

**inCider**

AN IDG COMMUNICATIONS  
PUBLICATION  
November 1990

**RamFast SCSI**  
Editors' Choice, p. 96



**Apple II / Macintosh**

# Exploring Hypermedia

## 6 Options Compared

### In Search of Early-Learning Software

### 5 Programs For the Preschool Set

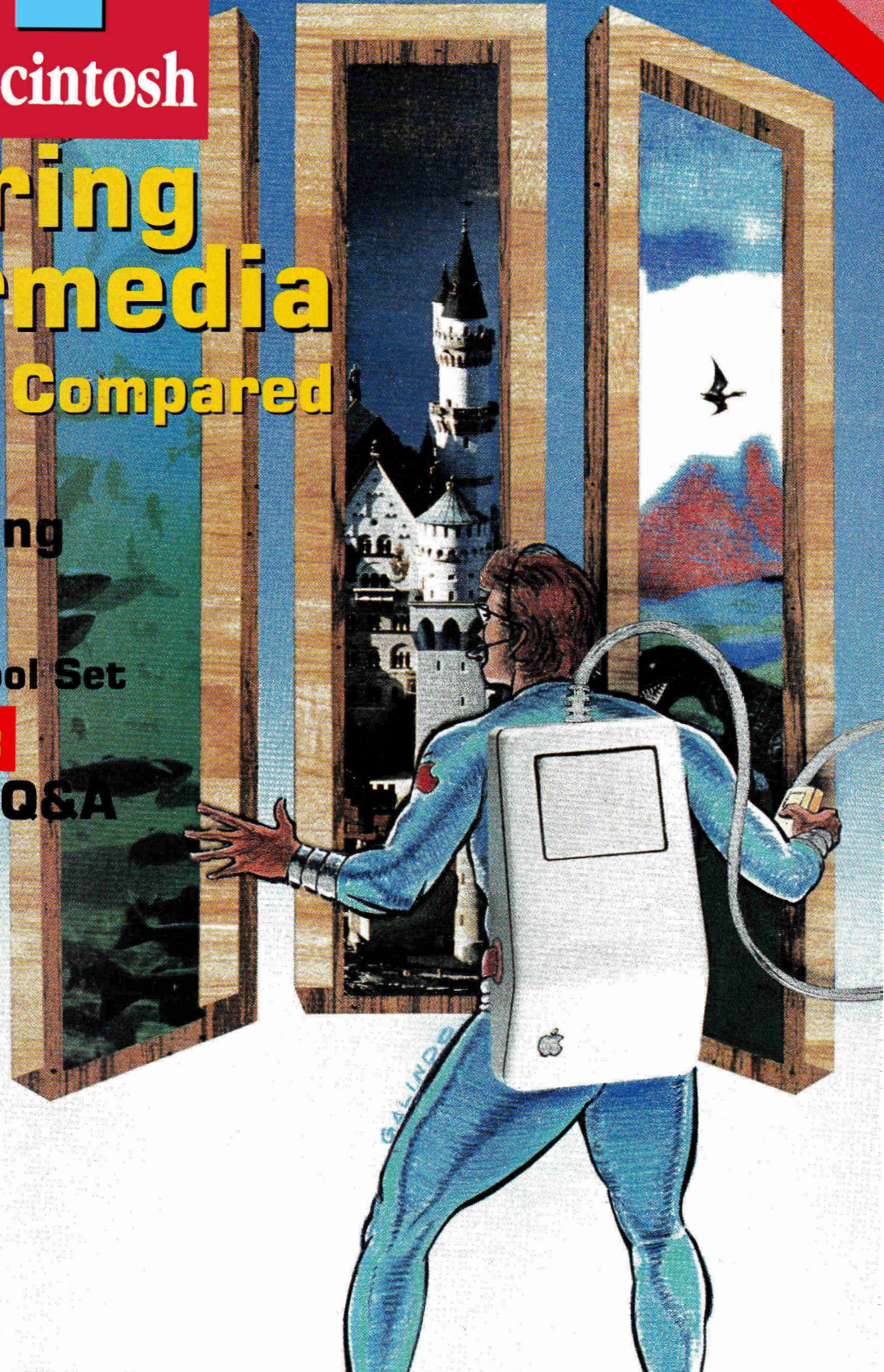
**New Section:**

### AppleWorks Q&A

### Reviews:

- GSNumerics
- Geographic Jigsaw
- Talking School Bus
- Exploring Tidepools
- Halls of Montezuma
- European Challenge

USA \$3.95  
Canada \$4.50





# Inside Story

## 64K Video RAM

Controlled by our own Video Display Generator (VDG) array, this feature off-loads video work from the 128K system RAM, providing both analog and digital (IBM®-type RGB) outputs.

## Very Large Scale Integration

We manufacture our own custom gate arrays to improve performance and make our products compact, reliable, and affordable.

## Triple Speed Processor

The 65C02 power plant blazes through your applications at 3.6 Mhz - three times faster than the IIe®.

## 1MB RAM Board

Controlled by our own Memory Management Unit (MMU) array, add an extra 1MB using inexpensive 256 x 1 DRAM's.

## Apple® Compatible ROM

Since 1985, we have made a huge investment to develop and maintain the only legal Apple compatible ROM on the market.

## Built-In Ports

Video and disk expansion, two serial, a parallel, and a mouse/joystick port are part of our motherboard design. The EX/2 even adds a MIDI port and Real-Time Clock.

## Universal Disk Controller

Our unique UDC array allows the use of both 3 1/2" and 5 1/4" drives. The 128EX/2™ even supports the IIGS®-compatible "Daisy Chain" drives.

Having all this performance usually means compromising one thing. Price. But like a good book, this story has a surprise ending. With a one year warranty, the Laser 128EX™ and 128EX/2 cost about half of what you'd pay for a stripped Apple IIe.

Want more inside information? Find out the reason why *inCider* said "Look at today's Laser if you want to see tomorrow's Apple." Call (708) 540-8911 for a free catalog and the name of a Laser dealer near you.

Laser Computer, Inc., 800 N. Church Street, Lake Zurich, IL 60047. In Canada, call (800) 387-9672. For information on our Dealer, VAR, and Education programs, call us at (708) 540-5000. Laser 128EX and 128EX/2 are trademarks of Laser Computer, Inc. Apple IIe and IIGS are registered trademarks of Apple Computer, Inc.

Circle 175 on Reader Service Card.

**/// LASER™**  
For Those Who Know Better



**NOW Available for the Apple IIGs!**

# Why do over 25,000\* Apple® owners like you buy *Softdisk*™ and *Softdisk G-S*™ every month?

**See why with a three-month trial subscription for only \$19.95!**



**3-Month Trial Subscription only \$19.95**

## 1. Variety.

Each monthly *Softdisk* and *Softdisk G-S* delivers office productivity tools, AppleWorks® templates, educational software, games, utilities, clip art, professional fonts, and more! You've never seen a selection like this anywhere.

## 2. Demonstrations.

We frequently offer demonstrations or limited-use programs so you can "try-before-you-buy". Major software companies from around the world offer our subscribers advanced previews of what's to come in commercial software.

## 3. Program Integrity and Tech Support.

Every issue of *Softdisk* and *Softdisk G-S* passes through dozens of quality checks. If there ever is a problem, our technical staff is eager to help!

## 4. Create Your Software Library.

With so many original programs at your disposal, it won't take long to collect an entire software library. Collect utilities for copying, cataloging, saving time, and more. Enjoy incredible games with challenging electronics and mind-blowing graphics. Choose software for word processing, spreadsheets, financial planning and more!

## 5. Super Discounts on Commercial Software.

Subscribers automatically become members of our *Software Savers Club*. You'll receive regular mailings listing hundreds of commercial software items, many at up to 40% off the retail price. In addition; you can also select from an extensive list of back issues of *Softdisk* and *Softdisk G-S* to fill in the holes of your library.

## 6. Reasonably Priced.

A three-month trial subscription to *Softdisk* is only \$19.95! If you have a Apple IIGs and would like a three-month trial subscription to *Softdisk G-S*, it's only \$29.95! Subscribe to both for a combo trial subscription for just \$39.95!

## 7. Free Bonus When You Act Now.

Order your trial subscription to *Softdisk* or *Softdisk G-S* and receive free the *Softdisk Premium Graphics Collections, Vol. 4*. This superb collection contains signs, animals, sports figures, people, plus maps and symbols. Order the *Softdisk* combo and receive both *Softdisk* and *Softdisk G-S* at incredible savings. Or take the software collection of your choice, and still receive the graphics collection absolutely free!

## 8. Money-Back Guarantee.

If for any reason you're not completely satisfied, simply return your first issue for a prompt, cheerful refund. But keep the *Softdisk Premium Graphics Collection, Vol. 4* as our gift!

"Softdisk isn't just for the new owner ... [it's] for the serious user as well—you'll have to go a long way to beat the price."

—inCider Magazine

"In a word where real bargains are hard to find, *Softdisk* is a very pleasant surprise"

—Electronic Learning

Contents of Issue #100  
(Available as a back issue)

**Calendar Wizard**—Create custom calendars with this powerful application.

**Birthday Games**—Celebrate with a super trilogy of arcade games.

**Softdisk Centennial**—Browse through a decade of impressive programs.

**Job Hunter**—An AppleWorks® template that helps track your resumes.

Plus 3 more great programs!

Call Toll Free

**1-800-831-2694**

**ORDER TODAY!**

Send in the order form now or call toll free for a trial subscription. Three sample issues are only \$19.95, and you get the free bonus disk. So fill in the coupon or call 1-800-831-2694 for even faster service.

\*As of press time, but growing by leaps daily.

**SOFTDISK PUBLISHING**  
monthly software

**YES!** Rush my free bonus, *The Premium Graphics Collections, Vol. 4*, and start my three-month trial subscription to *Softdisk* and/or *Softdisk G-S*, postage paid. Make check or money order payable to *Softdisk Publishing* in U.S. funds. (Louisiana residents, add 4% sales tax).

Check one:  *Softdisk* (for the Apple II) \$19.95  
 *Softdisk G-S* (for the Apple IIGs) \$29.95  
 *COMBO-Softdisk and Softdisk G-S* \$39.95

Check Disk format:  Two 5¼" 360K disks  One 3½" 720K 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

IN110

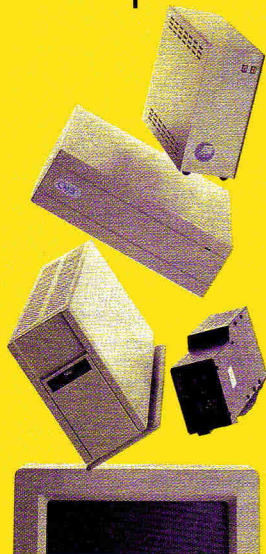
*Softdisk*: 64K Required; 128K Recommended.  
*Softdisk G-S*: 768K—One 3.5" drive Required; 1.25 Meg.—Two 3.5" drives Recommended.



# QUALITY COMPUTERS OVER-NIGHT!

## 1-800-966-1508 or 1-800-443-6697

### Hard-Disk Headquarters



Quality Computers was one of the first Apple II companies to sell and support a full line of hard-disk drives, and we're still the leader. Why? We offer more - more service, more support, more hard drive systems, and more innovative products like EasyDrive.



#### HARD-DISK BUYERS' GUIDE

Base your decision to buy a hard drive on fact, not fiction. The

Hard-Disk Buyers' Guide, exclusively from Quality Computers, is packed with brand name evaluations, performance charts, and informative articles. **\$6.00** (Shipped overnight to most locations)

#### HARD DRIVES

##### QUALITY COMPUTERS (Apple SCSI)

40 MEG. (Conner Drive)	599.95
100 MEG. (Conner Drive)	999.95

##### CHINOOK (\*Apple SCSI)

20 MEG.*	539.95
40 MEG.*	729.95
80 MEG.*	1,395.95
20 MEG. (IIc)	579.95
40 MEG. (IIc)	749.95

##### CMS (Apple SCSI)

20 MEG.	495.95
40 MEG. (Conner Drive)	675.95
60 MEG.	699.95
80 MEG.	899.95
45 MEG. (Removeable)	899.95
Cartridges	99.95

##### APPLIED ENGINEERING

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

#### SCSI INTERFACE CARDS

Apple High-Speed	109.95
RamFAST/SCSI (w/256K RAM)	199.95

#### MEMORY CARDS

<b>AE RAMWORKS III</b>	<b>AE</b>	
256K	139.95	
512K	159.95	
1 MEG.	209.95	
RGB ColorLink Option	99.95	
1 MEG. Expander	179.95	
2 MEG. Expander	269.95	

##### AE RAMFACTOR

256K	169.95
512K	199.95
1 MEG.	249.95
RamCharger Option	139.95
Y Cable Adapter	20.95
1 MEG. Expander	219.95
2 MEG. Expander	309.95

##### AE Z-RAM ULTRA II

256K	179.95
512K	219.95
1 MEG.	269.95

##### AE RAM EXPRESS II

256K	179.95
512K	219.95
1 MEG.	249.95

##### AE GS-RAM PLUS

1 MEG.	229.95
2 MEG.	319.95
3 MEG.	409.95

##### AE GS-RAM ULTRA

1 MEG.	229.95
2 MEG.	329.95
3 MEG.	429.95

##### CHINOOK 4000 GS

1 MEG.	179.95
2 MEG.	269.95
4 MEG.	449.95

#### MEMORY CHIPS

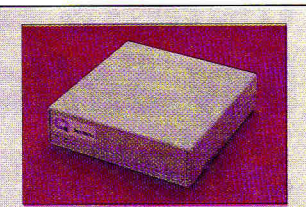
256K (bank)	24.95
256Kx4 (bank)	25.95
1 MEG. (bank)	79.95

#### DISK DRIVES

AE 3.5"	199.95
AE 5.25"	119.95
AMR 3.5"	189.95
AMR 5.25" (Daisy chainable)	144.95
Laser 3.5"	179.95
Laser 5.25"	99.95
Laser UDC	49.95
Apple 3.5" (IIe, II+)	309.95
Apple 3.5" (IIc Plus, IIGS)	319.95
Apple 5.25"	249.95
Apple Controller	69.95

#### PRINTER INTERFACE CARDS

AE Parallel Pro	79.95
AE Serial Pro	109.95
AE Buffer Pro Option	89.95
Fingerprint GSI	94.95
Fingerprint Plus	89.95
Fingerprint G+	59.95
Fingerprint SS	59.95
Grappler 9 Pin	84.95
Grappler Plus	79.95
<b>SPECIAL!</b> SuperWriter 924	64.95
SMT Printech or Envoy	54.95



#### QC HARD DRIVE

Finally, a drive we believe in, and so can you. The Q Drive uses only reliable Conner mechanisms, and comes with Apple's High-Speed SCSI card. It sets up in under 15 minutes and automatically configures itself to your Apple system. The plain-English manual leads you through installation and explains how to use your hard drive space effectively.

40 MEG.	<b>\$599.95</b>
100 MEG.	<b>999.95</b>

### ATTENTION PRICE-HUNTERS

We'll match any advertised price, plus our service can't be beat!

PRICE MATCH POLICY AT MANAGER'S DISCRETION

## THE DECKED OUT GS



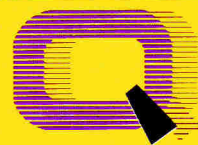
#### BEGINNER SYSTEM \$1,999

- IIGS CPU w/ 1 MEG.
- Apple RGB Monitor\*
- ImageWriter II Printer w/cable
- AE 3.5" Disk Drive
- 10 3.5" Diskettes
- Mouse Pad
- 1,000 sheets of paper

#### STORAGE SYSTEM \$3,269

- IIGS CPU w/ 1 MEG.
- Apple RGB Monitor\*
- ImageWriter II Printer w/cable
- AE Vulcan 40 MEG. w/EasyDrive
- AE 3.5" Disk Drive
- AE GS-RAM Plus 2 MEG.
- AE TransWarp GS
- Mouse pad, diskettes and paper

\*Save up to \$150! Get the Magnavox RGB monitor. MORE FEATURES! LESS MONEY!



Quality Computers

POWER FOR PERFORMANCE

#### YOUR COMPLETE APPLE II SOURCE

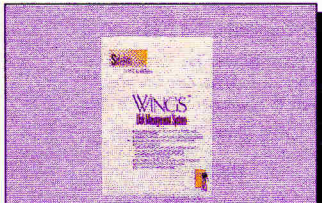
Quality Computers is the largest Apple II-specific company in the industry. Why? We offer more: a staff of Apple II sales experts; a complete product line; user-friendly Customer Service; the best Technical Support in the business; our own software development division, Q Labs; our own newsletter, *Enhance*;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



# QUALITY COMPUTERS

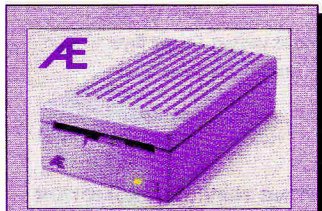
# OVER-NIGHT!

## 1-800-966-1508 or 1-800-443-6697



### WINGS VITESSE

A high-performance disk management utility combined with an extremely flexible program launcher. It gives the IIGS user the ability to perform almost any needed disk, folder, or file utility function including: catalog, copy, move, verify, rename, etc. **\$49.95**



**3.5 DRIVE APPLIED ENGINEERING**  
All the performance and reliability of Apple's 3.5" drive, including the same top-quality Sony internal mechanism, but AE added a dual-color read/write light, and gave it a price you can afford. Compatible with Apple IIe, IIGS, IIc Plus and Macintosh **\$199.95**



### LASER 128 SYSTEM LASER

The Laser 128® System with Color Monitor and Starter Software is a complete, ready-to-run system in a box. Can run over 10,000 Apple IIe/IIc software titles. Includes Laser 128, tilt/swivel base, RGB color monitor, cables, and MagicWriter word processor. **\$510.95**

### PRINTERS

ImageWriter II	459.95
ImageWriter LQ	1,249.95
Hewlett-Packard LaserJet	Call
Panasonic 1180	199.95
Panasonic 1191	249.95
Panasonic 1124	329.95
Panasonic 1624	449.95

### MODEMS

AE DataLink 2400 (Internal)	174.95
AE DataLink Express	184.95
Mitac 2400	119.95
SupraModem 2400	119.95

### MONITORS

Magnavox or Goldstar 12" Amber	99.95
Magnavox or Goldstar 12" Green	99.95
Laser RGB	249.95
<b>NEW!</b> Magnavox RGB	299.95
Custom Cable	24.95
Apple RGB	459.95
Sony KV1311	529.95

### INPUT DEVICES

AppleMouse IIe	119.95
AppleMouse IIc	89.95
A+ Mouse IIGS	79.95
Laser Mouse	49.95
Kensington Turbo Mouse	109.95
CH Roller Mouse	75.95
CH Mach II Joystick	28.95
CH Mach III Joystick	34.95
CH Mach IV Plus Joystick	62.95
CH Flightstick	47.95
Kurta ADB Drawing Tablet	399.95
IBM-Compatible Keyboard	79.95
Cutting Edge ADB Keyboard	129.95

### SOUND & GRAPHICS HARDWARE

Quickie Scanner	199.95
LightningScan	199.95
ThunderScan	159.95
ComputerEyes IIe	99.95
ComputerEyes IIGS	195.95
Apple Video Overlay Card	429.95
HyperStudio	86.95
AE Sonic Blaster	98.95
AE Audio Animator	189.95
AE Phasor	129.95
MIDI Interface (IIGS)	99.95
MIDI Interface (w/tape & drum)	99.95
MIDI Interface (w/drums)	149.95
Visionary GS	249.95

### ACCELERATORS

AE TransWarp GS	259.95
Zip Chip 8MHz (IIe)	149.95
Zip GS	249.95

### COMPUTERS

Apple IIGS CPU (w/1 MEG. RAM)	825.95
Laser 128EX	387.95
Laser 128EX-2 (3.5")	449.95
Laser 128EX-2 (5.25")	409.95
Laser 286/2	from 699.95
Laser Turbo XT	from 599.95

### ACCESSORIES

AE Conservor	77.95
AE FastMath	139.95
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
<b>NEW!</b> AE Power Supply IIGS	79.95
AE TimeMaster	78.95
AE TransDrive	189.95
AE TransDrive (Duo)	289.95
AE ViewMaster	124.95
AE Z80 Plus or Z80 C	119.95
Apple IIe Enhancement Kit	59.95
Cables (most)	14.95
ClockPro (IIe, IIc, IBM PC/XT)	29.95
Diskettes 3.5" (10)	8.95
Diskettes 5.25" (10)	6.95
Disk Notcher	5.95
Kensington Antiglare Filter (IIGS)	39.95
Kensington System Saver IIe	59.95
Kensington System Saver GS	69.95
Kensington Universal Copy Stand	39.95
Kensington Printer Stand	24.95
Kensington Printer Muffler 80	49.95
Kensington Dust Covers	11.95
Keyboard Skin	14.95
Laser 128EX Power Supply	39.95
Laser 128 Monitor Stand	25.95
Laser 128 Expansion Box	59.95
SMT No Slot Clock	29.95
Switchboxes	from 32.95

### BUSINESS SOFTWARE

Alpha Check	32.95
AppleWorks 3.0	170.95
AppleWorks GS	199.95
BeagleWrite	48.95
BeagleWrite GS	59.95
BusinessWorks Bundle	249.95
BusinessWorks Payroll	99.95
DB Master Pro	189.95
Dollars & Sense	74.95
Managing Your Money 4.0	89.95
On Balance	39.95
Quicken	38.95
Sensible Grammar	52.95
Sensible Speller	79.95
Will Maker	34.95
WordPerfect IIe	99.95
WordPerfect GS	104.95

### COMMUNICATION SOFTWARE

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

### EDUCATIONAL SOFTWARE

<b>THE LEARNING COMPANY</b>	
Reader Rabbit	
Home	24.95
School	39.95
Lab Pack	84.95
Talking Reader Rabbit GS	
Home	36.95
School	54.95
Lab Pack	94.95
Math Rabbit	
Home	24.95
School	39.95
Lab Pack	84.95
Magic Spells	
Home	24.95
School	39.95
Lab Pack	84.95
Think Quick (Home)	29.95
Think Quick GS (Home)	29.95

## ATTENTION: CANADIAN RESIDENTS

All of these products, with the same great service, are available from Dandam Software. Avoid import-export delays!

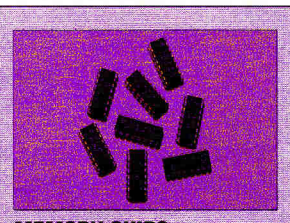
### THIS MONTH'S SPECIALS:

<b>DP RamPLUS/GS DMA</b>	
1 MEG .....	159 Can.
2 MEG .....	249 Can.
4 MEG .....	449 Can.
AE 3.5 Drive .....	309 Can.
Laser 128EX/2	
with monitor .....	695 Can.
SupraModem 2400 ...	125 Can.
Q Labs Products .....	46 Can.
DPS 46 MEG. 28ms	
SCSI Hard Drive .....	699 Can.
DPC 100 MEG. 24ms	
SCSI Hard Drive ...	1,099 Can.
TransWarp GS .....	379 Can.
PC Transporter .....	379 Can.

Dandam is an authorized AE dealer with a large selection of Apple II, Amiga & IBM software. Call for our free catalogue.

## 1-800-265-9576

8406 Wyandotte St. E. • Windsor, Ont. N8S 1T6  
(519) 974-3011 • FAX (519) 974-6643



### 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	<b>\$24.95/bank</b>
256Kx4	<b>25.95/bank</b>
1 MEG.	<b>79.95/bank</b>

**ATTENTION SCHOOLS!  
LET US BE YOUR  
APPLE II SOURCE!**



**Quality Computers**

POWER FOR PERFORMANCE

### POLICY

- VISA, MasterCard and Discover accepted with no added charges. Add \$3.95 for C.O.D. certified.
- If order is split, we pay freight on balance of items.
- We ship via Airborne Express, UPS, and US Mail. Saturday deliveries available.
- Items returned for credit will be charged a 15% restocking fee.
- Prices subject to change without notice.
- Quality Computers is not an authorized Apple dealer.
- We accept school P.O.'s by mail or FAX.
- Dealers and User Groups may qualify for volume discounts. Call for details.

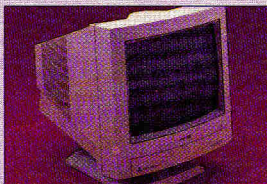


Circle 136 on Reader Service Card.



# QUALITY COMPUTERS OVERNIGHT!

## 1-800-966-1508



### MAGNAVOX RGB MONITOR

Magnavox's new monitor is an affordable replacement for the IIGS monitor (requires cable \$24.95). Also works with the IIe. Features: 13" diagonal screen, built-in tilt stand, 2,000 char. display, vertical and horizontal controls, analog and digital input, and more! **\$299.95**



### BUSINESSWORKS MANZANITA

Integrated Accounting System for the Apple II. Make your small-to-medium sized business more efficient and productive with four powerful and versatile modules: General Ledger, Accounts Payable, Accounts Receivable, and Inventory Control. **\$249.95**

### EDUCATIONAL SOFTWARE

#### THE LEARNING COMPANY

Children's Writing & Publishing Center

Home	32.95
Home GS	32.95
School	62.95
School GS	62.95
Lab Pack	99.95
Lab Pack GS	99.95

#### BRØDERBUND

Where in the World is Carmen Sandiego?

Home	25.95
Home GS	29.95
School	39.95
School GS	39.95
Lab Pack	74.95
Lab Pack GS	79.95

Where in Time is Carmen Sandiego?

Home (3.5 or 5.25)	29.95
School	39.95
Lab Pack	74.95

Where in the USA is Carmen Sandiego?

Home	29.95
School	39.95
Lab Pack	74.95

Where in Europe is Carmen Sandiego?

Home	29.95
School	39.95
Lab Pack	74.95

The Playroom

Home	27.95
School	39.95
Lab Pack	84.95

Geometry GS

Home	54.95
School	69.95
Lab Pack	129.95

Science ToolKit - Master Module

Home	54.95
School	69.95
Lab Pack	136.95

Science ToolKit - Modules 1, 2, or 3	
Home	27.95
School	39.95

The PrintShop

Home	29.95
Home GS	36.95
School GS	54.95
Lab Pack GS	90.95

#### MECC

Word Munchers

Home (3.5)	27.95
School (3.5 or 5.25)	39.95

Number Munchers

Home (3.5)	27.95
School	39.95

Fraction Munchers

Home (3.5 or 5.25)	27.95
--------------------	-------

Paint with Words

Home	27.95
School	32.95
Lab Pack	84.95

World GeoGraph GS

Home	59.95
Lab Pack	229.95

USA GeoGraph GS

Home	59.95
School	99.95
Lab Pack	229.95

Oregon Trail

Home (3.5 or 5.25)	27.95
School (3.5 or 5.25)	39.95

### BOOKS

1,001 Things to do with the Apple IIGS	10.95
AppleWorks Made Easy	15.95
Desktop Publishing	23.95
The Official New Print Shop Handbook	15.95
Programming Apple IIGS	23.95
Understanding Hard Disk Management	18.95
Using AppleWorks GS	15.95

VICE PRESIDENT/GROUP PUBLISHER **Paul Boule**

EDITOR IN CHIEF **Dan Muse**

MANAGING EDITOR **Eileen T. Terrill**

SENIOR EDITOR **Paul Statt**

REVIEW EDITOR **Lafe Low**

TECHNICAL EDITOR **Cameron Crotty**

COPY EDITOR **Carla Barker**

EDITORIAL ASSISTANT/ **Janet Cote**

SPECIAL-PRODUCTS COORDINATOR

WEST COAST EDITOR **Jeff Cable**

CONTRIBUTING EDITORS **Joe Abernathy,**

**Cynthia E. Field, Eric Grevstad,**

**Owen W. Lintzmayer, Ruth K. Witkin**

FIELD EDITOR **Babs Cringely**

### DESIGN

ART DIRECTOR **Roger Goode**

SENIOR DESIGNER/AD GRAPHICS **Dianne K. Ritson**

PRODUCTION MANAGER/DESIGNER **Elizabeth Auer**

**Carolyn Boutwell**

### ADVERTISING

ASSOCIATE PUBLISHER/ **Dale Strang**

NATIONAL SALES MANAGER (800) 441-4403

EASTERN SALES MANAGER **Peter Slingluff**

(800) 441-4403

MARKETPLACE/CLASSIFIEDS **Diane Maguire**

SALES REPRESENTATIVE (800) 441-4403

ADVERTISING COORDINATOR **Mary Hartwell**

(800) 441-4403

ADMINISTRATIVE ASSISTANT **Carmen Bryer**

WESTERN SALES MANAGER **James Burns**

2421 Broadway

Suite 200

Redwood City, CA 94063

(415) 363-5230

### MARKETING SERVICES/PROMOTION

MARKETING MANAGER **Peg Brown**

MARKETING ASSISTANT **Rita Rivard**

### CORPORATE PRODUCTION

MANUFACTURING MANAGER **Sue Gross**

SYSTEMS COORDINATOR **Doreen Means**

TYPOGRAPHER **Heidi N. Thomas**

### IDG COMMUNICATIONS/PETERBOROUGH

PRESIDENT **Roger J. Murphy**

VICE PRESIDENT **Dennis S. Christensen**

MANUFACTURING/OPERATIONS

DIRECTOR OF CORPORATE **Bonnie Welsh-Carroll**

CIRCULATION/PLANNING

DIRECTOR OF TECHNOLOGY RESEARCH **Jeffrey D. DeTray**

SINGLE-COPY SALES DIRECTOR **Linda Ruth (800) 343-0728**

NEWSSTAND PROMOTION MANAGER **Debbie Walsh**

CIRCULATION DIRECTOR, *INCIDER* **Megan Lane**

ASSISTANT CIRCULATION MANAGER **Laurie K. Seamans**

CUSTOMER SERVICE (800) 289-0619

DIRECTOR OF CREDIT, SALES, **William M. Boyer**

AND COLLECTION

AUDITS AND STATISTICS **Cecile Giguere**

FOUNDER **Wayne Green**

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



*inCider* (ISSN #0740-0101) is published monthly by IDG Communications/Peterborough, Inc., 80 Elm Street, Peterborough, NH 03458. Phone: (603) 924-9471. 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, \$43.00 for two years and \$59.00 for three years. In Canada, \$34.97, U.S. funds, one year only. In Mexico, \$32.97—one year only, U.S. funds drawn on a U.S. bank. Nationally distributed by International Circulation Distributors. Foreign subscriptions (surface mail), \$47.97—one year only, U.S. funds drawn on a U.S. bank. Foreign subscriptions (air mail), \$82.97 prepaid, U.S. funds drawn on U.S. bank, one year only. **Postmaster:** Send address changes to *inCider*, Subscription Services, P.O. Box 58618, Boulder, CO 80322-8618. (Send Canadian changes of address to: *inCider*, P.O. Box 1051, Fort Erie, Ontario L2A 5N8.)

## YOU WILL BE A WINNER!

How? Just order from Quality Computers. While other companies tempt you with prizes that you have a slim-to-none chance of winning, we give ALL of our customers things they can really use. Just what do they get?

- **The best Technical Support in the industry.** Having a technical problem? Call the Apple II experts. Quality Computers Technical Support is staffed with Apple II programmers, researchers and specialists. We give more Apple II support than our three biggest competitors combined.
- **Our bi-monthly newsletter, *Enhance*.** *Enhance* is packed with Technical Tips, Product News, and advertised specials.
- **48-hour turn around on defective items.** We will ship you a new item from stock within 48 hours of receipt.
- **The Quality Computers Bonus Disk.** Starting in October 1990, every customer receives a valuable diskette FREE with every order. It's filled with public domain software, technical tips, and product information.



# QUALITY COMPUTERS

# OVER-NIGHT!

## 1-800-966-1508 or 1-800-443-6697



### CROSSWORKS SOFTSPOKEN

Copies and converts files either way between Apple II and IBM, and translates the formats. Exchanges AppleWorks files with Microsoft Works, WordPerfect, Lotus 1-2-3, dBase or most popular MS-DOS programs via universal cable (included) or modem. **\$69.95**

<b>DAVIDSON</b>	
MathBlaster Plus	34.95
MathBlaster Mystery	34.95
AlgeBlaster Plus	34.95
Read & Roll	34.95

<b>MISCELLANEOUS</b>	
Math Talk GS	27.95
Mavis Beacon Teaches Typing (Ile)	28.95
Mavic Beacon Teaches Typing (IGS)	33.95
McGee	29.95
StudyMate	27.95

### GAMES

Arkanoid II GS	22.95
Battle Chess GS	32.95
The Cryllan Mission	34.95
Crystal Quest	32.95
The Duel: Test Drive II	27.95
Grand Prix Circuit	28.95
Hardball	27.97
Hunt for Red October	34.95
Jack Nicklaus Golf	34.95
Serve & Volley	28.95
Test Drive	27.95
Tetris GS	27.95
Tunnels of Armageddon	29.95
Xenocide	32.95

### SOUND & GRAPHICS SOFTWARE

Award Maker	29.95
BeagleDraw	64.95
Dazzle Draw	33.95
Deluxe Paint GS	65.95
Design Your Own Home GS	59.95
Diversi-Tune	52.95
Font Factory GS	25.95
GraphicWriter III	84.95
GS Font Editor	29.95
Jam Session	34.95
Labels, Labels, Labels	28.95
MusicWriter Limited	84.95
MusicWriter Special	209.95
MusicWriter Professional	399.95
PaintWorks Plus	32.95
PrintShop NEW!	29.95
PrintShop GS	36.95
PS Graphics Libraries	each 24.95

PS Lover's Utility Set (Ile or IIGS)	27.95
Publish It! 3	79.95
VCR Companion	34.95

### TIMEOUT SERIES

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 or Telecomm	42.95
ReportWriter	48.95
Graph	55.95

### UTILITIES & LANGUAGES

#### NEW PRINTER DRIVER!

Get Harmonie, from Vitesse, and unleash the power of the IIGS for top-quality (300 dpi) text and graphics printing. If your printer emulates HP LaserJet™, HP DeskJet, or Epson LQ printers, you can use Harmonie. **29.95**  
 HP LaserJet™ **Call**  
 HP LaserJet™ **329.95**  
 Panasonic 1124 **329.95**  
 Panasonic 1624 **449.95**

Bag of Tricks	29.95
Copy II Plus	25.95
CrossWorks	69.95
GS Desk Accessories	37.95
<b>K-12 MICROMEDIA</b>	
FamilyFiles	21.95
OfficeWorks or TestWriter	35.95
SchoolWorks: Teacher	39.95
Micol Advanced BASIC IIGS	89.95
MS DOS v. 4.01	89.95
Orca/M	39.95
Orca/PASCAL or Orca/C	80.95
<b>Q LABS</b>	
RepairWorks or SuperPatch	34.95
RAMUP, EasyDrive, or TIC	39.95
<b>SALVATION</b>	
Exorciser, or Harmonie	29.95
Guardian, or Renaissance	34.95
Wings	49.95



### 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**



### HYPERSTUDIO

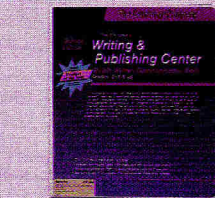
**ROGER WAGNER**  
 Hypermedia authoring system for the Apple IIGS that provides every-

thing you need in one complete package. Integrate text, super Hi-Res graphics and digitized sound files to create your own hypermedia applications or edit existing ones. Includes: Paint Tools, Text Editor, Sound Editor, Sound Digitizing Hardware, and Microphone. Requires 1.25 MEG. RAM. **\$86.95**



### 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 nonsense command structure and GS/OS compatibility. **\$39.95**



### THE CHILDREN'S WRITING & PUBLISHING CENTER

Helps children write and think clearly. Combines word processing, pictures, and page design to help produce first-class reports, letters, stories, and more! Ages 8-14.

School	<b>54.95</b>
Lab Pack	<b>99.95</b>

## HEY, TEACHER! YOU GET A BONUS!

Schools are on a tight budget. At Quality Computers, we understand that. That's why we offer the Teacher Bonus Point program, an exciting way for you to earn free hardware and software simply by telling your school about Quality Computers. It's easy and fun! Call a Quality Computers representative for details. Sign up today!

Quality Computers is one of the largest vendors of school computer supplies in the country. We carry a full line of educational software for Apple, IBM, Macintosh and more! Call for your free catalog!



### REPAIRWORKS/SUPERPATCH

Two Q Labs utilities that all AppleWorks user should have. RepairWorks is the award-winning database/word processing recovery and repair program. SuperPatch is the customization program that lets you change AppleWorks in over a hundred ways. **\$34.95 ea.**

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

### BUSINESS HOURS

SALES: 1-800-966-1508 or 1-800-443-6697 Mon.-Fri. 9AM-7PM Sat. 10AM-4PM (Eastern Time)  
 TECHNICAL SUPPORT: (313) 774-7740 Mon.-Fri. 10AM-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

Circle 136 on Reader Service Card.



