierarchical dictionary (one that organizes words categorically instead of alphabetically), or *The Random House Encyclopedia*, which has more than 20,000 entries on a variety of topics. (All INFODESK reference sets have the same interface, so moving from one environment to the other doesn't involve learning any new commands.)

## INSIDE INFORMATION

Unlike conventional dictionaries, *Inside Information* organizes data by word classes such as *Nature*, *Science & Technology*, *Domestic Life*, *Institutions*, *Art & Entertainment*, *Language*, and *The Human Condition*. These classes, in turn, are divided into 20 subclasses, subclasses are divided into 125 categories, categories are partitioned into 700 subcategories, and each subcategory consists of 50–200 definitions.

You can browse the *Inside Information* database in four different ways: *Outline*



**Inside Information makes data handy.**

*View* provides access to the seven word classes. If you select a specific word class such as *Nature*, you'll make its three subclasses (*Human Body*, *Living Things*, and *Earth*) appear. Double-clicking on *Human Body* calls up its categories (*Anatomy*, *Medical Problems*, *Physical Appearance*, and so on). Selecting one of these categories brings even more information into view.

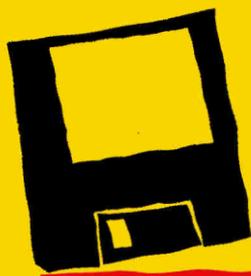
As you delve deeper and deeper into the database you'll eventually get to the word list. If you're searching for information on AIDS, you'll travel from *Nature* to *Human Body* to *Medical Problems* to *Diseases & Infestations* and finally to *AIDS*.

You can also search the database by *Graphic View*, and scroll through columns that display each level (word class, subclass, category, and so on). Double-clicking on a highlighted item causes it to expand and reveal more information; eventually you get to a definition.

By selecting *Reverse Dictionary* from the INFODESK menu, you can hunt for a definition by entering a word or word phrase. *Inside Information* accepts partial words and the Boolean logical connectors "and" and "or" to narrow the search criteria.

*Tree View*, the fourth way to look at data, is available only if you use *Inside Information* as a stand-alone desk accessory, not as an application in the INFODESK reference set. Updating the dictionary so that you can access it from the INFODESK menu via the *Switch Reference Sets* dialog deletes this option. Losing this format (it displays data similarly to a family tree) isn't important, though, because it's just another way of looking at the same information.

Whichever view you choose, keep track of your research trail by placing a bookmark at any point in a search. Once you've marked the spot, you'll be able to return to it later simply by accessing *Open to Bookmark* ⇨



# APPLEWORKS GS PRODUCTIVITY PAK II

10 ALL NEW READY-TO-USE TEMPLATES TO GET  
THE POWER OF APPLEWORKS GS WORKING FOR YOU!

The AppleWorks GS Productivity Pak series was created by Cynthia Field, *inCider/A+*'s "Press Room" columnist, exclusively for *inCider/A+*. These outstanding collections will improve your personal productivity while helping you become an AppleWorks GS pro!

**JUST \$29.95!  
LESS THAN \$3  
PER TEMPLATE!**

With each Productivity Pak you get ten ready-to-use templates to make easy work of your home, business, and school projects! Each project includes a blank template and a completed sample to use as a model. Plus, you get an extensive manual to guide you step-by-step through each project.

**SPECIAL OFFER!  
SAVE \$10 WHEN  
YOU BUY BOTH!**

Look at these exciting, new applications:

## APPLEWORKS GS PRODUCTIVITY PAK II\*

- Prepare a LIVING WILL to document your wishes.
- Compare housing options with HOME BUYER'S GUIDE.
- Build your desktop-publishing skills with BOOKLET.
- Print an attractive FAMILY TREE.
- Catalog and label your tapes with VIDEOTAPE LIBRARY.
- Select an affordable car with CAR-COST COMPARISON.
- Create CUSTOM CALENDARS for personal schedules.
- Compile a personal COLLEGE COMPARISON guide.
- Collect your recipes in an electronic COOKBOOK.
- Plan ahead for April 15th with INCOME TAXES.

**ORDER TODAY!  
1-800-343-0728  
(INSIDE NH 924-0100)**

## STILL AVAILABLE . . . APPLEWORKS GS PRODUCTIVITY PAK\*

- Create customized MEMO PADS.
- Organize your group's MEMBERSHIP records.
- Design eye-catching NAME BADGES.
- Use MERGE DOCUMENT to create form letters with ease.
- Calculate your tax deduction with AUTO MILEAGE LOG.
- Generate an effective RESUME and cover letter.
- Plan healthy meals with the NUTRIDATA database.
- Automate your checking account with CHECKBOOK.
- Analyze your home BUDGET.
- Publish a professional-looking NEWSLETTER.

\*Requires AppleWorks GS v. 1.1 AppleWorks is a registered trademark of Apple Computer, Inc., licensed to Claris Corporation.

Please send me the following *inCider/A+* Special Products:

- AppleWorks GS Productivity Pak\* at \$29.95
- AppleWorks GS Productivity Pak II\* at \$29.95

SPECIAL OFFER! Save \$10

- Both AppleWorks GS Productivity Pak and AppleWorks GS Productivity Pak II for just \$49.90!

Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Check enclosed (payable to *inCider/A+*)

Charge my:  MasterCard  Visa  American Express

Card # \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_

Foreign air mail: Add \$3.95 Foreign orders must be paid in U.S. funds drawn on a U.S. bank.

\*Requires AppleWorks GS v. 1.1

Mail to: *inCider/A+* Special Products  
80 Elm Street, Peterborough, NH 03458

161B

# REVIEWS

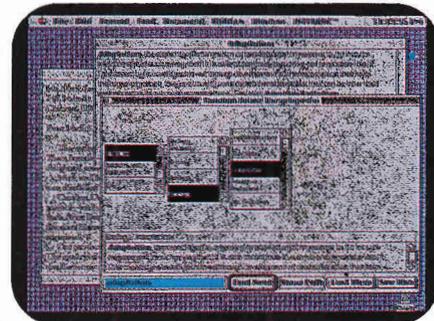
from the *INFODESK* menu. You can copy definitions to the *Clipboard* and paste them into other applications, or print them from *Graphic* and *Outline Views*. On-line help is always available from the *INFODESK* menu.

## RANDOM HOUSE ENCYCLOPEDIA

The Random House Encyclopedia organizes information by subject areas, such as *Geography*, *History*, *Social Science*, *The Arts*, *Sports and Leisure*, *Law*, and *Government*. Similarly to expanding Inside Information

classes, you can double-click the mouse to turn these categories into subcategories. Select *Arts*, for example, and you can choose from nine subcategories that include *Literature*, *Visual Arts*, *Music and Instruments*, *Art History*, *Photography*, and *Architecture*. Expand *Music and Instruments* and you can choose from several articles related to this topic.

Once you access an article, you can print it, copy it to the *Clipboard* for pasting in another application, or earmark it for future retrieval by saving it as a *Bookmark*. If this



The Random House Encyclopedia

article contains cross-references to other documents, you can proceed directly to the cross-reference by clicking on the *See Also* button at the bottom of the screen.

The Random House Encyclopedia lets you find an article by clicking on a vertical list of categories in the *Outline View*; scrolling through columns of categories and subcategories in the *Graphic View*; searching by word or phrase with the *Reverse Dictionary*; and clicking the *Find* command for its *Title*.

If these options aren't enough, *TIMECHART* lets you hunt for important events by time range, from the first civilizations to the modern world. For example, enter "violin" in the *Reverse Dictionary* window, and the program will show 33 occurrences of that word in the *Matches* window. Four of the 33 matches are time periods: 730-760, 1612-1618, 1654-1660, and 1796-1800. Double-clicking on 1796-1800 directs the desk accessory to call up a brief two-line article on the violin in India during British rule.

## INSTALLATION

*INFODESK* makes information instantly available from the Macintosh desktop. The Random House Encyclopedia package consists of seven floppies, a manual, and a special program that installs the application on a hard disk in a folder you specify. You decide which package modules to install — Basic Encyclopedia Data (categories and article titles), Definitions (article text), or Reverse Dictionary (a utility that searches for an article by its contents). All three modules take up more than 5 megabytes of hard-disk space, but all are necessary to obtain the full benefits of the program.

The installation sequence is easy to follow, takes about five minutes from start to finish, and is the same for both programs. Inside Information, however, ships on only five 800K floppies and gobbles up a mere

## ALLTECH ELECTRONICS CO., INC.

602 Garrison St., Oceanside, CA 92054

1300 E. Edinger Ave., Suite D., Santa Ana, CA 92705  
2018 Lomita Blvd., Lomita, CA 90717

We Buy  
Old/Broken Items,  
call for details

Visa  
& MasterCard  
No Surcharge!

PHONE ORDERS: 619/721-7733 FAX 619/721-2823

Apple® Service Parts • Apple® Chips & ROMs • RAM Chips & SIMM Modules • SCSI Hard Disks

• School Purchase Orders Accepted! •

### Disk Drives & Hard Disks

5.25" FH (20 Pin).....	\$65.00
5.25" FH (DB-19).....	\$75.00
5.25" IIc Internal.....	\$95.00
Apple Disk II (Refurb).....	\$85.00
800 K Drive Assy* (Exch Only).....	\$135.00
SCSI 20/30 Meg w/card.....	\$345.00/\$395.00
SCSI 40 Meg w/card.....	\$445.00
SCSI Case and Power Supply.....	\$85.00
Other SCSI Hard Disk Options.....	CALL

### Keyboards

Apple II+, III.....	\$45.00
Apple IIe, IIc, w/exch. only.....	\$65.00
Numeric Keypad II+, MAC.....	\$35.00

### RAM Chips

4164 -15/-20.....ea.	\$75/50
41256 -10/-12.....ea.	\$2.75/\$2.50
41256 -15.....ea.	\$1.50
41000 -10 (1Meg) ea.	\$6.00/Bank
44256-80 (256x4) each	\$6.00/Bank
256KX8 SIMM.....	\$15.00
1024X8 SIMM.....	\$49.00
EPROMs IC's & Other RAM Chips Avail.	