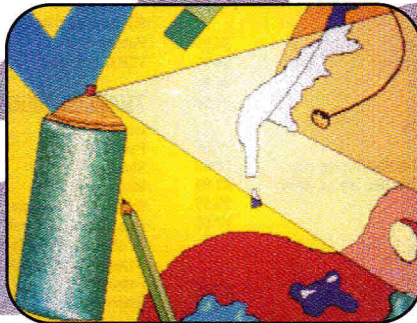
**Quality Computers**

POWER FOR PERFORMANCE



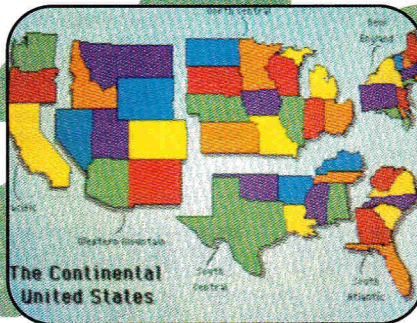
# Forget the Gold... Go for the Platinum

Platinum Paint™ finishes first when it comes to paint programs. With more features and speed than Paintworks Gold, DeluxePaint II and others, Platinum Paint wins top honors in every event. The palette editor lets you quickly find the right color using any 16 of over 4,000 available. Options include controls that lighten, darken, warm, cool, mix and blend.



Compose stunning graphic and text effects without any hassle. You can use over 20 different effects with brushes, marquee and lasso selections, such as Lighten, Darken, Stretch, Slant, Resize, Rotate, 2-D Perspective, Shadow, Flip, Mirror, Invert and more.

With Platinum Paint you can easily create visual aids and student handouts. With over 100 keyboard shortcuts available, Platinum Paint lets you quickly produce graphics, like this map, that could take forever in other paint programs. All commands are easily accessible through pull-down menus and dialog boxes.



- Advanced lasso selection techniques.
- Repeat selected item as a brush stroke.
- Nine brush modes with Smear, Slide, Charcoal, Shade, Wash and Smooth.
- Six airbrush methods with adjustable spray speed and nozzle size.
- "Squish Brush" fill method contorts the brush to fit *any* shape—even circles.
- Super-fast smoothing, shading and blending.
- Fast, automatic color remapping.
- Automatic shadowing.
- Three kinds of gradient fills, including sunburst radial fill.
- Bézier curves.
- Easily colorize scanned images.
- Advanced color and area masking.
- Open four documents at once.
- Cycle colors for animation.
- Import and export all popular graphic formats.
- Compatible with System Software 5.0.3 and later (included).

## Trade Up to Platinum Paint for Only \$49.95

This advanced IIGS paint program improves on features from Paintworks Gold, DeluxePaint II and PixelPaint. Dozens of advanced color graphic editing features and special effects are all easy to use and incredibly fast. And as always, our unsurpassed customer support stands behind it.

If you're tired of your slow, featureless, hard-to-use, or unsupported paint program, now's the time to go for Platinum Paint. Send us the original manual cover from *any* commercial Apple II paint program and we'll take \$50 off our retail price of \$99.95.

With all the assets described here, plus compatibility with System 5.0.3, there's no reason not to upgrade. Mail us your manual cover before December 25, 1990, and we'll send you Platinum Paint for only \$49.95 plus \$5.00 shipping and handling.

\$49.95 upgrade offer available only when ordered directly from Beagle Bros. Platinum Paint requires an Apple IIGS with at least 1 Mb of memory, a 3.5 inch disk drive and a color monitor. Platinum Paint is a trademark of Beagle Bros, Inc., Apple IIGS is a trademark of Apple Computer, Inc., Paintworks Gold is a trademark of Mediagenic/Activision, DeluxePaint II is a trademark of Electronic Arts and PixelPaint is a trademark of SuperMac Software.

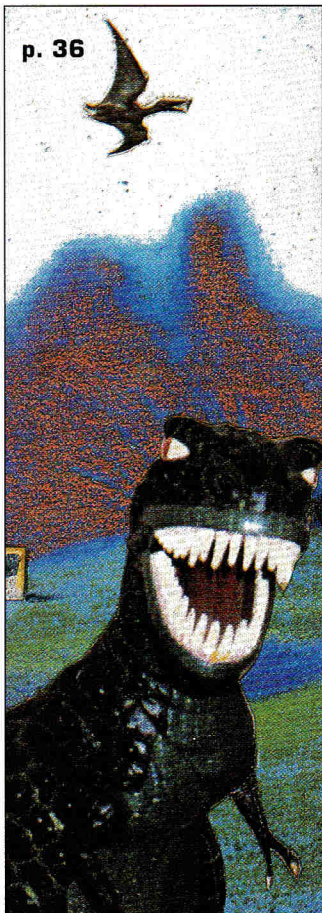


**BEAGLE BROS, INC.**  
6215 Ferris Square, Suite 100  
San Diego, CA 92121  
(619) 452-5500

Circle 179 on Reader Service Card.







p. 36

# NOVEMBER

1990 Vol. 8 No. 11

## ARTICLES

### 36 Exploring Hypermedia

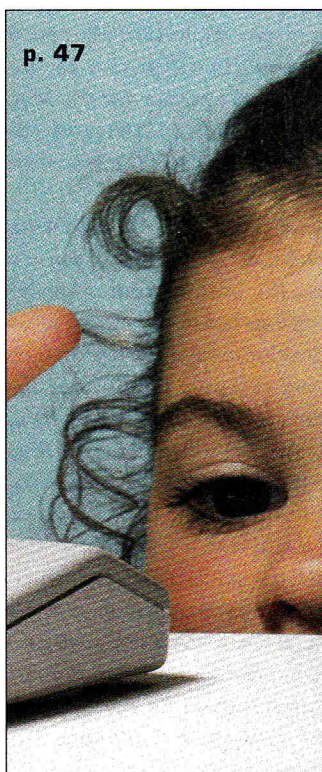
Lessons, stories, and business presentations come alive when you combine text, graphics, sound, and video in an interactive environment. Here's one media event you can program yourself, as you dazzle your audience with the power of your Apple II.

### 47 Days of Discovery

The best software lets kids explore electronic worlds just as they explore their physical world — at their own speed and for their own reasons. *inCider* takes a look at five such programs for preschoolers and evaluates their potential for fun and learning.

### 54 Graphics Gallery: You Call That Art?

When art meets technology, the computer screen's your canvas. In this first installment in a six-part series exploring the dimensions of Apple II graphics, computer artist and teacher Debbie Greh looks at the 40-year history of this steadily evolving medium — where we've been and where we're headed.



p. 47

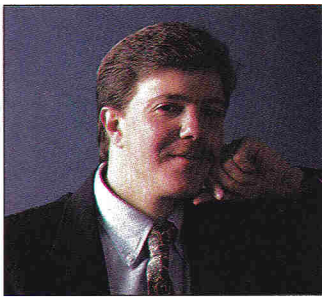
## COLUMNS

<b>inCider's View</b> * <i>Dan Muse</i>	
All in the Family.....	8
<b>AppleWorks in Action</b> * <i>Ruth Witkin</i>	
In the Balance 2 .....	60
<b>Press Room</b> * <i>Cynthia E. Field</i>	
Label Frenzy .....	64
<b>Applesoft Adviser</b> * <i>Dan Bishop</i>	
Command Performance .....	70
<b>Learning Curve</b> * <i>David D. Thornburg</i>	
The Beauty of Chaos .....	86

## DEPARTMENTS

<b>Letters to the Editor</b> .....	10
<b>What's New</b>	
Software, Apple Bits, Tech Notes, AppleWorks Notes, Education Notes .....	17
<b>Apple Clinic</b>	
File It Away: ProFile Disk Problems, Disk-Drive Clicks, SCSI DuoDisk? AppleWorks Clinic.....	22
<b>Reviews</b>	
GSNumerics, Talking School Bus, Exploring Tidepools, Geographic Jigsaw ..	24
<b>Game Room</b>	
Halls of Montezuma, European Challenge	28
<b>Hints &amp; Techniques</b>	
Cookin' Up a Batch: Shortcuts to Success ..	90
<b>Editors' Choice</b>	
Faster Than a Speeding . . .	96





**INCIDER'S  
VIEW**

# ALL IN THE FAMILY

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

**I**t's time for  
**Apple II users to**  
**see the Macintosh**  
**as an ally,**  
**not the enemy.**

YOU PROBABLY DON'T READ MANY computer trade newspapers. We do — it goes with the territory. While a lot of what we read doesn't affect us directly, a few stories have an impact on the Apple II. For nearly a year, computer industry newsweeklies, such as *InfoWorld* and *MacWeek*, have been reporting heavily on new Macintoshes, which are anticipated this fall.

The implications are clear: Apple has been trying to sell Macs to schools for the last couple of years. At least one of the new Macs reported by *MacWeek* and *InfoWorld* will be designed to appeal to the education market and other markets that have historically been Apple II fare. When the rumored low-end Macs appear — computers that John Sculley has already pre-announced — expect to see big changes in the Apple world. That's not to say the II will shrivel up and go away, but things won't be the same. It's time for Apple II users to see the Macintosh as an ally, not the enemy.

Last month, in his letter to *inCider* readers, Sculley said, "We are currently working on a variety of 'bridges' between the Apple II and Macintosh families to make that synergy even better. During 1990 and 1991, Apple will introduce several new entry-level Macintosh computers, and at least one will have Apple II emulation capabilities . . . ."

One difference between New England and California is that East Coast types don't often use words like *synergy* — at least not with a straight face. In discussing the way the II and the Mac work together, however, *synergy* is appropriate.

Maybe *inCider* editors aren't typical Apple II users in every way, but we do use IIs eight hours a day. For the last year or so, however, Macs have been springing up at slow but steady pace. Does that mean we're getting rid of our Apple IIs? Hardly. Apple IIs still rule the office.

Some products we need to produce the magazine, however, simply don't exist for the Apple II. Quark Xpress, Adobe Illustrator, and so on are necessities in the magazine biz. We find

ourselves converting text and graphics from IIs to Macs with Apple File Exchange, SHR.Convert, and other products. On the other hand, it's true that the II is better suited for some things, such as affordable multimedia solutions. Also, the GS' inherent sound capabilities far exceed the Mac's.

On my desk I have an Apple IIGS and a Mac SE/30. The walls haven't started to bleed; the sky didn't turn black; I didn't develop a sudden and acute hatred of the Apple II. The II (the GS especially) and the Mac are more like kissing cousins than they are sibling rivals.

On the software side, the Mac and the GS bear a striking family resemblance. If you're familiar with one, using the other comes naturally. On the hardware side, the similarities are even greater. Apple SCSI (small-computer-systems interface) devices work with either the Mac or the II with a SCSI card. So you can, for example, use one removable-cartridge hard-disk drive with both machines: Just format one cartridge for the II and another for the Mac. The Apple Desktop Bus (ADB) and the AppleTalk network let the II and the Mac share more data and devices.

Apple, however, needs to convince hardware and software developers that it makes sense to market products for both systems. Apple's system-software group has done a great job of providing new development tools that make it easier to create better Apple II software. The cross-development tools are also available to let programmers design GS software on the Mac.

I don't believe that Apple intends to develop the Apple II line further. I *do* believe that Apple wants the II and the Mac to work well together. Apple wants to sell the similarities and connectivity of the two computers as a benefit to Apple customers in general. Okay, that's not great news for Apple II owners. But it's important to face facts: The Macintosh is good for the Apple II; they're part of the same family. Let's hope it's a family that sticks together for a long time. □





## The Ultimate 3.5 Drive

Introducing the new AE 3.5 Drive — setting a new standard for basic Apple II storage. All the reliability and performance of Apple's 3.5 drive at a price approaching that of the cheapest import. Our design incorporates the same top-quality Sony mechanism that Apple uses, but instead of Apple's \$429, our drive is \$279.

Just to make your decision easier, we added a couple of performance features like upgradeability to 1.4 MEG of capacity or higher — an upgrade we'll make available in the future.

High density 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 previous number of disks.

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.

We're even making available a low-cost optional controller card for the IIe. The card

(not required for IIgs), allows the IIe to accept data from the 3.5 format. The AE drive is also Macintosh compatible and you will be able to separately upgrade to 1.44 MEG in the Macintosh format.

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. Naturally, the AE Drive is Conserver compatible, snuggling neatly inside the drive port.

We also added features like auto eject, complete daisy-chain capacity (from AE to another drive or vice versa) and a full one-year warranty.

### Features

- 800K, upgradeable to 1.4 MEG or higher
- 2-way LED indicator, green for read, red 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 with IIe, IIc Plus, IIgs, Mac and PC Transporter

- Stack and footprint compatible with Apple Drive
- Conserver compatible
- FDHD compatible (upgrade to 1.4 MEG or higher on Apple II)
- FDHD SuperDrive compatible (upgrade to 1.44 MEG on Macintosh)

**AE 3.5 Drive . . . . . \$279**

### Order today!

To order or for more information, see your local 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% sales tax. Add \$10 outside U.S.A.

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

A Division of AE Research Corporation

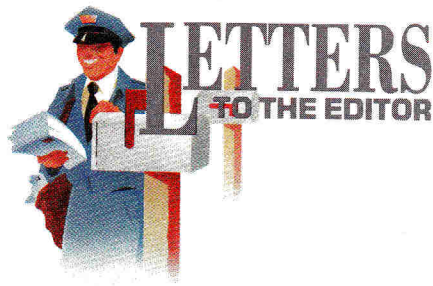
(214) 241-6060

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





## ECONOMICS 101

**I**N THE JUNE 1990 STATUS Report, Paul Statt tells us to save the Apple II by buying “all the hardware you can afford.” (See “Supply and Demand,” p. 20.) Rubbish! I think Paul has been to too many three-martini lunches with Apple executives. If Apple would sell more IIs to new users, there’d be no problem. Apple should offer a decent warranty, customer support, and competitive prices. Every Apple II user I know loves the machine, but hates the company. We’ll get our revenge — Laser will clone the GS at a fair price, the Mac will be eaten in the marketplace by Big Blue, and the legend will become history.

**John Gilkey**  
Route 4, Box 299  
Lynchburg, Virginia 24503

**T**WO RECENT EDITORIALS, “Supply and Demand” (Status Report, June 1990, p. 20) and “Creating a Market” (*inCider’s* View, August 1990, p. 8), speak the truth about the declining Apple II market.

Mr. Muse’s mention of Vitesse’s Quickie scanner points out an important fact: Short of developing the product independently, there’s no way to express demand for a product that doesn’t exist. (Although I wrote to express my desire for a IIe version of the scanner, I doubt my one letter had any measurable affect.)

Mr. Statt’s argument for buying all the Apple II hardware and software we can afford, however, is flawed. Running out and buying unwanted and unneeded items is absurd — especially if a product’s quality is poor or its use is limited. If there’s any real interaction between supply and demand, demanding mediocre products

should increase only the supply of mediocre goods.

Although third-party hardware has kept the Apple II running, there are remarkably few useful programs available for the machine. AppleWorks, Publish It!, HyperStudio and a handful of other programs represent a tiny fraction of the much-touted body of Apple II software. Only a continued supply of quality software will keep the Apple alive.

If you must spend every available dollar on Apple II items, buy what you find useful. It’s better to buy ten copies of AppleWorks, WordPerfect, Dazzle Draw, or whatever fills your need than to buy inferior products that cost the same.

**Leonard Lanigan**  
P.O. Box 358  
Browns Valley, CA 95918

## CAVEATS

**I**PURCHASED QUALITY COMPUTERS’ RepairWorks thinking it would run on the same machine as my AppleWorks version 2.1. It doesn’t — RepairWorks runs only on an enhanced IIe. I wrote to Quality Computers to suggest it should have marketed the product with a warning, but the company didn’t offer to refund my money. Did *inCider’s* Editors’ Choice point out this quirk?

**Wayne I. Pribble**  
112 North West Drive  
New Haven, IN 46774-1160

*When we reviewed this product in October 1989, we weren’t aware of the problem. (See “Salvaging Sunken Files,” p. 124.) Quality Computers has made no plans to introduce a patch or another version of RepairWorks.*

— eds.

## DO IT YOURSELF

**I**N RESPONSE TO THE SEPTEMBER 1990 Apple Clinic item, “RAM Additions” (p. 34), we at VMC Marketing Technologies would like to offer some further insight into Dr. Kennedy’s advice.

First, we want to commend Dr. Kennedy on his explanation of installing memory chips on expansion cards. We’ve also helped countless numbers of customers through this process. Adding RAM seems to be a common obstacle and we’re quite pleased you addressed it.

We’re somewhat concerned, however, with Dr. Kennedy’s comments on cheap parts. It’s been our experience that bare boards are indeed cost effective. Our market research has shown a savings of 50 percent or more by adding memory chips rather than purchasing fully populated boards.

We believe Dr. Kennedy’s reservations about using bare boards are unwarranted. The potential for error is present in all of life’s challenges, but we’ve never had a customer void a warranty. In fact, we’ve had only one problem: Upon adding more RAM, one customer snapped a pin. (Our policy is to replace these chips at no additional cost to our customers.) With the expert advice in Dr. Kennedy’s column, our customers may not make this kind of mistake again.

**Michael Van Matre**  
VMC Marketing Technologies  
1031 East Battlefield, Suite 221 B  
Springfield, MO 65807

**I**CAN’T AGREE WITH WILLIAM P. Kennedy’s advice in the September Apple Clinic column. (See “RAM Additions,” p. 34.) I’m the owner of a company that sells large quantities of RAM chips



both preinstalled in our Laser computers, and to customers who install the chips themselves. Most of these people are novices, and in all cases they've installed the chips without difficulty. Dr. Kennedy's opinion that adding RAM is a difficult task you should leave to a dealer increases the mystery surrounding computers. Apple and Laser computers are made to be opened — users just need to read and follow the directions. Dr. Kennedy's advice probably scared off people who could have added the RAM themselves.

Also, Dr. Kennedy's endorsement of a single dealer as being more reputable than others is untrue and unfair. Dealers buy chips from distributors, who in turn buy from a pool of manufacturers.

My company receives different brands with each purchase — all of which work fine. All that matters to the customer is the chip type, such as 256K by 1, 120ns, and CAS/RAS, the instructions and technical support the dealer provides, and, of course, the price.

I hope your readers support all dealers and continue to install RAM chips as a powerful and inexpensive upgrade to their computers.

**Andrew Kramer**  
**Perfect Solutions Software**  
**3701 Savoy Lane, Suite 106-D**  
**West Palm Beach, FL 33417**

## CONSUMER ALERT

**I** NEED YOUR HELP RECEIVING A \$406.50 credit to my account from Zimco International, Inc. (85-39 213th Street, Queens Village, NY 11427).

On April 17, 1990, I ordered merchandise from Zimco by phone. In that conversation, the sales representative stated that the company would ship the goods in "15 to 25 business days." Although Zimco charged my VISA account for the order that same day, when I paid the bill on June 6 I still hadn't received the merchandise.

On June 14 I called Zimco to ask about the delay and was told that the order would "take an additional 15 or more business days to ship." I decided to cancel the order and asked for a prompt credit to my VISA account. As of June 29, 1990, I've received no such credit.

I think this company routinely charges for goods well before shipping them, and fails to inform the customer of this practice. Also, it's clear that Zimco delays issuing credit well beyond three to five business days.

**Dale W. Lerch**  
**416 15th Street**  
**Modesto, CA 95354**

*This letter represents several complaints we've received regarding Zimco International, Inc.*


*In all of the cases, the company billed the customer for the product, even though it was back-ordered. When customers cancel their orders, there's a significant delay in crediting their accounts. Although Zimco International is working to correct these problems, progress is slow.*  
 — eds.

INCIDER WELCOMES READERS' COMMENTS. WE RESERVE THE RIGHT TO EDIT LETTERS FOR CLARITY, STYLE AND SPACE. PLEASE ADDRESS YOUR CORRESPONDENCE TO LETTERS, INCIDER, 80 ELM STREET, PETERBOROUGH, NH 03458.

• IBM • MANNESMAN TALLY • DATA PRODUCTS • PANASONIC •

ALPS • AT&T • BROTHER • CENTRONICS • C.ITOH • CITIZEN • GENICOM

# Open the World of Printers for Your Apple® II Series



**Grappler +**  
 The "original" Grappler+ has more than 700,000 units installed worldwide. It connects virtually any parallel 9-pin dot matrix or daisy-wheel printer to your Apple IIe.

**Grappler 9 Pin**  
 The most popular parallel printer interface for the Apple IIc, IIc plus and the IIGS. It connects a wide variety of 9-pin dot matrix printers with maximum compatibility by using the standard Imagewriter II driver.

**Orange Micro® inc.**  
 "10 Years of Innovation and Excellence"  
 1400 N. Lakeview Ave., Anaheim CA 92807

Available From:  
**Programs Plus** (800) 832-3201  
**CDA Computer Sales** (800) 526-5313  
 ...and your local Apple dealer

© 1990 Orange Micro, Inc.

• SEIKOSHA • STAR MICRONICS • TOSHIBA •

EPSON • FACIT • FUJITSU • NEC • OKIDATA • OLYMPIA • DICONIX



# STOP

Have you noticed the "other guys" are suddenly reducing their prices—ASK YOURSELF WHY??? It's because we will ALWAYS give you the lowest price on EVERY PRODUCT WE SELL and back it up with our UNSURPASSED CUSTOMER SERVICE. COUNT ON IT.

# THE CLUES LEAD



## The Case Kidnapped

### APPLIED ENGINEERING

- Timemaster II HO \$67
- Z-RAM Ultra 2, 256K \$176
- GS-RAM Ultra, 256K \$144
- GS-RAM Ultra, 1 Meg \$189
- GS-RAM PLUS, 1 Meg \$189 (limited quantity)
- RamWorks Basic, 256K \$117
- RamWorks III, 256K \$133
- RamWorks Expander 256K \$95
- 512K \$119
- 1 Meg \$135
- 2 Meg \$199



**IF YOU DON'T SEE IT, CALL US!**

- Color Link RGB Option \$94
- Ram Factor, 256K \$165
- Ramcharger \$129
- Phasor (II+, //e Stereo Card) \$109
- DATALINK**
- 2400 (Internal Modem) \$174
- Express (2400 Bd Ext Modem) \$159
- Express w/MNP-5 (2400 Bd Ext Modem) \$189
- Ram Express 2, 256K + Clock //(c+) \$144
- Sonic Blaster (GS Stereo Card) \$94
- Audio Animator (GS MIDI Interface) \$174
- Parallel Pro (Parallel Card w/Cable) \$74
- Buffer Pro, 32K (for Parallel Pro) \$81
- Transwarp GS (GS Accelerator) \$259
- PC Transporter (640/768K) \$259
- PC Transporter GS installation kit \$37
- PC Transporter //e installation kit \$29

### APPLIED ENGINEERING

- IBM Style Keyboard \$101
- TransDrive:
- 5.25 Single \$189
- 5.25 Dual \$286
- 5.25 Add-On \$109
- Vulcan 20 Meg Int HD \$499 (specify computer)
- Vulcan 40 Meg Int HD \$649 (specify computer)
- Vulcan 100 Meg Int HD \$1279 (specify computer)
- ReadyLink Terminal Software \$57
- Conserver (GS Surge Protector & Fan) \$74
- Serial Pro (Serial Card w/Clock) \$101
- Power Supply //(+, //e) \$58
- Power Supply (GS) \$74
- Ext. 80 col card //(e) \$54
- AE 3.5 Disk Drive //e, c+, GS, Mac) \$199

### LASER

- Laser 128 Computer \$349
- Laser 128EX Computer \$389
- Laser 128EX/2 Computer (5.25 Drive) \$409
- Laser 128EX/2 Computer (3.5 Drive) \$449
- Laser 190 A Printer \$189
- Laser Monitor (Specify Green or Amber) \$89
- Laser RGB Color Monitor \$219

### BEAGLE BROS

- TIMEOUT SERIES:**
- Macro Tools \$101
- Macro Tools II \$18
- AppleWorks 3.0 Companion MacroEase \$27
- Desktools
- Desktools II
- Filemaster
- GS Font Editor
- Power Pack
- Program Writer
- SideSpread
- Thesaurus
- Text Tools
- SuperFonts Activity Guide \$34



- Ultra Macros
- Spread Tools \$39
- Outline
- Quickspell
- SuperFonts
- Telecomm \$46
- Beagle Compiler \$49
- Report Writer
- BeagleWrite //(e, c) \$54
- Graph \$59
- BeagleWrite GS \$69

**WE CARRY OVER 550 ITEMS NOT LISTED PLEASE CALL FOR COMPLETE CATALOG**

### GLEN BREDON

- Prosel 8 //(e, c Program Selector) \$37
- Prosel 16 (GS Program Selector) \$54

**WINGS by Vitesse**

The ultimate program selector and more for your IIGS. Makes the GS/Macintosh Finder green, with envy.

List \$79.95  
NOW \$49

Agent Matt F.B.I.\*

### HOT GAMES

- ACCOLADE**
- Test Drive II (GS) \$29
- The 3rd Courier \$31
- Grand Prix Circuit (GS) \$27
- CALIFORNIA DREAMS**
- Tunnels of Armageddon \$27
- MEDIAGENIC**
- Battlechess \$31
- MICRO REVELATIONS**
- Xenocide (GS) \$29
- VICTORY SOFTWARE**
- 2088 The Cryllan Mission \$34

**Catch what's on:**

**QUESTMASTER**

With a little luck you might live to fulfill your destiny.

by Electronic Arts list \$39.95

**NOW \$25**

**AGENT SEAN F.B.I.\***

### DISKETTES

- SONY 3.5
- 10 Pack Boxed \$12
- 10 Pack Bulk \$9
- 50 Pack Bulk \$42
- 100 Pack Bulk \$79

### CHIPS

**All Memory Chips Carry a Lifetime Warranty! (User Installed)**

- CHIPS:**
- (set of 8) 256K, 120ns, for 256K memory boards like GS RAM & Apple Memory Card \$27
- (set of 8) 1 Meg, 120ns or faster for 1 Meg memory boards like GS RAM plus & RAM Pro //GS \$69
- (set of 2) 256K X 4, 120ns or faster for memory boards like GS RAM Ultra \$15

### ORDERS ONLY:

1-800-438-2883

FAX: 1-619-274-2440

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

Authorized Applied Engineering Dealer

**Roger Coats**

P.O. BOX 171466  
SAN DIEGO, CA 92197

Circle 90 on Reader Service Card.



### ...RANSOM MONEY...

with every \$100 (in product) ordered, you'll receive ONE RANSOM BUCK redeemable for valuable merchandise.

Get even more! \$300 orders receive FIVE RANSOM BUCKS; \$500 orders receive NINE RANSOM BUCKS. Find Barney Immediately!

Details available with every order.



# TO DEALS

## of the Canine: Part VI



SUSPECT #5:  
**PROFESSOR RED. E. LINK**

when questioned about  
Barney's disappearance  
answered:

"Let us look at the  
probability of the  
canine sprouting  
WINGS and flying  
off in QUEST of  
his MASTER!"

### SOFTWARE

ADDITIONAL TITLES IN STOCK  
(Sorry, no software refunds)

#### ABRACADTA

Design Your Own Home Series:  
Architecture  
Interiors  
Landscape  
**\$47 ea (//+, e, c)**  
**\$59 ea (GS)**

Design Your Own Train  
**\$34**

#### ACTASOFT

Alphacheck v3.1  
**\$29**

APPLE COMPUTER GS/OS v5.02  
**\$39 (in stock)**

#### BRODERBUND

Printshop GS **\$36**  
VCR Companion **\$30**  
Carmen San Diego:  
Where in Europe (//e)  
Where in Time (//e)  
Where in the USA (//e or GS)  
Where in the World (//e or GS)  
**\$28 ea. (//e)**  
**\$30 ea. (GS)**  
Wings of Fury **\$23**

#### CENTRAL POINT SOFTWARE

Copy II Plus **\$24**

#### CLARIS

AppleWorks 3.0 **\$169**  
AppleWorks GS **\$194**

#### INSYNC

Proterm v2.2 **\$79**

INTUIT Quicken (//e, c, GS)  
**\$37**

#### JEM SOFTWARE MiniPaint-GS

Paint Program, VERY Powerful  
**\$19**

#### MANZANITA

Business Works Bundle **\$259**  
Business Works Payroll **\$99**

#### MEDIAGENIC

PaintWorks Gold (GS) **\$44**  
Music Studio (GS) **\$44**

#### MORGAN DAVIS

MD-BASIC **\$25**  
ModemWorks **\$29**  
ProLine **\$99**

#### PYGRAPHICS (specify computer)

Music Writer (Limited Edition) **\$79**  
Music Writer (Special Edition) **\$199**  
Music Writer (Professional) **\$399**

### SOFTWARE

#### ROGER WAGNER

Graphics Exchange **\$29**  
Hyperstudio **\$84**  
Macromate **\$29**  
Merlin 8/16 **\$77**  
SoftSwitch **\$34**

#### SEVEN HILLS

Disk Access (GS) **\$27**  
Font Factory (GS) **\$22**  
GraphicWriter III (GS) **\$75**

#### SOFTSPOKEN

Cross-Works (Xter Apple & IBM Files)  
**\$67**

#### TIMEWORKS

Graph It! **\$44**  
Publish It! 3  
(II Desktop Publishing) **\$84**

### VITESSE

SALVATION  
Deliverance (File Repair) **NEW**  
Guardian (GS Backup Utility)  
Harmonie (HP Printer Drivers)  
Renaissance (GS Optimizer)  
**\$29**

Exorcizer (GS Virus Utility)  
**\$24**

Wings (GS Program Selector)  
**\$49**

Quickie (//e, GS Hand Held Scanner) **WOOF!**  
**\$197**

### KENSINGTON

GS Anti-Glare Filter **NEW**  
**\$34**

Kensington System Saver GS  
**\$69**

Turbo Mouse ADB (GS, SE, II)  
**\$109**

### APRICORN

Apricord //c (Parallel Interface)  
**\$49**

Apricord 8 (Parallel Interface //c+, Mac, GS)  
**\$59**

No Slot Clock Pro **WOOF!**  
**\$37**

RamPro GS 1 Meg (Lifetime Warranty!)  
**\$109**

### AMR

GS Partner 20 Meg HD w/SCSI  
**\$519**

GS Partner 40 Meg HD w/SCSI  
**\$619**

GS Partner 60 Meg HD w/SCSI **WOOF!**  
**\$699**

GS Partner 80 Meg HD w/SCSI  
**\$799**

GS Partner 100 Meg HD w/SCSI  
**\$979**

AMR 3.5 Drive (//e, c+, GS, Mac, PC Transporter)  
**\$169 FREE SHIPPING**

AMR C3 3.5 Disk Controller Card  
**\$44**

AMR 45 Meg Removable Media w/SCSI (//e, GS) **WOOF!**  
**\$849**

45 Meg Removable Cartridge  
**\$89**

### HARDWARE

Supra 2400 Baud External Modem  
**\$99**

Numeric Keypad (//e)  
**\$29**

Numeric Keypad (//c, //c+)  
**\$99**

Meiji 5.25 1/2 Height Drive (//+, //e)  
**\$80**

Meiji 5.25 1/2 Height Drive (//c, GS)  
**\$95**

**ROGER'S SUPER SLEUTH DEAL**

ReadyLink by Applied Engineering  
Affordable yet powerful communications software for your Apple II.  
List \$99  
**NOW \$57**

### HARDWARE

Meiji 5.25 1/2 Height Drive (//c, GS) Daisy Chainable  
**\$119**

Zip Chip 8 Mhz Accelerator (//e, c)  
**\$149**

Thunderscan (e, c, GS Scanner)  
**\$149**

AB Switchbox (Ser/Par)  
**\$19**

ABCD Switchbox (Ser/Par)  
**\$24**

AB Switchbox (19-pin w/Cables)  
**\$79**

AB Switchbox (Mini 8)  
**\$24**

ABCD Switchbox (Mini 8)  
**\$29**

//e Fan and Surge Protector  
**\$29**

GS Sound System  
2 Speakers & 15 watt amp  
**\$119**

Prairie Pwr System, Battery Pack (8 HR, UPS) & Case  
**\$119**

Apple //e Enhancement Kit  
**\$58**

Cables (all types, 10 ft)  
**\$12**

CH Mach III Joystick  
**\$31**

CH FlightStick  
**\$47**

ImageWriter II Printer  
**\$459**

FingerPrint GSii vII  
**\$84**

Computer Eyes Color  
**\$189**

RamFast/SCSI (//e-GS SCSI Controller)  
**\$199**

Kurta ADB Graphics Tablet  
**\$249**

**FOR A COMPLETE PRICE LIST OF OUR PRODUCTS, FILL OUT THE READER SERVICE CARD IN THIS MAGAZINE**

Stay tuned next month for Part VII of:  
**The Case of the Kidnapped Canine.**

Be an F.B.I. Special Agent Anytime!

We are now open 24 hours a day/7 days a week for orders. And there are no modems or online services required! So now you can be a special agent on the Find Barney Immediately case by placing your order at anytime.



**Roger Coats**

P.O. BOX 171466  
SAN DIEGO, CA 92197

Circle 90 on Reader Service Card.



PRICE QUOTES & TECHNICAL SUPPORT

1-619-274-1253

8am - 5pm PST

Monday-Friday

Committed to value since 1985

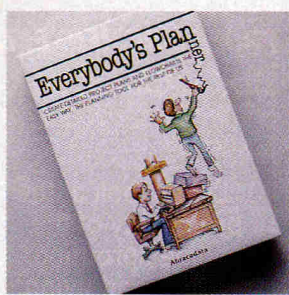
• Dunn and Bradstreet Number Upon Request • F.O.B. San Diego • \*F.B.I.—Find Barney Immediately

\* I always thought ReadyLink was much too intelligent to stoop to dogknaping--Roger, a.k.a. Super Sleuth SCHOOL PURCHASE ORDERS

WE ACCEPT







**EVERYBODY'S PLANNER**  
by Abracadata

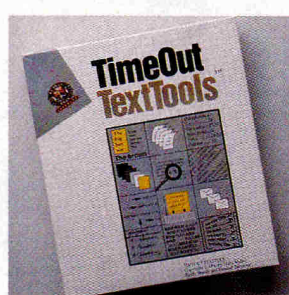
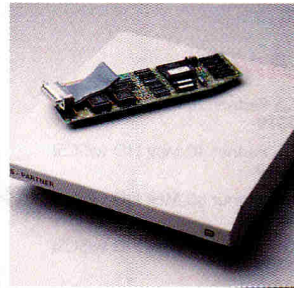
Are you living in fear and total chaos? Now you can get organized without the horrors of complicated and expensive project managers. Everybody's Planner is the ONLY Apple II project manager. Designed for the layperson. Free flowcharting program included.

**Our Price \$67**

**GS PARTNER**  
by AMR

Do you need a Partner? So does your GS! The AMR GS Partner is available from 20MB to 200MB, included is the new fast Apple SCSI card and GS/OS 5.02. With the advanced cooling system there is no need for any additional cooling device when used with your GS.

**Our Price 40/60/100 meg \$619/\$699/\$979**



**TIME OUT TEXT TOOLS**  
by Beagle Brothers

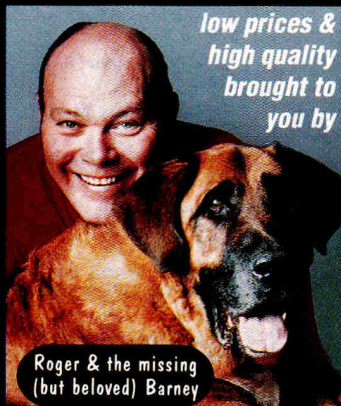
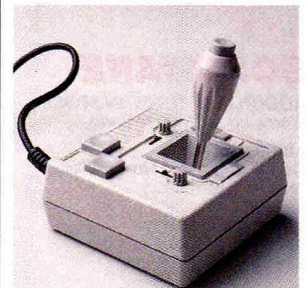
These AppleWorks 3.0 word processor enhancements take the drudgery out of producing complicated documents. Speed up text entry and formatting, find and replace printer options, build a table of contents and an index, create multiple-column documents, fill in preprinted forms and more.

**Our Price \$34**

**MACH III JOYSTICK**  
by CH

Our top-of-the-line joystick for all uses including games, drawing and graphics. The MACH III delivers more quality features, greater durability with up to 100 times the life of all others. It's even color coordinated to match your computer.