### RAM Expansion

<i>Super Expander boards</i>	
SE IIe (Zero K/1024K).....	\$59.00/\$109.00
SE II+ (Zero K/1024K).....	\$69.00/\$119.00
SE IIc (Zero K/1024K).....	\$79.00/\$129.00
GS Juice Plus 4Meg w/1024K.....	\$139.00
Extended 80 (Makes 128K IIe).....	\$35.00
16K Language Card II+.....	\$29.00

### Black Media

5.25" DSDD Disks.....	100 for \$19.00
5.25" DSDD Disks.....(SAVE!)	500 for \$85.00
3.5" DSDD Disks.....	50 for \$20.00

### Peripheral cards

80 Col. card (II+).....	\$45.00
5.25" Cont. Card (DB19/20 Pin).....	\$45.00
3.5" Apple UniDisk Cont. Card.....	\$65.00
Graphic Parallel Printer Card.....	\$45.00
Super Serial Card.....	\$52.00
Z80 CP/M.....	\$29.00
Mountain CPS (Clock, Par, Ser).....	\$45.00
RGB 80Col/64K IIe.....	\$79.00
Hayes Microdrom 300.....	\$29.00
System Saver IIe.....	\$35.00

### Monitors

Apple Monitor IIe (Small).....	\$79.00
Apple Monitor III (Refurb).....	\$65.00

Amdec Color -I Composite 14".....	\$125.00
Refurbished Composite Monitor.....	\$45.00

### Cables/Switch Boxes

8 Pin Minidin 6 ft. Ext.....	\$12.00
IIc→ Imagewriter I/II.....	\$12.00
II+, IIe→ Imagewriter I/II.....	\$12.00
IIg, IIc+→ Imagewriter I/II.....	\$12.00
Apple MiniDin8 (Both Ends).....	\$12.00
Laser 128 Parrallel Cable.....	\$15.00
20 to 19 Pin Disk II Adapter.....	\$14.00
Switch boxes.....	From \$25-\$50.00
Serial/Parallel/Din.....	2 Ports \$25.00
We Have Cables for Many Apple Products	

### Accessories

AntiStatic Comp. Covers (Clear).....	\$12.95
IIe, Monitor, Duodisk Cover.....	\$12.95
IIc, Monitor (Specify Monitor).....	\$12.95
ImageWriter I/II, LaserWriter +.....	\$12.95
Other Covers, Mac, Keyboards, Etc.....	\$12.95
No Slot Clock.....	\$29.00
ImageWriter I Accs Kit; IIe.....	\$29.00
Comrex Joystick. (16Pin only).....	\$99.55

### Apple IIgs Specific Chips

ROM 01.....	\$44-0077B.....\$29.00
VGC.....	\$44S0046.....\$29.00

### Printers & Accessories

Citizen GSX 140/200.....	\$299.00/195.00
Color Kit for Citizen Printer.....	\$55.00
Used 9 Pin (90 Day Warranty).....	\$95.00

### Printheads

ImageWriter I Printhead w/exch.....	\$75.00
ImageWriter II Printhead, exch.....	\$89.95
Okidata Print Head w/exch.....	\$59.00
Some Epson Heads Available.....	Call

### Mother Boards

Apple II+.....	\$100.00
Apple IIe, or Apple IIc.....	\$179.00

### Apple IIe Specific Chips

6502 (CPU).....	\$70-6502.....\$3.00
65C02 (CPU/Enhanced).....	\$9.00
MMU.....	\$44-0010.....\$29.00
IOU.....	\$44-0020.....\$29.00
CD ROM.....	\$42-0135.....\$19.00
EF ROM.....	\$42-0134.....\$19.00
AY-3600-PRO (Keyboard Encoder).....	\$29.00
Video ROM.....	\$42-0133.....\$19.00

Video ROM (Enh) 342-0265.....	\$19.00
HAL.....	\$41-0170.....\$9.00
Keyboard ROM 341-0132.....	\$19.00

### Apple IIc Specific Chips

65C02 (CPU).....	\$9.00
MMU.....	\$44-0011.....\$29.00
IOU.....	\$44-0021.....\$29.00
Character Gen.....	\$42-0265.....\$19.00
IWM (Smart Port) 344-0041.....	\$39.00
Serial Chip 6551.....	\$4.00
Keyboard Map.....	\$42-0132.....\$19.00
AY-3600-PRO (Keyboard Encoder).....	\$29.00
TMG.....	\$41-0170.....\$9.00
GLU.....	\$41-0243.....\$9.00

### Manuals & Software

AppleWorks 1.2 w/disks.....	\$35.00
PRODOS Users Disk & Manual.....	\$15.00
AppleWriter IIe 2.0 Manual.....	\$12.00
ImageWriter II/Color Plotter.....	\$12.00
LaserWriter Plus.....	\$12.00
Call us for other manuals	

### Apple Service Parts & Chips

#### Power Supplies

Apple IIc Internal Power Supply.....	\$29.00
Apple IIc External Power Supply.....	\$39.00
Apple II+, IIe P/S Exchange*.....	\$49.00
Apple II+, IIe, P/S No exchange.....	\$59.00
Apple IIgs P/S Exchange.....	\$79.00
SCSI Case & P/S for 3.5" HD.....	\$85.00
Call for avail. on other Apple P/S's	

### Apple II+ Specific Chips

ROMs DO, D8, E0, E8, F0, F8.....ea.	\$14.95
6502 (CPU).....	\$3.00
ROM SPCL 341-0036 (Char ROM).....	\$9.00
Keyboard Encoder KB-431.....	\$19.00

### MacIntosh

HyperCard v1.2. w/disks.....	\$29.00
Mac 128/512 Main board.....	\$95.00/145.00
Mac 512/Plus SE CRT.....	\$95.00
Mac 512/Plus Power Supply*.....	\$175.00
Mac 400 K Drive Assy.....	\$39.00
68881 co-processor.....	\$75.00
68882 co-processor.....	\$75.00
Mac 64K(128/512) Rom Chip Set.....	\$29.00
800 K Drive Assy.....	\$135.00
68000.....(64 Pin DIPP).....	\$10.00
68020.....(VLSI).....	\$30.00

### Cases

Apple II+.....	\$19.00
Apple IIe.....	\$45.00

Minimum Shipping & Handling Charge \$5.00. Some Products may be used/refurbished but still carry a 90 day warranty, inquire at time of purchase for more info on specific products. Above Prices are subject to change without notice. Refunds subject to 20% restocking fee. We are not responsible for products purchased in error. Our liability is limited to purchase price only.

InCider  
06/91

Circle 103 on Reader Service Card.

3.5 megabytes of free hard-disk space if you install all four of its modules — Basic Information Data, Definitions, Reverse Dictionary, and Explicit Material (“sexually explicit language and insulting terms”). These install as individual files in the System folder, rather than in a special folder that you’ve specified. Once installation is complete, you can transfer Inside Information files manually to their own folder outside the System.

To use Inside information as an INFODESK desk accessory you must update it with the special conversion utility included with The Random House Encyclopedia package. After updating, remove the Inside Information desk accessory from your System folder. The process may sound a bit tedious, but it’s worth the effort to access both The Random House Encyclopedia and Inside Information data directly from the INFODESK DA.

Although you don’t need to update Inside Information into the INFODESK.DA, if you do, you’ll appreciate how painless it is to retrieve data and switch from one reference set to another. You can copy entries to the Clipboard for use with other applications and print definitions or articles.

You pay a heavy price in hard-disk space for relatively brief INFODESK definitions and articles, though. If you want in-depth information available immediately at the point and click of a mouse, investing in a Mac compatible CD-ROM (compact-disc read-only memory) drive may be wiser. CD-ROM technology offers more megabyte for the buck!

**Carol S. Holzberg, PH.D.**  
Shutesbury, MA

## MERCURY

### MECC

3490 LEXINGTON AVENUE NORTH, ST. PAUL, MN  
55126, (800) 782-0032

Word-processing program with graphics capabilities; 1-megabyte Apple IIcs with ROM 01 or greater; two 3.5-inch 800K disk drives; mouse; color monitor recommended; ImageWriter II, LaserWriter, or compatible Epson printer recommended; \$89



Sometimes the best way to judge a product is to examine its shortcomings rather than its attributes. This advice seems to hold true especially with word-processing programs. After all, much of

this software is so technologically sophisticated it puts typewriters to shame. Let’s take a look at Mercury from MECC and see how its features stack (or don’t stack) up to the program you’re using currently.

Mercury contains 90 percent of the features the best high-end word processors include. With many document-formatting and page-layout options, this program can handle formidable tasks such as creating high-school term papers or office newslet-

ters, but its interface is simple and elegant enough that it won’t intimidate children or novice word-processing students. Simply by pointing and clicking the mouse you can create and format documents.

This product is a graphics-based word processor that employs a WYSIWYG (what you see is what you get) environment. You can see the results of using a variety of fonts on screen, rather than waiting until you print. Unlike other graphics-based word

# The Sensational Lasers

## Apple IIe/IIc Compatible

# \$299



The Laser 128® features full Apple® II compatibility with an internal disk drive, serial, parallel, modem, and mouse ports. When you’re ready to expand your system, there’s an external drive port and expansion slot. The Laser 128 includes COPY II PLUS software! Take advantage of this exceptional value today. . . . . \$299

### Super High Speed Option!

## only \$365

The LASER 128EX has all the features of the LASER 128, plus a triple speed processor and memory expansion to 1MB . . . . . \$365.00

The LASER 128EX/2 has all the features of the LASER 128EX, plus MIDI, Clock and Daisy Chain Drive Controller . . . . . \$405.00

#### DISK DRIVES

- \* 5.25 LASER/Apple 11c . . . . . \$ 99.00
- \* 5.25 Apple 11e . . . . . \$ 99.00
- \* 3.50 Apple 800K . . . . . \$139.00
- \* 5.25 LASER Daisy Chain . . . . . **New!** \$109.00
- \* 3.50 LASER Daisy Chain . . . . . **New!** \$179.00

### Save Money by Buying a Complete Package!

THE STAR a LASER 128 Computer with 12" Monochrome Monitor and the LASER 145E Printer . . . . . \$565.00

THE SUPERSTAR a LASER 128 Computer with 14" RGB Color Monitor and the LASER 145E Printer . . . . . \$675.00

#### ACCESSORIES

- \* 12" Monochrome Monitor . . . . . \$ 89.00
- \* 14" RGB Color Monitor . . . . . \$229.00
- \* LASER 190E Printer . . . . . \$209.00
- \* LASER 145E Printer . . . . . \$179.00
- \* Mouse . . . . . \$ 49.00
- \* Joystick (3) Button . . . . . \$ 29.00
- \* UDC Card . . . . . \$ 49.00

## USA MICRO YOUR DIRECT SOURCE FOR APPLE AND IBM COMPATIBLE COMPUTERS

2888 Bluff Street, Suite 257 • Boulder, CO. 80301  
Add 3% Shipping • Colorado Residents Add 3% Tax

Your satisfaction is our guarantee!

Phone Orders: 1-800-654-5426

8 - 5 Mountain Time • No Surcharge on Visa or MasterCard Orders!  
Customer Service 1-800-537-8596 • In Colorado (303) 938-9089  
FAX Orders: 1-303-939-9839

Laser 128 is a registered trademark of Video Technology Computers, Inc. Apple, Apple IIe, Apple IIc and ImageWriter are registered trademarks of Apple Computer, Inc.

## Hard Drive

for IIGs, IIE & Mac  
w/ Apple Hi Speed SCSI Card



**Half Shell** -- the hard drive that is 30% smaller than the floppy drive  
1.4"x5.5"x7.5"

40MB(25ms) - \$489

120MB(19ms) - \$789



### A-Hive Jr. -- small size

7.1"x7.1"x2.2"

Hard drive 32MB \$469

40MB \$509

60MB \$549

84MB \$579

105MB \$625

120MB \$809

200MB \$949

Tape drive 155MB \$589

### A-Hive -- expandable

9.9"x9.6"x4.3"

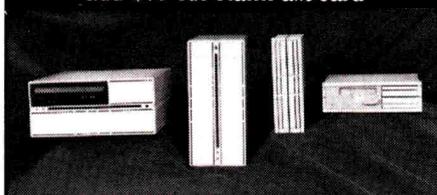
Hard drive 32MB \$469

40MB \$509

Cartridge drive 44MB \$629

Hard/tape drives combo

Hard/cartridge drives combo  
add \$79 for RamFast card



## Tulin Corporation

2156H O'Toole Ave.

San Jose, CA 95131

Tel: 408-432-9025

Fax: 408-943-0782

Circle 231 on Reader Service Card.

## REVIEWS

processors, though, Mercury is fast — only the speediest typists will notice any lag.