**Our Price \$31**

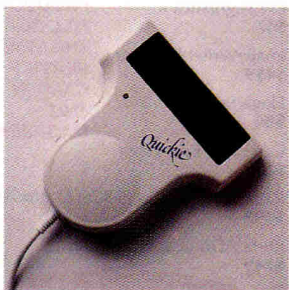


low prices & high quality brought to you by

Roger & the missing (but beloved) Barney

# Celebrity Squares

starring the hottest products in the Apple II Marketplace



**QUICKIE by Vitesse**  
A hand-held image scanner for all "slot-equipped" Apple IIs: IIGS, IIe, II+, and Laser 128. Scans flat images quickly and easily and saves them in standard Apple graphic file formats. GS/OS software supports extensive multiple scan operations, post scan editing—including cut/paste/crop/rotate/resize/"fat bits"—direct printing. Landscape (side-to-side)

scanning and NDA format are exclusive features. ProDOS software supports scanning in multiple sizes and saves in standard HR and DHR formats. Quickie is the only Apple II scanner that supports the new InWords optical character recognition (OCR) software.

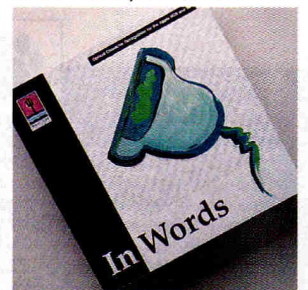
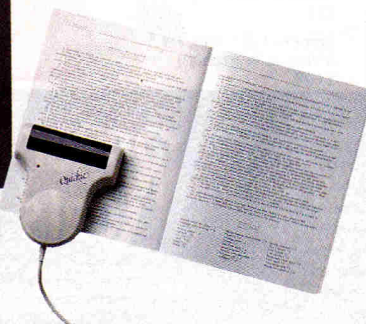
**Our Price \$193**



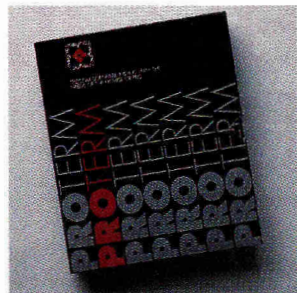
**INWORDS by WestCode Software**  
NEW! A thousand words are as easy as a picture with InWords OCR software for the Quickie scanner. Now in addition to scanning graphics, you can scan text for use with your word processor, desktop publisher, data base or spreadsheet—just as if you

entered it from the keyboard—only faster. Scan books, magazines, newspapers, typewritten pages. InWords reads almost any printed document. And InWords is fast and accurate: reading up to 3000 characters per minute! Stop typing and start scanning. Requires IIGS or enhanced IIe with 512K and Quickie hand-scanner.

**Introductory Price \$79**



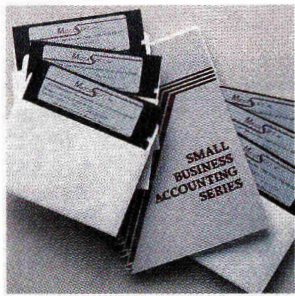




**PROTERM 2.2  
by Insync**

ProTERM v2.2 is the complete telecommunications solution offering features such as Rotary Dialing List, Protocol File Transfer, Scrollback, built-in Editor, Terminal Emulation, and AutoLearn Macros. ProTERM is the one program simple enough for the novice, but powerful enough for the pro.  
**Our Price \$79**

**SMALL BUSINESS ACCOUNTING by Miccasoft**  
The Invoicer has provided thousands of small businesses an easy, affordable way of billing their customers and tracking sales and inventory. Rate 8 out of 10 by inCider/A+ May '90. Very easy, menu driven, prints statements, invoices. **Invoicer with AR \$89 Above with added Sales Tracking/Inventory \$129**



IIGS Products By  
**Seven Hills  
Software**

**GraphicWriter III™**  
Superior desktop publishing. 1990 inCider/A+ Editors' Choice! 768K

**Our price \$75**

**Disk Access™**  
With features like Apple's Finder™ but it's available all the time as a new desk accessory! 128K

**Our price \$27**

**Font Factory GS™**  
Resizes fonts, creates special symbols, and improves print quality from your programs. "...clearly the Cadillac of the field."—inCider/A+ 768K

**Our price \$22**

**SENSIBLE GRAMMER & REPORT CARD by Sensible**  
Proofread ProDOS word processing files. Contains library of over 2,500 commonly misused English phrases. Shows errors in context; suggests alternate wordings for immediate replacement. Catches errors in punctuation, capitalization, repeated words, etc. Hard disk, Ram disk, AppleMouse compatible.

**Our Price \$52/ea**



**OUR FINE PRINT:  
We Accept the Following  
methods of Payment:**

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

- Not responsible for product compatibility
- Sorry, no shipping, handling, or insurance refunds
- Prices subject to change without notice
- We really appreciate your business!

**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

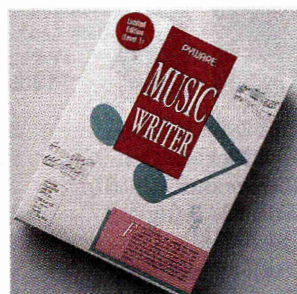
8am-5pm PST

Monday-Friday

# Roger Coats

P.O. Box 171466  
San Diego, CA 92197

committed to value since 1985



**MUSIC WRITER  
by Pygraphics**

Pyware™ Music Writer is the easiest yet most professional music composition package on the market. Featuring: MIDI input in real time, extensive editing options, instant transposition, full score printing ability and part extraction, and much more.

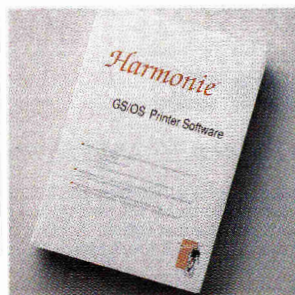
**Our Price Limited \$79  
Special \$199  
Professional \$399**

**TWO by VITESSE**

**HARMONIE  
by Vitesse**

Printer driver software that unleashes the power of the IIGS for top-quality text and graphics printing under GS/OS. Supports HS LaserJet, DeskJet, PaintJet (and work-alike) printers, as well as 24-pin dot matrix printers—serial and parallel.

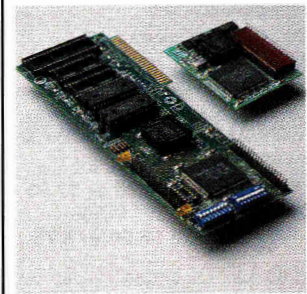
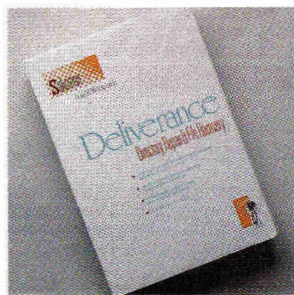
**Our Price \$29**



**DELIVERANCE  
by Vitesse**

The GS/OS utility to have when a disk, folder, or file has gone sour. Reconstruct directories and bitmaps, unerase volumes, mark 'BAD' blocks, rescue files, and more. Repaired files can be copied to a new volume. Uses the IIGS Graphic User Interface.

**Our Price \$29**



**GS ZIP CHIP by ZIP**

GS Accelerator offers 8 MHz plus Super Speed in 3 new products using Zip's patented Caching Technology.

Model 1500 Zip Chip GS  
8 Mhz Plus **Our Price \$189**

Model 1525 Zip Chip GSX  
8 Mhz Plus **Our Price \$224**

with 16K memory + DMS compatible  
Both models use a revolutionary chip  
to replace the CPU.

Model 1600 Zip GSX  
8 Mhz Plus **Our Price \$269**

Slot Based board slots 1 through 4  
DMA compatible—16K memory.



# 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

## Vitesse



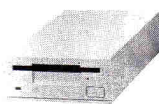
Quickie 400DPI Handscanner for Apple IIe & IIgs includes new 16 gray shade software  
**\$194.95**

Guardian (IIgs)	\$30.95
Renaissance (IIgs)	\$30.95
Exorciser (IIgs)	\$27.95
Wings (IIgs)	\$47.95
Deliverance (IIgs)	\$30.95

## West Coast Software

InWords Optical Character Reader Software for Apple IIe & IIgs. Quickie Hand Scanner required **SCA.LL**

## AMR AS800 3.5" Drive



**\$169.95**  
IIgs & IIc+  
Daisy-Chainable  
5.25" **\$139.95**

(Limited Quantities)

Apple IIe UDC Card **\$39.95**

## Promodem 2400A



**\$129.95**

300/1200/2400 Baud Hayes Compatible Internal Modem for II+, IIe or IIgs. Includes software!

## 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" Diskettes	\$6.50
25 DS/DD 5.25" Diskettes	\$8.95
System Saver IIgs	\$69.95
Mouse Mat	\$4.95

## Applied Engineering



GS Ram Plus w/1 Meg	\$199.95
GS Ram Ultra w/256K	\$149.95
GS Ram Ultra w/1 Meg	\$199.95
TransWarp IIgs	\$289.95
RamWorks III w/256K	\$134.95
DataLink 2400B Modem	\$179.95
AE 3.5" 800K Daisy-Chain Drive	



**\$204.95**  
IIgs and IIc+

Vulcan 20 Meg Drive	\$499.95
Vulcan 40 Meg Drive	\$649.95

## Memory Chips

256K x1 Drams (8 - 120ns)	\$25.00
256 x 4 Drams (2 - 120ns)	\$20.00
1 Meg x 1 Drams (8 - 100ns)	\$69.00

## Laser Computers

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

(Computer prices include freight)

## Digital Vision

ComputerEyes IIe	\$99.95
ComputerEyes IIgs	\$194.95

## Zip Technologies

4 mhz Zip Chip	\$99.95
8 mhz Zip Chip	\$144.95
Zip IIgs	\$Ca.ll

## Other Hardware

Thunder Scan	\$154.95
Lightning Scan	\$199.95
FingerPrint GSI	\$89.95
IIe 80 Column 64K Card	\$24.95

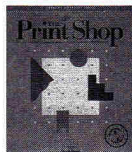
## DTP and Graphics



Publish It! 3  
**\$72.95**  
(Limited Quantities)

4 in one Graphics Pack	\$74.95
Educational Graphics	\$25.95
Childrens' Writing & Publishing Center	\$36.95
PaintWorks Gold (IIgs)	\$48.95

## 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		

## Beagle Brothers



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	\$30.95
T.O. Superfonts	\$39.95
T.O. Thesaurus, Powerpack	\$30.95
T.O. Desktools I or II	\$30.95
T.O. Sidespread, File Master	\$30.95
T.O. Spreadtools, Ultramacro	\$37.50
T.O. Graph	\$49.95
T.O. ReportWriter	\$49.50
Point-To-Point	\$59.95

## Productivity Software

AppleWorks 3.0	\$169.95
AppleWorks GS 1.1	\$199.95
HyperStudio 2.1 (IIgs)	\$89.95
Quicken	\$37.95

## Utility Software

Copy II Plus 9.0	\$24.95
Prosel 16 (IIgs)	\$54.95
Cross-Works	\$69.95
Repair Works	\$27.95
Easy Drive	\$41.95

## Educational Software

Where in Time	\$27.95
Where in the World	\$25.95
Where in the USA	\$27.95
Where in Europe	\$27.95
Math Blaster Plus	\$29.95
Word Attack Plus	\$29.95
Oregon Trail	\$25.95
Think Quick	\$30.95
McGee or Katies Farm(IIgs)	\$27.95
The Playroom	\$24.95
Mavis Beacon Typing IIgs	\$32.95

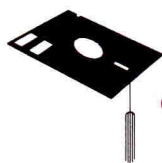
## Entertainment Software

Two Fantastic Games for the Price of 1!



Wheel of Fortune Gold & Jeopardy 25th Anniversary Package  
**\$18.95**

Test Drive II (IIgs)	\$29.95
Jack Nicklaus Golf (IIgs)	\$29.95
Chessmaster 2100 (IIgs)	\$32.95
Arkanoid II (IIgs)	\$21.95
Qix (IIgs)	\$21.95
Battle Chess (IIgs)	\$30.95
Fast Break (IIgs)	\$27.95
Clue	\$24.95
Task Force (IIgs)	\$24.95



**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 3% (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.



# WHAT'S NEW

# My

# PAINT

If full-featured paint programs for the Apple IIs simply overwhelm your young ones, **My Paint** may be just the software you need.

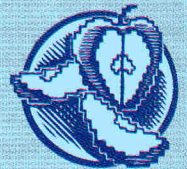


SOFTWARE

**My Paint** was created for kids. Everything about it — from the color of the disk to the easy interface — was designed with kids in mind. In fact, young

users who don't know how to read can let the colorful animated icons do the work. **My Paint** includes a Coloring Book with 28 fascinating pictures in which kids can draw and paint; you can add digitally sampled sounds. Additional coloring books are available. **My Paint** has been tested by educators in the classroom and has been successful in its Amiga and MS-DOS versions, according to the publisher, Saddleback Graphics. For more information, contact Saddleback at 3621 West MacArthur Blvd., Suite 119, Santa Ana, CA 92704, (714) 540-4062, or circle number 350 on the Reader Service card. —P.S.

☛Laser Computers (Lake Zurich, IL) has completed a **portable Apple clone**, but the company is looking for a "joint venture" partner to build it. Also, Laser would like to build an Apple II clone similar to its PC 4 MS-DOS clone; as an alternative to a laptop, this hand-held personal organizer has built-in software and a computer interface.



APPLE BITS

☛Apple's **animation toolkit** for the GS simulates full-screen animation and character/bit-map animation. Contact the Apple Programmers and Developers Association for details.

☛Mike Westerfield from **ByteWorks** (Albuquerque, NM) amazed a few attendees at the A2-Central Apple II Developers' Conference in July with his **Integer BASIC** compiler for the GS. "I actually started it just to prove it could be done," says Westerfield, "but now I kind of like it." It sure is fast.

☛**Apple's scanners**, built with the Macintosh in mind, run perfectly under GS/OS on the GS or under ProDOS on the IIe — they're full SCSI devices. Trouble is that Apple won't release scanner software, and expects third parties to do so.

☛Apple insiders promise that a ProDOS text-based version of **AppleLink** will be available "sometime within your lifetime."

☛Randy Brandt at JEM Software (P.O. Box 1500Q, Arvada, CO 80001) hopes to include Mark Munz's **AmperEngine in UltraMacros 3.2** — it adds more programming power.

## TECH NOTES

### AND A GOOD HARD-DISK MANUAL IS GOOD TO . . . HARD TO . . . OH NEVER MIND

Do the words "hard-drive partitioning" and "SCSI interface" make you cringe and weep? Fear not! The National Apple Users Group has released "The Apple II Hard Disk Primer." Gary Morrison leads the faint-of-heart and weak-of-knee gently through the trauma of selection, configuration, installation, organization, and salvation for all II models. "The Apple II Hard Disk Primer" is available for \$16.95 plus \$3 shipping from NAUG, Box 87453, Canton, MI 48187.

### WHAT IF WE THREW A PARTY AND NOBODY CAME?

Apple Computer has released improved GS sound tools that'll let music programmers access MIDI devices easily as well as edit digitized samples. Your GS could save MIDI input (as from a synthesizer), alter it, replay it, and translate it into sheet music. Sound-software developers, including Broderbund, Diversified, Electronic Arts, and Passport, are being conspicuous in their silence about new product design. What's their excuse now that Apple has provided GS support?

### SKELETONS OUT OF THE CLOSET

Call A.P.P.L.E.'s "Skeleton Desktop Application" by Sandy Mossberg is now available in disk form for the APW and ORCA/M assemblers and for the APW C and ORCAC compilers. It contains the entire series of articles in AppleWorks format, including the fourth and fifth installments, not yet published at the time Call A.P.P.L.E. went out of print. The disk is available for \$20 from Cecil Fretwell, 2605 Highview Avenue, Waterloo, IA 48187.

### ON THE HORIZON?

Date-line Scotland: Cirtech is being decidedly close-mouthed about Duet, which is scheduled for release in December 1990. It's a coprocessor card for the GS with a 16MHz 68020 microprocessor on board and 1 to 8 MB of RAM. Add some special "linking" software, and D-u-e-t spells "Macintosh emulator." The GS 65816 processor should handle nearly all I/O functions, leaving the 68020 to run Mac software faster than a IIcx can say "Brigadoon." Price? Well...

— Cameron Crotty





# AppleWorks Notes

**From the AppleWorks Programmers Association:  
Users and Programmers Sharing the Power to Create**

**A W tip:** When you use @AVG or @COUNT in the AppleWorks spreadsheet, problems often arise from the program's mishandling of zeros. In the example below, assume that Adam and Carol were present at school and took a test. Because Bruce was absent on the day of the test, his score was a zero. When AppleWorks averages the class scores in column

1 Student	Test	Absent
2 Name	Grade	Adjust
3 _____	_____	(formulas in column H)
4 Adam	90	90 @IF(G4=0,(H1),G4)
5 Bruce	0	absent @IF(G5=0,(H1),G5)
6 Carol	80	80 @IF(G6=0,(H1),G6)
7 =====	=====	(formulas for average)
8 AVERAGE	56.7	85 @AVG(G3..G7) & @AVG(H3..H7)

G, it includes the zero and gives an incorrect result as shown in G8. Instead, use the new text-pointing feature in AppleWorks 3.0 and change the value "0" to "absent." Then your program will produce the correct average in cell H8.

**A W enhancement:** TimeOut Glossary is a time-saving boilerplate tool for users who insert repetitive words, names, addresses, phrases, even paragraphs into various word-processing documents. To keep the information straight, create your own glossary and include up to 127 separate text entries — each entry will have a label that appears on a TimeOut pop-up menu. (Glossary entries may include carriage returns and specified embedded printer commands, too.) To search for your entries, simply type the first letter of the label or scroll through the menu with the arrow keys. Selecting an item with the return key (or mouse for UltraMacros users) inserts the entry immediately into the word-processing file at the current cursor position. Because you can access the files from a TimeOut Menu, you can make and keep track of multiple glossaries.

To create these glossaries quickly and easily, use AppleWorks' mail-merge function to access existing database files. TimeOut Glossary is included on the TimeOut TextTools disk from Beagle Bros, Inc. Other TextTools enhancements for the word processor include QuickStyles, QuickTabs, MarkMerge, MultiPrint, CopyBlock, SuperFind, Analyst, Indexer, Table of Contents Generator, and Carriage Return Stripper.

**A W personality:** For more than 12 years, A.P.A. member Stephen Reiss has called Aspen, Colorado, home. High in the Rocky Mountains, Aspen is ideal for outdoor people like Steve who enjoy skiing in the winter and "four-wheeling" in the summer. As a noted oenophile, he also travels the world to wineries and tasting events. His expanded Apple IIc has been integral in publishing a wine-accessories catalogue and managing the affairs of his company, Buyers & Cellars Wine Consultants.

On the computer front, Steve has written a number of AppleWorks templates, macros, and TimeOut help screens, which he shares with other Apple users. Steve's father was involved with the early Univac, leading Steve to develop an early interest in computing. All computer fans can identify with a story Steve tells of being chastised severely in grade school for writing a "I will not run in the halls" punishment paper on a TTY paper loop. Steve is a regular participant on popular on-line services and is always ready to lend a hand or upload a useful file.

**A W macros:** To accomplish a given task a specified number of times, you often need counters in your macros; the example below may help you understand how counters work. A counter macro must include certain elements (not necessarily in the form we use here); we've indicated these elements with brackets in this example. This simple counter macro types "Ring" ten times, then types "Hangup" once and stops. You can expand the action command to accomplish various tasks tailored to your needs.

```
T:<<all S=0 {start value}: E=10 {end value} :
begin {start point}:
>Ring<<rtn {action command} : S=S + 1 {increment}:
ifnot S=E : {test for end} : then : rpt : {repeat command}:
else>Hangup<<rtn>! {exit command}
```

**A P.A. news:** Members can obtain valuable discounts when they purchase products directly from the growing number of participating publishers and vendors. (A.P.A. is not a reseller.) With AppleWorks, Don Aquilino (Woodland Hills, CA) is making exciting breakthroughs in automated double-entry accounting, trial balances, and other advanced business-accounting activities. Anthony Vasek (Grand Rapids MI) has done some innovative work with map coordinates to make "Meals on Wheels" community projects more efficient. Pro-APA (our BBS) continues to expand networking facilities, adding new and important news feeds. Be sure to call us at (213) 463-9289. (Pro-APA is PC pursuitable.)

*Members contributing to this month's notes include Don Aquilino, Dave Gair, Mark Munz, Steve Reiss, and Anthony Vasek. For details on membership and other information, contact the AppleWorks Programmers Association at 6531 Lexington Avenue, Los Angeles, CA 90038-1451, modem (apa@pro-apa.cts.com) (213) 463-9289, voice (213) 469-9916. The A.P.A. is an Apple User Group registered with the Apple User Group Connection.*



# EDUCATION \*NOTES\*

\*According to a recent press release, **Apple Computer** has announced it will form a partnership with the **National Education Association (NEA)**, the country's largest organization of teachers, "to enable the nation's classroom teachers to purchase a personal computer system package for their personal professional use at home." IBM formed a similar partnership enabling teachers to buy special IBM PS/1 computers. Apple didn't specify the hardware it will make available.

\***Scholastic Software** (New York, NY) has followed up its **Success-with-Writing** program for the Apple II with a Mac version. The comprehensive writing course, which covers everything from prewriting to revising, costs \$99.95. Scholastic has also released **HyperScreen 2.0**, a substantially enhanced version of its Apple II hypermedia tool. Upgrade is free to registered users. Call (800) 541-4413 for details.

\*To launch its **Great Reading/Great Writing** series, **Sunburst Communications** (Pleasantville, NY) has selected three classic books of the read-aloud genre — Margery Williams' *The Velveteen Rabbit*, Roald Dahl's *Charlie and the Chocolate Factory*, and Richard Adams' *Watership Down* — to use with the Magic Slate II word processor in the classroom. To stimulate reading, writing, and thinking skills simultaneously, each package includes a copy

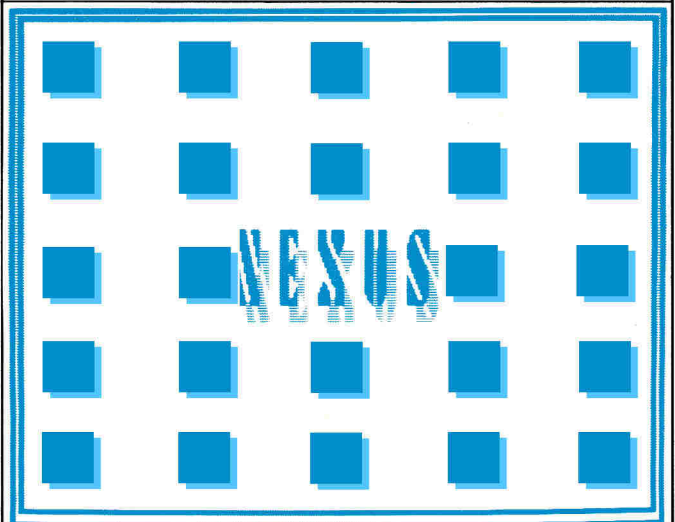
of the book, detailed lessons, and a student data disk. Each package costs \$59.95. Teachers can obtain a free 30-day preview by calling (900) 628-8897 or (914) 747-3310 collect.

\***William K. Bradford** (Acton, MA) has released the first of its multicultural **Explore-a-Folk-tale** series. "Ananse the Spider," a West African tale related by a storyteller around a campfire, has been animated with colorful pop-up text and graphics. The Explore-a-Folk-tale series includes the same features as Bradford's popular Explore-a-Story series. The standard package costs \$75. For a free preview, call (800) 421-2009.

\*For qualified schools, **Broderbund Software** (San Rafael, CA) is now offering site licenses for GS versions of **The New Print Shop**, IIe/IIc and GS versions of three titles in the **Carmen Sandiego** series, as well as Apple II and Macintosh versions of **Type!**. Contact Broderbund Software at P.O. Box 12947, San Rafael, CA 94913-2947, (800) 521-6263.

\***The New Math Blaster Plus** from Davidson and Associates (Torrance, CA) brings to the 512K Mac all the fun of the original program, released seven years ago. Covering elementary arithmetic from addition to word problems, this new version sports color graphics and is priced at \$59.95. For volume and teacher's prices call Davidson at (800) 556-6141.

## THE NEXT GENERATION OF HYPERMEDIA



**"Better Than Apple's Hypercard...  
incredible power."  
Editor's Choice**

—A+ / Incider  
August 1990

NEXUS ("noun, a linked list") is a revolutionary new software, which lets you quickly link your standard text, graphics and sound files, without altering those files in any way! Unlike any of the existing "hypermedia" programs available (on any machine) with NEXUS you do not need to create hyperfiles; instead you simply use your existing files, or create new files with your own word-processor, paint program, and/or sound digitizer.

You never need to re-enter data, add fields, define buttons, or learn complex programming languages. Click on a word, then click on the file you want it linked to. Now when you click on the word again, NEXUS displays the linked file graphic and sound files automatically! Linking is just as simple. Since NEXUS NEVER changes your original files, you can edit them to your heart's content!



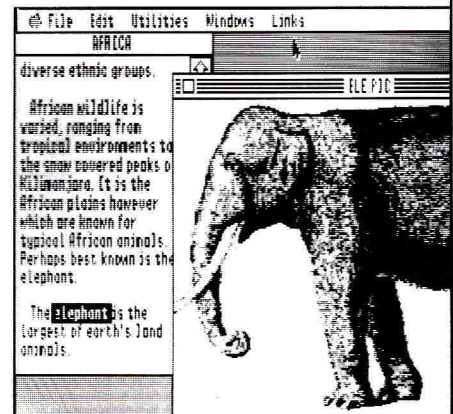
You can use NEXUS as a free-form database; create new games; link business documents; create outlines; add definitions to complex terms; zoom in on details of a map or schematic. The uses in home education, business, and recreation are limited only by your imagination! NEXUS set can handle over 6000 words and 1000 files, and you can have multiple sets. NEXUS remembers links even if you have moved or renamed your files! NEXUS requires GSOS 5.02 and 1.25 MB of memory.

**Consumer  
Version**

**\$79.95**

**Educational  
Version  
Available**

**Dealers Inquiries  
Welcome!**



# GOLEM COMPUTERS

P.O. Box 6698, Westlake Village, CA 91360

Mon.-Fri. 7am - 6pm / Sat. 9am-4pm PT

**TO ORDER 1-800-248-0363**



# GOLEM COMPUTERS

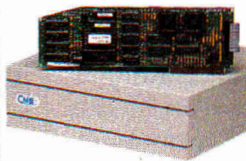
PRESENTS

# Hot Deals!

HOLIDAY SHOPPING BASKET

**MACSTACK** 20MB \$460.  
w/ Apple SCSI 40MB \$575.  
**CMS** 60MB \$680.

Performance you can count on. CMS drives use only the highest quality components to deliver levels of dependability unequalled by the competition. All CMS drives can be daisy chained together to provide almost unlimited storage capability. Features auto park, 32ms average access time, Apple's High speed SCSI Card included.



2088:

**THE CRYLIAN MISSION**



1st Scenario \$34.00

2nd Scenario \$34.00

**VICTORY SOFTWARE**

The crew of the U.S.S. Houston is missing on the planet Crylia. The player must lead a team of six and find the missing crew. Their travels lead to numerous towns and three-dimensional caverns and dungeons. They can converse with townspeople.

**TELINK**

**\$149.**

**GOLEM**

Telink is a reliable, easy-to-use, low-cost 2400 baud Hayes-compatible modem. Compare the Telink to any other modem on the market. You won't find a better value at any price. We've taken the best technology, and rolled it all into a neat package, with every AT Command, every Hayes Dial Command and S-Register support. Also includes on board non-volatile memory.



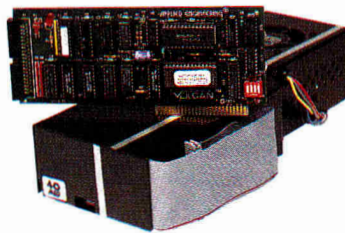
**VULCAN**

20MB \$499.

40MB \$649.

**APPLIED ENGINEERING**

Vulcan high-speed internal hard disks for the IIGS, IIe, II+ and II, combine a wide range of upgradeable sizes with the speed and power lacking in other systems. The result? A quantum leap forward into the Apple II future. A reliable and affordable way to store massive files while speeding up booting time.



**SOLITAIRE II**

\$35.

**SOLITAIRE/ CRIBBAGE**

\$35.



**COMPUTREK**

Eight new and exciting games of solitaire. Super fast loading, pull down menus, help screens, instant replay button, re-deal with same hand, and much more.

**TASK FORCE**

**\$27.00**

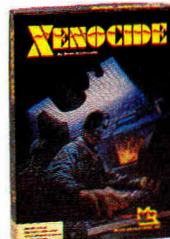


**FANFARE**

"Freeze!!!!" Yeah, sure. No one listens to the law any more...Not since terrorism has come to America's city streets. That's why you, Jon Baxter, and your partner, Michael Dvorak, have been chosen by the FBI to spearhead a specially organized **TASK FORCE!** You're outfitted with flame throwers, missile launchers, grenades—all the latest stuff.

**XENOCIDE**

**\$30.00**

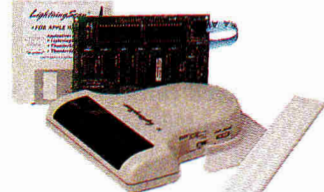


**MICRO REVELATIONS**

In Xenocide, an alien race has taken over research outposts on three moons orbiting the planet Talos IV. There have been no recent communications from any of these three outposts and thus we must assume the worst—there are no humans left alive. In order to halt the spreading of the alien race, you must destroy the three moons.

**LIGHTNINGSCAN GS THUNDERWARE**

**\$199.**



LightningScan GS can open the door to a whole new dimension of creativity with your Apple IIGS. LightningScan turns any printed image into a high-resolution graphic. It's as easy to use as a mouse. Can scan flat surface instantly.



FOR FAST SERVICE 1-800-248-0363

Mon. thru Fri. 7am - 6pm

Sat. 9am - 4pm - Pacific Time

# GOLEM COMPUTERS

P.O. BOX 6698  
WESTLAKE VILLAGE, CA 91360

Special  
of the Month!  
RAM 4000GS 4MB  
CHINOOK  
\$340.

## MEMORY & INTERFACE

APPLE SCSI Card	109.
APPLIED ENGINEERING Transwarp GS	257.
Audio Animator	178.
Ram Works III 512K (Ile)	140.
Ram Works III 1MB (Ile)	172.
GS-Ram PLUS 1MB	180.
GS-Ram PLUS 2MB	229.
GS-Ram Ultra 1MB	180.
Z Ram Ultra 2 - 512K (Ile)	185.
Ram Express II 512KB (Ile+)	148.
Ram Express II 1MB (Ile+)	160.
PC Transporter 768K	257.
Installation Kit (IIGS)	37.
Installation Kit (Ile)	91.
Sonic Blaster	35.
CHINOOK Ram 4000GS 1MB	149.
Ram 4000GS 2MB	199.
Ram 4000GS 4MB	359.
DIGITAL VISION Computer Eyes (IIGS)	195.
Computer Eyes (Ile)	116.
MEMORY Dram	Call
THIRDWARE Fingerprint GSI (IIGS)	90.
THUNDERSCAN Lighting Scan (IIGS)	199.

## HARD/FLOPPY DISK DRIVES

AMERICAN MICRO	
3 1/2 Drive (Daisychain IIGS, Ile+)	177.
5 1/4 Drive (Daisychain IIGS, Ile+)	145.
GS Partner 45MB w/SCSI	610.
GS Partner 60MB w/SCSI	725.
GS Partner 80MB w/SCSI	799.
Removable 45MB	845.
45MB Cartridge	99.
APPLIED ENGINEERING	
Vulcan Hard Drive 20MB	499.
Vulcan Hard Drive 40MB	649.
5 1/4 Drive (Ile/IIGS)	111.
3 1/2 Daisychainable Drive (Ile/IIGS/Ile+)	203.
Trans Drive Dual	286.
Trans Drive Single	195.
LASER COMPUTER	
External Disk Drive (5 1/4" Laser)	90.
External Drive (5 1/4" IIC/Ile)	95.
External Disk Drive (3 1/2" Laser)	185.
Universal Disk Controller	45.
External Disk Drive (5 1/4" Daisy, IIGS)	125.

## MODEMS

APPLIED ENGINEERING Datalink 2400	170.
Datalink Express Ext. w/soft	183.
Datalink Express w/soft & MNP5	221.
GOLEM Telink 2400 Ext.	99.
Telink 2400 w/ soft & cable	149.

## COMPUTERS

LASER COMPUTER Laser 128E	349.
Laser 128EX	389.
Laser 128EX/2 (5 1/4" Drive)	419.
Laser 128EX/2 (3 1/2" Drive)	449.

## MONITORS

LASER COMPUTER Amber, Green	ea. 99.
-----------------------------	---------

## ACCESSORIES

APPLIED ENGINEERING Conservor	73.
GS Power Supply	75.
BLANK MEDIA (Bulk)	Call
CH PRODUCTS Flight Stick	50.
Mach III w/fire Button (Ile/IIGS)	ea. 34.
KENSINGTON System Saver (IIGS)	69.
Turbo Mouse ADB (IIGS)	115.

Anti-Glare Filter (IIGS)	34.
KURTA i/SGS Tablet w/STylus	258.
LASER COMPUTER Mouse	45.
Expansion Box	55.
Cables - Parallel, Serial, RGB, Modem	ea. 16.
ORANGE COUNTY SPEAKERS	130.
Stereo Computer Amplifier	299.
Stereo Computer Amp/JBL Cont.1 speaker	92.
PASSPORT DESIGN MIDI Interface IIGS	8.
RIBBONS Imagewriter II, (4 Colors)	ea. 5.
Imagewriter (Black, Red, Brown, etc.)	199.
VITESSE Quickie (IIGS, Ile)	

## PRINTERS

APPLE Imagewriter II	459.
LASER COMPUTER	
190A (ImageWriter I Compatible, Serial)	235.
PANASONIC KX P1124 (80cps/24pin)	325.
KX P1180 (192 CPS/38 cps N/LQ)	195.

## ENTERTAINMENT

ACCOLADE Grand Prix Circuit (IIGS)	30.
Blue Angels (IIGS), Fast Break (IIGS)	ea. 32.
The Third Courier (IIGS)	32.
Jack Nicklaus Golf (IIGS)	32.
Test Drive II (IIGS), Hardball (IIGS)	ea. 30.
California, European Challenge (IIGS)	ea. 16.
The Super Cars (IIGS), Muscle Cars (IIGS)	ea. 16.
4th & Inches, Serve & Volley (IIGS)	ea. 27.
ARTWORX Strip Poker (IIGS)	27.
BRITANNICA Task Force (IIGS)	ea. 80.
Gnawley Golf (IIGS), Laser Force (IIGS)	ea. 20.
Great Western Shoot-Out (IIGS)	59.
BRODERBUND Dark Hart of Uukrul	32.
Wings of Fury, Prince of Persia	ea. 24.
Ancient Land of YS (IIGS)	30.
Ancient Art of War at Sea	37.
Centauri Alliance (5 1/4)	32.
Downhill Challenge (IIGS)	32.
CALIFORNIA DREAMS Blackout (IIGS)	ea. 30.
Vegas Gambler (IIGS)	27.
Tunnels of Armageddon (IIGS)	27.
CASADY & GREENE Crystal Quest (IIGS)	32.
CINEMAWARE	
Defender of the Crown (IIGS)	22.
COMPUTREK Solitaire Vol. II (IIGS)	35.
Solitaire/Cribbage (IIGS)	35.
Solitaire, Gin Rummy (Ile)	ea. 20.
ECLAT Fractal Explorer	ea. 27.
ELECTRONIC ARTS Bard's Tale (IIGS)	ea. 33.
Immortal (IIGS), Life & Death (IIGS)	20.
Empire	27.
Pipe Dream	20.
Reach for the Stars (IIGS), Zany golf (IIGS)	24.
Bard's Tale II (IIGS)	27.
Bard's Tale II, III	ea. 18.
Hunt for Red October (IIGS, Ile, IIC)	ea. 22.
John Madden Football (Ile/IIC)	17.
Keep the Thief (IIGS)	32.
Halls of Montezuma (IIGS)	ea. 32.
Chessmaster 2100 (Ile/IIC, IIGS)	ea. 33.
Star Saga I, II, (Ile, IIGS)	27.
F.T.L., Dungeon Master (IIGS)	
MEDIAGENIC/ACTIVISION	
Neuromancer (IIGS), Battlechess (IIGS)	ea. 30.
MICRO REVELATIONS Xenocide (IIGS)	30.
MINDSCAPE Balance of Power (IIGS)	32.
Captain Blood (IIGS), Hostage (IIGS)	ea. 30.
ORIGIN Omega (IIGS), Space Rogue	ea. 32.
PELICAN Pow! Zap! Kerplunk!	29.
SIERRA On-Line King's Quest I, II, III, IV	ea. 31.
Gold Rush (IIGS), Black Cauldron (IIGS)	ea. 27.
Thexder (Ile/IIC, IIGS)	ea. 24.
King Quest I, II, III, IV (IIGS)	ea. 32.

Space Quest I,II (IIGS)	ea. 32.
Police Quest (IIGS), Manhunter NY (IIGS)	ea. 32.
SPECTRUM Tetrís (Ile, IIGS)	ea. 25.
SSI Adv. D & D Champion of Krynn	30.
Adv. D & D - Pool of Radiance (Ile/IIC)	30.
Adv. D & D - Curse of Azure Bonds (Ile/IIC)	30.
Adv. D & D - War of the Lance (Ile/IIC)	ea. 30.
Adv. D & D - Dungeon Master Asst. I, II	ea. 30.
SUBLOGIC Flight Simulator II	32.
Oix (IIGS), Rastan (IIGS)	ea. 24.
TAITO Arkanoid II (IIGS)	
THREE-SIXTY SOFTWARE	
Dark Castle (IIGS)	ea. 30.
Warlock (IIGS)	28.
VICTORY SOFTWARE	
2088: The Crylan Mission (IIGS)	34.
VIRGIN MASTERTRONICS Clue, Risk	ea. 27.
War in Middle Earth (IIGS)	32.

## UTILITY/LANGUAGE

APPLIED ENGINEERING Ready Link	71.
BEAGLE BROS. Timeout Graph	52.
Designworks Accessories (IIGS)	35.
Timeout-Superforts, Telecom	ea. 45.
GS Font Editor	31.
Performance Pack	73.
Style Pack	86.
Decision Pack	99.
BIG RED COMPUTER PS Lovérs	27.
Labels, Labels, Labels	27.
BYTE WORKS ORCA/C, Pascal (IIGS)	ea. 80.
ORCA/Desktop (IIGS), ORCAM 1.1	ea. 39.
Design Master	59.
CENTRAL POINT Copy Two Plus	25.
DATASWIFT Nexus (IIGS)	80.
GLEN BREEDON ProSel 16	54.
ProSel 8	37.
INSYNC Proterm	82.
Q LABS Easy Drive	39.
Repair Works, SuperPatch, Ramup	ea. 30.
ROGER WAGNER Hyper Studio (IIGS)	89.
SEVEN HILLS Font Factory GS	27.
VITESSE Exorciser (IIGS)	ea. 32.
Renaissance (IIGS), Guaradian (IIGS)	53.
Wings (IIGS)	

## HOME/PERSONAL

ABRACADATA Design Your Own Home	
Architecture (IIGS), Interior (IIGS)	ea. 59.
Landscape (IIGS)	59.
Libraries	ea. 22.
ACTASOFT Alpha Check	32.
BEAGLE BROS. Beagle Draw GS	53.
Beagle Draw GS Clip Art	31.
BRODERBUND The New Print Shop	31.
The Print Shop (IIGS)	40.
The Print Shop Library (IIGS)-	
Sampler, Party	ea. 23.
The New Print Shop Libraries	ea. 31.
ELECTRONIC ARTS Instant Synth (IIGS)	56.
Delux Paint II/Delux Write II (IIGS Combo)	57.
INTUIT Quickpen	39.
MECA Managing Your Money	89.
MECC Calendar Crafter	33.

## BUSINESS

BEAGLE BROS. BeagleWrite GS	62.
BeagleWrite Font Library GS	25.
AppleWorks 3.0 Companion	27.
BRODERBUND Bank Street Writer Plus	195.
CLARIS Appletworks GS V1.1	47.
Appletworks V3.0	170.
MANZANITA Payroll	109.
Business Works (ProDos)	267.

SENSIBLE SOFTWARE Sensible Speller	68.
Sensible Grammar Checker	55.
SEVEN HILLS Graphics Writer III GS.	85.
TIMEWORKS Graph II	47.
Publish II 3	74.
Font Pack I, II, Symbols & Slogans,	
People, Places & Things	ea. 27.
4 in 1 Portfolio	80.
Design Ideas, Education	ea. 27.
WORDPERFECT Wordperfect (IIGS)	110.

## EDUCATION

BARRON'S Study Program For SAT V2.0	32.
BRITANNICA Jigsaw (IIGS)	25.
Algebra 1st Sem., 2nd Sem.	ea. 32.
BRODERBUND Science Tool Kit	49.
Science Tool Kit Module 1, 2, 3	ea. 26.
VCR Companion	33.
Where in Europe, Where in USA	ea. 27.
Where in World (IIGS), Where in Time	ea. 29.
Where in the World	24.
Geometry (IIGS)	53.
The Play Room (Ile, 3 1/2)	27.
Where in USA (IIGS)	30.
DAVIDSON & ASSOCIATES	
Read & Roll, Word Attack Plus	ea. 32.
Word Attack Plus - Spanish, French	ea. 32.
Math & Me (IIGS), Reading & Me (IIGS)	ea. 32.
Spell It Plus, Grammar Gremlins	ea. 32.
Math Blaster Mystery	32.
Math Blaster Plus, Alge Blaster Plus	ea. 32.
DESIGNWARE The Body Transparent	25.
Designasaurus (IIGS), Revolution 76 (IIGS)	ea. 32.
ECLAT Geographic Jigsaw	27.
ELECTRONIC ARTS	
Mavis Beacon Teaches Typing (IIGS)	32.
Mavis Beacon Teaches Typing (Ile/IIC)	25.
FIRST BYTE (for IIGS) (768K Req.)	
MathTalk, First Shapes, KidTalk	ea. 27.
Spelller Bee, Smoothtalker	ea. 27.
MathTalk Fractions, First Letter & Words	ea. 27.
HARCOURT, BRACE, JOVANOVIH	
Computer Prep for the SAT	26.
LAWRENCE PRODUCTIONS	
McGee (IIGS), Kates Farm	ea. 27.
MECC World Geograph (IIGS)	56.
U.S. Geograph (IIGS)	56.
Oregon Trail	27.
PYWARE Music Writer Level 1 (IIGS)	80.
Music Writer Level 2 (IIGS)	200.
Music Writer Level 3 (IIGS)	400.
STUDYWARE	
Computer Preparation SAT, GRE, ACT	ea. 33.
Principles of Biology, Calculus	ea. 33.
Principles of Chemistry, Physics	ea. 33.
Principles of Economics, Statistics	ea. 33.
THE LEARNING COMPANY	
Reader Rabbit (IIGS)	36.
Writer Rabbit, Think Quick	ea. 30.
Math Rabbit, Reader Rabbit	ea. 20.
Children's Writing Publishing Center	ea. 36.
WEEKLY READER Sticky Bears - ABC's,	
Basketbounce, Bop, Math, Math II,	
Numbers, Shapes, Opposites, Reading	ea. 24.
Slicky Bears - Basics, Drawing, Music,	
Music Library, Parts of Speech,	
Printer, Reading Comprehension,	
Spellgrabber, Town Builder, Typing,	ea. 30.
Word Problems	
Car Builder, Codes & Hyphens,	
Exploring Tables & Graphs-Level I, II,	
Map Skills, Math Word Problems,	
Punctuation Rules, Reading	
Comprehension, Vocabulary Level.	ea. 30.
Shapes, Opposites, ABC's (IIGS)	ea. 30.

FOR CUSTOMER SERVICE AND INQUIRIES CALL 1-805-499-7785 Monday thru Friday 9 a.m. to 5 p.m. Pacific Time

To order call toll free or send check or money order to the P.O. Box only, VISA/MC, American Express and C.O.D. welcome. Personal and company checks allow 10 working days to clear. Specify computer type, ill to back order or to send refund. California residents add 6.25% sales tax. Include phone number with order. All sales are final. Defective items will be replaced or money refunded, at our discretion. Call for Return Authorization number. We are not responsible for suitability or compatibility. Restocking fee of 15% will apply. Shipping and handling: Continental U.S.-Software: add \$5.00. Hardware: add 5% (\$6.00 min.). APO, FPO Alaska, Hawaii, Puerto Rico and Canada. Software: add \$8.00 min. Hardware: add 10% (\$10.00 min.).

ALL ITEMS SUBJECT TO AVAILABILITY. PRICES AND STIPULATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

INTERNATIONAL ORDERS WELCOME

SCHOOL PO's WELCOME

ORDERS ONLY

800-248-0363

FAX (805) 498-7689

Mon.-Fri. 7am-6pm / Sat. 9am-4pm Pacific Time

1111 Rancho Conejo Blvd., #407 • Newbury Park, CA 91320





# FILE IT AWAY

**The ProFile represents old technology —  
when you consider the cost and performance  
of the new SCSI hard drives, you may want to replace  
your ProFile rather than repair it.**

**By CECIL FRETWELL  
and PAUL STATT**

## PROFILE DISK PROBLEMS

I RECENTLY PURCHASED A USED 5-megabyte Apple ProFile hard-disk drive (model #A9M0005). I'm new to computing and have "hung up" the drive. It was working fine until I erased a file with my GS System Disk, which caused the window to freeze on screen. I hadn't read all the documentation, so I guessed, "When in doubt, reboot." Now I can't erase or format the hard drive. I tried to "zero" the disk and obtained an error.

I used the Block Warden program (from Glen Bredon's ProSEL) to erase enough blocks to load GS/OS onto the drive. But now I get the error message *MLI 27* when I try to run GS/OS. What does *MLI* stand for?

I'm sure I've really fouled up the structure of the hard drive's directory. According to the ProSEL utilities, my ProFile contains 9727 blocks. I can't locate any bad blocks using ProSEL utilities, but when I try to use the utility to repair a volume, it stops at 6144 blocks. If I can get past the magic 6144 blocks, will I be okay?

**Jerome Peplinski  
Omro, WI**

*It sounds like your ProFile may need a low-level, or hard, format — in other words, your hard disk needs to be worked back into a condition so that you can put files on it. The process also "repairs" any blocks that have gone bad by replacing them with good blocks the hard drive has kept in reserve. A high-level, or soft, format, by contrast, only writes a new directory on the disk. ProSEL, as good as it is, can't do a hard format. Neither can Copy II Plus, the Apple IIGs Finder, or the Apple II System Utilities. In fact, Apple designed the ProFile (back in the early '80s) in such a way that you can't hard-format it in the field.*

*Apple's ProFile can be formatted only in a carefully controlled environment. The process involves temporarily switching a chip and moving a couple of jumpers inside the ProFile. Evidently this can be done only on an old Apple III. Only a few companies will format an Apple ProFile, and Apple Computer isn't one of them. Sun Remarketing (Logan, UT, 800-821-3221), Lisa Shop (Woodland, CA, 916-668-5637), and ON THREE (Chicago, IL, 312-338-2202) can do the hard format for \$50 to \$100. My thanks to Bob Consorti from ON THREE for helping me answer your question.*

*You may want to consider two other facts. To work on the Apple IIGs, the ProFile's interface card requires a new ROM chip. Apple's part number is 341-0299, Revision B.*

*If that's not the number on the chip on your ProFile's interface card, ask an authorized Apple dealer for a free upgrade.*

*The ProFile is old technology, and has long since passed its normal life expectancy. Yours may not be repairable at a reasonable cost. Given that and the cost and performance of the new SCSI hard drives, you may want to replace your ProFile rather than repair it.*

*MLI, by the way, stands for machine-language interface. It's the workhorse for all disk operations on the Apple II. Anã 27 is an error code for I/O ERROR, meaning something's wrong with the input or output, which you might have guessed.*

## DISK-DRIVE CLICKS

WHY DOES MY APPLE 5.25-INCH drive click and light up every time I use the Finder on my Apple IIGs, even if there's no disk in the drive?

**Josh Ash  
Madison, WI**

*That clicking happens when the Finder checks to see if a new disk has been removed or inserted into the drive: It starts, then stops, the drive quickly. If you really want to stop the Finder from checking your 5.25-inch drive, you could remove the file called APPLIEDISK5.25 from the . . . SYSTEM/DRIVERS folder in GS/OS. You wouldn't be able to use the drive at all, but it would remain silent.*

## SCSI DuoDisk?

I'VE BEEN TOLD THAT THE APPLE DuoDisk Controller card is, in reality, an Apple small-computer-systems interface (SCSI) card. I also hear that you can connect any SCSI-compatible Apple II or



Macintosh hard-disk drive to that card.

Are the Apple DuoDisk and Apple SCSI cards compatible? If so, would using a SCSI drive require any oddball (not easily remedied) modifications to my hardware or software? I'm thinking of adding a hard drive to my Apple IIe system.

**D.S. Cronk**  
Lewisville, TX

*This interesting rumor has prompted quite a few letters to inCider. I proposed your question to several experts in the computer-hardware industry and without exception they answered that the Apple DuoDisk and its controller card aren't SCSI compatible. Sorry.*

*As a point of interest to Apple IIgs owners, the DuoDisk does work just fine on the IIgs. Just put the interface card in slot 6 and set slot 6 on*

*the Control Panel to Your Card. Don't try to run the DuoDisk from the SmartPort in slot 5.*

APPLE CLINIC IS A FORUM FOR ANSWERING YOUR QUESTIONS ABOUT APPLE II HARDWARE AND SOFTWARE. ADDRESS YOUR CORRESPONDENCE TO APPLE CLINIC, *INCIDER*, 80 ELM STREET, PETERBOROUGH, NH 03458. NOT ALL WILL APPEAR IN PRINT, BUT WE'LL TRY TO RESPOND IF YOU ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE.

## APPLEWORKS CLINIC

This month *inCider* introduces a new Q & A column called *AppleWorks Clinic*. If any version of AppleWorks — Classic, 3.0, or GS — has you stymied, confused, or just plain frustrated, this column and our panel of experts from Claris Corporation will provide helpful answers to your questions.

By William Marriott

### CODE WORDS

**With special AppleWorks codes I set up my ImageWriter II printer to use a color ribbon, then I used different codes to make it print in a foreign language. When I went back to use the driver for color output, I discovered that my special codes for color had been replaced with the special codes for foreign language. Does that mean I'm limited to one set of special codes?**

You're not limited to one set of codes, but you are limited to one set of labels.

The developers of AppleWorks intended you to use the special-code section to format three different printers. If you want your ImageWriter, Apple DMP, and Epson to print in boldface, for example, the program lets you write just one code. By labeling this command "bold," AppleWorks translates it for your three printers.

This time-saving feature becomes a drawback when you use one printer: Although you need two different codes, you can use only one label.

If you use code labels that remind you of the code's multiple personality, such as BlueSpanish or RedFrench, AppleWorks will do the rest.

### CHECK THE TAB

**In my original copy of AppleWorks, Open apple-Tab (OA-Tab) moves the cursor to the previous tab stop, but in AppleWorks 3.0 it moves the cursor to the next tab stop. Even the quick-reference card states that OA-Tab moves the cursor to the previous tab stop. Which is correct?**

The quick-reference card isn't correct. In AppleWorks 3.0, the tab key moves both the cursor and the text to the next tab stop, and OA-Tab moves only the cursor to that tab stop.

If you want to move the cursor backwards, press OA-Left Arrow.

In AppleWorks Classic (pre-3.0), pressing the tab key makes the cursor jump over the text and move to the next tab stop.

If you prefer this older tab format, Beagle Bros' AppleWorks 3.0 Companion offers a patch that changes 3.0 tabs to AppleWorks Classic format (\$39.95, 6215 Ferris Square, Suite 100, San Diego, CA 92121, 619-452-5500).

### LOCKED OUT

**I have a large database that I created in AppleWorks 2.1 on two 5.25-inch disks. When I try to open this file in AppleWorks 3.0, I get an error message and I'm unable to open the file. Why?**

If you have extra memory in your computer, it's possible to create files too large to fit on standard 5.25-inch disks.

Try saving the file either to a larger disk, such as a 3.5-inch disk, which holds 800K, or a hard disk, which holds at least 5 megabytes (about 5120K).

For earlier versions of AppleWorks you can buy a utility (such as AppleWorks 3 Expander, \$29 from Applied Engineering, P.O. Box 5100, Carrollton, TX 75011, 214-241-6060) from most memory-board manufacturers to cut your large files into segments, then save them to two or more disks.

Although segmenting your files takes advantage of your computer's memory, you can't use these files with AppleWorks 3.0 unless you check out one of the following procedures:

- Check with the memory-card manufacturer to find out if there's a utility to "unsegment" your AppleWorks Classic files.
- Purchase a 3.5-inch disk drive or hard disk. To open large files with AppleWorks 3.0 from either the 3.5-inch disk drive or

a hard disk, first open the files with AppleWorks 2.1, then copy the files to a 3.5-inch disk drive or hard disk.

• Separate the file into parts that fit on one disk, then combine the files in memory: Use AppleWorks 2.1 to open the large file and segment it manually across two or more disks. Open the file with AppleWorks 3.0 and combine the files in memory.

A final note: Because of its additional features, AppleWorks 3.0 uses 16K more memory than older versions. If you had files that were near the limit of the Desktop, you may not be able to open them in AppleWorks 3.0. Either make the files smaller or purchase additional memory.

### NO TIME

**I can use my No-Slot clock with AppleWorks 2.1, but I can't with 3.0. Does this version support clocks?**

AppleWorks 3.0 supports ProDOS-compatible clocks. If you use AppleWorks 3.0 with an Apple IIgs, for example, you don't need to enter the date or time when you start AppleWorks. The program even stamps your files when you modify them.

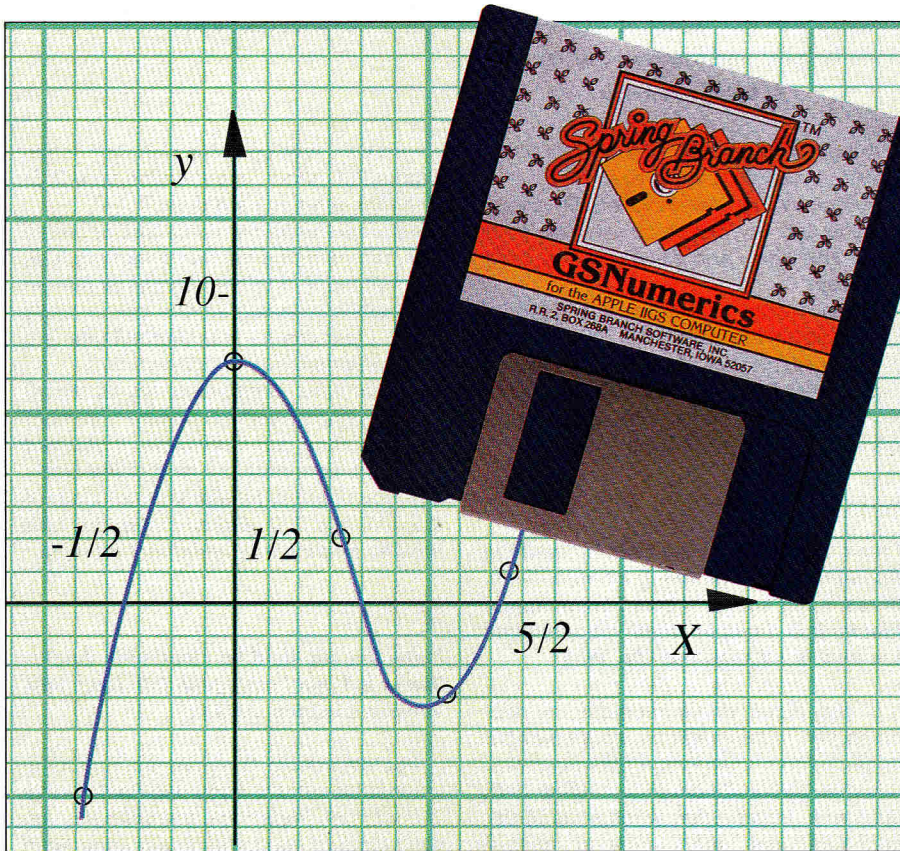
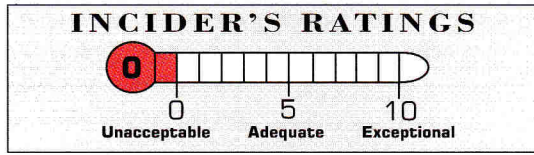
Although the No-Slot clock isn't ProDOS compatible, you can modify it with any number of special patches available on line or from your local user group. If you have an older (patched) version of ProDOS, you can copy it from your AppleWorks 2.1 disk to the ProDOS disk supplied with AppleWorks 3.0. Then your clock should work properly.

[Note: SMT Technologies' No-Slot clock is no longer available. —eds.]

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*, 80 ELM STREET, PETERBOROUGH, NH 03458.

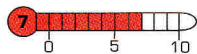


# REVIEWS



## GSNUMERICS

**SPRING BRANCH SOFTWARE**  
**P.O. Box 342, MANCHESTER, IA 52057, (319) 927-6537**  
 Mathematics-education program;  
 1-megabyte Apple IIcs, GS/OS 5.0.2; no copy protection; \$139.95

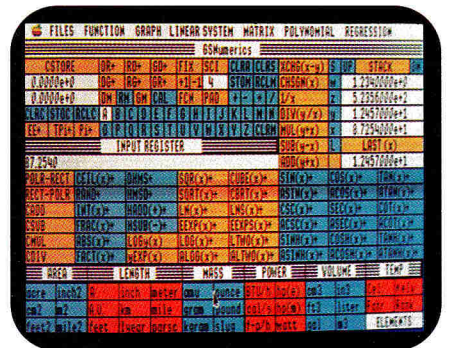


Mathematics seems to be all the rage with personal computers these days. People are fascinated by mathematically based games such as Life and by fractal programs, as they show off the marriage of powerful mathematics and beautiful imagery.

Beyond such imagery, however, there's a more compelling issue — that of mathematical literacy. Recognizing this problem, Spring Branch Software has developed a sophisticated educational program called GSNumerics. It's a scientific calculator, graphing tool, and equation tamer rolled

into one — which should make it the darling of the math class. It's a complex program, however, so it may be tough to learn, and its printing capabilities aren't quite as flexible as they could be. GSNumerics covers nearly anything you could expect to encounter in an average high-school math curriculum or during the first couple of years of college, with an emphasis on algebra and trigonometry. The program lets you enter mathematic functions just as you'd write them down, and then solve problems analytically or graphically.

Printing isn't quite as flexible. You can print a screen after you've plotted a graph, but it would be nice if you could print your graph as a finished product complete with a headline, explanatory text, labeling, and a longhand representation of the equation you've just graphed. It would also be nice to be able to print the graph as a rudimen-



### Solving the math-literacy problem.

tary text file for inclusion in a word processor document or as a high-quality picture for a desktop-published document.

My impression of the program's general presentation — the things that together account for your overall comfort when using a piece of software — improved as I grew more familiar with the program. Nearly 100 buttons with obscure abbrev-



# Preferred Products, Low Prices



## Memory Expansion

<b>Applied Engineering</b>	
GS-Ram Plus or Ultra 1 Meg (IIGS) ....	\$209
GS-Ram Plus or Ultra 2 Meg (IIGS) ....	\$279
GS-Ram Plus or Ultra 4 Meg (IIGS) ...	\$439
RamWorks III 256k (Ile) .....	\$133
RamWorks III 1 Meg (Ile) .....	\$199
RamFactor 256k (IIGS, Ile, II+) .....	\$169
RamFactor 1 Meg (IIGS, Ile, II+) .....	\$239
<b>New!</b> Ram Express II (Iic, Iic+) .....	\$ Call
Z-Ram Ultra Series (Iic) .....	\$ Call
DRAMs 256k or 1 meg .....	\$ Call

## AE APPLIED ENGINEERING

Authorized Dealer

### Accelerators/Co-Processors

TransWarp GS (7 mbz for IIGS) .....	\$259
TransWarp (Ile, II+) .....	\$99
FastMath (IIGS, Ile, II+) .....	\$131
<b>Sale!</b> PC Transporter 768k (IIGS, Ile) ...	\$239
IIGS Installation kit .....	\$36
Ile/II+ Installation kit .....	\$29
MS-DOS v4.01 (5.25") .....	\$85

### Why buy from us.

- ☞ 15 day money back guarantee on all hardware. If the hardware 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 and tested RAM chips.
- ☞ 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.

IBM Keyboard w/cable (PCT) .....	\$101
Combo TransDrive (5.25 & 3.5) .....	\$279
Single 5.25" or 3.5" TransDrive .....	\$189
3.5" - 720k Add-on drive (PCT) .....	\$95

### Hard Drives & Floppy Drives

<b>Applied Engineering</b>	
Vulcan 20 Meg (specify machine) .....	\$519
Vulcan 40 Meg (specify machine) .....	\$659
<b>Sale!</b> 3.5" 800k drive (IIGS, Ile, Iic+) ...	\$189
3.5" Controller Card (Ile, II+) .....	\$59
5.25" Disk Drive (all Apple IIs) .....	\$119
5.25" Controller Card (Ile, II+) .....	\$50
AMR A5.D 5.25" drive (IIGS, Ile, Iic) ..	\$139
Apple High Speed SCSI (IIGS, Ile) .....	\$109

### Accessories

<b>Applied Engineering</b>	
TimeMaster H.O. (IIGS, Ile, II+) .....	\$79
Serial Pro (IIGS, Ile, II+) .....	\$98
Parallel Pro (IIGS, Ile, II+) .....	\$69
Sonic Blaster (IIGS) .....	\$91
Audio Animator (IIGS) .....	\$175
ViewMaster 80 (II+) .....	\$124
Converter (IIGS) .....	\$69
Heavy Duty Power Supply (Ile) .....	\$69
<b>New!</b> IIGS Power Supply (IIGS) .....	\$79

### CH Products

MACH III joystick (specify machine) .....	\$39
MACH IV Plus (specify machine) .....	\$69

### Digital Vision

Computer Eyes GS (color) .....	\$199
Computer Eyes (B&W) .....	\$108

**Kensington** System Saver (Ile) .....

### Street Electronics

Echo Iic .....

### ThunderWare

**Sale!** ThunderScan (IIGS, Ile) .....

### Vitesse

Quickie Scanner (IIGS, Ile) .....

### Communications

<b>Applied Engineering</b>	
<b>Sale!</b> DataLink 1200 bps (int.) .....	\$105
DataLink 2400 bps (int.) .....	\$175
DL Express 2400 w/MNP-5 (ext.) .....	\$209
DL Express 2400 bps (ext.) .....	\$175
MNP-5 option (for DL Express) .....	\$65
ReadyLink Communications .....	\$65
<b>Morgan Davis Group</b>	
ModemWorks (BBS construction kit) .....	\$49
ProLine BBS (Best Apple II BBS) .....	\$175

### Holiday Special

SEIKO DataGraph 2001 watch

A complete system that puts Apple II scheduling on your wrist! Includes watch, software & interface. Interface doubles as a ProDOS clock! (specify II, II+, Ile or Iic)  
DataGraph 2001 (limited qty's.) .....

\$39

### Apple II Software

<b>Beagle Bros</b>	
TimeOut Series .....	\$ Call
<b>Bröderbund</b>	
Print Shop (64k) .....	\$35
Print Shop GS (768k) .....	\$45
Carmen Sandiego Series .....	\$ Call
<b>Central Point</b> Copy II+ (128k) .....	\$29
<b>Claris</b>	
AppleWorks v3.0 (128k) .....	\$199
AppleWorks GS (IIGS) .....	\$219
<b>Roger Wagner</b>	
HyperStudio (IIGS) .....	\$89
<b>StoneEdge</b>	
DB Master Professional (128k) .....	\$192
<b>TimeWorks</b>	
Graph It! (128k) .....	\$53
Publish It! 3 (128k) .....	\$77

Questions and Customer Service Call 214-484-5464

We accept VISA, MasterCard and COD orders. School and Government Purchase orders are welcome. Order by phone or mail. Prices and Specifications subject to change without notice. Please verify product compatibility before ordering. Texas residents add 7.25% tax.

# 800-327-7234

Orders Only, Call Toll-Free

## Preferred Computing

P.O. Box 815828 Dallas, Tx 75381



rations on them, combined with a set of interlocking pull-down menus, is an intimidating sight. After I learned what and where everything was, however, I came to appreciate having it all in one place; your work does go faster.

GSNumerics computes the value of an expression differently from the familiar hand-held calculator. To add 16 and 4 on a calculator, for example, you'd enter 16, +, 4, and =. To evaluate the same expression in GSNumerics, on the other hand, you first enter all the numbers, then the operator. That's called *post-fix notation*, and it simplifies long calculations. You also need it to work with *complex numbers*, which always have two parts, a real number and an imaginary one. Thanks to post-fix notation, GSNumerics can operate on a complex number such as  $16 + 4i$  as a single entity. A hand-held calculator can't.

GSNumerics accomodates polynomials up to the tenth order. You can solve for  $x$  compute area and slope, find real and complex roots, do multiplication and division by binomials, and integrate or differentiate polynomials. X-y data-analysis features let you analyze up to 300 points, along with linear regression, log regression, exponential regression, power regression, and coefficient correlation. GSNumerics also lets you solve systems of linear equations. The program supports all standard matrix math operations. You can have as many as three matrices of up to  $10 \times 10$  numbers. Memory operations are available for two  $10 \times 10$  matrices at once.

The program's graphing capabilities are extensive — standard polynomials and nonpolynomial functions, x-y data, regressions and curves, and regression predictions — and you can extract real roots of functions and overlay various graphs on the same screen.

You can customize GSNumerics by defining your own functions and saving them in logically related files — one for each class or job, for instance. You can also save sessions in progress, polynomials, x-y data, matrices, and systems of linear equations.

GSNumerics uses the built-in Standard Apple Numerics Environment (SANE) to provide extended precision for mathematical operations. Extended precision, however, often means extensive time needed to complete a calculation. While an accelerator such as TransWarp GS can certainly help, the real answer here is the Floating

Point Engine from Innovative Systems (reviewed in December 1989, p. 119). The FPE provides more than twice the acceleration than the TransWarp for most mathematical operations.

I recommend GSNumerics. It may have a couple of rough points, but there's nothing else like it, and its power is undeniable.

**Joe Abernathy**  
Houston, TX

## TALKING SCHOOL BUS

ORANGE CHERRY SOFTWARE  
Box 390 WESTCHESTER AVENUE, POUND RIDGE,  
NY 10576, (800) 672-6002,  
(914) 764-4104

Basic skill-building program;  
512K Apple IIgs; no copy protection; \$49  
(\$59 for Educator version with backup disks  
and Teacher's Guide)



The Talking Schoolhouse series from Orange Cherry Software reconfirms that the Apple IIgs is a computer built for graphics and sound. These programs combine beautifully drawn super-hires graphics with clear and realistic digitized speech for a wonderland of audiovisual stimulation. Talking School Bus is no exception. It provides four



### Graphics and sound teach basic skills.

graphically rich speech-enhanced activities to teach young children counting, identification, and map skills.

Like other programs in the series, Talking School Bus is easy to use, with a picture menu, full mouse support, on-screen instructions, pull-down menus, and dialog boxes. Even preschoolers should be able to choose activities and complete tasks with minimal adult supervision.

Prereaders can begin an activity by clicking on a picture icon that interests them. Children who already have some reading skills can select activities from a written table of contents. As the activity loads into

memory, a yellow school bus at the bottom of the screen drives down the road to the appropriate destination.

When children reach the Aquarium — the first activity — a digitized voice instructs them to count the animals swimming in the tank and select the correct answer (up to 10) from those displayed at the bottom of the screen.

After answering a set number of problems, the program automatically moves to the second half of this two-part activity. Here aquarium visitors must add the number of animals in the first group to the number in a second group and again select an answer at the bottom of the screen. Talking School Bus simplifies the task of addition by dividing the animals into two distinct groups, and keeping the answers somewhere between zero and ten.

With the spoken instructions, kids can play At the Aquarium with minimal adult supervision. An ever-present menu bar at the top of the screen gives children access to written instructions and volume-adjustment controls. There's also an option to repeat the spoken instructions. When the activity is over, a beautiful full-screen drawing congratulates the child on a job well done.

On the Farm lets kids visit a country farm. It shows a nonanimated screen of nine realistically drawn barnyard animals — including a horse, a donkey, a sheep, and a turkey. Children click on the animal that matches the sound they hear. When the answer is correct, the written form of that sound (such as *neigh*, *honk*, or *bleat*) appears on screen next to the appropriate animal and the sound repeats. Children may click on *Repeat* at the menu bar to instruct the program to replay the animal sound. After identifying all nine animals, the activity ends and youngsters receive a visual reward.

The third activity is called Bus Route, which builds map skills as children direct a bus through a maze of city streets to pick up children for school. There are always four students on the route and their names never change, but the program varies the order in which the students get picked up. Once all four kids are on board, bus drivers must navigate the vehicle to school — steering by clicking on compass icons at the bottom of the screen. For example, clicking on *west* moves the bus to the left, while clicking on *south* moves the bus downward. As youngsters play the game



several times, they begin to understand compass directions and build a solid foundation for reading more complex maps.

Farmer's Market, the final activity, presents kids with eight food bins, each containing a bunch of colorless fruits or vegetables. The bottom of the screen shows five paint cans with different hues. The program will instruct the child to color the carrots orange or the bananas yellow.

Children respond by clicking first on the picture of the specified fruit or vegetable, and then on the correct color paint can. The carrots will then turn orange, for example, and the word *carrots* will appear beneath the carrot bin. If children correctly identify and color all eight fruits and vegetables, they receive a visual reward.

Three of the activities in the package — On the Farm, Bus Route, and Farmer's Market — also reinforce early reading skills by using words on screen. These activities encourage youngsters to figure out the spelling of animal sounds, kids' names, and the names of fruits and vegetables. All Talking School Bus activities offer audio reinforcement for correct answers.

The program doesn't provide the answer when a child responds incorrectly. Instead, a digitized voice requests that the child try again. The activities don't advance to the next problem until the child answers correctly. Kids may become frustrated if they have continued difficulty with a problem, because there's a never-ending loop of wrong answer/try again/wrong answer. Orange Cherry should consider including a help option in the menu bar to provide players with problem-solving hints.

When all activities are complete, youngsters can direct the program to print a reward by select this option from the written table of contents on the main menu. Type in a child's name and click on *print* at the menu bar, and the program generates a personalized *Award of Excellence* (suitable for coloring).

Orange Cherry targets Talking School Bus at children aged 4 to 8 (as indicated by the packaging) or 3 to 7 (as in the manual). Actually, the product may be more appropriate for children aged 2 to 6. Children can select the activities in any order, as they're nonsequential. The program doesn't incorporate multiple levels of difficulty to engage children with more chal-

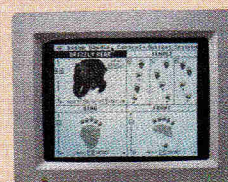
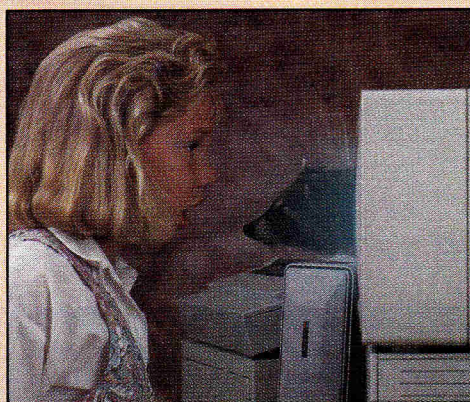
Continued on p. 78

# TOO REAL?

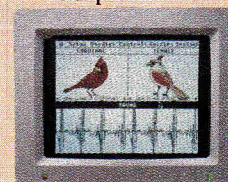
NEW!

When we set out to create the best software package to teach students about North American animals, we didn't know just how real it would appear!

What we did create is a fun to use and easy to understand program. ANIMAL TRACKER is the very best method to learn and teach about animals. Students see what the animals look like, hear how they sound, see their tracks, learn fascinating facts about them and then answer quizzes on information covered. ANIMAL TRACKER gives you the proven quality and performance you've been looking for in educational software . . . Really!



Sample screens



. . . Watch for more data disks to come.