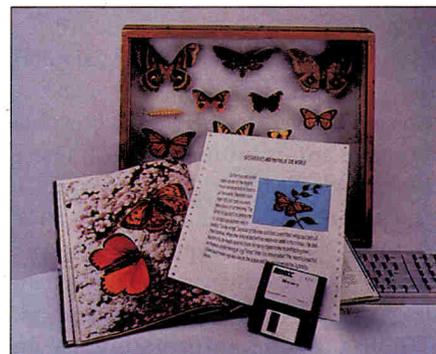
Mercury comes complete with standard word-processing and editing tools, too. It contains a powerful, rapid search-and-replace function; a header and footer feature; a toolbox of basic drawing tools; document-layout options that include customized rulers, spacing specifications, and tabs; and the capability to import graphics images and text from other sources. Numerous kinds of type styles, and sizes also add versatility and usefulness to the Mercury package, as do the included style sheets and clip-art pieces.

None of these features necessarily sets Mercury above other word processors. Most of Mercury's competitors could highlight the same options in one form or another. What makes Mercury special is the program's ease of use. You can access every selection and option via the mouse, and pop-up windows, pull-down menus, and dialog boxes are fully implemented throughout the program. Some word processors make only partial use of the point-and-click interface inherent in the IIGs — Mercury almost overdoes it.

The obvious benefit of this menu-driven interface is that it eliminates the need for memorizing keystroke combinations or consulting reference material to perform tasks. (All newcomers to the world of computerized word processors should appreciate this shortcut.) But if you don't use a mouse don't worry; Mercury also recognizes touch-typist's preferences and fully supports keyboard-command equivalents.

Mercury's options also set the program apart from others. Each feature lets you determine its specifications exactly. For example, not only does Mercury's spacing option let you select from standards such as single, one-and-a-half, and double spacing, you can also choose custom spacing and make your format precise. This option lets you use a point system that sets the exact spacing between successive lines of text.

When you select the *Custom Spacing* option from the menu, a dialog box appears, telling you the number of points that make up a single space for the font you're using currently. To change the spacing, simply type the number of points you want between your lines of text. Spacing can, of course, vary from page to page, paragraph to paragraph, or even line to line.



Mercury's options help you be creative.

The product's selling points, ease of use and thoroughness of its options, also manifest themselves when you employ headers and footers. Selecting the *View Header* option, for example, opens a screen-size window, complete with an independent ruler for positioning text and information within the header. Four large buttons labeled *Insert Date*, *Insert Time*, *Insert Page#*, and *Insert Total Pages* let you insert information automatically anywhere within the header. All you need to do is position the cursor at the location you want the data to appear and click on the appropriate button.

Eleven smaller buttons let you select the format for the date, time, and page numbering. Once again illustrating the versatility of the Mercury program, you can number pages numerically, alphabetically (upper- or lowercase), or in Roman numerals.

The *Sort* option lets you sort a group of words, numbers, or phrases into a column. This command can organize lists alphabetically or numerically in either ascending or descending order. This feature sounds more impressive and functional than it really is, because it won't work on words within a paragraph; you must separate each word, number, or phrase by a carriage return.

Mercury handles graphics images with the same aplomb as it manages text. Whether you use the drawing tools to "frame" headlines or sections of text, or import clip art from the included pieces or outside sources, Mercury's performance is superior. If you're trying to maintain a straight row or column of images, you can use the program's grids to force the images to align along invisible lines. Once you've placed your graphics image, Mercury lets you manipulate it. You can turn off the grid if you want to position your object somewhere else on the page. A

single Mercury document can include up to 100 objects or imported graphics.

### CAVEATS

Although Mercury is a good program, it's not without problems. First, it can't deal with what it terms "collisions." In other words, the program makes no allowance for wrapping text around a newly placed graphics image. More powerful word processors that venture into the desktop-publishing domain (something that Mercury doesn't claim to do) feature automatic word wrap. This shortcoming means that if you intend to use graphics images, you must plan the appearance of the page and leave adequate room for importing your pictures. Because you can't see your graphics images in the text mode, but you can see text in the graphics mode, the manual suggests you type your text first, then place your pictures later.

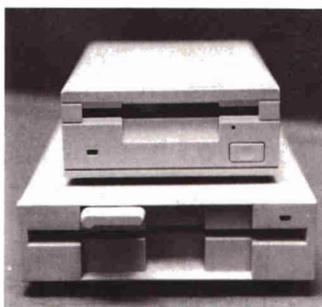
Other drawbacks that might make power users pause include the program's lack of footnoting, spell checker, and thesaurus capabilities, its inability to create "bullets" that set off items (although you can use the drawing tool to get around this one), and its document size limitations.

Mercury can create documents up to 50 pages in length, but that number is subject to the types of fonts you use and the number of graphics images you employ. Multiple fonts, drawn objects, and imported clip art require quite a bit more memory than standard text. You'll find no in-program method for chaining documents either.

Overall, though, Mercury is a strong program. Its deficiencies simply help define its niche. If you're working on a master's thesis or a professional presentation, you'll probably want something a little more powerful. If you're new to word processing or have simpler needs, Mercury's ease of use and speed make it an excellent choice. Classroom teachers and perhaps small-business owners might be surprised and pleased to know that a special version of Mercury even supports GS/OS System 5, allowing it to run on networks.

MECC has long been associated with useful, well-designed, and reasonably priced programs. Mercury certainly fits that description. □

**James V. Trunzo**  
Leechburg, PA



### MPD 5 1/4" DISK DRIVES FOR:

1 Year Warranty Parts & Labor	Apple II, II+, IIe Franklin Ace 1000	\$79.00
100% Compatible	Apple IIc, IIc+, IIGS Apple IIe UniDisk Laser 128	\$79.00
Super Quiet	Apple IIc+, IIGS Daisy Chain	\$99.00
Cable Included		

AMR 3 1/2" Disk Drive  
For Apple IIc+ & IIGS **\$199.00**

ZIP CHIP 8 Mhz . . . . . \$158.00	UNIVERSAL DISK CONTROLLER Run 800K Disk Drives on your II+ and IIe <b>\$64.95</b>	
<b>PRO TERM \$78.50</b>		
GS Power Supply . . . . . \$69.00	800K DISK DRIVE 3 1/2 for II+, IIe, MAC, LASER 128 <b>\$179.00</b>	
Memory Chips . . . . . Call	Disk Controller Card For Apple II, II+ & IIe <b>\$34.95</b> 5 Year Warranty	
MPD 4 Meg GS Card 0 Meg to 4 Meg from <b>\$59.00</b>	CPM Card . . . . . \$34.95 IIe Numeric Keypad . . . . . \$34.95 II+ & IIe RF Modulator . . . . . \$15.95	
SUPER EXPANDER IIe 0K to 1 Meg . . . . . from \$52.50 IIc 0K to 1 Meg . . . . . from \$65.50	Cooling Fan for Apple II+ & IIe With Surge Suppressor . . . . . \$26.95	
<b>GS MOUSE \$59.00</b>	Cooling Fan . . . . . No For <b>\$19.95</b> Noise Apple IIGS Interference	
SWITCH BOXES DIN 8 A/B . . . . . \$24.95 DIN 8 A/B/C/D . . . . . \$29.95 DB 25 A/B . . . . . \$24.95 DB 25 A/B/C/D . . . . . \$34.95 Parallel A/B . . . . . \$24.95 Parallel A/B/C/D . . . . . \$34.95	ACCESSORIES Mouse Pad . . . . . \$4.95 Disk Notcher . . . . . \$4.50 Disk Clean 5 1/4 . . . . . \$4.00 Disk Clean 3 1/2 . . . . . \$4.00 Mouse IIc, c+ . . . . . \$49.00 Amber Monitor . . . . . \$99.00	
Extended 80 Column Card With 64K for Apple IIe 100% Appleworks Compatible <b>\$38.95</b> 5 Year Warranty	Replacement Keyboard <b>\$55.00</b>	5 Amp. Pwr. Supply II, II+ & IIe <b>\$49.00</b>
SUPER SERIAL CARD 100% Apple Compatible 5 Year Warranty . . . . . \$48.95	Joystick for Apple IIe, IIc, IIc+ & IIGS With Fire Button <b>\$24.95</b> Same as Mach III	
Graphics Printer Card w/Cable For Apple II+ & IIe <b>5 Year Warranty</b> Parallel <b>\$44.95</b>	LASER 128 Computer Three Times the Speed of a IIe Built in Memory Expansion Board 128EX . . . . . \$399.00 128EX2/5.25 . . . . . \$445.00 128EX2/3.50 . . . . . \$495.00	
DISKETTE STORAGE W/Lock 5 1/4 Holds 70 Disks . . . . . \$6.95 5 1/4 Holds 100 Disks . . . . . \$8.95 5 1/4 Holds 120 Disks . . . . . \$10.95 3 1/2 Holds 100 Disks . . . . . \$8.95	Do you have an IBM System? Want to run Apple Software . . . You need TRACKSTAR .. \$399.00	
II+ OWNERS 16K Card . . . . . \$34.95 128K Card . . . . . \$64.95 80 Column Card . . . . . \$48.95 Plus Works . . . . . \$49.00 5 Year Warranty	<b>MOUSE POCKET</b> <b>\$4.95</b>	
Prices subject to change without notice.		

We Ship  
2nd Day Air  
Continental US Only

VISA & MASTERCARD — NO EXTRA CHARGE DEALER PRICING  
Shipping Most Items \$6.00 / Drives \$8.00 / Computers Call / C.O.D. + \$4.00

### MEMORY PLUS DISTRIBUTORS, INC.

505 South 48th Street, Suite #104

Tempe, Arizona 85281

(602) 820-8819

(602) 830-6457

FAX# (602) 968-3211

Serving Apple Users Since 1983

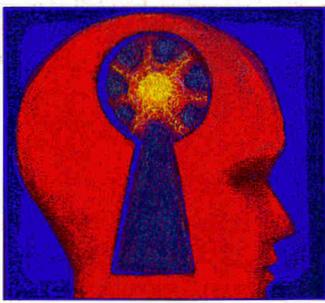
We carry only the  
Highest Quality products for  
your Apple.  
That's why we are  
the LARGEST  
and  
the BEST!

10 a.m. to 5 p.m.  
M.S.T.  
Mon - Fri.

University & School P.O.  
Accepted

20% Restocking charge  
on returned items

We Ship  
2nd Day Air  
Continental US Only



## LEARNING CURVE

**D**oes television's power to shape kids' opinions and feelings rob them of independent thought?

# EDUCATION'S NEW ORDER

By DAVID D. THORNBURG, Ph.D.

SOME YEARS BACK WHEN I WAS WADING in the ocean on the coast of California, a length of seaweed wrapped around my legs and I was pulled down by the undertow. I felt completely helpless. Fortunately, I didn't fight it, and I soon bobbed to the surface and swam to shore.

That feeling of helplessness came back to me this past January as I watched the Persian Gulf situation explode. As teachers, how do we explain war to our students, and how do we deal with their pain and uncertainty? An incessant barrage of information — televised accounts broadcast around the clock — sweeps us along and only adds to kids' confusion. There's no doubt that TV's an *easy* way to get information — it asks for nothing from its audience but attention. You needn't move, think, discuss, or even form an opinion. All you have to do is sit still, be quiet, watch, and listen. But does the power of this passive medium to shape its viewers' opinions and feelings rob them of independent thought?

In some ways, lecture-based classroom instruction isn't much better. The expert shares information with the novice on a one-way path, asking nothing in return until exam time rolls around. Lectures stand in contrast to interactive methods of instruction, which require the learner's active engagement. Once you interact with the world, you're empowered — you weigh evidence, develop opinions, and decide what stand to take.

Taking the Iraqi conflict as an example, I suggested to the teachers in a workshop I was conducting at the time that they involve children in projects that would give voice to feelings and provide some control over their access to information. Instead of passively watching events unfold on TV, students could actively study the region's geography, economy, and history, thereby learning a great deal about Mideast cultures.

I demonstrated one such application of interactive technology by using Software Toolworks' **World Atlas** on CD-ROM (\$109.95; 60 Leveroni Court, Novato, CA 94949, 415-883-3000). Within a few mouse clicks we'd zoomed from a view of

the world to a detailed map of Kuwait. Another click and we landed in a State Department summary of the politics of the country. Another few mouse clicks and we focused on Iraq, Saudi Arabia, Israel, and other countries connected in some way with the Mideast conflict. At any time, I could have stored text and pictures on disk to incorporate into a detailed report.

This excursion through the conceptual space of geopolitics was conducted in the span of a few minutes. Teachers asked the kinds of questions students would ask: Between Iraq and Kuwait, who has more oil (Iraq), who has the higher per-capita income (Kuwait), and so on. The ability to ask questions and get answers with the aid of the computer suddenly gave the teachers a sense of control, and provided some form of comfort.

Teachers and students can also press word processors into service for recording feelings, writing letters to servicepeople or politicians, and publishing a school newspaper. They can use CD-ROM-based encyclopedias to facilitate research on the geography and history of the area.

The active study of the Mideast situation serves as a model for learner-centered instruction in other subjects. But for that to work, the teacher must be willing to relinquish control as content expert. With the Mideast that's easy; few of us know enough about the area to be considered expert, so we're willing to learn alongside our students.

With the attitudes and support systems to encourage "proactive" learning, student engagement with the content is ensured. In pursuing a project, students will develop skills and attitudes needed to learn new subjects. The "drawing out" that defines education (from the Latin *educere*, "to lead out") involves more than just drawing ideas out of the student's mind — it entails drawing the student's mind out of the confines of the classroom and into the larger world around us. □

WRITE TO DR. THORNBURG AT 1561 LAUREL, SUITE A, SAN CARLOS, CA 94070. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

## IIGs Blowout! New-in-the-box ONLY \$699.

Reconditioned IIGs w/512k...\$589.  
800k external (Apple®).....\$199.

### Parts & Systems Buy-Sell-Trade

Apple II, Macintosh & IBM PS/2

**Shreve  
Systems**



3804 Karen Lane  
Bossier City, La. 71112 FAX 318-742-2799

**800-227-3971**

School & Government P.O.'s accepted!

Circle 29 on Reader Service Card.

## APPLE MEMORY CHIPS

### Guaranteed Lowest Price!

- ★ 2MB SIMM (MAC) \$110.00
- ★ 256K Chip Set (Standard) \$19.95
- ★ 256KX4 Chip Set (AE Ultra) \$14.95
- ★ 1MB Chip Set (AE Plus) \$59.95
- ★ Chinook 4000 4 MB card w/1MB \$143.00
- ★ SE 1 MB card for IIc w/256K \$105.00
- ★ SE 1 MB card for IIE w/256K \$99.00

School P.O.'s welcome, call for details.

**CALL TOLL-FREE 1-800-776-6260**



**COD**  
1031 E. Battlefield  
Suite 221 B  
Springfield, MO 65807  
Phone: (417) 883-6261  
FAX: (417) 883-2584

Circle 17 on Reader Service Card.

## Unleash the Hidden Audio Powers of Your Apple II

The Shan's DigiCorder (D.C.R.) allows any Apple II (+, e, c, GS) or compatible to play real world sounds, like natural human speech in any language, multi-timbral poly-phonic music etc., through your Apple's built-in speaker, with out requiring any additional hardware. You can easily create (Digitize) sounds, using its graphic user interface. Later you can play them back with or w/o special-fx like Flange, Mix, reverse and more from your own Basic / M.L. programs. Your programs with the sounds may be distributed on disk, without paying any cash royalties, so that it may run on any Apple.

Just US\$ 49.95 (incl. Air Mail). Demo disk for \$4 (fully refundable when your order). Free catalog. **ORDER NOW AND GET DCR (FREE GIFTS TOO) FOR ONLY \$39.95 (add \$5.00 for shipping).**

And now, to introduce you to the D.C.R. (and to us) take part in the **Cybergenesis-Sweepstakes**. 1000s of prizes with a trip for 2 to India as 1st prize. Every contestant is a winner, as they will receive a free custom printed shirt (not a T-Shirt).

Use groups,  
Dealers and  
Educational  
Users,  
Write F.A.M. on  
our exclusive  
offers for you.

Entry forms inside every D.C.R. pack. For more details, contact your dealer or write to us. **HURRY!** contest closes 15th Nov, 1991.



Vatanappally - 680614 Kerala India

Circle 26 on Reader Service Card.

## The Next Classic...



Hyper-Magiczine™

The Incredible Monthly Magazine on Disk for Users of HyperStudio®.

Every month you'll receive two 3.5" disks packed with...  
> Terrific New Stacks & Hyper-Reviews™ of IIGs Soft & Hardware  
> Ideas, Tips, Techniques, & Awesome New Hyper-Magic™ Palettes  
> Super Ideas & Stacks by Teachers for Teachers and Students  
> Hyper-Sounds™ and Hyper-Clips™ (great new sounds and clip art)  
> Games like Totally Hard Hyper Trivia™, Super-Slot Machine, & More  
> Exclusive Hyper-Fiction like "The Keeper" by Taurus McDaniels

Subscriptions: U.S.: \$50 (12 issues) \$95 (24 issues)  
International: \$84 (12 issues) \$144 (24 issues)  
U.S. Schools/Librarians: \$47 (12 issues) \$90 (24 issues)

Send check or money order in U.S. funds only:

The Next Classic/Hyper-Magiczine™  
Dept. A-2, P.O. Box 3416,  
Idyllwild, CA 92349-3416

Please allow 4-6 weeks for your first issue to arrive. Subscription rates subject to change without notice. You must have HyperStudio® to run Hyper-Magiczine™. HyperStudio® is a registered trademark of Roger Wapner Publishing, Inc. IIGS® is a registered trademark of Apple Computer, Inc.

Circle 30 on Reader Service Card.

## ASSET ANALYSIS

THE ONLY TOTALLY INTEGRATED FINANCIAL SPREADSHEET FOR THE APPLE II OR MACINTOSH

"[ASSET ANALYSIS is]... a truly powerful program for the serious investor." inCider A+, March '91

**Tired of slow calculating "management" programs?  
Frustrated when you can't find your "money"?**  
**JOIN THE "ASSET ANALYSIS" REVOLUTION!**

Determine your **real** wealth accumulation.

- Your investment at risk and current amounts.
- Gain (loss), % gain (loss), % annual and total return for each asset and for all combined assets.
- Quick and accurate, and printing is as easy as 1, 2, 3.

Compatible with all versions of Apple Works and Microsoft Works (Mac version) and MS Excel.

For AppleWorks: Version E2.1.1 (3.5 disc, 218K) \$54.95  
Version V2.1.1 (5.25 disc, 132K) \$49.95  
For Macintosh: MS Works (456K) or Excel (383K) \$59.95

FrankSoft Publishing  
3300 33rd Avenue Court  
Rock Island, IL 61201  
309-788-7663

Order from the publisher  
No shipping & Handling  
Illinois residents add  
6.25% sales tax.

Circle 31 on Reader Service Card.

## CANADIAN MAIL ORDER

### DANDAM SOFTWARE

EST. 1987

CALL FOR FREE CATALOGUE

AE 3.5 Drive \$249.95

### DP RamPlus Memory Cards

- 1 MG/E...\$179.95
- 2MG /GS...\$199.95
- DP52 Hard Drive with Apple SCSI...\$719.95
- Syquest 44MG Removable Drives with Cartridge & Apple High Speed SCSI...\$949.95
- PC Transporter or Transwrap/cs...\$329.95
- LASER 128EX/2...\$469.95

• LIMITED TIME OFFER •  
\$CDN\$

• 1-800-265-9576 • (519) 974-3011 •  
• Fax: (519) 974-6643 •  
8408 Wyandotte St. E.,  
Windsor, Ont. CANADA, N8S 1T6

Circle 80 on Reader Service Card.

## RIBBONS

**1-800-331-6841**

1-513-252-1247  
FAX 513-252-4429  
Over 350 types

Volume Discounts Available  
\*\* Satisfaction Guaranteed \*\*

	BLACK	COLORS
APPLE IMAGEWRITER	2.40	2.95
APPLE 4-COLOR	-	5.50
APPLE SCRIBE	5.95	-
CITIZEN 200GX/GSX-140	3.50	13.50
EPSON LX-80/90	2.10	3.50
EPSON MX-FX 80	2.50	4.50
EPSON MX-FX 100	3.50	4.50
IBM PROPRINTER	3.50	-
OKIDATA 182-192	3.50	4.50
PANASONIC 1080	3.50	4.50
PANASONIC 1124	4.95	4.50
STAR NX-1000	3.25	3.95
NX-1000 4 COLOR	-	7.50

DAYTON COMPUTER SUPPLY  
a division of Den-Sys Corp  
1220 Wayne Avenue, Dayton, Ohio 45410

Est.1979 TERMS: C.O.D., MC, VISA, DISCOVER, AMEX.

Circle 134 on Reader Service Card.

## LASER 128 Apple Compatibles

	Computer	w/Amber	w/RGB
128	289	378	499
128 EX	359	448	559
128 EX/2 w/5.25	369	458	569
128 EX/2 w/3.5	429	518	619

Largest LASER Authorized Repair Center & Educational Dealer in Southeast.

Amber Monitor.....95  
UDC Card or Mouse...45  
LASER Expansion Box.....49  
Zoom 2400 Modem.....99  
New - LASER PC-4 Portable for Mac...222  
LASER 3.5 Drive...119 Daisy Chain 3.5...159  
LASER 5.25 Drive...89 Daisy Chain 5.25...95  
LASER 14" RGB color monitor + green + tilt & swivel...219  
New - Magnavox color for Ile...289 for IIGs...309  
Ile Printer Card w/cable: Parallel...45 Super Serial...66

Memory  
RAM Card Ile...75 IIGs...70 Ilc, Ilc+, Macintosh...25  
Chips for IIGs: 1 meg...58 for Laser & Apple: 256K...20

III LASER Experts **1-800-726-7086**

LASER 190A ImageWriter Compatible Printer for Ile, Ilc, Laser...195 for IIGs, Ilc+, Macintosh...229  
New - T.I. Postscript Laser Printer w/AppleTalk...1750

Perfect Solutions (407) 790-1070  
12657 Lake Breeze Drive, West Palm Beach, FL 33414

Circle 59 on Reader Service Card.

## A MUST for Computers VIZIFLEX SEELS®



### The Ideal Keyboard Cover!

Protect your computer and eliminate downtime caused by liquid spills, contaminants, environmental hazards, etc. with VIZIFLEX SEELS - the only keyboard cover that:

- Remains securely in-place during the operation of the keyboard. Does not impede computer performance in any way.
- Is designed to "form-fit" to the exact contours of the keyboard.
- Provides superior tactile sensitivity and feel for individual keys.
- Consists of a durable matte finish material that eliminates glare while keeping all keyboard markings clearly visible.