## ALL SOFTWARE FEATURES :

- HIGH DEFINITION GRAPHICS
- COMPLETELY MENU/MOUSE DRIVEN
- SUPPORTS BOSE/EXTERNAL SPEAKERS
- WORKS GREAT WITH TRANSWARP GS
- SUPPORTS MIDI IDEAS SUPERSONIC STEREO & APPLIED ENGINEERING SONIC BLASTER CARD
- DIGITIZED HUMAN VOICE (choose M/F)
- COVERS OVER 40 NORTH AMERICAN ANIMALS/BIRDS, SOUNDS, DIET, HABITAT, ETC.
- AUTHENTIC DIGITIZED SOUNDS OF ANIMALS/BIRDS
- INTERACTIVE RANDOM QUIZZES
- SUPPORTS EPSON/IMAGEWRIER PRINTERS
- SPANS 4 3.5" DISKS, HARD DISK INSTALLABLE
- NOT COPY PROTECTED
- MADE IN USA



only \$79.95

Discover  
quality & value  
from



FOR MORE INFORMATION CALL 1-508-481-2911

DEALER INQUIRIES WELCOME

1-800-NATURE BOY--TOLL FREE ORDER LINE--CALL TODAY



# GAME ROOM



## HALLS OF MONTEZUMA

STRATEGIC STUDIES GROUP  
1747 ORLEANS COURT, WALNUT CREEK, CA 94548, (415) 932-3019

Military-strategy game;

1-megabyte Apple IIgs, GS/OS 5.02; two drives recommended; no copy protection; \$44.95



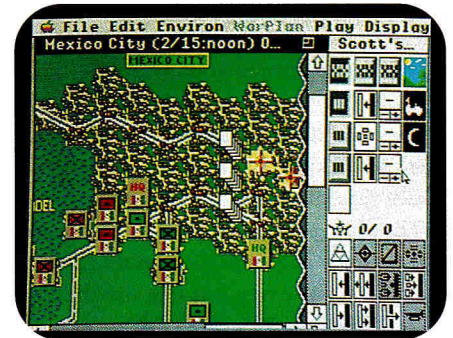
A good computer war game is everything a “good war” isn’t — fun, educational, and safe for children and other living things. You might even argue the case that the better people understand war, the less likely they’ll be to want to call in the Marines.

Playing just a few rounds of Strategic Studies’ Halls of Montezuma will indis-

putably show you just how much sacrifice is involved when that call does go out. Seven scenarios let you simulate pivotal battles in Marine Corps history: Mexico City in 1847, Belleau Wood in World War I, the World War II battles of Iwo Jima and Okinawa, Pusan and Inchon during the Korean conflict, and Hue in Vietnam.

Halls of Montezuma brings SSG’s

“Battleplan” gaming system to the GS and takes full advantage of the machine’s desktop interface — mouse control, menus, and icons. This unique simulation system has two aspects: During part of the game you play the role of a general in a war room; during the rest, you’re a popcorn-munching theatergoer.



History of the Corps, battle by battle.

Consider, for example, how General Buckner must have prepared for the invasion of Okinawa: He didn’t get on the phone and call all those thousands of servicemen who were to storm the beach; he didn’t even communicate directly with his company commanders in the field. In real life, one man simply couldn’t handle all that, so Halls of Montezuma simulates the way a general would issue orders and set mission priorities for divisional and regimental commanders. That’s the first phase of each turn. Then you sit back and watch as the icons on your screen move and clash, and combat results are tallied. Did your plan work or fail?

SSG’s Battleplan system scores big points for ease of use. On screen you’ll see map and command windows. Icons indicate your divisions (up to three per scenario). Click on a division and icons representing the regiments within it (up to four each) appear. Select a regiment and the icons



representing its component battalions flash in unison. To assign orders, click on a division first, then a regiment, and then on one of the order icons.

Battalion icons flash, light up, and dim to show states of readiness and wear-and-tear — you can analyze your situation at a glance. Reshape your forces on the fly in response to the outcome of a battle by assigning various battalion-level assets from regiment to regiment or division to division — all thanks to the game's icon-based interface.

How do you know how well a regiment will carry out its orders? A large part of it depends on the condition of the battalions within the regiment. Click on a battalion icon to see its type and degree of strength. Click on individual units and pull down the appropriate menu to get a divisional report covering leadership, supply administration, and losses.

The game includes SSG's "Warpaint" module — a program that lets you modify existing scenarios with what-if possibilities. You can even re-create actual battles — if you're willing to do the library work as you search out orders and terrain maps. The computer part's easy — with Warpaint it's simple to add units to a scenario or alter a map. Completely mouse and icon driven, it's intuitive and fun, and just as challenging as you want to make it.

Halls of Montezuma is something of an experiment for SSG, as the company makes a foray into conversion of 8-bit Apple II games to this superior GS format. Pick up Halls of Montezuma, and the next time you hear the phrase *Semper Fidelis*, it'll mean a whole lot more to you.

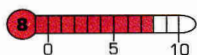
**Neil Shapiro**  
Bethpage, NY

## EUROPEAN CHALLENGE

### ACCOLADE

550 SOUTH WINCHESTER BOULEVARD, SUITE 200,  
SAN JOSE, CA 95128, (408) 985-1700

Add-on scenery disk for Test Drive II: The Duel;  
768K Apple IIgs; Test Drive II game disk;  
copy protected; \$21.95



**T**ired of driving over the deserts and mountains of Test Drive II? Had enough of the Pacific Coast highway as presented in California Challenge (Accolade's first scenery disk)? Or maybe you've had one too many encounters with

the California Highway Patrol? Well then, it's time to head for Europe.

European Challenge, the latest scenery disk for Test Drive II: The Duel, takes you over the twisting roads of Italy, France, Germany, Spain, Switzerland, and the Netherlands. Sure, you're still driving the same car you're used to, but now you can watch the beauty of Europe flash by your windshield.

In Italy, you'll drive past the ruins of ancient Rome. The roads in France will take you along the Riviera. The Netherlands shows you gardens and windmills. (The roads are pretty narrow and winding, though, so don't spend too much time admiring the view.)

If all-out speed's your game, be sure to head for the Autobahn in Germany. With no speed limit and four lanes to play with, you'll be able to see just how fast your car can really go.

Installing the European Challenge



**Hit the road, Continental-style.**

scenery disk (or any of the other add-on disks for Test Drive II) is still the only backfire in your otherwise smooth and silky ride. Although the manual includes a clear explanation, the procedure's still tedious. You have to create and enter names for play disks, and enter the pathname of any scenery or car disk you're using. Why can't you just switch disks when prompted, as in Accolade's Jack Nicklaus add-on golf-course series?

When you've grown accustomed to the same old scenery whizzing by the windows of your Porsche 959 or Ferrari F-40, it's time for a change. Try speeding through Europe — after all, you're probably driving an automobile of European origin, so go all the way.

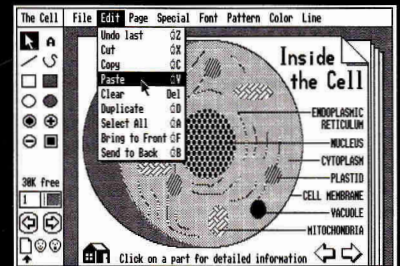
The vistas afforded by the roadways of European Challenge are spectacular. Start your engines — and *bon voyage!* □

**Lafe Low**  
inCider staff

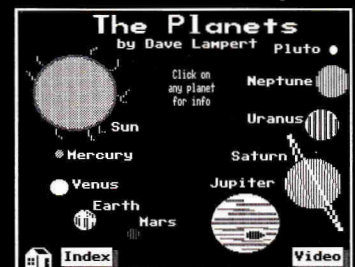
# Tutor-Tech™

## Hypermedia Authoring Multimedia

for your Apple IIe, IIc, IIgs



Create your own courseware and tests.  
Use text, graphics, and clip-art.



Link facts and ideas with buttons.  
Create interactive adventure games.



Create interactive video "stacks"  
using your VCR, videodisc  
player, or Video Overlay Card.

**A new world  
for your Apple II.  
Take it for a spin with  
our FREE Demo Disk.**

**Reach for the Stars!  
1-800-34-REACH**

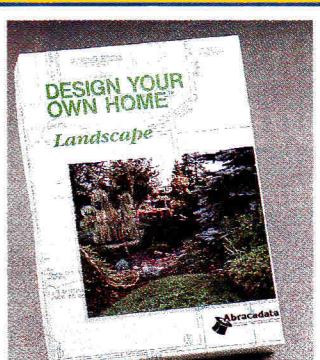
**Technware Corporation, Box 151085-C,  
Altamonte Springs, FL 32715-1085 USA  
(407) 695-9000 9-5 Eastern Time**

Tutor-Tech and Technware are trademarks of Technware Corp. © 1990 by Technware Corp. All rights reserved.

Circle 49 on Reader Service Card.



# Programs, Peripherals



**PLAN YOUR PLANTINGS BEFORE YOUR DIG**

**Design Your Own Home—Landscape**—by Abracadata simplifies landscape architectural planning and lets you design with breathtaking speed! Arrange flowers, shrubs, trees, walks, steps, fences and more. Examine your creation from aerial views and from all 4 side directions, plus north, south, east and west perspectives.  
Suggested Retail.....\$69.95  
**Programs Plus Price.....\$47.**

TransWarp Original Accelerator.....	95.
ViewMaster 80 (II+)	125.
Z-Ram Ultra 2 256K.....	205.
Z-Ram Ultra 2 512K.....	245.
Z-Ram Ultra 2 1MG.....	325.
Z-Ram Ultra 3 1MG.....	395.

**Chips**  
Chips Set 256K 120 or 150 NS.....27.

**Harris Labs**

GS Load 256K (3 pack).....	79.
GS Sauce 1MG.....	179.
GS Sauce 2MG.....	269.
GS Sauce 4MG.....	459.

**Zip Technology**

Zip Chip 4 MHZ.....	125.
Zip Chip 8 MHZ.....	SPECIAL 159.
Zip Chip(GS).....	239.

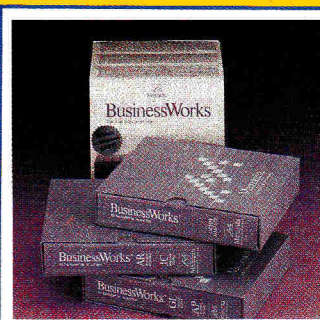
## ACCESSORIES

**Advanced Gravis**

Advanced Gravis' JoyStick(AP & GS).....	39.
MouseStick ADB(GS).....	69.

**Apple Computer**

Apple Mouse IIc.....	85.
Apple Mouse IIe (w/ Card).....	119.
Disk Controller Card.....	69.
Video Overlay Card.....	429.



## TOTAL ACCOUNTING PACKAGE

**BusinessWorks® by Manzanita Software Systems** is everything you need for a complete business accounting system. Bundle includes all modules: General Ledger, Accounts Payable, Accounts Receivable, Inventory Control. AppleWorks spreadsheet compatible. Requires: IIe, IIc or IIGS, 128K/80 column card, 2 disk drives or hard disk.  
Suggested Retail.....\$495.  
**Programs Plus Price.....\$259.**

**Applied Engineering**

Audio Animator(GS).....	185.
Conserver(GS).....	79.
IBM Style Keyboard.....	109.
IIGS Heavy Duty Power Supply.....	79.
Sonic Blaster(GS).....	104.
TimeMaster II H.O.....	79.

**CH Products**

Hayes Flight Stick.....	47.
Hayes Mach III Joystick.....	33.
Roller Mouse ADB(GS).....	75.

**Digital Vision**

Computer Eyes(GS).....	195.
------------------------	------

**IMCS, Inc.** MousePen ADB.....75.

**Kalmar**

Kalmar roll top 3½ (holds 135).....	35.
Kalmar roll top 3½ (holds 45).....	14.
Kalmar roll top 3½ (holds 90).....	21.

**Kensington**

AntiGlare Filter GS.....	39.
Apple IIe, IIc or GS Dust Cover or Imagewriter II Cover.....	9.
Apple Security System.....	33.
Mouse Pocket (Reg. or ADB) or Mouseway (Mousepad).....	8.
New Turbo Mouse (Reg. or ADB)...	109.
Printer Muffler 80.....	43.
System Saver (Platinum or Beige).....	59.
System Saver GS.....	SPECIAL 69.

**Koala Technologies**

Koala Pad Plus w/Graphics Exhibitor.....	82.
--	-----

**Kraft**

Floppy Disk Notcher.....	4.
Kraft Universal 3 Button Joystick (IIe, IIc).....	34.

**Kurta**

IS ADB Tablet w/stylus(GS).....	255.
---------------------------------	------

**Lynn Products**

Cables (Specify).....	15.
-----------------------	-----

**Lynx Computer**

Turbo Trackball (IIe or GS).....	59.
----------------------------------	-----

**Maxell**

Maxell 3½ DS,DD (10).....	14.
---------------------------	-----

**Mouse Systems**

A+ ADB Mouse (GS).....	75.
A+ Mouse.....	58.
Littlemouse.....	79.

**MousTrak**

MousePad (Low Friction).....	10.
MousePad 7"x 9".....	8.
MousePad 9"x 11".....	9.

**Northgate Computer Systems**

OmniMac Ultra Keyboard(IIGS).....	125.
-----------------------------------	------

**Orange County Speaker**

IBL Control 1 Speaker.....	205.
OCS 2-40 (Stereo Amplifier).....	145.

**Practical Solutions**

Cordless Mouse.....	95.
---------------------	-----

**RC Systems**

Double Talk.....	187.
------------------	------

**Ribbons**

ImageWriter Ribbons available in Orange, Purple, black, blue, brown, green, red, yellow, silver, or gold	
ImageWriter II-4 Color Ribbon.....	9.
ImageWriter Rainbow Pack (6 colors).....	20.
ImageWriter Ribbon-Black (6 pack).....	20.
Laser 190A Ribbon.....	5.
Seikosha Ribbon.....	6.

**Sony**

Sony 3½ DS,DD (10).....	13.
-------------------------	-----

# 1-800-832-3201

## ACCELERATORS /RAMCARDS

**American Research (Micro Sci)**

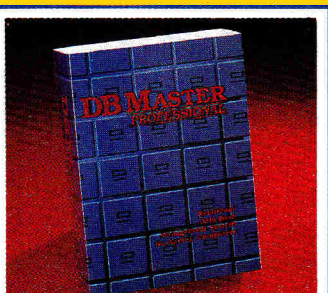
80/64E 80 Column 64K Card (IIe only).....	49.
---	-----

**Apple Computer**

Apple IIe Enhancement Kit.....	58.
Apple IIe Extended 80 Col. Card.....	89.

**Applied Engineering**

GS-Ram Plus 1MG.....	264.
GS-Ram Plus 2MG.....	389.
GS-Ram Plus 3MG.....	509.
GS-Ultra 1MG.....	265.
GS-Ultra 2MG.....	389.
GS-Ultra 512K.....	199.
PC Transporter (768K).....	299.
PC Transporter Installation Kit GS.....	33.
PC Transporter Installation Kit IIe.....	30.
Ram Express II 1024K.....	245.
Ram Express II 256K.....	155.
Ram Express II 512K.....	189.
RamFactor 1MG.....	309.
RamFactor 512K.....	235.
RamWorks III 1MG.....	269.
RamWorks III 256K.....	149.
RamWorks III 512K.....	185.
TransWarp Accelerator(GS).....	299.



**TOP DATABASE BUY!**  
**DB Master Professional by Stone Edge Technologies** is a powerful, relational data base manager for Apple II or GS. Many advanced capabilities. Easy-to-use relational features for automatic look-ups and posting. Lots of math capability. Print reports in almost any form: labels (including multiple-across), columnar reports, mail-merge letters, complex forms, invoices, etc. Easy import from AppleWorks files.  
Suggested Retail.....\$295.  
**Programs Plus Price.....\$195.**

# 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



## QUICKEN 1.0 BY INTUIT

Forget financial hassles with **Quicken**, the world's #1 selling finance software. It's the absolute fastest, easiest way to do your personal or small business book-keeping. Quicken slashes the time you spend on your finances by automating all your routine financial tasks, from printing recurring checks without typing, to providing detailed tax deduction summaries instantaneously. Suggested Retail.....\$59.95  
**Programs Plus Price..... \$39.**

### Street Electronics

Echo II (AP & GS)..... 101.  
Echo IIC (IIC & IIC+)..... 121.

## APPLE COMPATIBLE COMPUTERS

### Laser Computer Inc.

Laser 128 800K 3.5"  
Drive w/Controller..... 215.  
Laser 128 Cables  
(Parallel, Serial, RGB or Modem)..... 16.  
Laser 128 Computer..... 349.  
Laser 128 Disk Drive  
or Laser Amber Monitor..... 99.  
Laser 128 Mouse..... 45.  
Laser 128 System w/Amber Monitor  
& Word Processing Software..... 399.  
Laser 128 System w/Color Monitor  
& Word Processing Software..... 510.  
Laser 128EX Computer..... 389.  
Laser 128EX II Computer (3½)..... 449.  
Laser 128EX II Computer (5¼)..... 409.  
Laser 190A Printer  
w/Serial Interface..... 235.  
Laser RGB Monitor..... 279.

## BACKUP UTILITIES

### Alpha Logic

LockSmith v6.0..... 36.

### Apple

GS/OS v5.0.2 (GS)..... 45.

### Central Point Software

Copy II Plus v9.0..... 25.

### Glen Bredon

Dos.Master or Pro.Cmd..... 25.

ProSel 16 (3.5)..... 54.

ProSel 8 (5.25)..... 37.

### Vitesse, Inc.

Deliverance(GS)..... 31.  
Exorcizer(GS)..... 29.  
Guardian(GS) or Renaissance(GS)..... 31.  
Wings(GS)..... 57.

## BUSINESS SOFTWARE

### Abracadata

Everybody's Planner..... 69.

Actsoft Alpha Check v3.1..... 29.

### Addison-Wesley

Wordbench (AP & GS)..... 95.

### Advanced Idea

Stars & Planets(GS)..... 28.

### Beagle Brothers

AW v3.0 Companion

or Timeout MacroEase..... 23.

Beagle Bros. Clip Art 1(GS)..... 29.

Beagle Bros. Desk Accessories(GS)..... 34.

Beagle Write Desk Accessories

or Font Pack 1 or 2..... 23.

Beagle Write Picture Manager..... 23.

Beagle Write(GS)..... 59.

GS Font Editor or Program Writer.... 29.

Timeout Decision Pak(Graph,

SpreadTools & SideSpread)..... 85.

Timeout Graph..... 50.

Timeout Performance Pak

(DeskTools I, II & PowerPak)..... 75.

Timeout ReportWriter

or Beagle Write..... 45.

Timeout SideSpread, FileMaster,

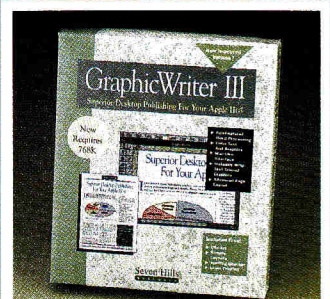
or DeskTools..... 29.

Timeout Style Pak(SuperFonts,

Thesaurus & FileMaster)..... 75.

Timeout SuperFonts or QuickSpell... 39.

Timeout TextTools..... 29.



### HIGHLY RATED

### DESKTOP PUBLISHER!

### GraphicWriter III by Seven Hills

provides superior desktop publishing for the IIGS, including

page layout, word processing and

graphics all in one complete

package. Includes a full set of

fonts and clip art plus a built-in

spell checker. Prints in color or

B&W on a variety of printers.

Requires only 768K.

Suggested Retail..... \$149.95

**Programs Plus Price..... \$75.**



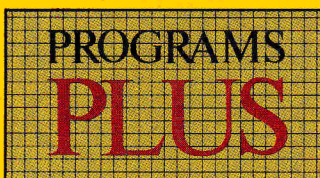
**WIN A COMPLETE LASER SYSTEM!**

Everytime you order from Programs Plus, you're automatically entered into a fantastic drawing for **LASER 128EX/2** with 5¼" floppy disk drive, 14" full-color RGB monitor and **LASER 190A Printer**. A \$1,369 retail value!

### Rules:

1) No purchase necessary. 2) Automatic entry by purchasing from PP. Alternate entry: send name and address to Monitor Drawing, Programs Plus, 75 Research Drive, Stratford, CT 06497. 3) Odds of winning depend on number of entries. 4) Drawing date on or about 12/15/90. 5) Winner notified by mail. If unable to contact winner, alternate winner will be selected by random drawing. 6) Eligibility: Contest open to U.S. and foreign residents, except where prohibited by law. Employees of PP and suppliers are not eligible. Not responsible for misdirected entries. Any tax liability sole responsibility of winner. 7) PP reserves the right to substitute prize of equal or greater value. 8) Winner's list available by written request after 1/15/91.

**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



# Over 2500 Items in Stock



**PAINT AND ANIMATION**  
**Color+** by **EL KASSIR Software** lets you create animation, presentations, stories on IIGS. Change any standard 16 colors SHR to 256 colors. Transform 320 HR to 640 and vice versa.  
**SupergraphixII** enhances Apple-soft enabling colors, music, animation. **Superpuzzle** is two games: scramble SHR and 256 color pictures, switch or slide 'em.  
**Color+**..... \$49.  
**Supergraphix II**..... \$59.  
**Superpuzzle**..... \$29.

Timeout Thesaurus, DeskTools II  
 or PowerPack..... 29.  
 Timeout UltraMacros  
 or SpreadTools..... 34.  
**Big Red Computer**  
 Labels, Labels, Labels..... 22.  
**Broderbund**  
 Bank Street Writer Plus (AP or C+), 50.  
 On Balance..... 39.  
**Claris**  
 Apple Works v3.0..... 169.  
 Apple Works(GS) v1.1..... 205.  
**Intuit** Quicken v1.0..... SPECIAL 39.  
**Manzanita**  
 BusinessWorks Bundle AP & GS  
 (Sys. Manager, G/L, A/P, A/R,  
 Inventory)..... SPECIAL 259.  
 BusinessWorks Payroll (AP & GS).. 102.

## 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 purchases accepted, based on credit approval. To submit

**Meca Software**  
 Managing Your Money  
 v4.0 (AP & GS)..... 90.  
**Micca Soft**  
 Invoicer w/A/R & Sales  
 Tracking/Inventory..... 139.  
**Milliken** Medley(GS)..... 75.  
**Monogram** Dollars and Sense..... 75.  
**Nolo Press** Will Maker v3.0..... 35.  
**Sensible Software**  
 Sensible Grammar  
 ProDos (AP & GS)..... 63.  
**Seven Hills Software**  
 Disk Access(GS)..... 32.  
 Font Factory(GS)..... 23.  
 GraphicWriter III(GS)..... SPECIAL 75.  
**SoftSpoken** Cross-Works v2.0..... 67.  
**Stone Edge**  
 DB Master Professional  
 (AP & GS)..... SPECIAL 195.  
**Timeworks, Inc.**  
 Art Portfolio 4 in 1..... 74.  
 Graph It!..... 45.  
 People, Places and Things,  
 Design Ideas..... 27.  
 Publish-It v3.0 (AP & GS).. SPECIAL 74.  
 Symbols and Slogans, Education  
 Graphics, Font Pack 1 or 2  
 (AP & GS)..... 27.  
**WordPerfect Corp.**  
 WordPerfect (AP or GS)..... 105.

## COMMUNICATION SOFTWARE

**Applied Engineering**  
 ReadyLink..... 59.

**24 Hour**  
**203-381-9043**  
**Fax**

purchase orders, call our business office at 203-378-1926, 9am-5:30pm EST. Shipping on corporate 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.



## ACTION ADVENTURE MASTERPIECE!

**The Immortal™** by **Electronic Arts** brings your worst nightmares to life right on your GS! Action-packed game of sorcery and betrayal. Bravely you venture into caverns far below to save your lost master, Mordimir. 20 fully animated monsters, eight levels, 50 different locations, and 15 animated gruesome deaths! Amazing effects.  
 Suggested Retail..... \$49.95  
**Programs Plus Price..... \$34.**

**Beagle Bros.**  
 Point-to-Point..... 55.  
 TimeOut TeleComm..... 45.  
**Compuserve**  
 Compuserve Membership Kit..... 24.  
**InSync** Proterm..... 79.  
**L & L Productions** GBBS..... 79.  
**Morgan Davis Group**  
 ModemWorks..... 49.  
 ProLine..... 164.

## DISK DRIVES & HARD DISK SUBSYSTEMS

**American Micro Research (Micro Sci)**  
 A.5 Half Height (II+ & IIe)  
 or A.5C Half Height (IIc)..... 135.  
 A5D Half Height 5 1/4" Drive  
 (IIGS Daisychain)..... 144.  
 AMR 800K Drive Bundle..... 235.  
 AS800K 3.5 Ext. Drive..... 189.  
 GS Partner: Quick 20MB..... 539.  
 GS Partner: Quick 40MB..... 659.  
 GS Partner: Quick 60MB..... 719.  
**Apple Computer**  
 Apple 3 1/2 Drive  
 (GS & C+)..... 335.  
 Apple 5 1/4 Drive (IIE, GS, C+)..... 269.  
 SCSI Card..... 109.  
**Applied Engineering**  
 AE 3.5" Drive..... SPECIAL 209.  
 Controller Card for 3.5" Drive  
 (IIc or II+)..... 64.  
 Disk II Style Controller Card..... 59.  
 TransDrive 360K Dual Drive..... 299.  
 TransDrive 360K Single Drive..... 199.  
 TransDrive Additional Drive  
 (for TD single)..... 119.

Vulcan 100 Meg (AP or GS)..... 1285.  
 Vulcan 20 Meg (AP or GS)..... 519.  
 Vulcan 40 Meg (AP or GS)..... 649.

## CMS Enhancements

20 MB w/ SCSI II card..... 519.  
 30 MB w/ SCSI II card..... 569.  
 60 MB w/ SCSI II card..... 729.  
 45 Removable Cartridge..... 119.  
 CMS 45RM A/2S..... 839.  
 SCSI Rom Upgrade..... 25.

## CV Technologies

RamFast SCSI card..... 199.

## Ingenity, Inc.

GS Juice Plus 1MG..... 199.  
 Inner Drive 20 IIE..... 486.  
 Inner Drive 40 IIE..... 612.

## Laser Computer Inc.

Laser 800KB Drive..... 189.  
 Laser 800KB Drive Bundle..... 215.  
 Laser DiskDrive(GS)..... 99.  
 Universal Disk Controller..... 45.

## EDUCATIONAL SOFTWARE

### A.E.C.

Spanish Vocabulary  
 or Spanish Grammer..... 16.

### Activision

Music Studio v2.0(GS)..... 43.

### Advanced Idea, Inc.

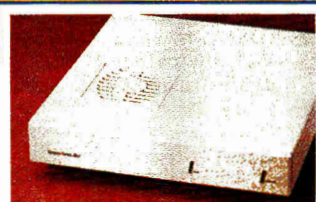
Audubon Wildlife Adventures:  
 Grizzly Bears or Whales..... 32.  
 Audubon Wildlife Adventures:  
 Grizzly Bears or Whales(GS)..... 38.  
 Wizard of Words..... 25.

### Barron's

Computer SAT Revised Version..... 34.

### Britannica

Algebra 1: 1st & 2nd Semester..... 48.  
 Algebra 1: 1st or 2nd Semester..... 29.  
 Designasaurus(GS)  
 or Revolution '76(GS)..... 27.



## COOL, CLEAN PROTECTION

### System Saver IIGS by Kensington

protects your entire system from heat and surge damage. Fits between IIGS and monitor. Quiet fan keeps IIGS power supply cool. Surge suppression and noise filtering circuitry protects against surges and spikes to prevent equipment damage and data loss. Outlets for 2 peripherals.  
 Suggested Retail..... \$99.95  
**Programs Plus Price..... \$69.**

# Programs Plus

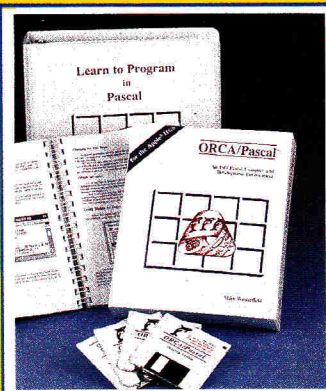
# 1-800-832-3201



Fax: 203-381-9043  
 Inquires: 203-378-3662  
 Canada: 1-800-344-7753  
 75 RESEARCH DRIVE  
 STRATFORD, CT 06497



# Prompt and courteous attention to all your Apple needs.



## PROGRAM THE EASY WAY

### ORCA/Pascal with Learn to Program Tutorial by Byteworks.

Now you can learn to program even if you've never programmed before! 16 easy to follow lessons will take you step by step into the exciting world of Pascal programming using ORCA/Pascal. Each lesson includes tutorial instruction, sample programs and solutions to the problems. Requires IIGS with 1.25M of memory.

Suggested Retail..... \$200.  
Programs Plus Price..... \$119.

### Broderbund

- McGee(GS) or Katie's Farm(GS).....29.
- Playroom (3.5" or 5.25").....27.
- Science Tool Kit Master Module..... 55.
- Science Tool Kit Module I or II..... 26.
- Type!..... 19.
- Where in Europe  
is Carmen Sandiego?(AP or C+).. 28.
- Where in the USA  
is Carmen Sandiego?..... 28.
- Where in the USA  
is Carmen Sandiego?(GS)..... 31.
- Where in the World  
is Carmen Sandiego?..... 25.
- Where in the World  
is Carmen Sandiego?(GS).....32.
- Where in Time  
is Carmen Sandiego?(AP or C+).. 28.

### CompuTech

- Studemate-The Grade  
Booster (AP or GS)..... 27.

### Davidson & Associates

- Alge-Blaster Plus(AP or GS)..... 32.
- Math Blaster Plus(AP or GS)  
or Grammar Gremlins.....32.
- Read 'N' Roll..... 34.
- Reading & Me..... 21.
- Spell-It Plus(AP or GS) or  
Math Blaster Mystery(AP or C+).. 32.
- Talking Math & Me(GS)  
or Talking Reading & Me(GS).....34.
- Word Attack or Word Attack Plus..... 32.
- Word Attack Plus Spanish or French.. 34.

### Eclat Microproducts

- Geographic Jigsaw (AP or GS).....27.
- The Rhyming NoteBook.....29.

### Fisher Price

- I Can Remember  
or Firehouse Rescue.....9.
- Little People Bowling.....9.
- School Bus Driver or  
Chutes & Ladders.....9.

### Grade Busters Corporation

- Grade Busters 1,2,3..... 75.

### Great Waves Software

- Kidstime II (GS).....24.

### Learning Company

- Magic Spells(3.5 or 5.25)  
or Gertrudes Secrets(3.5)..... 24.
- Reader Rabbit  
or Math Rabbit(3.5 or 5.25)..... 24.
- Talking Reader Rabbit(3.5)..... 33.
- 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)..... 32.

### MECC

- Calendar Crafter School Ed.(GS).....59.
- Number Munchers  
or Word Munchers..... 24.
- USA Geograph(GS)  
or World Geograph(GS).....69.

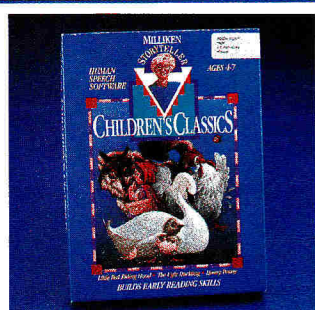
### Milliken Publishing

- Milliken Story  
Teller(GS only)..... SPECIAL 35.

### Mindscape Crossword Magic..... 34.

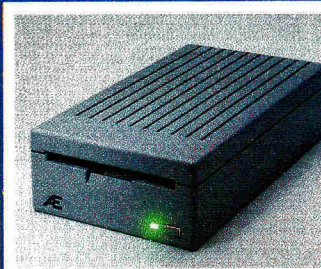
### Orange Cherry

- Addition & Subtraction, ABC's, Speller,  
Clock or Money..... 42.
- Animals, Dinosaurs, Numbers, First  
Write, First Reader, School Bus, Alpha



## STORYTELLING MAGIC HELPS YOUNG READERS

The Storyteller by Milliken uses animation and speech capabilities of Apple GS to build early reading skills. Stories come to life with human voice reading as the words appear on screen. Interaction, including painting, involve child. Featuring Little Red Riding Hood, the Ugly Duckling, Henny Penny.  
Suggested Retail.....\$49.95  
Programs Plus Price..... \$35.



### SUPERDRIVE PRICE BEATER

AE 3.5 Disk Drive by Applied Engineering offers you the same reliable Sony mechanism that Apple uses, but at almost half the cost. High impact plastic case stacks on same footprint as Apple drive. Read/write LEDs. Full daisy chain compatibility. 800K. Suggested Retail..... \$289.  
Programs Plus Price..... \$209.

- Chimp, Colors & Shapes, Reading  
Railroad..... 42.

### PC Globe, Inc.

- PC Globe 3.0(GS) or PC USA(GS).... 40.

### Pelican Software

- Dinosaur Days..... 24.
- Monsters & Make Believe Plus.....29.
- POW! ZAP! KER-PLUNK!.....35.

### Roger Wagner HyperStudio(GS).... 88.

### Sensible Software

- Report Card II(AP & GS)..... 37.
- Sensible Grammar(AP & GS)..... 63.

### Simon & Schuster

- Typing Tutor IV (AP or GS)..... 26.

### Software Toolworks

- Mavis Beacon Typing..... 28.
- Mavis Beacon Typing(GS)..... 33.

### Spinnaker

- Atlas Explorer  
or Kidwriter Gold(GS)..... 35.

### Facemaker: Gold Edition

- or Kidwriter.....27.

### Terrapin Terrapin Logo Plus.....79.

### Weekly Reader

- New Talking Alphabet (3½)..... 30.
- New Talking Opposites (3½)  
or Sentence Fun (3½)..... 30.

- New Talking Shapes (3½)  
or Spelling Rules (3½)..... 30.

### StickyBear Series:

- Full Line Available..... CALL

## ENTERTAINMENT SOFTWARE

### Accolade

- 4th & Inches(GS) or FastBreak(GS).. 28.
- Grand Prix Circuit(GS)..... 28.

### Jack Nicklaus Course Disk

- Vol. 1 or 2(GS)..... 15.
- Jack Nicklaus Golf(GS)..... 34.

### Mean 18(GS) or Hardball(GS).....28.

### Third Courier(GS)

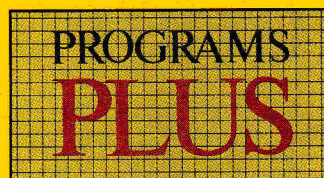
- or Test Drive II(GS)..... 31.

All Packing  
Materials  
100% Safe  
For The  
Environment

One of  
The Oldest  
Most  
Reliable  
Mail Order  
Suppliers,  
Programs  
Plus  
Offers  
You The  
Best  
Prices,  
Service  
& Support.

# 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

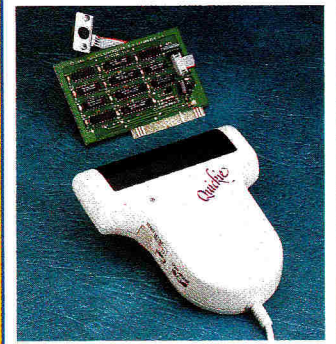


# Programs Plus is the best value



**DIGITIZE CLIP ART,  
DRAWINGS, PHOTOS!**

**Lightning Scan® by Thunderware®** turns any image into an Apple IIGS graphic... instantly! Complete low-cost package includes handheld scanner, card and connector, SnapGuide™ and rule, and image-enhancement software. Selectable resolution settings up to 400 dpi, 16 gray levels, supports both 320/640 modes. Requires IIGS with 512K or more memory. Suggested Retail..... \$295. **Programs Plus Price..... \$199.**



**LOW COST  
QUALITY SCANNER**

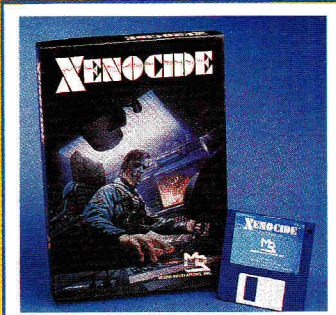
**Quickie—FIRST Hand Scanner for your Apple II Computer by Vitesse, Inc.** Allows you to scan in true grey or B&W, 320/640 mode. Features include Landscape/Portrait Scan, cut/paste, open multiple windows, fat bits edit, resize, rotate, flip, direct print, save to six formats, NDA and MORE! **ONLY** scanner that's Inwords OCR Software compatible. Suggested Retail..... \$299. **Programs Plus Price..... \$195.**

King of Chicago(GS).....	17.	Hostage(GS) or Captain Blood(GS)...	29.
Star Saga 1(AP or GS) or Star Saga 2(GS).....	35.	<b>New World Computing</b>	
<b>Compu-Teach</b>		Might & Magic.....	19.
Once Upon A Time(GS) or Once Upon A Time II(GS).....	35.	Might & Magic II.....	36.
See the U.S.A.....	30.	<b>Origin Systems</b>	
<b>Data East</b>		Space Rogue, Knights of Legend or Omega(AP or GS).....	30.
Batman, Heavy Barrel, or Robo Cop..	22.	Times of Lore(AP & GS) or WindWalker.....	26.
<b>Datasoft</b>		Ultima Trilogy(I, II & III), Ultima IV or Ultima V.....	39.
Hunt for Red October (AP or GS).....	22.	<b>PBI Software</b>	
<b>Electronic Arts</b>		Strategic Conquest(GS).....	35.
Bards Tale II.....	18.	The Tower of Myraglen(GS) or Alien Mind(GS).....	39.
Bards Tale III or John Madden Football.....	32.	<b>Publishing International</b>	
Block Out(GS) or Zany Golf(GS).....	26.	Pharaoh's Revenge.....	17.
Cartooners(GS), Bards Tale II(GS) or Pipe Dream.....	22.	<b>Sierra On-Line</b>	
Instant Synthesizer(GS).....	35.	Gold Rush(AP or GS) or Black Cauldron(GS).....	25.
King's Bounty or Earl Weaver Baseball.....	26.	Kings Quest I, II, III or IV(AP or GS)..	30.
Marble Madness(GS).....	15.	Leisure Suit Larry(AP or GS).....	25.
Music Construction Set(GS) or Skate or Die(GS).....	15.	ManHunter New York(AP or GS) or Police Quest(AP or GS).....	30.
The Immortal(GS).....	<i>SPECIAL</i> 34.	Mother Goose(AP or GS).....	19.
<b>FTL</b> Dungeon Master(GS).....	27.	Thexder(AP or GS) or Silpheed(GS)..	22.
<b>Gametek</b>		<b>Sir-Tech Software</b>	
Double Dare or Press Your Luck.....	9.	Wizardry Trilogy (includes I, II, III)....	30.
		Wizardry V: Heart of the Maelstrom.	30.
		<b>So What Software</b> Sonix(GS).....	34.
		<b>Software Toolworks</b>	
		Chessmaster 2100 or Life & Death(GS).....	34.
		Chessmaster 2100(GS).....	33.
		Cribbage/Gin King(GS).....	29.
		Keef the Thief(GS).....	16.
		<b>Spectrum Holobyte</b>	
		Solitaire Royale(GS).....	22.