Available for over 600 popular keyboards, VIZIFLEX SEELS can be custom designed for any keyboard or similar application. VIZIFLEX SEELS... The only keyboard cover for your computer!

**VIZIFLEX SEELS, INC.**

16 E. Lafayette St., Hackensack, NJ 07601  
Tel. (201) 487-8080 • Fax (201) 487-6637  
in Canada, call 1-800-668-6570

Call, write or fax for brochure—Dealer inquiries invited

Circle 290 on Reader Service Card.

## 2 POWERFUL SOFTWARE PROGRAMS from



COMPLETE MATHEMATICAL PROGRAMS for HIGH SCHOOL and UNIVERSITY STUDENTS or WORKING PROFESSIONALS

### GSNumerics

for the APPLE IIGS COMPUTER

- SCIENTIFIC CALCULATOR • Atomic Weight & Number • 196 Unit Conversions • Automatic Function Parsing • Complex Math • 64 Functions.
- POLYNOMIAL & NON-POLYNOMIAL OPERATIONS • Solve for y. • Slope • Area • Roots • Integrate & Differentiate Polynomials.
- x-y REGRESSION • Linear • Log • Exponential • Power.
- SYSTEMS OF LINEAR EQUATIONS • Real or Complex, up to 10 x 10.
- MATRIX OPERATIONS • Add • Subtract • Multiply • Scalar Multiplication • Transpose • Inversion • Determinant • Real or Complex up to 10 x 10.
- COMPLETE FILE OPERATIONS
- GRAPHICS • Polynomials • Non-polynomials • x-y Data • Regressions • Graph Magnification • Overlay Two Functions • Overlay Function and Derivative • Overlay Function and Integral.

Circle 60 on Reader Service Card.

### MacNumerics

for the Macintosh Computer

The NEW MacNumerics has all the basic functions and features of GSNumerics PLUS...

- POLYNOMIAL OPERATIONS • Enter In Polynomial Form • Enter In Factored Form • Enter As A Factor Power Expansion • Factor Polynomials With Real And Complex Factors.
- GRAPHICS • Compute And Display Real Roots • Compute And Display Area Between Two Points • Compute And Display Common Solutions • Compute And Display Area Between Two Functions.
- SHOW COMPUTATION STEPS

TWO POWERFUL TOOLS FOR TEACHING AT THE HIGH SCHOOL & UNIVERSITY LEVELS  
For complete information contact:

Spring Branch Software, Inc.  
P.O. Box 342 • Manchester, IA 52057  
Phone: (319) 927-6537

Circle 3 on Reader Service Card.

## Bible Software

Find any verse in the Bible, search for any word or phrase. Easily find the exact verse you need for your study. Build personal concordances to the Bible. We also offer a topical index and a Greek transliterator. For ProDos, Macintosh & MSDOS. Call for a FREE brochure.

(800) 423-1228

### Bible Research Systems

2013 Wells Branch Pkwy #304  
Austin, Texas 78728  
(512) 251-7541

Circle 87 on Reader Service Card.

## The AppleWorks Handbook

Volume One of the AppleWorks Handbook should be in every AppleWorks user's professional library. More than 50 articles help you:

- Answer the most frequently asked AppleWorks questions and solve common problems.
- Configure AppleWorks for optimum use with your printer, RAM card, and other hardware.
- Select and use popular software enhancements.
- Satisfaction guaranteed or your money back.
- Only \$16.95 plus \$2.50 s/h. Visa and M/C accepted.

National AppleWorks Users Group  
Box 87453, Canton MI 48187; (313) 454-1115

Circle 55 on Reader Service Card.

## Sports Scheduler

THE BEST MOST COMPLETE LEAGUE PLAY SCHEDULING SOFTWARE ON THE MARKET.

- Schedule any number of leagues, categories or divisions with 4 to 22 teams in each.
- The date, day, time, location, game number, & home & visitor are calculated for every game.
- Equal distribution of; opponents, teams playing in time slots, byes for odd number of teams, home and visitor status, and the number of games.
- Games are listed in chronological order by date and time arranged in sets and round robins.
- Only minutes to create/print/save a schedule.
- Saved schedules can be recalled into APPLEWORKS providing unlimited editing and printing options. You select desired file format-word processor, spreadsheet, or data base.
- Prints mailing labels and league/team contact rosters for each league, category or division.
- Create scheduling organization/setup worksheets.

Bonus- Referee/ Facility Scheduler included free.  
Apple IIe, c, IIGS (5 1/4 disk) \$109.95+\$3.00 S&H  
IBM PC & Comp (3 1/2 or 5 1/4 disk) \$129.95+\$3.00 S&H  
Call or write for informative brochure:

SPORTS SOFTWARE ASSOCIATES  
P.O. BOX 458, HINGHAM, MA 02043  
(617) 749-7880

Circle 18 on Reader Service Card.

	Computer	MonoSys	ColorSys
LASER 128	\$295	\$381	\$498
LASER 128EX	\$369	\$458	\$588
LASER 128 EXII	\$401	\$490	\$620
LASER 128 EXII+	\$447	\$536	\$666

12" Laser Monochrome.....	89	Laser UDC Card (3.5/5.25).....	46
12" Magnavox Mono/Comp.....	96	Laser 128E Memory Card.....	30
14" Laser RGB Color.....	219	256K Memory.....	25
13" Magnavox 8764 Color.....	259	Monitor Stand.....	28
14" Magnavox 1135 Color.....	289	Laser Safeskin.....	24
Laser 190 (Epson).....	195	Apple Safeskin.....	24
Laser 190 (Apple).....	195	Laser Joystick.....	25
Laser 190 (Mac/IIGS).....	255	Laser Mouse.....	46
Laser PC4.....	219	Star NX 1000.....	185
Modem Software.....	120	Star Rainbow.....	255
Apple II Serial Card.....	85	Laser 3.5 Drive (Mac).....	123
Apple II Parallel Card.....	49	Laser/IIe 5.25 Drive.....	92
AppleWorks 3.0.....	185		

All Units 1 year Warranty  
90 Days Free Pick-up & Return

### NEW SCIENCE PROSPECTS

Your full Laser Computer Service Center  
1200 Blalock Ln., Ste. 380, Houston, TX 77055  
713-464-8303  
School orders welcome

Circle 173 on Reader Service Card.

## COLOR RIBBONS & PAPER

Colors: Black, Red, Blue, Green, Brown, Purple, Yellow

Ribbons:	T-Shirt
price each	Black Color Ribbons
Apple Image, I, & II	\$3.75 \$4.50 \$6.50
Apple Image, II 4-Color	\$5.95 \$10.00
CitizenGSX140	\$4.00 \$5.00 \$7.50
CitizenGSX140, 4-Color	★
Epson MX-80	\$3.75 \$4.50 \$6.75
Okidata 182/192	\$5.00 \$7.50
Panasonic 1180/1124	\$5.00 \$7.50
Star NX 1000	\$3.50 \$4.50 \$6.75
Star NX 1000, 4-color	\$6.25 \$10.00

T-Shirt (Heat Transfer) Ribbons

Colors: Black, Red, Blue, Green, Brown, Purple, Yellow

### COLOR PAPER

Color Paper:	200 Shts assorted
Bright Pack:	9 1/2 x 11 \$10.90/pk
Pastel Pack:	9 1/2 x 11 \$7.90/pk
Color Certificate Paper:	100 sheets \$9.95/pk
Color Banner Paper:	45 ft/roll \$8.95/roll

Min. orders: \$25.00. Minimum S&H: \$4.50. Call for other ribbons and supplies. Price and spec. are subject to change w/o notice.

### RAMCO COMPUTER SUPPLIES

P.O. Box 475, Manteno, IL 60950 U.S.A.  
USA 800-522-6922 or 815-468-8081  
(Canada) 800-621-5444

Circle 7 on Reader Service Card.

## APPLEWORKS ↔ IBM

CROSS-WORKS 2.0 can exchange AppleWorks data files with the most popular MS-DOS programs:

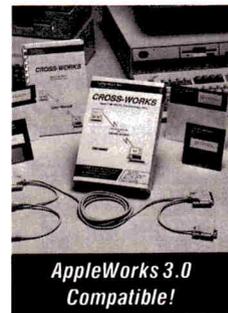
**NEW!** AppleWorks ↔ Microsoft Works  
AppleWorks Word Proc. ↔ WordPerfect  
AppleWorks Spreadsheet ↔ Lotus 1-2-3  
AppleWorks Data Base ↔ dBase III, IV, etc.

In seconds, **CROSS-WORKS** copies files either way between your Apple II and IBM PC, and translates the file formats. Word Processor files maintain underlining, margins, centering, etc. Spreadsheets transfer data and formulas! Transfers ASCII text files too. Includes universal 19,200 baud cable to connect IIe (with Super Serial Card), IIc, IIcPlus & IIGS to PC, XT, AT, PS/2 & compatibles. Also supports modem transfers. Both 5 1/4 and 3 1/2 inch disks included.

"...Look no further. SoftSpoken's **CROSS-WORKS** carries the biggest stick in the file translation/transportation business... Rating: ★★★★★" — *InCider* July, 1989

**CROSS-WORKS™** \$99.95 + Shipping & Hand.  
30 Day money-back guarantee! School P.O.s welcome.

☎ (919) 870-5694 for free information.



AppleWorks 3.0 Compatible!

SoftSpoken  
P.O. Box 18343  
Raleigh, NC 27619

Circle 127 on Reader Service Card.

## DUST COVERS

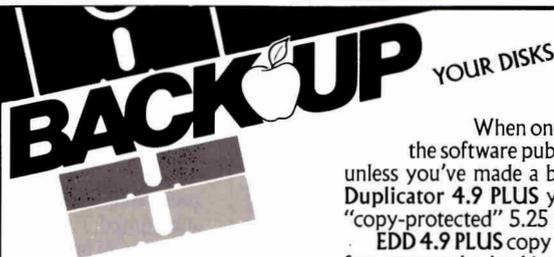


### 100% Fabric Dust Covers

- Heat Ventilating, Unlike plastic, and Won't Dry Out, Yellow or Crack with age! • Machine Wash & Dry!
  - Highest Quality, Custom-Fit Designs! • For Apple, MAC, IBM, Compaq & many more! • Custom orders!
  - Monogramming and Silk-screening Available!
  - 100% Satisfaction Guarantee! • Service since 1983!
- |   |   |
|---|---|
| 10-62 ligs. RGB Mon & Kbd. .... 29.95     | 95-24 Laser 128 CPU..... 15.95          |
| 10-87 ligs. KSS, RGB & Kbd. .... 29.95    | 10-60 Apple 3.5" Drive..... 6.95        |
| 10-96 ligs. RGB & Kbd (3 pc) .. 34.95     | 10-38 Apple 5.25" Drive..... 6.95       |
| 10-67 ligs Keyboard Only..... 6.95        | 10-59 3.5" on top 5.25"..... 9.95       |
| 10-16 lfc & Monitor lfc..... 24.95        | 11-30 Mac Classic & Kybd. .... 24.95    |
| 10-61 lfc & Color Mon lfc..... 29.95      | 11-32 MacLC 12" Mtr & Kyb. .... 29.95   |
| 10-17 lfc External Drive..... 6.95        | 11-36 Mac lsi 13" Mtr & Kyb. .... 29.95 |
| 10-58 lfc & lfc Color Monitor. .... 29.95 | 10-37 Imagewriter II..... 15.95         |
| 10-34 lfc Computer Only..... 15.95        | 10-90 LaserWriter II..... 24.95         |
| 10-32 lfc Color Monitor Only. .... 19.95  | 11-25 Personal LaserWriter. .... 24.95  |
| 10-07 lfc & lfc Mono Monitor. .... 24.95  | 11-52 Stylewriter..... 15.95            |
- Add \$4.00 Shipping & Handling (Check, M.O., C.O.D., VISA/MC)

CO-DU-CO Computer Dust Covers  
4802 W. Wisconsin Ave., Milwaukee, WI 53208  
800-735-1584 • 414.476.1584 • 414.476.9329 FAX

Circle 21 on Reader Service Card.



When one of your favorite disks "crash" and the software publisher is out of business, all is lost—unless you've made a back up copy. With **Essential Data Duplicator 4.9 PLUS** you can back up your uncopyable "copy-protected" 5.25 inch disks... before it's too late!

**EDD 4.9 PLUS** copy system uses a special interface card for accurately backing up more disks than all copy programs together, guaranteed! In addition, we've included several useful utilities.

**EDD 4.9 PLUS** runs on apple compatibles, II+, IIe, and IIgs; price, **\$129.95**. *Daisy chain type or duodisk drives need \$15 cable adapter.* Add \$5 shipping (\$8 foreign).

A software only version, **EDD 4.9 standard**, runs on apple compatibles, II+, IIe, IIc, IIgs, and III; price, **\$29.95**. Add \$3 shipping (\$6 foreign).

No risk — If unhappy for any reason, return in 30 days for refund.

If you already own EDD, please pass this message to a friend.

Phone orders (707)965-2290 weekday mornings (P.S.T.). M/C, Visa accepted. Or, send orders to: **UTILICO**, 3377 Solano Ave., Suite 352, Napa, CA 94558. EDD is also available through your favorite software dealer.

ESSENTIAL DATA DUPLICATOR

## FREE -15 DISKS - FREE FULL OF GREAT SOFTWARE

### TRY US!

Get 15/5.25" disks or 6/3.5" disks for Apple II, Apple GS or Mac. Bestselling **VIRUS FREE!** Games, Business, Graphics, Education, Utilities, Finance, and Desktop publishing software. Credit cards only! **PAY ONLY \$5.00 FOR SHIPPING** satisfaction guaranteed

MACINTOSH • APPLE II • APPLE GS

SMC SOFTWARE PUBLISHERS

ORDER TODAY - CALL

619 931-8111

since 1985



Circle 23 on Reader Service Card.

*inCider/A+* brings you ten new projects for AppleWorks 3.0!

## AppleWorks 3.0 Productivity Pak II

These ready-to-use templates take the work out of getting organized and some can even save you money. Just follow the step-by-step instructions in the reference guide and you'll be able to complete the projects with ease and confidence.

- Display your "roots" in an attractive **FAMILY TREE**.
- Use **VIDEOTAPE LIBRARY** to organize your collection.
- Select an affordable car with **CAR COST COMPARISON**.
- Decorate **CUSTOM CALENDARS** with homemade stickers.
- Compare housing options with **HOME BUYER'S GUIDE**.
- Prepare a **LIVING WILL** to document your wishes.
- Print recipe cards from an electronic **COOKBOOK**.
- Create an attractive **BOOKLET** enhanced with clip art.
- Use a custom **COLLEGE GUIDE** to narrow your choices.
- Project your **INCOME TAXES** in time to save money.

STILL AVAILABLE - AppleWorks 3.0 Productivity Pak I

- |                      |                     |
|----------------------|---------------------|
| INVENTORY ORGANIZER  | MAIL-MERGE POSTCARD |
| DESKTOP PUBLISHER    | CHECKBOOK MANAGER   |
| AUTO-MILEAGE LOG     | NUTRIDATA           |
| MEMBERSHIP ORGANIZER | NUTRICALC           |
| STATEMENTS           | HOME CONSTRUCTION   |

Order AppleWorks 3.0 Productivity Pak I\* or Appleworks 3.0 Productivity Pak II\* for

Only \$29.95 each!

SPECIAL OFFER — Save \$10  
Order both volumes for just \$49.90!

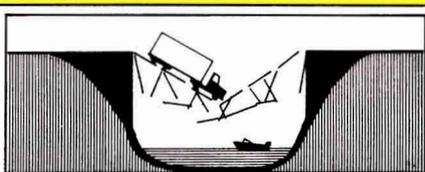
Foreign Airmail, add \$3.95. Foreign orders must be paid in U.S. funds drawn on a U.S. bank.

\*Requires AppleWorks 3.0. AppleWorks is a registered trademark of Apple Computer, Inc. licensed to Claris Corporation.

*inCider/A+* Special Products  
80 Elm Street  
Peterborough, NH 03458

TOLL-FREE: 1-800-343-0728  
In NH: 924-0100  
Fax: 603-924-9384

161A



© Copyright 1987, 1990 Robert A. Wolf III, P.E. & Scott M. Sutton

## CAN YOU BUILD A BETTER BRIDGE?

PRE-ENGINEERING SOFTWARE™  
presents

### BRIDGE BUILDER™

A construction set for the computer that allows players to create real bridge designs and test their designs with a built-in structural analysis package.

For Apple II+ (64k), IIe, IIc+, & IIGS (file emulation mode)

Price \$36.00\*

\* per single copy - add \$3.50 postage & handling (\$8.00 outside U.S.)

Package includes illustrated manual and 2 disks (specify 3.5 or 5.25)

Send check or money order to:

Pre-Engineering Software™  
1266 Kimbro Drive  
Baton Rouge, LA 70808  
(504) 769-3728

School purchase orders accepted. Site License \$99.00 + \$4.50 P&H

S.L. includes limited copying privileges + 2 manuals

Apple is a trademark of Apple Computer, Inc.

Circle 78 on Reader Service Card.

**Music**

**ELECTRONIC MUSIC  
MIDI SYSTEMS**

Laminated MIDI Reference Poster, attractive, suitable for framing, for home studio or music classroom, \$19.95 + \$5.50 S/H. Turn your Apple into a Multi-Track Recording Studio or Music Ed. Tutor with these great products: Apple II+, IIe, MIDI Card 1x2 channels \$69, GS/MAC MIDI 1x3 \$59, with Serial Thru Switch and Diode Lights 1x3 Interface \$89. Sequencing software: MasterTracks Jr, GS \$79, MT PRO GS \$259, Dr.T's KCS V. 2.0 IIe/II+ \$159, GlassTracks \$89, Super Sequencer GS, IIe \$179, Apple II or GS MIDI Music Pack: MIDI Interface & Cables & Software \$169. Music Printing Software \$99, Keybrd. Tutor \$39, Chords \$79, Fingering \$79, Note Reading \$39, Intervals \$79., Hear Today Play Tomorrow \$199. 5" MIDI Cables \$7.95. Books \$2.50 S/H each: A GuideTo Computer Music, \$19.95; Electronic Music Dictionary \$16.95; Sequencing for Musicians \$17.95; Music and the Mac \$16.95; Polyphonic MIDI Keybrd. with speakers \$389, or Kawai PH50 Keybrd. \$379. MAC, MIDI, MUSIC SYSTEMS. Band in a Box with song disks \$79, Encore Notation \$359, Al Tech new MIDIFACE EX 1X3 Interface plus software \$69, Practica Musica Education software \$99. MT Pro \$259, Pro 4 \$359, Vision \$339, Trax \$79, All Editor/Librarian Mac Software. MIDI Software for any level user; Apple II, Mac, C-64/128, IBM, Atari, Schools and Canadian orders welcomed. New 1991 MIDI Buying Guide Catalog.

**SOUND MANAGEMENT  
P.O. Box 3053**

Peabody, Ma 01961  
Check, MO, VISA, MC, School P.O.  
Call (800) 548-4907 orders USACall  
(508) 531-6192 MIDI Buying Guide  
catalog and foreign countries

**Entertainment**

**WIN THE LOTTERY TODAY!**  
**LOTTO PICKER™** works with your computer to improve your odds of winning million \$ jackpots by exploiting hidden biases in your States lottery games. Increase your win rate in every Lotto game worldwide! For IBM, Apple II, & C64. \$39.95 (+\$2.55 sh). 3.5" disk add \$5. NY res. must add tax.

**GE RIDGE SERVICES, INC.**  
170 Broadway, Suite 2011C  
New York, N.Y. 10038  
ORDERS: 1-800-8352246 x121.  
Info 1-718-317-1961

**Public  
Domain**

**BEST VALUE IN  
APPLE PUBLIC DOMAIN**

Over 1000 disks, packed, organized and MENU-DRIVEN with only the best PD and Shareware. Our library is continually updated and now includes many of the latest releases for the Apple IIGS! We emphasize quality and service with NEXT DAY shipping available. Disks as low as \$1.00 each and include all categories (Utilities, Education, Business, Games, PRINTSHOP GRAPHICS, Religion, Appleworks templates, Pascal, Ea-mon, and more). Programs available in 5.25 and 3.5 format. BLANK DISKS, RIBBONS, and more also available at discount prices. No membership fee! Send \$2.00 for a descriptive catalog and demo disk to:

**CHRISTELLA ENTERPRISE  
P.O. Box 483  
St. Clair Shores, Michigan 48080**

**APPLE PUBLIC DOMAIN DISKS** Request free catalog or send \$2 for sample disk & catalog (REFUND- ABLE). Categories include education, utilities, games, business, Print Shop graphics, shareware, EAMON and more. Buy as low as \$1.00 per disk. A \$20 order gets 4 free disks of your choice. NEXT DAY SHIPPING! We have been distributing Public Domain programs since 1986 and will continue to provide timely, courteous responses to all inquiries. Purchase Orders Welcomed!

**CALOKE INDUSTRIES (Dept. SK) P.O. Box 18477  
Raytown, Mo 64133**

**FREE APPLE PUBLIC DOMAIN  
CATALOG**

Request free catalog containing complete descriptions of hundreds of programs for the Apple II+, e, c, c+, and GS computers. We carry the very best in all categories including Business, Home, Education, Utilities, Games, Print Shop Graphics, AppleWorks Templates, and more. We use only high-quality colored disks which are completely SELF-BOOTING and MENU-DRIVEN. All orders are shipped the same day they are received. We pay shipping with small minimum order. Money-Back Guarantee! Send for yours today!

**MOONLIGHT SOFTWARE  
P.O. BOX 179144  
San Diego, CA 92177**

**Sale! 20 programs \$1.95**  
Public Domain & Shareware for Apple II+, E, C, C+, GS Computers. Any disk \$1.95 none higher, no minimum purchase. That's right, we supply the programs and disk for only \$1.95 during our limited Time Sale. Some disks have over 40 programs. Our 10th year distributing Public Domain programs. Thousands of programs. Our Big 48 page catalog gives you descriptions of many of the programs, not just a name. Education & School, Games, EAMON, Art & Graphics, Astronomy, Business & Finance, Ham Radio, Math & Statistics, Music & Sound, Appleworks™ templates and more. Limited time sale, order only on special (supplied) order blank. Send \$3 for Big Descriptive 48 page catalog to:

**Computer Budget Shopper (CBS)  
2203 Park Ave Suite 25  
Cheyenne Wy 82007**

**Insurance**

**INSURES YOUR COMPUTER**

SAFEWARE provides full replacement of hardware, media, and purchased software. As little as \$49 a year provides comprehensive coverage. With blanket coverage, no lists of equipment are needed. One phone call does it all! Call 8am to 10pm ET (Sat 9 to 5).