<b>Activision</b>	
Blackjack Academy(GS).....	17.
KaleidoKubes(GS).....	14.
Sky Travel(AP & GS).....	34.
<b>Artworx</b>	
Bridge 6.0(AP or GS) or Strip Poker II(GS).....	27.
<b>BlueLion</b>	
Ticket to Hollywood or London.....	27.
Ticket to Paris or Spain.....	27.
Ticket to Washington D.C.....	32.
<b>Britannica</b>	
Gnarly Golf(GS).....	<i>SPECIAL</i> 17.
Great Western Shoot-Out(GS).....	17.
JigSaw(GS) or Task Force(GS).....	24.
Laser Force(GS).....	17.
<b>Broderbund</b>	
Ancient Art of War.....	30.
Centauri Alliance or Jam Sessions(GS).....	32.
Down Hill Challenge(GS).....	22.
Geometry(GS).....	55.
The Dark Heart of Ukruk or VCR Companion.....	30.
Wings of Fury(AP & GS) or Prince of Persia.....	23.
<b>ByteWorks</b> Ugly Duckling(GS).....	32.
<b>California Dreams</b>	
Tunnels of Armageddon(GS).....	27.
Vegas Gambler or Mancala.....	27.
<b>Casady &amp; Greene, Inc.</b>	
Crystal Quest(GS).....	30.
<b>Cinemaware</b>	
Defender of the Crown(GS) or Sinbad(GS).....	17.

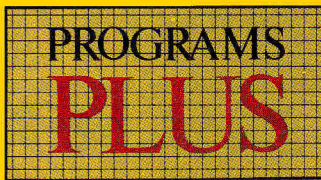
<b>Infocom</b>	
Battle Tech.....	34.
ShoGun or Zork Zero.....	12.
<b>Interplay</b>	
Battle Chess.....	27.
Battle Chess(GS) or DragonWars(AP & GS).....	30.
Neuromancer(GS).....	14.
<b>Leisure Genius</b>	
Clue, Risk, or Scrabble.....	27.
<b>Melbourne House</b>	
Barbarian(GS).....	25.
Quarterback(AP or GS).....	19.
War in Middle Earth(GS).....	30.
<b>Micro League Sports</b>	
Micro League Baseball w/ General Manager & Stat.....	24.
<b>Micro Revelations</b>	
Xenocide(GS).....	<i>SPECIAL</i> 29.
<b>Microillusions</b> Firepower(GS).....	21.
<b>Microprose</b>	
F-15 Strike Eagle or Silent Service(AP or GS).....	14.
<b>Mindscape</b>	
Balance of Power 1990(GS).....	32.



**IIGS ALERT! ALIENS  
MUST BE DESTROYED!**  
**Xenocide™** by Micro Revelations comes alive with superb IIGS graphics and sound that rivals top arcade games. Your challenge: defeat the spread of aliens on 3 moons orbiting Talos IV. Be brave, before it's too late. Takes special advantage of optional stereo cards. Requires IIGS with 512K RAM, 3.5" drive, mouse. Suggested Retail.....\$49.95 **Programs Plus Price..... \$29.**

Tetris(AP & GS).....	23.
<b>Strategic Simulations</b>	
AD&D Pool of Radiance.....	32.
Battle of Napoleon or Curse of the Azure Bonds(GS).....	33.
Champions Krynn.....	33.
War of Lance.....	29.
<b>Sublogic</b>	
Flight Simulator II.....	30.
<b>Taito</b>	
Bubble Bobble(AP & GS) or Renegade(AP & GS).....	10.
Qix(GS).....	10.
Rastan(GS) or Puzznic(GS).....	22.
<b>Three Sixty</b>	
Warlock(GS) or Dark Castle(GS).....	29.
<b>Victory Software</b>	
2088: The Cryllan Mission: The Second Scenario.....	36.
2088 The Cryllan Mission(GS).....	36.
Secrets of Bharas.....	36.
<b>Virginia Real Software</b>	
Anchorman.....	29.
<b>Walt Disney</b>	
Mickey's Crossword Puzzle Maker... 25	
<b>GRAPHICS PACKAGES</b>	
<b>Abacadata</b>	
Architecture Library 1, 2, 3 or 4(AP or GS).....	21.
Design Your Own Home: Architecture(GS), Interiors(GS), or Landscape(GS).....	<i>SPECIAL</i> 59.

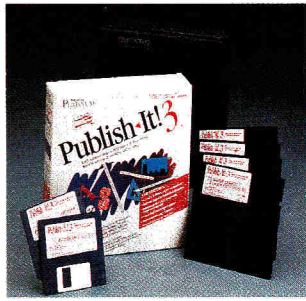
**Programs Plus**  
**1-800-832-3201**



Fax: 203-381-9043  
Inquires: 203-378-3662  
Canada: 1-800-344-7753  
75 RESEARCH DRIVE  
STRATFORD, CT 06497



# for all your Apple & GS needs!



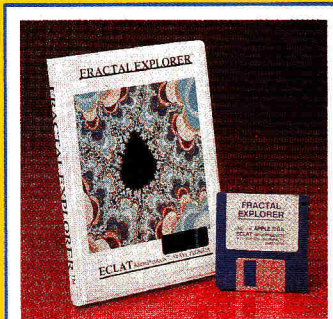
**FULL FEATURED DESKTOP PUBLISHING**  
**PUBLISH IT! 3** by **Timeworks** is the fastest way to start producing newsletters, ads, reports, catalogs, forms, brochures. Two hundred graphic images included. Prepare text on screen or import from AppleWorks 3.0, or any ASCII file. Import graphics from popular paint packages. Supports many dot matrix, laser printers. Requires 128K.  
 Suggested Retail..... \$129.95  
**Programs Plus Price..... \$74.**

- Design Your Own Home:  
 Architecture(AP), Interiors(AP) or Landscape(AP)..... *SPECIAL* 47.  
 Design Your Own Train..... 34.  
 Electronic Drawing..... 32.  
 Interiors Library 1, 2(AP or GS) or Landscape Library 1..... 21.  
**Baudville**  
 816/Paint..... 49.  
 Award Maker Plus(AP & GS)..... 30.  
**Beagle Brothers** Beagle Draw(GS) 50.  
**Berkeley Geoworks**  
 GEO Publish..... 65.  
 GEOS V2.1, GEOCalc or GEOFile..... 43.  
**Big Red Software**  
 PS Lover's Utility Set(AP or GS)..... 27.  
**Broderbund**  
 Bannermania..... 22.  
 Dazzle Draw or Print Shop(GS)..... 37.  
 New Print Shop(AP or C+)..... 29.  
 New PrintShop Bundle w/Graphic Library (3.5 or 5.25).... 31.  
 Print Shop Companion..... 25.  
 Print Shop Graphics Library I, II, III or Holiday Edition..... 16.  
 Print Shop Graphics Library Party Edition(GS)..... 24.  
 Print Shop Graphics Library Sampler Edition(GS)..... 24.  
 PrintShop Bundle w/Graphic Library(GS Specific)... 37.  
**ECLAT**  
 Fractal Explorer(AP or GS)...*SPECIAL* 27.  
**El Kassir Software**  
 COLOR+ (GS)..... 49.  
 Supergraphix II w/music(GS)..... 59.  
**Electronic Arts**  
 DeluxePaint II(GS)..... 18.

- DeluxeWrite w/Deluxe Paint II(GS)... 27.  
**Epyx** Print Magic..... 29.  
**Roger Wagner**  
 Graphic Exchange(GS)..... 30.  
**So What Software** Iconix(GS)..... 29.  
**Spinnaker**  
 Certificate Maker..... 24  
 Certificate Maker Library #1..... 19.  
 Newsroom..... 22.  
 Newsroom Clip Art Collection vol. 1, 2 or 3..... 14.  
**Thunderware**  
 LightningScan(GS)..... *SPECIAL* 199.  
 Thunderscan(AP & GS)..... 159.  
**Triad Venture**  
 GDL Graphic Disk Labeler-GS v2.0.. 25.  
**VersaCAD Corp.**  
 CADapple (3.5)..... 199.  
**Vitesse, Inc.**  
 Quickie(AP or GS)..... *SPECIAL* 195.

## MODEMS & MONITORS

- Anchor Automation**  
 2400E..... 155.  
**Apple Computer**  
 Apple Color Composite Monitor..... 339.  
 Apple GS Color Monitor..... 465.  
**Applied Engineering**  
 DataLink Express (ext. 2400)..... 159.  
 DataLinkModem2400B(IntAP&GS)175.  
**Hayes MicroComputing**  
 Hayes 2400 SmartModem..... 349.  
**Prometheus Products**  
 Practical Modem 2400 SA..... 179.  
 Pro Modem 2400A (Single Card)... 125.



### ZOOMING CREATES VISUAL FEAST

**Fractal Explorer (AP or GS)** by **Eclat** creates entertaining series of visuals by zooming billions of times. Includes a flexible slideshow with dazzling color effects. Easy to run. Uses Mandelbrot and Julia fractal sets. Includes informative and educational instruction manual. Images compatible with popular paint programs.  
 Suggested Retail..... \$39.95.  
**Programs Plus Price..... \$27.**

## What's Right For You?



## Call Chris!

**Need help choosing from our big selection of 2,500 products?**

As one of the oldest and largest software/hardware

suppliers, we've learned from tens of thousands of loyal customers what works best. We want you to be a satisfied customer, too. Call our tech service for advice so you get the right product for your special needs.

- Supra Corporation**  
 SupraModem 2400 (Hayes Compatible)..... 119.  
**U.S. Robotics** Courier HST 9600.. 669.

- ORCA/Disassembler(GS)..... 32.  
 ORCA/M Assembler(GS)..... 39.  
 ORCA/Pascal(GS)..... 80.  
 ORCA/Pascal w/Learn to Program Pascal..... *SPECIAL* 119.

## DHL Overnight

## PRINTER INTERFACES

- Apple Computer**  
 Apple Super Serial Card..... 119.  
**Applied Engineering**  
 Parallel Pro..... 73.  
 Serial Pro..... 106.  
**Orange Micro**  
 Grappler 9 pin..... 78.  
 Grappler Plus(AP & GS)..... 75.  
**SMT**  
 Envoy..... 54.  
 No Slot Clock..... 30.  
 Print Tech II..... 33.  
**Thirdware**  
 Finger Print GSi verIII (Includes Desktop Accessories-GS)..... 89.  
 Finger Print Plus (Parallel, Serial, or ImageWriter II)..... 89.  
 Upgrade Kit (FingerPrint I & II)..... 30.  
**Vitesse, Inc.** Harmonie(GS)..... 32.  
**Xetec Inc.**  
 Superwriter 924 (GS, C+, C)..... 44.

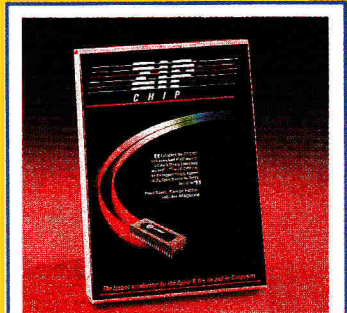
- Micol Systems**  
 Micol Advanced Basic IIE..... 59.  
 Micol Advanced Basic(GS) v3.0..... 89.  
**Morgan Davis Group**  
 MD-Basic..... 39.  
**Roger Wagner**  
 Merlin 8/16(AP & GS)..... 75.  
 SoftSwitch(GS)..... 36.  
**Seven Hills Software**  
 Disk Access (GS only)..... 32.  
**So What Software**  
 Call-Box(GS)..... 69.  
 Hyper Launch(GS) v3.0..... 35.  
**TML Systems**  
 TML Basic(GS) or TML Pascal II(GS)..... 82.  
 TML Source Code Library II(GS)..... 35.  
**Zedcor** ZBasic v4.21..... 39.

## PRINTERS

- Apple Computer** ImageWriter II... 459.  
**Laser Computer Inc.**  
 Laser 190A w/ Serial Interface..... 235.  
**Seikosha**  
 M-1109AP (ImageWriter Compatible)..... 225.

## UTILITIES AND LANGUAGES

- Absoft** AC/BASIC(GS)..... 79.  
**ByteWorks**  
 ORCA/DeskTop(GS)..... 34.  
 ORCA/C(GS)..... 80.  
 ORCA/Design Master(GS)..... 59.

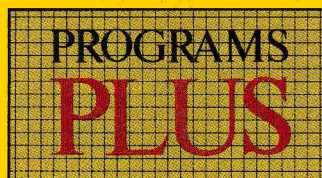


### TURN YOUR APPLE II INTO A SPED DEMON!

**ZIP CHIP™** by **ZIP Technology** speeds processing by 800%. Games run faster! Graphics come alive! Number crunch spreadsheets in 1<sup>st</sup> the time! From the leader in acceleration technology. Simple plug-in chip. 100% compatible with Apple II, II+, IIe, IIc, Laser 128, and all major Apple II software and hardware.  
 Suggested Retail..... \$199.  
**Programs Plus Price..... 159.**

# 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



# EXPLORING HYPERMEDIA

**Lessons, stories, and presentations come alive when you combine text, graphics, sound, and video in an interactive environment. Compare the six leading packages: Here's one media event you can program yourself, as you dazzle your audience with the power of your Apple II.**

**By CYNTHIA E. FIELD, Ph.D. \* CONTRIBUTING EDITOR**

**I**F YOU THINK YOU'VE HAD FUN GETTING CREATIVE with desktop publishing, just wait 'til you try your hand at *interactive multimedia*. The very term sounds pretty highfalutin — yet an investment of about \$50 to \$200 is all that's required to begin authoring your own courseware, visual databases, or Twistaplot-style stories.

Interactive multimedia isn't restricted to "techies" or experts, either. In fact, the average computer user should be able to design his or her first creation — complete with sound effects and graphics embellishments — within a couple of hours. Best of all, absolutely no programming experience is required.

## **PAINLESS PROGRAMMING**

In preparing this article, we took a close look at the half-dozen hypermedia authoring systems now available for the Apple II: HyperStudio, Nexus, Tutor-Tech, HyperScreen, Super Story Tree, and StoryWorks. (For details about each product and available add-ons, see the accompanying "Product Information" box.)

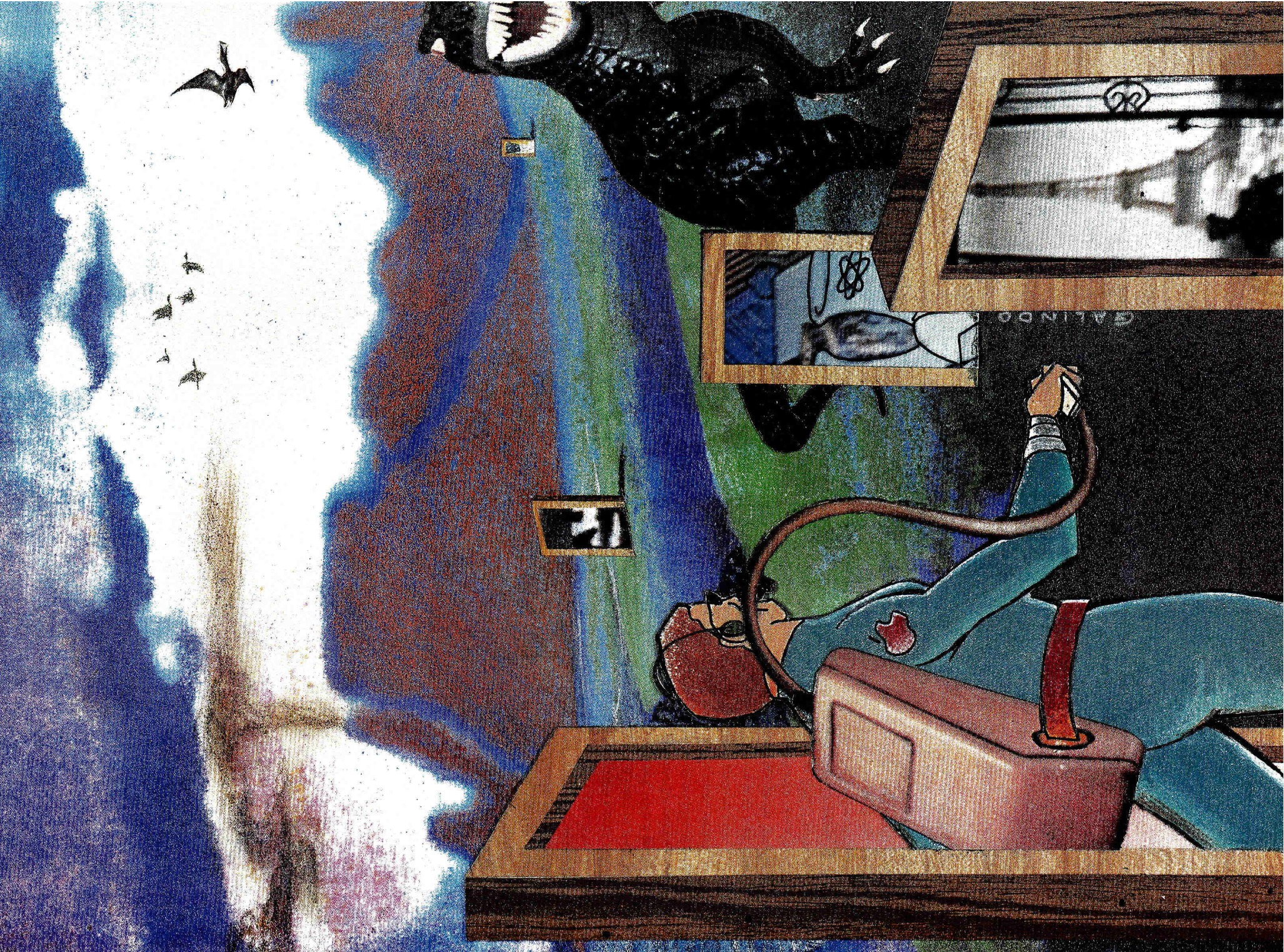
Each of these Apple II products shares at least two attributes with the popular Macintosh product HyperCard. For one thing,

authoring systems let the creator (that's you) write — in hours or days — software that would otherwise take weeks or months to prepare. Second, hypermedia software lets the reader (a student, business associate, or customer) browse interactively through the free-form database you design.

What does a hypermedia application look like? You can probably find one right in your local grocery store: Any number of supermarkets these days have computer-based information kiosks. Want to know where the pickles are? Press *P* on the kiosk's touch screen. Browse through the listings until you find the word *pickles*. Press the screen again, and a display pops up showing the aisle location for pickles and a "you are here" indicator. If pickles are on special today, the kiosk might even generate a cents-off coupon. Imagine being able to design similar systems with an Apple II — of course, you probably don't sell pickles, but maybe you're trying to sell your students on the value of classical music, say. Your interactive database would feature Beethoven and Mozart instead of Heinz and Vlasic.

As the author of this cultural-enrichment lesson, you'd type selected text about classical music on an introductory (or "home")







screen. From that screen, a student could choose to go to other screens to learn more about any of the composers featured in the introduction to your lesson. Moving from screen to screen often takes no more than a click of the mouse or joystick button, or a tap on the spacebar or **TouchWindow**.

Depending on the hypermedia package and the computer accessories you used to create your program, the student can veer off to see illustrations of musical instruments that were popular in Mozart's day, to listen to a sound clip from each of those instruments, to view a portrait painting or digitized image of the child genius, or to watch a video sequence of an orchestral rendition of one of Mozart's works.

With hypermedia you can intersperse true/false, multiple-choice, or even fill-in questions throughout the lesson and have your database respond appropriately to students' answers. Some hypermedia authoring systems can keep score and perform more advanced grading functions, as well.

Talk about self-paced learning! With hypermedia the reader can proceed or branch off to new information, or revert to review material that's already been displayed. And, like the best examples of commercial educational programs, your computer-assisted tutorials are infinitely patient, motivating, and reinforcing.

Another benefit is that most Apple II authoring systems have adaptive features that can help special-education students use teacher-scripted lessons, too.

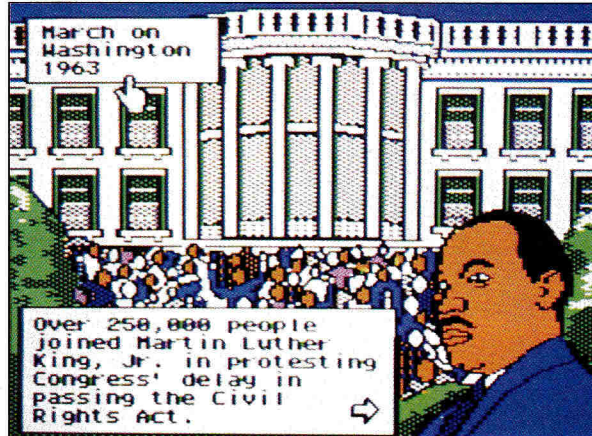
That's not to say that interactive multimedia is just for kids — or schools, for that matter. Not long ago we interviewed a horticulturist in the Midwest who was planning his first visual database. (See "Taking Care of Business," October 1990, p. 44.) His retail customers, like most customers in his industry, always want to know how plants will look when they flower, how high they'll grow, or how big a certain tomato fruit will be. Just like teachers, retailers tend to share the same information over and over again.

But hypermedia can do a lot more than just liven up a broken record. Creative writers, including young ones, relish the ability of most authoring systems to take readers on interactive adventures. You can build a series of choices into your story that in effect let your reader determine the story's path and its outcome.

As a bonus, most authoring systems let you create self-running disks. This novel communications medium, to which one developer has jokingly referred as "disktop publishing," lets you share your databases and stories with others who use compatible Apple II computers. (For a no-frills, low-cost approach to this technique, see the accompanying sidebar, "Getting Back to BASiCs.")

Surprisingly, hypermedia has few prerequisites. You don't need to master a traditional programming language — but you do need to get a handle on some new jargon. For one thing, authoring systems refer to each program you create as a *file*, a *story*, a *set*, or, more commonly, a *stack*. Each screen within a stack is usually called a *card*, although some programs refer to them as *pages* or *segments*; the starting point in a stack is the *home card*. Links between cards are usually called

*buttons*; some move the reader forward, some link back to a previous card, some ask questions and keep score, some play music, and some elicit a video sequence. At least a couple of the hypermedia programs reviewed here let you use invisible buttons, which you can cover up with colorful, readily identifiable icons. Click on the house icon to return to the home card, for instance; click on the stop sign to end the lesson; click on the right-facing



**HyperScreen: a low-cost alternative for 8-bit Apple IIs.**

arrow symbol to proceed to the next card in the application.

Besides buttons, authoring systems give you lots of other tools with which to work. Use a program's text editor or graphics text tool to type directly on a card in a variety of fonts and colors. Create original artwork with a program's paint and drawing tools. Some hypermedia packages offer multiple brush shapes and assorted line widths in addition to flood-fill and spray-paint tools. Shape tools, such as hollow and filled rectangles and ovals, are standard fare.

If the number and variety of built-in text and graphics tools in a particular authoring package seem insufficient, consider this: Most hypermedia programs can also import text files from other software either in ASCII format or as **AppleWorks** Classic word-processor files. Depending on the graphics capabilities native to the Apple II system for which they were designed, hypermedia authoring programs may also import high-resolution, double-hi-res, or super-hi-res clip art as well as original illustrations and digitized images. And, to get you started, the majority of programs we tested come with free clip art, full-screen backgrounds, borders, and sound effects.

In general, hypermedia products support the **Apple II Video Overlay Card**. This circuit board lets you display images from a VCR or a videodisc player on the computer screen instead of requiring you to set up a second monitor at your workstation. You commonly incorporate brief codes on designated buttons within your stack to start and stop the player after it displays a given frame or sequence. The manuals accompanying programs that support laserdisc players teach you how to write these "scripts."

True to their nature, most multimedia authoring systems can incorporate sound effects, musical selections, or spoken language into your stacks. HyperStudio, a GS authoring



# H Y P E R M E D I A

system, comes with its own sound-digitization card that lets you record "live" music or spoken words. Another superstar Tutor-Tech, imports speech from dictionaries created with software accompanying the **Echo** family of synthesizers.

Most hypermedia products we reviewed are breathtakingly easy to use. The majority feature Apple Human Interface niceties such as pull-down menus, mouse input, and sensible dialog boxes. Virtually all offer on-line help, interactive tutorials, and sample stacks.

Most programs provide automatic scripting: You don't have to type programming codes to design the cards in a stack. Want to place a button somewhere? Depending on the authoring system, all you have to do is pull down a menu and choose the "add a button" feature, click on the button icon in the program's toolbox, or draw a button with the mouse. Want to review a button's attributes? Click on the button and read the dialog box that appears. You can design (and redesign) each card until you're happy with the results.

Whether it's stapled, spiral bound, or inserted into a three-ring binder, hypermedia program documentation is generally of good, but not outstanding, quality. Many offer a plethora of stack ideas for teachers, school administrators, business owners, and hobbyists. Take advantage of resources, too, including the **HyperStudio Forum** newsletter and **Stack Central**, a magazine on disk, to supplement and expand your hypermedia authoring expertise.

## NO HYPERBOLE

No ifs, ands, or buttons about it: If you use a GS, you need **HyperStudio** (1.25 megabytes required). Thanks to excellent

design and a strict adherence to Apple Human Interface standards, this cream-of-the-crop authoring system is superbly easy to learn and simple to use.

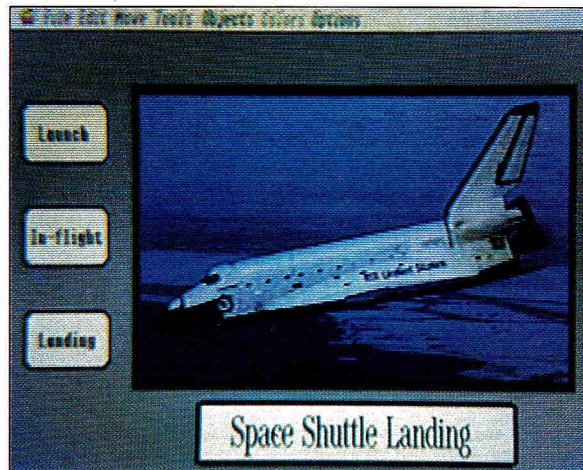
Among its many laudable features, HyperStudio offers a full-featured toolkit for creating original artwork — even a "magnifying glass" for zooming in on pixel-sized details. And with a program called **The Graphics Exchange** (sold separately), you can incorporate virtually any Apple II artwork into your HyperStudio stacks.

HyperStudio even lets you create scrolling text windows so that you can incorporate more information onto a card than might otherwise be possible. True to the Roger Wagner tradition, the program also supports extended commands, written in standard Apple II programming languages such as assembly and Pascal, that add advanced features.

In addition to its authoring software, the HyperStudio package includes some hardware, as well: a sound digitization card and a microphone. The "no-slot" card attaches via a metal bracket to the inside of the GS' chassis; it doesn't usurp any precious peripheral space.

To record live, designate a button to play a sound. Hold the microphone close to your mouth if you're going to speak — or near a musical instrument or a stereo speaker if you're going to record music. The Sound Shop, a free utility program that comes with HyperStudio, lets you digitize, edit, and save sound files for later use in your stacks. A small amplified speaker that supplants the GS' own internal unit is available at nominal cost.

With HyperStudio and other "desktop publishing" systems, everything you display on a card — text, background, clip-



**HyperStudio: the premier GS authoring system.**

## Getting Back to BASICs

Need an inexpensive way to launch your "desktop-published" newsletter or catalogue? Take a look at Floppy Book 1, the first in a series of disk-based communications written by Phil Shapiro, a Washington, D.C. -area educator and computerphile.

"The floppy-book concept derives from the fact that nothing is cheaper to reproduce and distribute than magnetic media," Shapiro says. "For the wholesale dissemination of ideas, magnetic media works out to be at least one-tenth the cost of equivalent hardcopy distribution of the same ideas. I see this Floppy Book disk as a sort of poor man's

hypermedia. Ideas can be quickly accessed from either of two menus. Comments can be added or deleted from the text. And the whole shebang can be reproduced for 25 cents, the price of a blank 5.25-inch floppy disk."

Creating your own "floppy book" requires implementing Karl Bunker's public-domain Dogpaw programming routine, as well as customizing the two menus to which Shapiro refers. Some knowledge of Applesoft BASIC is helpful, but don't be daunted: The "B" in BASIC stands for "Beginner's."

"Karl Bunker has effectively donated a printing press to any Apple II user who

owns a disk drive," Shapiro concludes. "Those of us who use Apple IIs for work and play have shown a great willingness to continue the vivacious spirit of the early days of microcomputers. We are all just far-flung members of the Homebrew Computer Club, creating and sharing new products, new tools, new ideas with wide-eyed amazement. I am hoping that the floppy-book concept will play a small part in keeping the Homebrew ethos alive in our hearts."

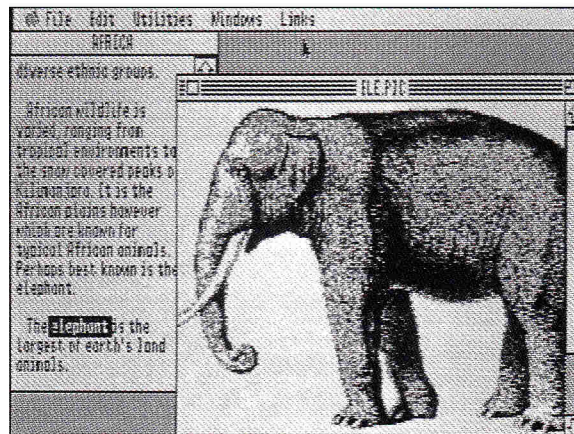
For more information on Floppy Book 1, write to Phil Shapiro at 5201 Chevy Chase Parkway NW, Washington, DC 20015-1747. — C.F.



art, and button icons — looks outstanding, in sharp contrast to many desktop-published communications in which the message is often blurred by a dot-matrix medium.

## LINKS IN THE CHAIN

Another exclusively GS program, **Nexus** (1.25 megabytes and GS/OS 5.0.2 required) pales in comparison to HyperStudio. In fairness, however, Nexus takes a totally different approach to hypermedia. You can't write a multiple-choice question or draw a polygon within Nexus itself; instead you use it as a utility to link files previously created with word-processing, painting, or sound-digitization programs. (At press time, a version of Nexus supporting Pioneer laser-disc play-



**Nexus: free-form database linking text, graphics, and sound files.**

ers was in development.) In Nexus each free-form database isn't a stack; it's a *set* consisting of linked files. Forging links couldn't be easier. For example, open a document written with the AppleWorks Classic word processor (version 3.0 files are imported without formatting); now pick a linking word. Press Open apple-A (or pull down the Link menu) to add the connection. Drag and

double-click on the hollow rectangle on the target word. Finally, choose the file to which you'd like to link; you can link as many as 1000 such files in a chain.

You can also place one or more links in graphics documents and sound files. In theory, clicking on a picture of a flute could open up a sound file and coax your Apple IIGs to play a selection from Mozart's *Flute Quartets*. Besides providing these powerful linking options, Nexus also offers the ability to create your own self-running disks, although you may have to alter the pathnames of accompanying files, depending on your particular hardware setup.

## TOOLS GALORE

A veteran 8-bit hypermedia authoring system, **Tutor-Tech** is the program of choice if audiences for your interactive tutorials and business presentations are likely to use the Apple IIe, IIc, IIc Plus, or their Laser 128 counterparts. A Tutor-Tech-based hypermedia system is an affordable choice for the average classroom, computer lab, or retail store.

Tutor-Tech, which requires only 128K of random-access memory, probably offers more tools and options than other

## PRODUCT INFORMATION

### Apple II Video Overlay Card

Apple Computer Inc.  
20525 Mariani Ave.  
Cupertino, CA 95014  
(408) 996-1010  
\$549

### AppleWorks 3.0

Claris Corp.  
5201 Patrick Henry Drive  
Santa Clara, CA 95052-8168  
(408) 727-8227  
\$249

### BCD-450 Interface

BCD Associates  
7510 North Broadway Extension  
Suite 205  
Oklahoma City, OK 73116  
(405) 843-4574  
\$595

### Dazzle Draw, \$59.95

### The New Print Shop, \$49.95

Broderbund Software  
17 Paul Drive  
San Rafael, CA 94903-2101  
(415) 492-3200  
(800) 521-6263

### Echo II, \$129.95

### Echo IIc, \$149.95

### Echo Headphones, \$19.95

Street Electronics Corp.  
6420 Via Real  
Carpinteria, CA 93013  
(805) 684-4593

### Graphics & Sound Booster Packs:

#### Holidays and Special Events

#### People and Places: U.S. History

#### Science and Technology

#### Science Fiction

#### Mystery

#### Adventure

#### Everyday People, \$29.95 each

#### HyperScreen, \$99.95

#### Super Story Tree, \$79.95

Scholastic Inc.  
730 Broadway  
New York, NY 10003  
(212) 505-3000

### HyperStudio Forum

HyperStudio Network  
Box 103  
Blawenburg, NJ 08504  
(609) 466-3196  
\$29/year (quarterly,  
includes network membership)

### HyperStudio 2.1, \$149.95

### Amplified External Speaker,

\$9.95 plus \$3 shipping

### Demonstration Set, \$10

### Clip Art Volume 1, \$24.95

### Clip Sounds Volume 1, \$24.95

### XCommands Library Disk

Volume 1, \$49.95

### The Graphics Exchange, \$49.95

Roger Wagner Publishing  
1050 Pioneer Way  
Suite P  
El Cajon, CA 92020  
(619) 442-0522  
(800) 421-6526

### Laser 128, \$479.95

### Laser 128 Color System, \$699

### Laser 128EX, \$549.95

Laser Computer Inc.  
800 North Church St.  
Lake Zurich, IL 60047  
(708) 540-8911



# H Y P E R M E D I A

hypermedia products for the Apple II family. In addition, the program's features are neatly organized around eight easy-to-use pull-down menus: File, Edit, Page, Special, Font, Pattern, Color, and Line.

Among other things, Techware's "Hypermedia Toolkit" comes complete with an impressive collection of ready-to-use artwork and an adequate supply of graphics tools for creating custom illustrations.

Tutor-Tech can import both single- and double-hi-res graphics, so you needn't worry about incompatibility with your growing collection of **Print Shop**, **Newsroom**, and **Dazzle Draw** images.

Not only does Tutor-Tech support more than a dozen models of **Pioneer** brand videodisc players, the program can interact with videocassette players by means of a BCD Associates' **BCD-450** interface. At press time, we knew of no other Apple II hypermedia product that could "talk" to VCRs, though Roger Wagner Publishing was said to be working on the necessary drivers for an upcoming version of HyperStudio.

How does Tutor-Tech work on your 16-bit GS? Well,

despite the many alluring features of Tutor-Tech stacks, if you're creating them on a GS, you need to make one minor adjustment. Note that because the program's double-hi-res colors tend to bleed on the GS' RGB monitor screen, you may want to switch to monochrome mode via the Control

Panel first to get the clearest images possible.

Tutor-Tech is a standout when it comes to supporting a wide variety of peripheral devices, including the **Tutor-Tech Tape Cassette Controller**; Echo speech synthesizers; various joysticks, trackballs, and graphics tablets; the **TouchWindow**; and the **Muppet Learning Keys**. You can use the regular keyboard to present stacks, a feature that may be an important consideration for some hardware-hungry schools.

Prospective software authors will be up and running in no time thanks to the Tutor-Tech tutorial; it's one of the best we've ever seen. Moreover, creating a new stack is as easy as pulling down menus and making choices with the mouse.

According to the company, some 250 stacks are available through various public-domain libraries and resources such



**Tutor-Tech: a complete range of tools and options in 128K.**

## Laser-Disc Players

Pioneer Communications  
3545 Long Beach Blvd.  
Suite 400  
Long Beach, CA 90807  
(213) 492-9935  
(800) LASER-ON  
\$895 - \$2285

## Muppet Learning Keys

Sunburst Communications  
101 Castleton St.  
Pleasantville, NY 10570  
(914) 769-5030  
(800) 431-1934  
(800) 247-6756 Canada  
\$129

## The Newsroom

Spinnaker Software  
201 Broadway  
Cambridge, MA 02139  
(617) 494-1200  
(800) 823-8088  
\$34.95

## Nexus

Golem Computers  
1111 Rancho Conejo Blvd. #407  
Newbury Park, CA 91320  
(805) 499-0197  
(800) 248-0363  
\$79.95

## Stack Central

A2-Central  
P.O. Box 11250  
Overland Park, KS 66207  
(913) 469-6502  
\$42/year (6 2-disk issues)

## StoryWorks

Teachers Idea & Information Exchange  
P.O. Box 6229  
Lincoln, NE 68506  
(402) 483-6987  
\$49.95

## TouchWindow

Edmark Corp.  
P.O. Box 3903  
Bellevue, WA 98009  
(800) 426-0586  
\$275

## Tutor-Talk

### Tape Cassette Controller

OMMEGA Corp.  
15476 NW 75th Court  
Suite 122  
Miami Lakes, FL 33016  
(305) 558-0097  
\$195

## Tutor-Tech 2.6

### Hypermedia Toolkit, \$195

### Gradebook, \$95

### Demo Disk, free

### Video Overlay Card

### Demo Disk, free

### The Stack Exchange,

free to registered users

Techware Corp.  
P.O. Box 151085  
Altamonte Springs, FL 32715-1085  
(407) 695-9000  
(800) 34-REACH



as *The Stack Exchange* newsletter, a publication produced by Techware and sent free to registered Tutor-Tech users.

## ON YOUR SMALL SCREEN

**HyperScreen**, an authoring program from Scholastic Software, finishes third among HyperCard-like interactive-hypermedia programs for the Apple II family (128K required). Although it's well-designed and easy to use, the program lacks the appeal of either HyperStudio or Tutor-Tech. For one thing, HyperScreen limits you to single-hi-res graphics in your stacks. We recognize the fact that for some prospective software authors, that's no limitation at all, because thousands of single-hi-res Print Shop images are available in the public domain. Moreover, Scholastic Software sells add-on "booster" disks with additional graphics and sound files.

To its credit, HyperScreen offers you a choice of 15 opening transitions, 32 paintbrushes, 80 colors, and various fonts. Moreover, the program supports videodisc players and the Apple II Video Overlay Card. Like other programs reviewed so far, HyperScreen sports pull-down menus and mouse support, two features that make the program easy to learn. Sample stacks, including "The Human Body" and "Movie History," provide glimpses of the program's capabilities.

HyperScreen has one distinct advantage over Tutor-Tech, its only real competitor, and that's price — it's about \$95 cheaper. If you're a teacher who plans to use an Apple IIe, IIc, or IIc Plus to create stacks and you're undecided about the program that's right for you, take advantage of both Techware's and Scholastic Software's 30-day preview policies.

## MULTIMEDIA STORYTELLING

**Super Story Tree** is similar to HyperScreen. They were designed by the same person and share certain features,

including compatibility with Scholastic's **Graphics and Sound Booster Packs**. Both programs offer a similar array of paintbrushes, line widths, and dithered colors.

A number of differences are immediately apparent, however. True to its name, Super Story Tree (128K required) is geared almost exclusively to writing and illustrating stories. In place of HyperScreen's File menu, for example, Super Story Tree sports Story and Page menus.

At each twist and turn, a story writer can give a reader one of three options: *continue*, *choice*, or *chance*. Continue buttons let the reader proceed to the next screen; choice buttons provide options about where the story should go; chance buttons create opportunities for random exploration. The author doesn't have to draw physical buttons on screen; the program supplies them automatically.

Super Story Tree's many appealing features would make it an exceptional addition to your elementary-school classroom or computer lab, particularly if your students like to collaborate on illustrated stories complete with sound effects.

## APPLEWORKS BRANCHES OUT

While it may not be inherently as intuitive as the other interactive products reviewed so far, **StoryWorks** has at least three compelling attractions: First, authors use the AppleWorks Classic word processor (versions 1.0 through 3.0) to create stacks. Second, the program requires only 64K. Third, StoryWorks costs less than \$50, a price that most schools can readily afford.

Start up AppleWorks, add the StoryStarter word-processing template to the desktop, and press Open apple-Z. The template consists of 51 segments demarcated by predefined markers that were set by the template's creator through the word processor's Printer Options (Open Apple-O).

Map your story (the manual includes sample flowcharts for ↗

## FURTHER READING

### **Super Story Tree.**

Reviews, October 1990, p. 75

### **"Videodiscs and Apple IIs: A Star Is Reborn,"**

September 1990, p. 58

### **HyperScreen.**

Reviews, September 1990, p. 38

### **"I Want My GTV,"**

Status Report, September 1990, p. 30

### **"GTV: Back to the Future,"**

September 1990, p. 100

### **"Get Hyped,"**

What's New, August 1990, p. 22

### **"Link Up: Nexus,"**

Editors' Choice, August 1990, p. 100

### **"Hypertext,"**

June 1990, p. 16

### **"On the Button: Scholastic HyperScreen,"**

Editors' Choice, May 1990, p. 96

### **"Where Were We?"**

What's New, May 1990, p. 16

### **"Desktop Video: Making Movies with Your Apple II,"**

April and May 1990, pp. 44 and 45

### **StoryWorks.**

Reviews, April 1990, p. 32

### **"More Hypertext,"**

What's New, April 1990, p. 20

### **"Exploring HyperStudio,"**

March 1990, p. 56

### **"In the Cards,"**

Speaking of Graphics, October 1989, p. 94

### **"Does HyperStudio Stack Up?"**

September 1989, p. 44

### **"Curing the 8-Bit Blues,"**

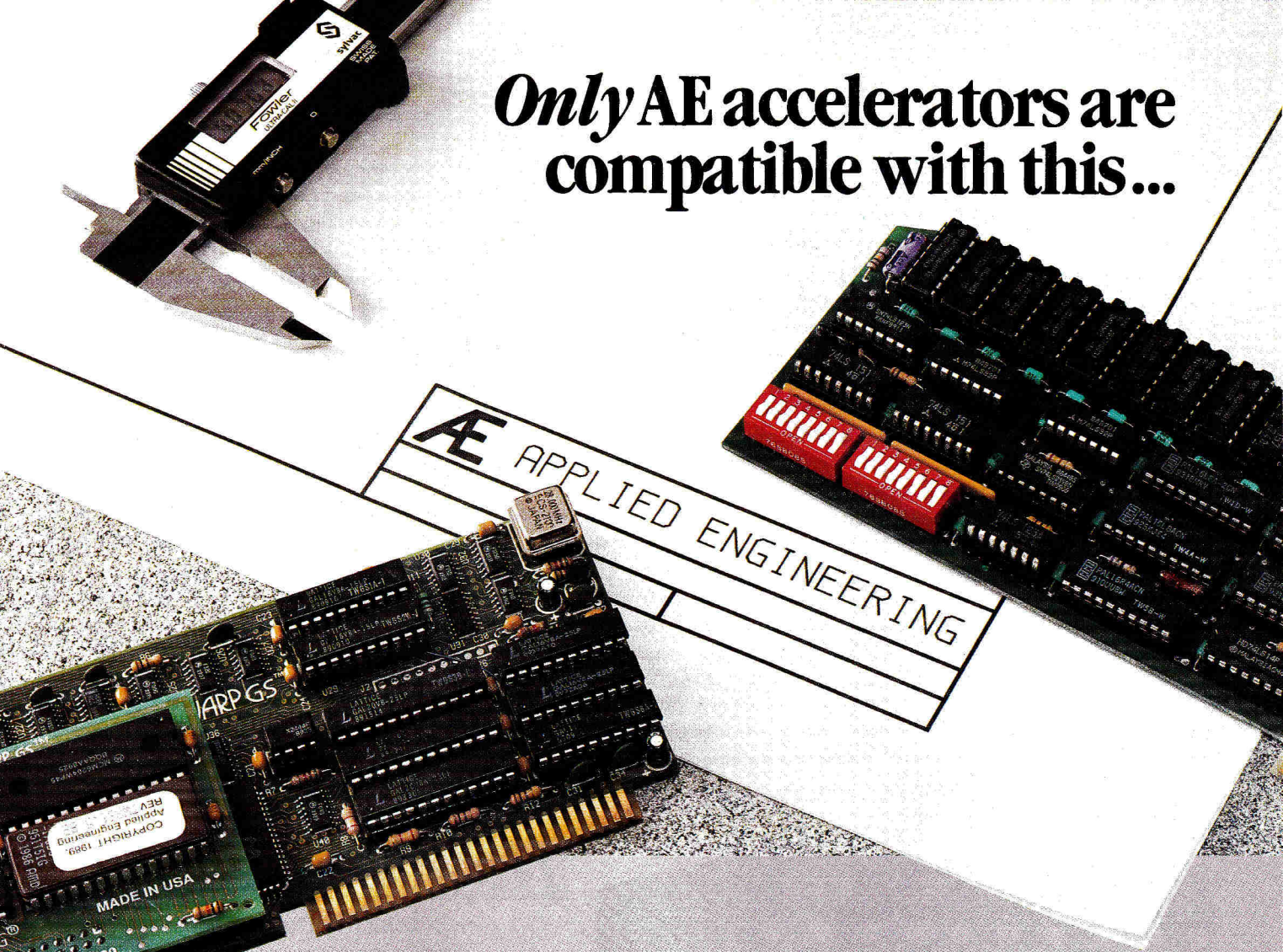
September 1989, p. 48

### **"HyperStudio: Hypertext for Your GS,"**

Editors' Choice, August 1989, p. 108



# 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 buss 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 computer

*"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 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% sales tax. Add \$10 outside U.S.A.

**AE Applied Engineering®**  
The 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.



# H Y P E R M E D I A

stories and a multiple-choice test) and write its text between appropriate sets of markers. Change the filename to the title of your story in progress.

After each Set Marker sandwich, type in a short script that directs StoryWorks to respond to buttons (selected Apple II keyboard keys), which the student presses. Besides branching off to appropriate parts of a story, these "transfer directives" can instruct StoryWorks to play a sound (the program comes with 26 sound effects), revert to a previous story segment, keep score, or display a grade.

Typing transfer directives isn't as easy or as fast as creating stacks with object-oriented authoring systems, but StoryWorks' syntax makes sense. If at a certain juncture you want the program to respond to a press of the *L* key, for instance, you include *L,l* in the transfer directive. If you want to play the fourth sound effect in the sound file, type a *d* at the appropriate location in the transfer-directive sentence. If you want the story to proceed to the eighth segment, type *>8*.

When your stack is finished, save it. Then boot up StoryWorks and test your masterpiece. You can read the story in 80-column text, but the program's default 30-column graphics text is much more appealing and much easier on the eyes.

Unfortunately, we know of no way to incorporate standard graphics into a StoryWorks story, though a sample seating-chart template provided in the StoryWorks package includes

an impressive drawing created solely with text characters.

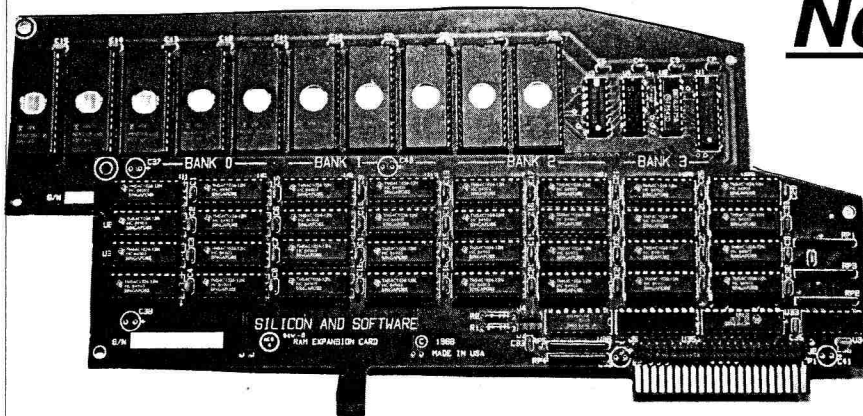
If you're an AppleWorks-using educator, you owe it to yourself to test-drive StoryWorks either as a teaching tool or as the basis for creative-writing activities in your classroom. You'll be in excellent company, too: StoryWorks is published and supported by the Teachers' Idea & Information Exchange, a professionally run network of software-sharing educators.

## HOW DOES IT STACK UP?

If one genre of software deserves to be hyped, it's hypermedia. With the ultimate in programming tools for the non-programmer, virtually every Apple II user can design stacks and stories that used to be impossible for the average person to create.

Thanks to HyperStudio, Tutor-Tech, and the other purveyors of personal-computing power we've talked about here, you'll be astounded by the sheer number and variety of enrichment opportunities you'll discover for your home, classroom, or business. □

CONTRIBUTING EDITOR CYNTHIA E. FIELD IS A FREE-LANCE JOURNALIST SPECIALIZING IN COMPUTER-RELATED TOPICS. SHE'S THE AUTHOR OF PRESS ROOM, *INCIDER'S* MONTHLY COLUMN ON DESKTOP PUBLISHING. WRITE TO HER AT 60 BORDER DRIVE, WAKEFIELD, RI 02879. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.



S&S- Apple IIs Ram and ROM expansion cards

## New Concepts

### NCS-GS RAM and ROM expansion boards

This multi-layered memory expansion board (same technology used by Apple) is 100% DMA and RamKeeper compatible. It is expandable to 4 megabytes via the economical 1 megabyte expansion kit and includes a ROM expansion socket for the existing ROM sister board.

NCS-GS with 0k- \$79; 1 meg- \$139; 2 meg- \$229; 4 meg- \$369

NCS-GS ROM board- \$59.

**Dealer Inquiries Welcome**

**InnerExpress™**- Speeds up Inner/OverDrives™ and Falcons™ by 200 to 300 percent. **\$129.**

**Enhanced Vision Plus GS-** A realtime color / BW digitizer for the Apple IIs computer. Useful for time-lapse photography, newsletters, home, school, and business desktop video applications. Referred to as Visionary™ in September *InCider* review. **\$329.**

**Emerald Visions™**- The first full-featured, full-screen 16, 256, 3200 color paint program for the Apple IIs. Features all the tools of your favorite paint program and much, much more. Not copy protected. **List price- \$99.95.**

New Concepts, Inc. 665 West Jackson St., Suite 2  
Woodstock, IL 60098  
Inquiries / Tech Support / Information: (815) 338-4227

Upgrade your AST Vision Plus™ to the Visionary! \$149.  
Upgrade to Emerald Visions 3200 color paint program. \$60\*  
\* With cover of DeluxePaint II™ or PaintWorks™ Plus/Gold manual.

**Orders Only:**

**(800) 487-8684**

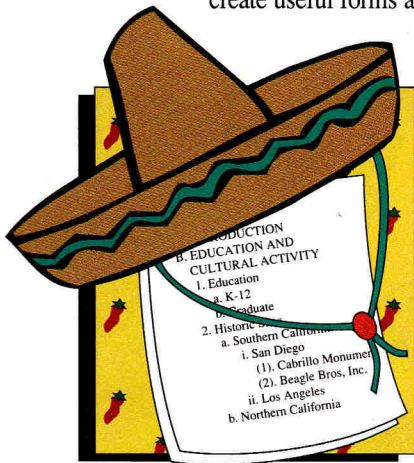
NCS-GS, InnerExpress, and Emerald Visions are trademarks of New Concepts, Inc. Visionary is a trademark of VRI. Falcon, InnerDrive and OverDrive are trademarks of Ingenuity, Inc. PaintWorks Plus/Gold is trademark of Activision. DeluxePaint II is trademark Electronic Arts.

Circle 39 on Reader Service Card.



# Three Amigos for Your AppleWorks Word Processor

Beagle Bros introduces three new products that enhance your AppleWorks Word Processor. Outline a term paper, create useful forms and learn how to develop innovative lesson plans—all without leaving AppleWorks.



## Outline and Thought Processing Made Easy

This exciting productivity tool brings outline processing to AppleWorks 3.0. Outliner for AppleWorks 3.0 lets you organize information up to six levels deep. Use it to create to-do lists and tests, prepare curriculum, generate lesson plans, organize class notes, write a term paper and more. Any information that you organize into different topics or levels can be processed with Outliner.

**\$69.95**

*Outliner for AppleWorks 3.0 requires a 128K Apple IIe, IIc, IIc+ or IIgs with at least one 3.5" or 5.25" disk drive and AppleWorks 3.0.*

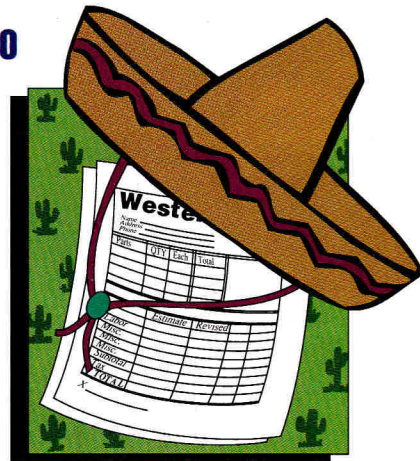
## Outliner™ for AppleWorks 3.0

## Design Forms Like a Pro

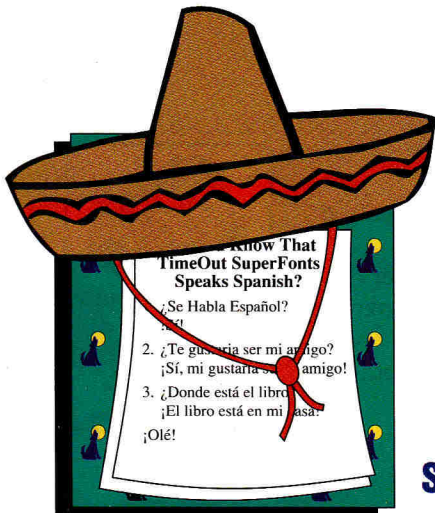
SuperForms, a utility that works with TimeOut SuperFonts, lets you create custom forms right inside AppleWorks. Now you can graphically create professional looking invoices, calendars, inventory forms, grade sheets and more. Plus, once you've created your form, FormFiller will allow you to fill it with information transferred from a data base, spreadsheet or word processor file. **\$69.95**

For a limited time you can purchase TimeOut SuperFonts and TimeOut SuperForms together for only **\$99.95!**

*TimeOut SuperForms requires a 128K Apple IIe, IIc, IIc+ or IIgs with a 3.5" or 5.25" disk drive and AppleWorks 3.0 with TimeOut SuperFonts.*



## TimeOut SuperForms™



## A Personal Learning Tool

The SuperFonts Activity Guide is a collection of teaching materials that helps you get the most out of TimeOut SuperFonts in your classroom. Developed with the assistance of professional educators, the guide was written with the instructor in mind. A variety of ideas and examples for students and teachers are included. The guide also gives tips and explanations for integration of other resources, including the use of other TimeOut products. **\$49.95**

TimeOut SuperFonts and SuperFonts Activity Guide. **\$99.95.**

*SuperFonts Activity Guide requires AppleWorks 2.0, 2.1 or 3.0 with TimeOut SuperFonts.*

## SuperFonts Activity Guide™



**Order from your favorite software dealer.**  
**To order directly from Beagle Bros call (800) 345-1750.**

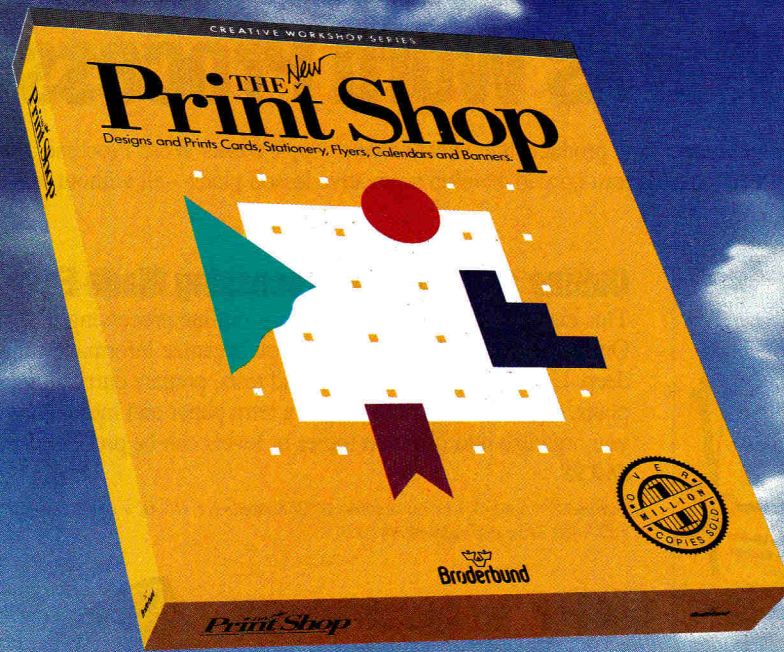
Circle 178 on Reader Service Card.



BEAGLE BROS, INC. • 6215 Ferris Square, Suite 100 • San Diego, CA 92121 • (619) 452-5500

TimeOut, SuperFonts, SuperForms, Outliner and Beagle Bros are trademarks of Beagle Bros, Inc. AppleWorks is a registered trademark of Apple Computer, Inc., licensed to Claris Corp.

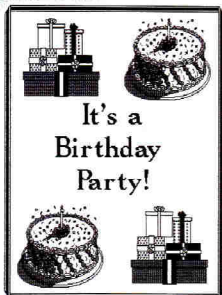




# HEIGHTENED CREATIVITY

We've just elevated creativity to a higher level. Announcing The New Print Shop® from Brøderbund — the new version of the most popular consumer software of all time. Now with sharper images, new formats and lots more fantastic features, including:

- Better graphic resolution
- Multiple graphics and fonts per page
- Multicolor graphics
- Create huge signs or tiny gift enclosure cards



- Greater flexibility to place graphics anywhere you like
- Skip steps or move backward and forward as you design

All this with the same Print Shop ease-of-use.

The New Print Shop. Now being creative is truly a heavenly experience.

**Special Upgrade Offer** for current Print Shop Owners. Just call The New Print Shop Hot Line for upgrade details:

**800-999-3256**

**Educators:** call 800-521-6263.

- Available for Apple IIe, IIc/IIc Plus computers with 128K, \$49.95. A compatible printer is required.
- Look for The New Print Shop at your local dealer, or call The New Print Shop Hot line at 800-999-3256 to order direct.
- Also available: The New Print Shop Graphics Libraries®: Sampler Edition, Party Edition, and School & Business Edition for the Apple IIe, IIc/IIc Plus, \$24.95 each.



## Brøderbund®

© Copyright 1990 Brøderbund Software, Inc.  
17 Paul Drive, San Rafael, CA 94903-2101. All rights reserved.

84INR



The best software lets kids explore electronic worlds just as they explore their physical world — at their own speed and for their own reasons. inCider takes a look at five such programs for preschoolers and evaluates their potential for fun and learning.

# DAYS OF DISCOVERY

By GREGG KEIZER

## ALIEN MINDS LIVE AMONG US.

No, that's not a headline from your favorite supermarket tabloid. It's a fact. Spend a few moments with a preschooler and you'll realize that young children simply *think* differently from the rest of us. They just don't live by the same rules as everyone else.

Everything is fair game to a preschooler. Any question can be asked, any saunter through the kitchen turned into an adventure, any law of physics repealed. Curiosity is their byword; learning is their job. That preschooler in your house is on a five-year

mission of exploration, trying to gather as much information as possible. The discoverers of the New World had it easy compared to kids — after all, at least they knew their colors.

## THE COMPUTER'S ROLE

To help such pint-sized Magellans, parents have always called upon special tools to quicken their children's progress — anything to give them an edge. Alexander the Great had a private tutor — Aristotle. We had Play-Doh and Etch-a-Sketch. Today's kids have





computers like the Apple IIe and the GS. But is the personal computer the right tool for preschoolers? Should a three-year-old sit at a computer desk, hands on the keyboard, eyes on the screen?

Some people say no. Surprisingly, at least one is a software developer. Tom Snyder, once a classroom teacher and now head of the software publishing company that bears his name, believes that computers can't compare with low-tech or no-tech learning. "A computer doesn't compete particularly well with other [learning] activities — the stuff is intriguing for only a couple of minutes," he says. "Let me put it this way: I've got two preschoolers at home and we don't own a computer. But we do have a ton of books. They're slightly more interactive than a computer."

What computers can do, suggests Snyder, is foster interactivity among children, perhaps by serving as a smart storyteller, by "introducing a new fictional problem for kids to deal with" — the computer as referee and coach.

Not everyone sees it the way Snyder does. Warren Buckleitner works for High/Scope, a nonprofit foundation that tracks and evaluates preschool software; as he edits an annual collection of preschool-software reviews, he watches kids use more than 400 programs every year. "Computers won't replace traditional preschool activities, like blocks," he says, "but they're a great activity for kids. Kids love computers." The key, he explains, is the software. "The best software puts the child in control," he notes, whether in an

open-ended or a drill-and-practice-style program. "Sure, kids should use computers. They're a good option. All the teachers I talk to feel good about what they see kids doing with computers," he adds. "But I could still raise a happy child without one."

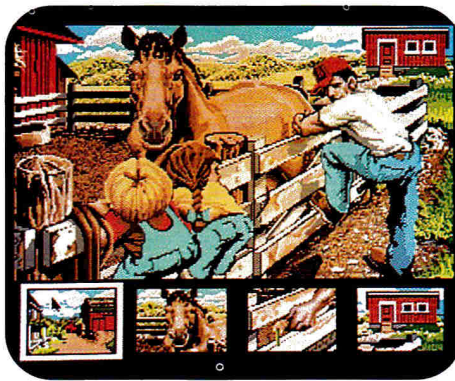
Most parents would agree. You want to put your Apple II to good use, and put your preschooler in front of good software. You've seen the way your Apple II has changed your life, and you want to see whether it can change your children's lives, too. We all want to give our kids the very best we can — and that goes for the computer time they keep just as much as for the food they eat and the books they read.

November's the start of the Christmas promotion season for many stores and manufacturers — a perfect excuse to kick your quest for high-quality preschool programs into gear. To get you started, here are five packages I recommend strongly to anyone with an Apple II and a tot in the house. I've put my four-year-old play tester

through the preschool-software mill to come up with this list. Pick up any (or all) of these five programs and your child will learn something, have loads of fun, and probably teach you a thing or two along the way.

### FROLIC ON THE FARM

Your preschooler won't find a better program of discovery than **Katie's Farm**, the sequel to **McGee**, Lawrence Productions' debut into no-word software (Editors' Choice, January



Go exploring around Katie's Farm.

## CHECK IT OUT

It's hardly surprising that good software for preschoolers is at a premium — it's simply harder to create quality preschool programs than educational software for older kids. A developer can assume that a school-aged child knows how to start a program or skim a manual, but take that for granted with a preschooler and the disk may never leave the box.

To help you find the best preschool programs, use this simple yes/no checklist. Answer three or four questions with a yes and you've spotted a good piece of software.

**1. Can kids use the program without much help?** Top-notch preschool software starts automatically, demands no disk swaps, and works with just a few easily recognized or remembered commands.

**2. Is the program self-paced or open-ended?** Good preschool software lets kids explore, lets them discover new ideas, shapes, words, and more without forcing them along some sort of locked-in path.

**3. Does the program use graphics and sound for a purpose, not just as window dressing?** To a young learner, pictures and sound take the place of written words. Good graphics and sound, especially spoken words, keep preschoolers' short attention spans focused on the program.

**4. Is the program fun?** Entertainment and education aren't contradictory terms, no matter what you remember from your school days. Preschool software must be fun to use, or children will recognize it as work and refuse to play along.

Other criteria can affect your evaluation of preschool software, of course. Does the program depend on perfect typing skills? Bad news.

Is it useful only for two-and-a-half-year-olds who can spell three-letter words? Worse news — software that accepts broad ranges of abilities and ages will get used more often, and longer, too.

To root out the best programs, talk to friends with computers and preschoolers, pump a local kindergarten teacher for recommendations, or visit a software store and ask to see programs demonstrated. Take your child with you on those trips to the software store, though. For confidence in what you're buying, nothing beats having your own preschool play tester give a package a thumbs-up. — G.K.



1990, p. 132). Like its predecessor, *Katie's Farm* puts preschoolers in complete control and lets them explore a fascinating world with their Apple IIgses.

High on graphics and packed with digitized sound and voices, *Katie's Farm* stars McGee and his older cousin Katie. Your preschooler decides what the computer kids do by moving the mouse and highlighting one of four smaller scenes at the bottom of the screen. A click of the mouse button sends them to the garden, the lake, the barn, the corral, the chicken coop, even the big oak tree in the yard.

Head into the barn, for instance, and watch Katie's mom milk the cow, or jump into a pile of soft hay, or feed the barn cats fresh milk. The sound effects are realistic enough to bring back memories of early mornings on the farm; the animation is smooth.

There are no numbers, letters, or shapes in *Katie's Farm*, so at first glance you may think its educational abilities suspect. But the key to the program's success is the control your child has over Katie, McGee, and their little world — a real luxury in most preschoolers' lives. Almost as important are the conversations you'll have after a stroll through *Katie's Farm*. Ask why McGee took the berries, then listen for a hilarious answer — or get ready to answer questions about anything from how to milk a cow to why horses like carrots. Don't underestimate the educational power of conversation — McGee and Katie don't.

### A MESSY ROOM WITH LOTS TO DO

A bit more traditional is **The Playroom** (Reviews, October 1990, p. 34), an intriguing collection of preschool learning games for the Apple II from Broderbund Software.

The opening scene is a crowded playroom with lots of objects to choose from. Using the keyboard, the mouse, or a joystick, kids select the clock, the alphabet book, the spinner toy, the computer, the mousehole, or the mixed-up toy. After a disk swap, another screen appears. It's an easy-to-use interface perfect for young learners.

One of the best activities is *The ABC Book*, three different scenes your child fills with objects that appear when he or she presses a letter key. Though some of the objects are obscure (how many kids know what a zither is?), *The ABC Book* is a wonderful way for young children to practice initial letter skills. They can even peel objects off the background and reposition them — a nice touch.

Another Playroom activity is *The Mousehole*, a one- or two-player counting game in which kids shake on-screen dice

and move pieces around a board. At its simplest level, it's a good introduction to numbers. Children learn to plan ahead, though: They have their choice of three dice and figure out quickly that some rolls mean a trip backwards, others a great leap forward.

Four more Playroom games focus on telling time, counting, spelling, and matching. The mix ensures that every preschooler will find something interesting. Think of *The Playroom* as the AppleWorks of preschool software — a bit of everything packed together — and you'll understand its attraction for young children.

### READ ME A STORY

Tom Snyder, educator and software developer, coined the word *lapware* for his kind of preschool programs. The idea, in a nutshell, is that a computer isn't something preschoolers should face alone, but instead should share while perched on a parent's lap.

Snyder turned his lapware idea into reality with the introduction of his Reading Magic series. Two titles

— **Jack and the Beanstalk** and **Flodd, the Bad Guy** (Reviews, September 1989, p. 38) — make up the line's Apple II offerings. They're more than two years old now, but they're still among the best preschool programs around.

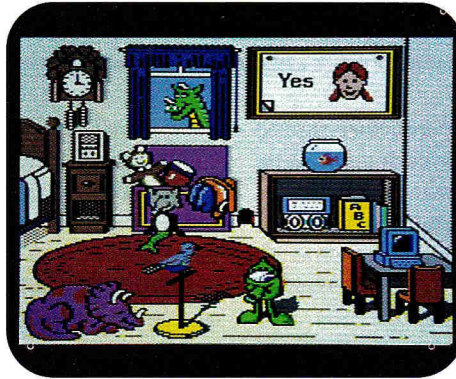
Our favorite is *Jack and the Beanstalk*, a slightly warped version of the classic. Set in a future in which cows are robotic, the story follows the traditional line for the most part. Jack sells his cow for magic beans, climbs the beanstalk, and rescues a goose-like creature from the nasty giant. There are no digitized or synthesized voices here, just relatively simple pictures and words to read from the screen. Your child is in control, and operating the program couldn't be easier — press the spacebar to "turn" the page.

What turns a computerized fairy tale into a top preschool program is the way the software forces you to interact with your child. At various times along the way, a fork in the plot trail appears and you've got to decide what to do. Go down the stairs or up? Leave the beanstalk or head for the top? What to do, what

to do? That's the point of the Reading Magic concept, for the story is secondary to the time spent together reading, talking, planning, enjoying.

### A TALKING BEAR

If you're looking for software fit for the younger preschooler, a two- or three-year-old perhaps, you can't go wrong by booting any program in the Stickybear series. This wide-ranging line is most impressive, though, in its ↪



Lots of games to choose from in *The Playroom*.



Reading is magic when it's *Jack and the Beanstalk*.



Apple IIGs format, for the veteran Stickybear talks to your child.

Our AFB (All-time Favorite Bear) is **New Talking Stickybear ABCs** (Reviews, September 1989, p. 82), a perfect program for young learners just starting to associate letters and their initial sounds. This GS program's graphics and sound are outstanding, head and shoulders above the competition.

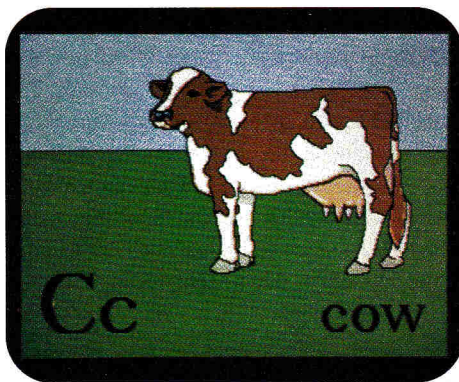
Your preschooler chooses one of three related activities. The most fun and the best learning tool is

*Alphabet*, a simple press-the-key-and-see-a-picture experience. The voice-over speaks the displayed letter and its associated word while animation takes over the screen. What sets Stickybear apart from other programs with similar ambitions is its illustration-quality graphics and its impeccable speech. Your child won't have any trouble understanding Bedford Stickybear and his cohorts.

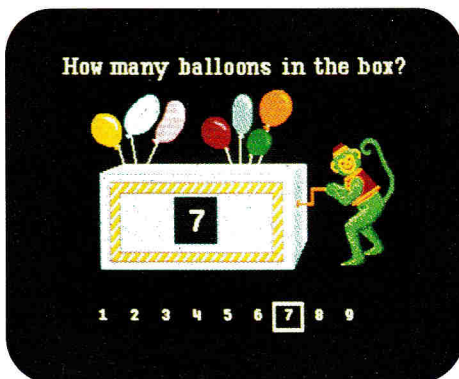
We've also enjoyed other bear software, and especially recommend the GS talking versions of **Stickybear Shapes** and **Stickybear Opposites** (Reviews, February 1990, p. 32). Shapes seems a bit more advanced, but Opposites is another perfect choice for young preschoolers ready for the concepts of up/down, in/out, and above/below. Stickybear may teach only one thing at a time, but he teaches it well.

### MONKEY MATH

More ambitious than the single-minded Stickybear, Davidson's **Math and Me** tosses a dozen math games into preschoolers' hands (Reviews, May 1990, p. 62). This drill-and-practice program directs children from simpler math concepts to more complex. It's not easy



Stickybear offers outstanding animation and sound.



Math and Me: solid drill-and-practice games.

to wander in Math and Me, and though the package is genuinely fun, it's more like work than any of the other programs on our recommended list.