**SAFEWARE, THE INSURANCE  
AGENCY INC.  
2929 N. High St.  
P.O. Box 02211  
Columbus, OH 43202  
(800) 848-3469 Nat;  
(614) 262-0559 (OH)**

**Software**

**FAMILY ROOTS, LINEAGES,  
TREE CHARTS**

From our collection of software to keep track of your family, choose one to fit your needs and pocketbook! Our software handles gobs of data for each of millions of people. Print pedigree and descendants charts, group sheets, person sheets, indices of names, address labels, more. Do screen tracing and searches. Compatible with your word processor. Call for a FREE catalog. Satisfaction guaranteed! Prices start at \$49. All Apples, Macs, PCs, and more.

**MC/VISA/AMEX  
QUINSEPT  
PO Box 216  
Lexington, MA 02173  
617-641-2930 (Mass.)  
800-637-7668 (USA & Canada)**

**EUROWORKS ADDS FOREIGN  
LANGUAGES TO APPLEWORKS**

Type French, German, Italian, Portuguese, or Spanish quickly, simply with the classic AppleWorks word processor. Then, from inside AppleWorks, EuroWorks prints your foreign text on an ImageWriter or true compatible. Print every keyboard character plus 8 new ones plus 13 French, 7 German, 10 Italian, 13 Portuguese, or 10 Spanish. No conflict with TimeOut. EuroWorks REQUIRES an ImageWriter 1, II, or LQ; Apple DMP; MT85/86; or Seikosha SP-1000AP. SPECIFY APPLEWORKS 2.x or 3.0. ORDER FRENCH (\$24), SPANISH (\$24) or ALL FIVE LANGUAGES (\$39). ADD \$3 S/H. Check, MO, Net-30 School PO, VISA/MC. Brochure on request.

**THE S.A AuTeur CO A66  
PO Box 7459  
Beaverton, Oregon 97007  
(503) 654-2306**

**THE SOURCE OF  
PLAN-MAKING SOFTWARE**

**DESIGN YOUR OWN HOME:  
ARCHITECTURE, INTERIORS or  
LANDSCAPE Apple II:**

\$69.95, IIGS: \$89.95, MAC: \$99.95. The most useful programs for complete home designing.

**DESIGN YOUR OWN RAILROAD:**  
Apple II: \$49.95. Design precision, to-scale (H,O,N,Z,O,S,G) layouts and run realistic railroad simulations.

**DESIGN YOUR OWN TRAIN:**  
Apple II: \$49.95. The train and transit system construction set.

**RUN YOUR OWN TRAIN:**  
Apple II: \$34.95. The flight simulator for down to earth people.

**EVERYBODY'S PLANNER:**  
Apple II: \$99.95. The only project management tool for Apple IIs, easy on your pocketbook and simple to use.

**ADVENTURE OF LEARNING:**  
Apple II: \$69.95. Enables you to run our educational and entertainment modules. The program comes with 3 FREE sample modules, and coupons worth \$120 OFF additional modules. Check/Visa/MC.

**ABRACADATA  
PO Box 2440 Dept. DD  
Eugene, OR 97402  
Orders: (800) 451-4871  
Information: (503) 342-3030**

**Use inCider/A+  
Classified Section  
to showcase your  
Products. Contact  
Diane Maguire at  
1-800-441-4403  
for further details.**

## Computers & Supplies

**SUPER DEALS ON  
MACS & APPLES!  
BUY\*\* SELL \*\* TRADE  
USED \*\* NEW**

Apple IIc	\$325
Apple IIc+	\$425
Apple IIe	from \$349
Apple IIgs	from \$599
All other Apple Systems	CALL
Imagewriter I(Used)	\$275
Imagewriter II(Used)	from \$349
Apple 3.5" Unidisk 800k	\$269
20 MEG External HD (SCSI extra)	\$269
MAC II	from \$2149
MAC IIcx(New)	from \$2649
MAC II ci	from \$3299
All other Mac Systems	CALL
Parts & Peripherals	CALL
Price List	\$.50 SASE

Also open evenings & weekends

**M.P.-Computer Micro Systems**  
655 W. Evelyn Avenue #2  
Mountain View, CA 94041  
(415) 968-0509 (FAX)  
(415) 968-9026 (VOICE)

### FACTORY FRESH RIBBONS

Ribbon	Black	Color
Apple Imagewriter		
I,II	\$ 2.25	\$ 2.95
Imagewriter II		\$ 4.95
4 color		
Imagewriter II		\$ 9.95
4 color Heat transfer		
Imagewriter LQ (Black and 4C)	\$ 8.95	\$13.95
Panasonic 1124	\$ 3.50	
Epson MX/FX/RX80	\$ 2.50	\$ 3.50
Epson MX/FX/RX100	\$ 3.50	\$ 4.00
Star NX1000	\$ 3.25	\$ 3.95

For Orders of less than 6,  
please add .75¢ each.

Hundreds more.

Colors (BLUE, RED, GREEN, PURPLE,)

**-PREMIUM IS ALL WE SELL!**

Shipping/Handling \$3.75 per order  
(over \$75 we pay S/H).

AK,HI,PR...APO/FPO, Canada add  
\$.6 S/H to all orders

Free box of 10 diskettes with orders over  
\$100.00 (specify 5.25 or 3.50). New York  
residents please add sales tax.

School, hospital and govt. PO's welcome.

**-MONEY BACK GUARANTEE**

### ISLAND COMPUTER SUPPLY

305 Grand Boulevard  
Massapequa Park, New York 11762  
(516) 798-6500

### REPAIRS BY MAIL !!

Two business day turnaround,  
work guaranteed for up to one year.  
Ile MLB Swap: \$110+ \$12 s/h - 1 year  
guarantee.  
II,II+, Iie Power Supply Replacement:  
\$75-1 year guarantee.  
Iic MLB Swap: \$90 + \$12s/h - 1 year  
guarantee.  
Disk Drive II Rehab: \$75 + \$7.50 s/h-  
6 month guarantee.  
NJ residents add 6% sales tax.  
Hardware supplies also available.  
School District orders welcomed.  
Write or call us for details.  
We also buy dead Apples,  
Franklins, Lasers.

**ARMINIUS PUBLICATIONS  
& PRODUCTS**  
P.O.Box 1265/8519  
Orchard Ave.  
Merchantville, NJ 08109  
(609) 662 3420

## Education

### MICROSOFT WORKS APPLEWORKS HYPERCARD

Our FREE 1991 catalog is filled with ev-  
erything you need to get up and running in  
these applications. It offers books, videos,  
student & teacher texts, resource  
corner, complete teaching packages, refer-  
ence books, and software to integrate  
Works and HyperCard into your curricu-  
lum. We also offer special pricing for ed-  
ucators on AppleWorks, Claris Power  
Pack (save 79%! ) and Microsoft Works.  
Plus, a FREE mug offer!

**K-12 MICROMEDIA PUBLISHING**  
6 Arrow Road  
Ramsey, N.J.  
(800) 292-1997

## Batteries

### Your IIGS Out of Time?

Slide-On™ Battery Replacement Kit  
will save your Apple IIGS computer!

- Fantastic Savings
  - Easy Installation
  - No Solder Required
  - Complete Instructions
  - Heavy Duty Lithium Battery
  - 10 Year Shelf Life
  - Satisfaction Guaranteed
- \$14.95 each Kit or \$120 for 10 Kits  
Send Cash, Check, MO, or School  
PO. Add \$2 S/H per order (Overseas  
\$5). KS residents 6% tax. VISA/MC.  
Patent Pending

FAX: (913) 362-5798  
Nite Owl Productions  
Slide-On Battery Dept.  
5734 Lamar Street  
Mission, KS 66202  
(913) 362-9898

# Need Some More Excitement in Your Life? Take Home One of These Puppies!\*

**Now!** For a limited time only.

When you purchase **BeagleWrite™** or  
**BeagleWrite GS™**, the finest in word  
processors for the Apple II, you can  
receive another little package to help you love your new  
friend even more. And it requires little attention.



All you need to do is purchase BeagleWrite or Beagle-  
Write GS from your favorite dealer between April 1 and  
July 31, 1991 and mail us the dated receipt, the cut out  
UPC code and the completed coupon below before  
August 15. That's all there is to it. No bones about it.

## Pick out your favorite.

**Purchase BeagleWrite GS  
and choose from:**

- GS Desk Accessories™
- BeagleDraw™
- Font Library™ Vol. 1

**Purchase BeagleWrite  
and choose from:**

- BW Desk Accessories™
- BW Picture Manager™
- FontPaks™ 1 & 2



### Beagle Bros, Inc.

6215 Ferris Square, Suite 100  
San Diego, CA 92121  
(619) 452-5500

\* Beagle Bros cannot, of course, guarantee that your life, however exciting it  
may be at this time, will change dramatically upon receipt of any of these  
programs. But, any new addition to your family of software can't hurt. Especially  
if it's a Beagle. All product names listed here are trademarks of Beagle Bros.  
Beagle Bros and the Beagle Bros logo are registered trademarks of Beagle Bros,  
Inc. Not valid with any other offer. Product must not have been purchased from  
Beagle Bros directly. All Beagle Bros products are house-trained.

### Please mail to the address shown above.

Yes! I have enclosed my dated receipt for BeagleWrite or BeagleWrite  
GS and the actual UPC code cut out. Please send me (check one):

- For BeagleWrite GS Purchase:
- GS Desk Accessories
  - BeagleDraw
  - Font Library Vol. 1

- For BeagleWrite Purchase:
- BW Desk Accessories
  - BW Picture Manager
  - FontPaks 1 & 2

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State/Zip \_\_\_\_\_

Phone No. \_\_\_\_\_

**U N L E A S H T H E P O W E R**

Circle 179 on Reader Service Card.

June 1991 • inCider • 79

# EDITORS' CHOICE



## KID PIX!

By THE STAFF OF INCIDER/A+

**W**ork, according to Tom Sawyer, "consists of whatever a body is obliged to do. Play consists of what a body is not obliged to do."

Keep that nice distinction in mind as you play with **Kid Pix**, Broderbund Software's Macintosh painting program for children (1 megabyte of RAM required for 9-inch monochrome monitors, 2 megabytes for color). Was **Kid Pix** obliged to feature an exploding eraser? Does a paint program need to splash random blobs all over the screen? Is it necessary to shatter a painting like broken glass? Does the undo command have to say, "Oh no!"?

No, none of **Kid Pix's** craziness is necessary. It's just plain fun. **Kid Pix** is crazy because it's based on a crazy idea: All kids are artists. Do you believe that? Does every child have the gift of drawing? If you think not, forget **Kid Pix**. But if you want to give your youngsters a chance to find out how much fun it is to be creative, give them **Kid Pix**.

Do you remember the first time you sat down to use a painting program? Maybe it was **MousePaint** on the Apple IIc, maybe it was the original **Dazzle Draw**. Remember how you felt? It was liberating — it felt like dipping your fingers into the paint, except that your fingers stayed clean.

**Kid Pix** sets you free again. It's designed to be fun, not to create color separations or mimic photographs. Instead of clip art, **Kid Pix** uses stickers. Instead of 10,000 True-Type fonts, **Kid Pix** has a talking alphabet. And instead of a screenful of menus — pull-down, tear-down, tear-off,

rip-off, and clutter-up — **Kid Pix** lets you turn off the menus altogether. That way kids can't make any major mistakes. "Of course I had a lot of fun with **Kid Pix**," says Senior Editor Paul Statt. "But, more importantly, my daughter loved it. She's 2, and a tough critic."

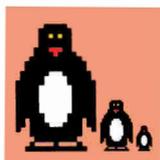
**Kid Pix** talks to kids in English or Spanish, and even lets them record their own voices. It's not recommended for high-level artistic work, but it does take advantage of 16 colors, and some of its crazier features, such as the ability to outline figures in color, have some potential for serious exploration.

**Kid Pix** is so much fun that you may just talk your kids into doing some actual work with it. It doesn't paint picket fences, but it does pack a lot of power — and it also has an exploding eraser. **Kid Pix** is available for \$49.95 from Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101, (415) 492-3200.



No one's too young or too old to get a kick out of **Kid Pix**. Crazy visual effects mean wacky fun for kids of all ages.

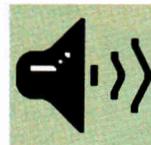
EDITORS' CHOICE SINGLES OUT ONE PRODUCT EACH MONTH THAT THE *INCIDER/A+* EDITORS FEEL IS A SIGNIFICANT ADDITION TO THE APPLE FAMILY. PRODUCTS EVALUATED ARE AMONG THE MOST RECENT RELEASES AND MAY NOT BE AVAILABLE YET FOR RETAIL DISTRIBUTION.



The **Kid Pix** rubber stamp lets you create pictures even if you can't draw a line — 112 different color "sticker" images you can paste in three sizes. If that's not enough, you can even create your own.



"Oh no!" Among **Kid Pix's** extras is a talking "undo" command that takes the sting out of inadvertent errors by flashing a cartoon face on screen. Just click and the last thing you did will disappear.



A dazzling array of **Kid Pix** sound effects — from gurgling paint and exploding firecrackers, to talking letters (in English or Spanish) and recorded music and messages — keep kids entertained.



## IIGS High Density arrives.

AE's new 3.5 High Density Drive™ for the IIGS sets a new standard for Apple IIGS storage. 1.6 MEG capacity means you can stop playing diskette roulette. Simply store your large 2-disk application programs on one, high density disk and forget about fumbling for clumsy "sets" of disks. And storing files just became twice as easy too, because you'll only need half the number of disks.

**Compatible with all versions of GS/OS**, our design incorporates the same, top-quality SONY mechanism that Apple uses. Aesthetically, the AE Drive is every bit as handsome as the Apple Drive. We designed a thick, high-impact plastic case to stack with and exactly match the footprint of Apple's drive. But AE's drive gives you twice the capacity at a far lower price.

**Our exclusive 2-way LED** indicator shows green for reading, red for writing. Now you can monitor the drive's progress and know that a disk is actually being copied, instead of being confronted with an ambiguous "on" light.

**The 800K version** of the AE drive works with the IIe, IIc Plus, IIGS, Macs and our PC Transporter. For IIe owners, we've even designed a low-cost optional controller card that allows the IIe to accept data from the 3.5 format. The AE Drive is also Macintosh compatible as an 800K drive. And owners of AE's 800K drive wanting 1.6 MEG high density capacity for their IIGS can affordably upgrade.

**High density** is quickly becoming the standard for other personal computer platforms. Now you can bring the power and convenience of high density to your IIGS!

### Features

- 800K, upgradeable to 1.6 MEG on IIGS
- 2-way LED indicator, red for read, green for write
- Auto eject
- Daisy chain port - works both ways, connect a drive to it, or connect it to another drive
- 1 year warranty
- Apple compatible, works as 800K drive with IIe, IIc Plus, IIGS, Mac and PC Transporter

- Stack and footprint compatible with Apple Drive
- Conserver compatible

**AE 3.5 Drive (800K) ..... \$279**

**AE 3.5 IIGS High Density Drive (1.6 MEG-GS only).....\$339**

**Order today!** To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7 1/4% sales tax. Shipping not included.

  
**Applied Engineering®**  
*The Apple enhancement experts.*

A Division of AE Research Corporation

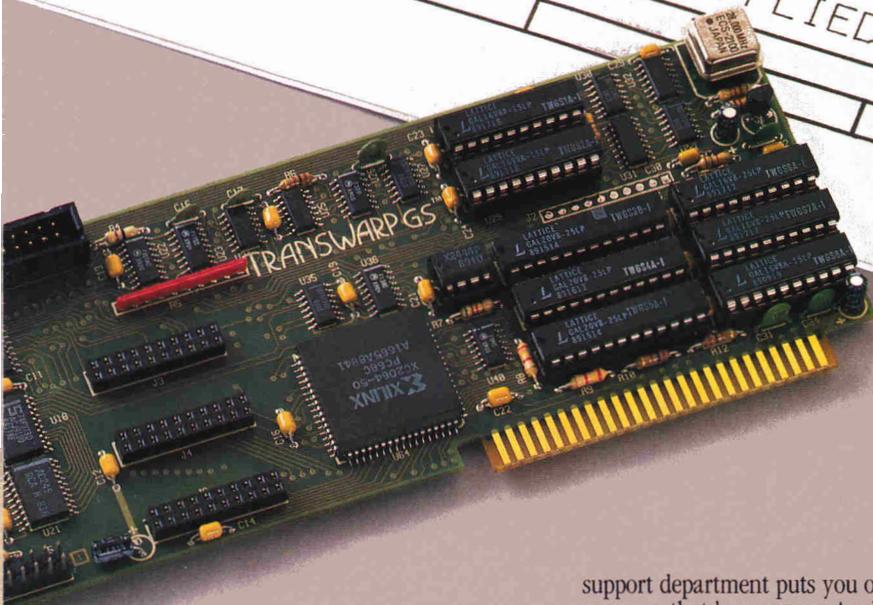
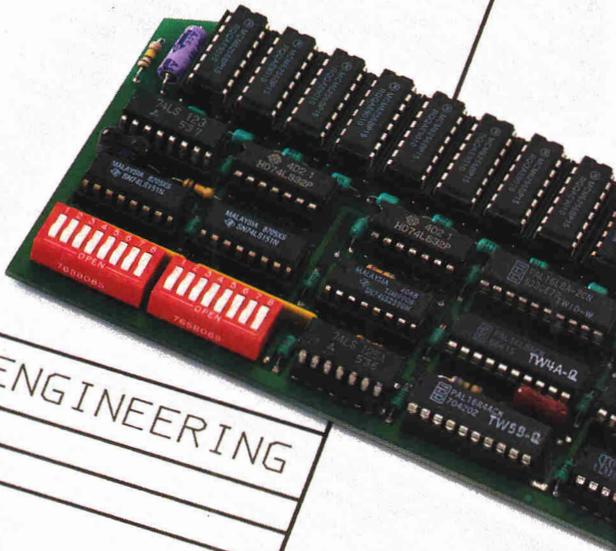
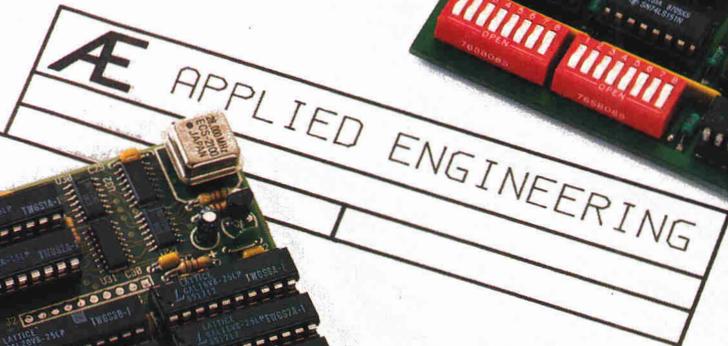
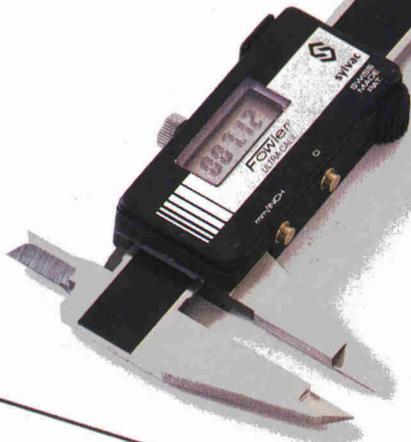
(214) 241-6060

P. O. Box 5100  
 Carrollton, TX 75011

Made  
 IN THE  
 USA

©1990. AE Research, Inc. All rights reserved. Prices subject to change without notice. Brand and product names are registered trademarks of their respective holders

# Only AE accelerators are compatible with this...



**A blank sheet of engineering paper.** For some time now, we've done all of our design work using CAD (computer aided design), but the blank sheet of paper shown above represents future AE peripherals and accessories for the Apple II line.

**Because accelerator cards** push technology close to the limit, designing new peripheral cards to be fully compatible with a given accelerator requires a special insight. That's why whenever one of our engineering teams designs an Apple II peripheral, they have to take into account the way in which TransWarp™ and TransWarp GS™ will interact with that particular peripheral device.

**Both TransWarp and TransWarp GS** were designed with future upgrades in mind (note the 40-pin high speed Bus connector on TransWarp GS). That's why Apple owners who expand and enhance their computers with Applied Engineering products have far fewer compatibility and performance problems than those who try to "mix and match". But should you ever have a question, one call to our technical

support department puts you on line with someone that knows your Apple and all the peripherals in it, making a solution to your configuration much easier.

**You've probably already read** the great reviews the TransWarps have received; *"I wasn't able to find a single piece of software incompatible with it, nor could I attribute any system problems to the card's presence."* - A+ (IIGS)

*"TransWarp is great. I have replaced all my other accelerators with it!"* - Steve Wozniak, co-founder of Apple (IIe).

*"Wait til you see it perform. Folders and icons open from the finder like lightning text wraps instantly around graphics in your favorite desktop publishing program; documents scroll at a reasonable rate in any graphics-based word processor. TransWarp makes the GS as good as the Mac, because it's fast and it's still in color."* - Incider (IIGS)

*"Your engineering department should take a bow. As a developer and consultant, I work with the Mac II and Mac SE as well as the IIGS. I have conducted some recent tests which indicate that the "little" IIGS outperforms the Mac SE."* - George Dombrowski, Jr. (IIGS)

Both cards offer "plug in and go" performance. No preboot disks or complicated configurations necessary. And should you wish it to, your Apple can still run at normal speed by a simple keyboard command. So, if you'll remember us when you decide to make your Apple II run faster, we'll remember you every time we get out another blank sheet of paper.

**TransWarp GS Accelerator.....\$349**  
**TransWarp II+, IIe Accelerator...\$119**

**Order Today!** To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7 1/4% sales tax. Shipping not included.

**AE Applied Engineering®**  
*The enhancement experts.*

A Division of AE Research Corporation

(214) 241-6060

P.O. Box 5100  
Carrollton, TX 75011



©1990 AE Research, Inc. All rights reserved. Prices subject to change without notice. Brand and product names are registered trademarks of their respective holders.