From a main menu, youngsters can choose one of four subjects — *Shapes, Numbers, Patterns, or Addition* — each offering three different games. Traditional computer-style learning activities for the most part, they range from the very simple (identifying a shape) to the demanding (adding numbers under

time limits). Math and Me's pattern activities, in which kids fill in a gap in a sequence of objects or numbers, are fun; the puzzle problems seem to strike preschoolers as particularly challenging. Correct answers are greeted with musical and graphics rewards. If you have a GS, your child will delight in the high-quality digitized voices that gently request "Try again" and read numbers as they're summed.

This program is best suited for reinforcement of things already learned. My tester balked at the addition problems because the software did little more than display numbers. Once we'd spent time on the floor with piles of real things, adding Lego blocks by counting them out one at a time, she got more out of Math and Me's drill-and-practice. There's a lot in Math and Me — the dozen activities cover a lot of ground — but it wouldn't be my first choice for a preschool package. Second or third, yes, definitely.

### DREAMING OF TOMORROW

The Apple already in your house becomes a terrific tool for preschoolers when it's running terrific software. Top

## Learning Without the Computer

Time spent exploring with the computer is time well spent, but learning can take place away from the monitor, too. One of the great things about preschool software is that it usually sparks creativity in parents as well as in their kids.

To really make learning happen, take a look at the preschool software your child uses and come up with a few off-screen activities.

It's not that hard. Take Katie's Farm, for instance. The program offers several things to do or to investigate in

each scene. You can help foster your child's sense of sequencing, for instance — an important part of understanding such things as numbers and repetitive patterns — by sketching each activity on a separate index card. Even the crudest drawings will do fine. (It's not art you're teaching here, remember.)

Then after your child has played with the program, ask him or her to group the cards into the appropriate scenes. "What can Katie and McGee do at the pond?" is a good way to phrase it.

Some of the best preschool software puts ideas not just in your head, but on paper, too. Broderbund's Playroom is an excellent example, for its manual includes several pages of off-screen learning ideas that mesh with the software.

No matter what software you're using, keep thinking of new ways to use its power with your child. The software's designers may know kids, but they don't know your kid. You're the only one who can really individualize computer learning. — G.K.



preschool software mimics the way preschoolers learn — by playing, guessing, leaping from activity to activity — just as top simulation software mimics the way planes fly and cars drive.

But buy a computer just to launch your kids into education orbit? That's probably overkill. Even the best software pales in a preschooler's world when compared to crayons and coloring books, action figures and dolls, backyard trees and playground swings. Computers and software can push the exploration envelope into some new areas, but that's about it for now.

When technology catches up with our dreams and offers a home center that takes advantage of multimedia techniques, huge amounts of information and data, and open-

ended exploration, then computers can truly become first-line teachers. Imagine an answer machine, your kids asking tough questions such as "Where does electricity come from?" and getting treated to audiovisual answers on electromagnetic fields, generators, and wires full of electrons — real learning, real stuff not available on the playground or even in the library.

Until that day, we'll have to use what we've got. The five Apple programs covered here are among the best today. Tomorrow? Who knows? □

GREGG KEIZER IS A FREE-LANCE COMPUTER JOURNALIST. WRITE TO HIM AT 614 LINDEN STREET, SHREVEPORT, LA 71104. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

## PRODUCT INFORMATION

### First Letter & Words First Shapes

FirstByte Software  
3100 South Harbor  
Suite 150  
Santa Ana, CA 92704  
(714) 432-1740

512K GS

\$49.95 each

Multiple activities in each package, some of which aren't closely linked with the subject matter. The synthesized speech may be difficult for preschoolers to understand.

### Flodd, the Bad Guy Jack and the Beanstalk

Tom Snyder Productions  
90 Sherman St.  
Cambridge, MA 02140  
(617) 876-4433  
(800) 342-0236 (orders)

64K Ile/Ilc/Ilc Plus,

512K GS

\$34.95 each,

home edition

\$44.95 each,

school edition

### Katie's Farm McGee

Lawrence Productions  
1800 South 35th St.  
Galesburg, MI 49053  
(616) 665-7075  
(800) 421-4157

1-megabyte GS

\$39.95 each

### Kidstime II

Great Wave Software  
5353 Scotts Valley Drive  
Scotts Valley, CA 95066  
(408) 438-1990

512K GS

\$39.95

Letter recognition and computerized dot-to-dot games appropriate for young preschoolers; music composition and playback for older kids.

### Math and Me Reading and Me

Davidson & Associates  
3135 Kashiwa St.  
Torrance, CA 90505

(213) 534-4070

512K GS,

\$49.95 each (talking)

128K Ile/Ilc/Ilc Plus,

\$49.95 each

### Muppets on Stage

Sunburst Communications  
101 Castleton St.  
Pleasantville, NY 10570  
(914) 769-5030  
(800) 628-8897

128K Ile/Ilc/Ilc Plus, GS

\$65

\$129 with Muppet

Learning Keys

Letters and numbers discovery package rarely seen outside the classroom.

Good preschool program when used with Muppet Learning Keys alternative keyboard.

### The Playroom

Broderbund Software  
17 Paul Drive  
San Rafael, CA

94903-2101

(415) 492-3200

(800) 521-6263

128K Ile/Ilc/Ilc Plus, GS

\$39.95

### Reader Rabbit

Learning Company  
6493 Kaiser Drive  
Fremont, CA 94555  
(415) 792-2101

(800) 852-2255

256K GS, \$59.95 (talking)

64K Ile/Ilc/Ilc Plus, \$39.95

Excellent learning tool with

great digitized sound, but

too difficult for most pre-

schoolers. Better left for

early-elementary-aged kids.

### Stickybear ABCs,

512K GS, \$49.95 (talking)

48K Ile/Ilc/Ilc Plus, \$39.95

### Stickybear Opposites,

512K GS, \$39.95 (talking)

64K Ile/Ilc/Ilc Plus, \$39.95

### Stickybear Shapes,

512K GS, \$39.95 (talking)

64K Ile/Ilc/Ilc Plus, \$39.95

Optimum Resource

10 Station Place

Norfolk, CT 06058

(203) 542-5553

### Talking Animals Activity Set

Orange Cherry Software  
Box 390

Westchester Ave.

Pound Ridge, NY 10576

(914) 764-4104

(800) 672-6002

512K GS

\$49

Best part of this package is the free-form animal creator, in which kids build bizarre animals and paint them with an electronic brush. Other programs in the series are Talking Numbers and Talking School Bus.

### The Ugly Duckling

The Byte Works  
4700 Irving Blvd. NW  
Suite 207

Albuquerque, NM 87114

(505) 898-8183

768K GS

\$49.95

Talking storybook with good

digitized voice and limited

plot changes.



# EDUCATIONAL

CALL FOR A FREE 132 PAGE  
COLOR CATALOG!



YOUR SINGLE SOURCE SUPPLIER FOR COMPUTER SOFTWARE □ DISKETTES □ ACCESSORIES

# RESOURCES

USA □ Canada Toll Free  
**1-800-624-2926**

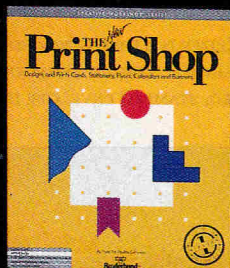
In Illinois Call  
**708-888-8300**



Your Cost  
**\$42<sup>95</sup> \$62<sup>95</sup>**

APL MAC IBM

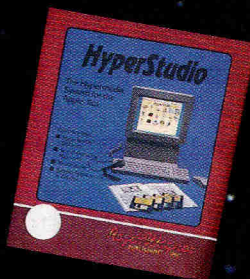
IIGS \$56.95  
Adventures Of Learning APL \$42.95  
Modules \$19.95 ea.  
D.Y.O. Train APL MAC \$33.95 IBM \$37.95



Your Cost  
**\$29<sup>95</sup> \$35<sup>95</sup>**

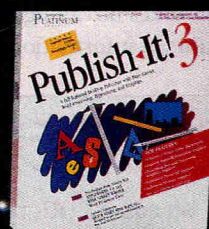
APL IBM/IIGS

School Version APL \$39.95 IBM \$48.95  
Lab Pack APL \$80.95 IBM \$104.95



Your Cost  
**\$83<sup>95</sup>**

IIGS  
1meg



Your Cost  
**\$84<sup>95</sup>**

APL 128K/IIGS

IBM \$121.95  
MAC \$223.95

## LASER 128 SYSTEM

Laser 128 Computer/Monochrome Monitor

ONLY  
**\$395<sup>00</sup>**

### LASER 128 COLOR SYSTEM

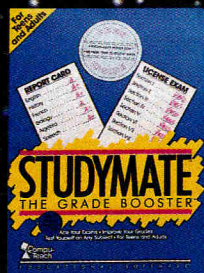
Laser 128 computer  
14" RGB Color Monitor  
**\$505<sup>00</sup>**

190A Printer Add \$196.95  
Monitor Stand - \$24.95  
Printer Cable - \$19.95

Call for lowest component pricing!  
Includes Free Copy II Plus!



**NEW** Your Cost  
**\$23<sup>95</sup>**  
IIGS



Your Cost  
**\$25<sup>95</sup>**  
Lab Pack (5) \$79.95  
APL/IIGS/IBM/MAC  
(3.5" or 5.25")



**WOW** Your Cost  
**\$16<sup>95</sup>**  
IIGS  
IBM \$48.95  
Write/Paint II Bundle \$27.95



Your Cost  
**\$17<sup>95</sup>**  
APL/IBM

**DON'T SEE IT HERE? WE HAVE IT!  
CALL FOR A FREE  
132 PAGE COLOR CATALOG!**

MAIL SCHOOL P.O.'S TO: **EDUCATIONAL RESOURCES**



1550 EXECUTIVE DRIVE  
ELGIN, IL 60123



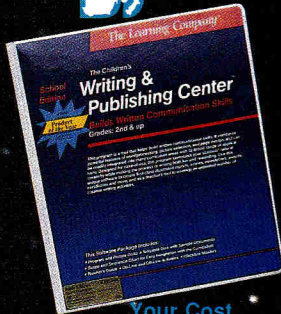
# DON'T MISS EDUCATIONAL RESOURCES

# Out Of This World Pricing, Service & Selection



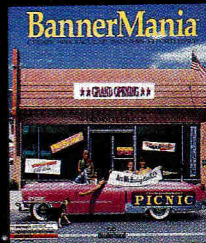
Your Cost  
**\$27<sup>95</sup>**

School Version \$41.95  
Lab Pack (5) \$119.95  
APL/IIGS/IBM/MAC



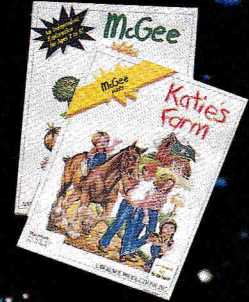
Your Cost  
**\$51<sup>95</sup>**

Lab Pack \$97.95  
Home Version \$32.95  
APL/IIGS



Your Cost  
**\$21<sup>95</sup>**

APL/IBM/MAC



Your Cost  
**\$47<sup>95</sup>**

IIGS/MAC  
Sold Separately \$26.95 each

## LOWEST RIBBON & ACCESSORY PRICES



(Quantities of 6)

Imagewriter I & II*.....	\$ 2.48	Epson LX 80/90*.....	\$ 2.50
Imagewriter II 4 Color Ribbons.....	5.48	Epson MX 100.....	4.00
Imagewriter II 4 Color Heat Trans.....	16.00	IBM Pro Printer.....	4.75
Panasonic KX-P 1090,1091,1092*.....	3.25	Okidata 182/192/193*.....	2.99
Epson MX/FX/RX 70,80*.....	2.50		

\* Available in Most Colors: Red, Green, Blue, Purple & Yellow Or For Quantities Less Than Six - Add \$1.00 Each.

## DISKETTES/PAPER

Diskettes - 5 1/4", DS/DD, (multiples of 50).....	\$ .35
Diskettes - 3 1/2", DS/DD, (multiples of 10).....	.69
Color Diskettes (10 Pk., Asst.) 5-1/4".....	6.95
Color Diskettes (10 Pk., Asst.) 3-1/2".....	14.50
Color Paper, Asst., 250 Sheets.....	10.95

Computer Eyes, B/W Ite/Ilc.....	\$102.95
Computer Eyes, Color, Iigs.....	199.95
Thunderscan.....	159.95
Vulcan 40 Meg Hard Drive.....	649.95
PC Viewer 200S APL/IBM.....	627.00

## ACCESSORIES

System Saver Iigs.....	\$68.95
Transwrap IIGS.....	289.95
Touch Window APL w/adaper cbl.....	282.24
Pioneer Laser Disc V2200 Player.....	749.95
Quickie Hand Scanner APL/IIGS.....	199.00

64K/80 Column Card  
**\$19<sup>95</sup>**

Allows you to use all the new 128K programs at a price you can't afford to miss!

## BEAGLE BROS.

APL/IIGS Compatible Products!

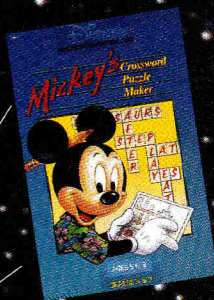
Beaglewrite.....	\$43.95	Timeout TextTools.....	\$27.95
Beaglewrite IIGS Only.....	54.95	Timeout ReportWriter.....	43.95
BeagleDraw IIGS Only.....	49.95	Timeout Graph.....	54.95
Timeout MacroEase.....	21.95	Timeout Thesaurus.....	27.95

Compatible With Appleworks 2.0 & 3.0!

## 5.25" HALF HEIGHT DISK DRIVES

**\$119<sup>95</sup>** APL/IIGS/LASER

3.5" 800K DRIVE \$199.95  
APL/IIGS/MAC (MAC Only \$209.95)



Your Cost  
**\$27<sup>95</sup>**

APL



SAVE!  
**\$49.95 VALUE!**

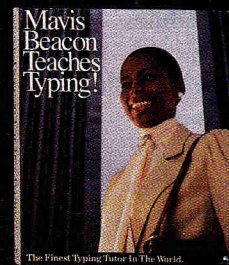
Your Cost  
**\$24<sup>95</sup>**

APL/IIGS/IBM  
IBM requires joystick port



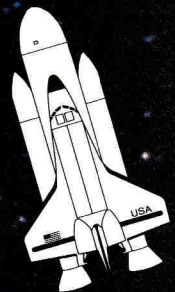
Your Cost  
**\$48<sup>95</sup>** APL/IIGS

Nature Disk \$20.95  
Holiday Disk \$20.95  
People & Places Disk \$20.95



Your Cost  
**\$26<sup>95</sup> \$32<sup>95</sup>**

APL IIGS/IBM/MAC  
Lab Pack APL \$109.95  
Lab Pack IIGS/IBM/MAC \$127.95



Checks and School P.O.'s welcome. Under \$300 add 5% shipping with a \$3.00 minimum  
\$25 minimum on charge cards. Free shipping over \$300.00 (Continental U.S. only)  
Canada add 10% to orders under \$500 with a \$5.00 minimum. Over \$500 add 5%.

**ORDER NOW!**  
**1-800-624-2926**  
**FREE 132 PAGE COLOR CATALOG**



# YOU CALL THAT ART?

**When art meets technology, the computer screen's your canvas. In the first installment in a six-part series exploring the dimensions of Apple II graphics, computer artist and teacher Debbie Greh looks at the 40-year history of this steadily evolving medium — where we've been and where we're headed.**

By **DEBORAH GREH, Ed.D.**

DRAWING AND PAINTING, LIKE music and language, can express both our deepest emotions and the most basic factual information. But can these uniquely human and varied forms of communication be transferred from traditional paints and brushes and pencils to the chips and pixels of today's personal computers?

The answer: They already have been. Apple II programs such as Paintworks Gold, DeluxePaint II, Dazzle Draw, and Blazing Paddles allow established and would-be artists to convey their message through an electronic medium. But although the II certainly boasts a proud graphics heritage, the roots of computer art run even deeper — back four decades.

notebooks and in the sketches of his anatomical studies. Five hundred years later, the mathematicians, scientists, and engineers of the 1950s were using main-

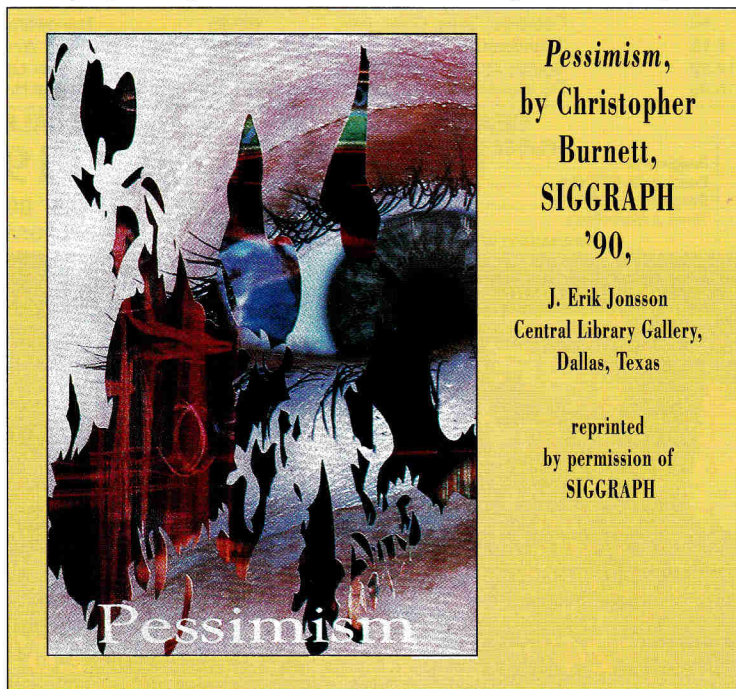
to see in those images the beauty of the ordered, structured world around them. At least one mathematician has observed that “a good mathematical problem produces

a beautiful graphic image.” To quote Galileo, “Mathematics is the language with which God has written the Universe.” (See *inCider's* Learning Curve column in September 1989, p. 110; February 1990, p. 84; June 1990, p. 82; and this issue, p. 86, for more on the relationship between graphics and mathematical functions.)

It wasn't long before artists became intrigued with computers' potential as a new graphics tool. Those early images were limited by monochrome monitors and low resolution, however; in addition, plotters were the only output devices available, printing only line drawings

that were often used as preliminary designs for work that would be executed in other media, such as paint, film, or textiles.

Each individual graphics image had to



*Pessimism,*  
by Christopher  
Burnett,  
SIGGRAPH  
'90,

J. Erik Jonsson  
Central Library Gallery,  
Dallas, Texas

reprinted  
by permission of  
SIGGRAPH

## BIT BY BIT

Technology and art seem to have always enjoyed an interesting kinship — think of Leonardo's genius on canvas and on fresh plaster, in the pages of his architectural

frame and minicomputers to visualize missile trajectories, aerodynamic design, and early robotics problems. As they plotted their equations and functions, they began



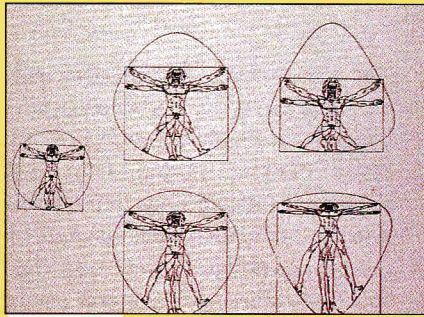
be programmed by hand, so most artists working with computers came from the world of industry or higher education, where access to technical expertise and state-of-the-art equipment was available. The cost of an IBM or Digital Equipment Corporation computer was prohibitively expensive for individuals — and so artists needed to work closely with programmers, or to become programmers themselves.

In the late '60s, for example, artists Lillian Schwartz and Ken Knowlton worked out of Bell Laboratories in Murray Hill, New Jersey; Charles Csurí, a painting instructor, traded in his brushes for a box of key-punched cards at Ohio State University. Working with programs and systems that today are obsolete, these artists and others pioneered the field of computer art. In 1968 the first major exhibition of works created on computers, *Cybernetic Serendipity*, was held at the Institute of Contemporary Arts in London. Since then, computer artwork has been shown regularly at mainstream galleries and museums around the world, as well as in special exhibits, such as annual juried shows of members' works sponsored by SIGGRAPH and the National Computer Graphics Association. (See the accompanying sidebar for details.)

While the increasing accessibility of all types of technology tempted many artists to look beyond traditional media, nothing had as great an effect as television. Television offered color screens for output and the ability to create overlays, special effects, and transitions (wipes, dissolves, and so on) through the use of a switcher, a device that controls two or more input sources, such as cameras, videotape, and computer graphics. Many artists — Nam June Paik, for instance — turned to video as a tool of expression, with computer-designed images providing additional inspiration. Today's genlock technology for personal computers, as found in the Apple II Video Overlay Card, for example, lets even amateur artists and home-movie enthusiasts combine video and graphics images (and text) for personalized multimedia presentations. (See "Roll Video," May 1989, p. 42; "Reel-World Images," July 1989, p. 40; and "Desktop Video," April 1990, p. 44, for more information.)

#### A CUMBERSOME BRUSH

By the mid-1970s, advances in silicon-chip circuitry led to reductions in



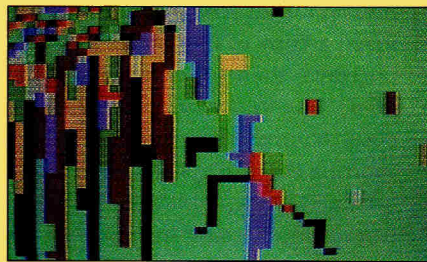
*Urbana Vita*,  
by Milton Montenegro,  
SIGGRAPH '90

reprinted by permission of SIGGRAPH



Computer drawing  
by Charles Csurí,  
Ohio State University

reprinted by permission of  
SIGGRAPH

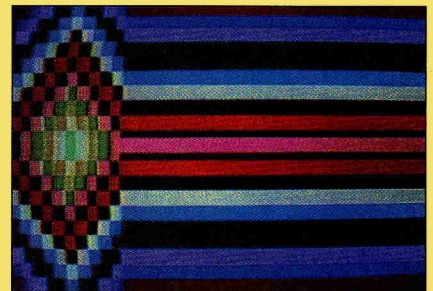


Lo-res Applesoft BASIC  
design by Kathy Neasey

Union Catholic Regional High School,  
Scotch Plains, New Jersey

KoalaPainter design  
by Julie Shanahan

Union Catholic Regional High School,  
Scotch Plains, New Jersey



the cost and size of computers. You could "build your own" (Heath/Zenith, for one, offered computers kits) for \$395; meanwhile, Steve Jobs and Steve Wozniak were developing the desktop-sized Apple II in a garage in Palo Alto, California. Home and office "hackers" started experimenting with "art typing" programs — code that would print a fairly simple image (such as Snoopy or a Christmas tree) composed of nothing but alphanumeric characters.

But it was another phenomenon altogether that really brought computer graphics home: a video game called Pong. In 1972, Atari invented this coin-operated entertainment program, and its success led to development of a microcomputer version. Pong's graphics images were limited to a "blip" moving across the screen, but

from those humble origins came further graphics-programming experimentation and the development of Space Invaders, Asteroids, and PacMan.

As Apple IIs began to appear in schools and homes in the early '80s, refinements in the computer language BASIC made it possible to create exciting graphics images, with little programming skill required. Drawing and painting programs appeared in a number of magazines, such as *BYTE*, *Kilobaud*, *Creative Computing*, and *inCider*; if you could type in some code, you had yourself a rudimentary graphics package — and you didn't have to write a whole new routine for each image you were designing.

Despite the convenience of today's commercially available painting and drawing ↗



software, typing in and running a simple BASIC graphics program can still open up whole new worlds of experimentation and exploration. As *inCider's* Learning Curve columnist David D. Thornburg notes, "Without the computer these pictures would be hard to create — it's unlikely that anyone would have the patience to do the calculations by hand. But with an Apple II at your fingertips, you can free the human mind to do what it does best — to wonder and to ask, 'What if . . . ?'" (See "An Ordered World," September 1989, p. 110; "The Art of Mathematics," February 1990, p. 84; "Glued to the Set," June 1990, p. 82; and "The Beauty of Chaos," this issue, p. 86, for programs and sample output.)

**A BITE OUT OF GRAPHICS**

The mid-1980s saw two major advances in personal-computer technology, completing the migration of graphics from the domain of expert programmer/artists out into the world of computer users with less expertise but plenty of curiosity: the development of commercial painting and drawing software and the invention and/or the promotion of the joystick, mouse, light pen, and graphics tablet. These input devices, which more closely resembled traditional artists' tools, provided an alternative to the keyboard.

Memory and speed also increased — from the Timex Sinclair 1000's 2K to the "megs" of RAM now commonly available, capable of defining vastly more complex images — and color was enhanced, from early Apple IIs' four hues (green, violet, orange, and blue) to the GS' 4000-plus, and from a resolution of 280 by 190 pixels to the gs' 640 by 200.

The KoalaPad touch tablet came packaged with KoalaPainter software (now MicroIllustrator); Blazing Paddles, Dazzle Draw, and The Print Shop with its disk libraries of clip art and other images put graphics into the hands of everyone who wanted it, from professional artists to gifted amateurs to students. Today, painting and drawing programs take full advantage of the GS' spectacular palette to produce designs of stunning power and detail.

When you look at the complex graphics designed for today's computer games — software such as the King's Quest series, Carmen Sandiego, The Ancient Art of War,

and so on — it's hard to imagine that only ten years ago artists had to program each image individually. HLIN, VLIN, PLOT, PLOT, PLOT . . . Sounds more like a sequence of dance steps than a string of BASIC commands, doesn't it? As for more serious pursuits, a new relationship between science and art is now emerging. Perhaps taking a cue from Leonardo, a new organization called the "Renaissance Team," based at the National Center for Supercomputing Applications in Chicago, is working with scientists, engineers, and mathematicians to develop more precise graphics renditions of digital information.

Computer graphics can even help illuminate some of the mysteries of art history; Lillian Schwartz, for instance, digitized a copy of one of Leonardo's self-portraits, then superimposed it on the *Mona Lisa* and made the astonishing observation that that famous face may be sporting the artist's features in disguise.

Whatever the application — visualization of the innermost structure of a human gene, corporate profit-and-loss spreadsheet data turned into readable charts and diagrams, multimedia geography lessons combining text and graphics, sound and video — computer graphics is advancing into the 21st century right along with the rest of the information revolution.

Regardless of the technological advances, however, many people still look at computer-generated or computer-enriched images and ask "Is it art?" The responses have been mixed. Some critics still call computer graphics an expensive form of "paint by number" and shun the machine as too technical a tool, too "cold" a medium. Still, computer-based works are in fact exploding into the mainstream.

But *is* it art? We'll tackle that question in depth in upcoming issues — but in the meantime, the best answer yet comes from Nam June Paik: "Art is what artists do." □

DEBORAH GREH TEACHES COMPUTER GRAPHICS AT ST. JOHN'S UNIVERSITY IN JAMAICA, NEW YORK. INTERESTED READERS MAY SEND SLIDES, PHOTOS, OR PRINTOUTS (NO DISKS) OF THEIR COMPUTER ART TO HER FOR POSSIBLE PUBLICATION AND CRITIQUE IN UPCOMING ISSUES OF *INCIDER*. ADDRESS YOUR CORRESPONDENCE TO 516 FARLEY AVENUE, SCOTCH PLAINS, NJ 07076. ENCLOSE RETURN POSTAGE OR A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A REPLY.

**FOR MORE INFORMATION**

**Organizations**

**SIGGRAPH**

Association for Computing Machinery  
11 West 42nd St.  
New York, NY 10036

In 1966, the Special Interest Group on Computer Graphics of the Association of Computing Machinery (ACM) was founded. It's an organization of graphic artists and fine artists who meet to share ideas and insights they've gained while using computers to create visual images. SIGGRAPH sponsors an annual summer technical conference, including an art show of juried works by members.

**NCGA**

2722 Mernilee Drive  
Suite 200  
Fairfax, VA 22031

The National Computer Graphics Association focuses on artists working in business and industry. The group sponsors a Video Gala at its conference each year, featuring the winners of the organization's annual animation competition.

**Books and Articles**

Berstein, Saul & Leo McGarry  
**Making Art on Your Computer**  
Watson Guptill Publications,  
New York, 1986

Deken, Joseph  
**Computer Images: State of the Art**  
Stewart, Tabori & Chang, New York, 1983

Knowlton, Ken  
**"Why It Isn't Art Yet"**  
Computer Graphics, January 1987, p. 11

Leavitt, Ruth  
**Artist and Computer**  
Harmony Books, New York, 1976

Machover, Carl  
**"A Brief Personal History of Computer Graphics"**  
Computer, November 1978, p. 21

Prueitt, Melvi.  
**Art and the Computer**  
McGraw-Hill, New York, 1984

Truckenbrod, Joan  
**"Computer Graphics Opens Artistic Options: Interview with Joan Truckenbrod"**  
Computer Graphics Today, August 1986, p. 4

**Magazines and Journals**

**Art in America**

**Art Forum**

**Art News**

**Audiovisual Communication**

**Computer Graphics**

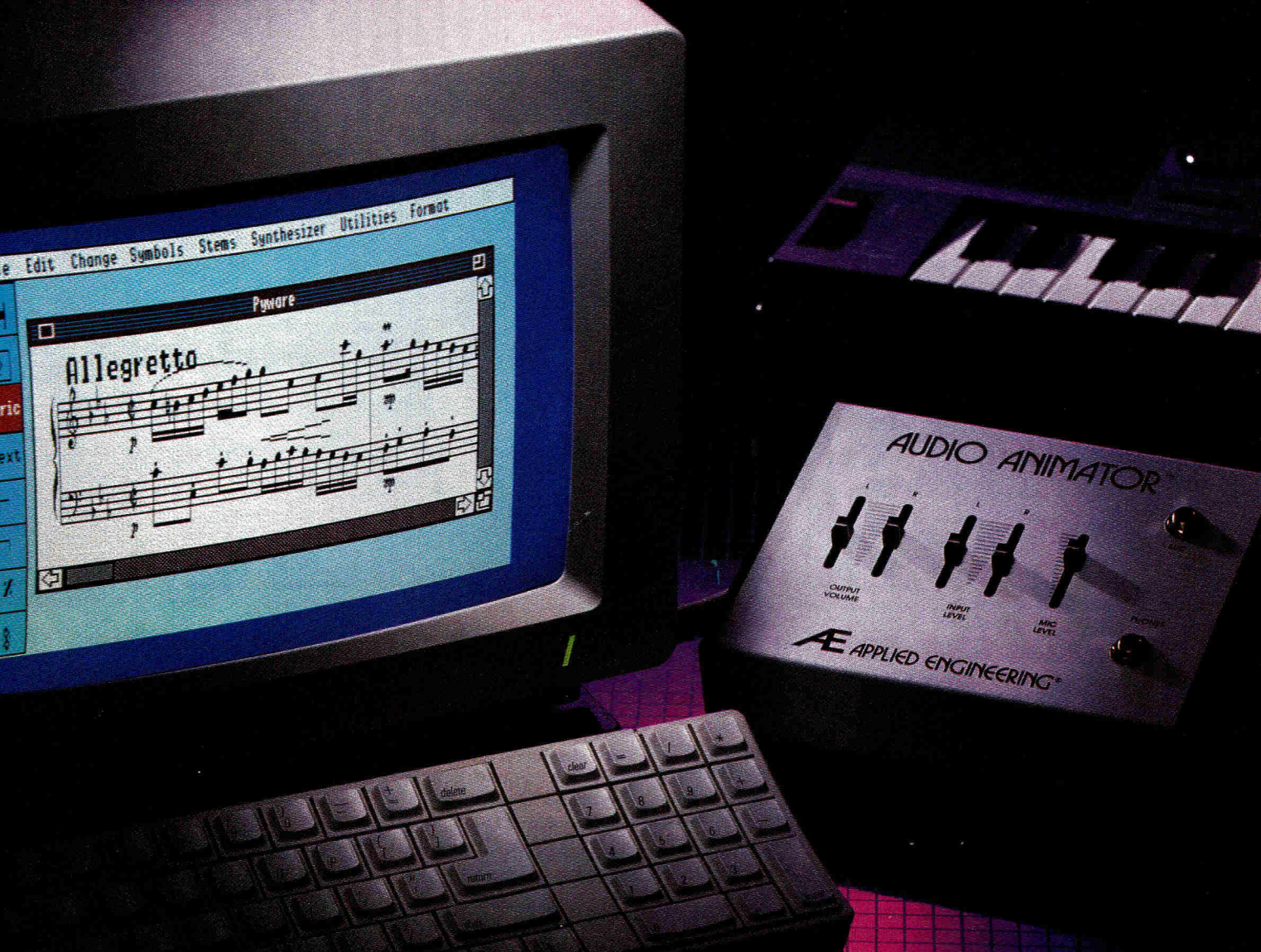
**Computer Graphics Review**

**Computer Graphics World**

**Computer Pictures**

**Presentation Products**





# A Couple of Great Performers

Put the capabilities of a professional sound studio into your Apple IIGS by orchestrating the duet performance of Pyware™ Music Writer and AE Audio Animator™. Now offered together for the special price of \$299.

With the teamwork of Pygraphics and Applied Engineering at your fingertips, you'll compose, edit, sequence, mix, sample, and print out your musical masterpiece. You'll unleash your creativity as you enjoy the potential your IIGS was designed for.

The AE Audio Animator™ provides the MIDI interface, sequencer, sampling, external mixer and amplified stereo sound capabilities.

The Pyware™ Music Writer lets you compose in real time or step time, edit the passages via simple commands, then print to your Apple Imagewriter or Laserwriter in parts, range of parts or score formats.

To bring a professional-level sound studio into your home, for only \$299, give us a call. But act soon. This offer ends January 30, 1990.

Pyware™ Music Writer Level I and Audio Animator™ \$299.

Music Writer Level II and Level III pricing upon request.



PYGRAPHICS, P.O. BOX 639 GRAPEVINE, TX 76051

**AE Applied Engineering®**

*The Apple enhancement experts.*

A Division of AE Research Corporation.

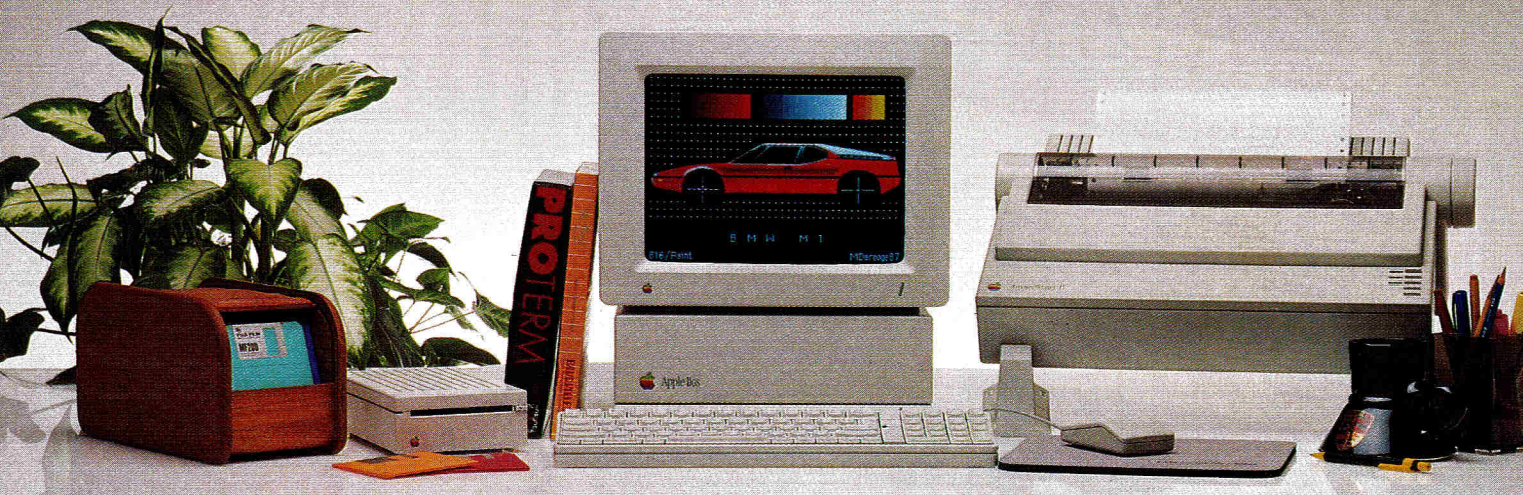
P.O. BOX 5100, CARROLLTON, TEXAS 75011

For more information or to order, contact your local dealer or call Pygraphics at 1-800-222-7536 or Applied Engineering at 214-241-6060.

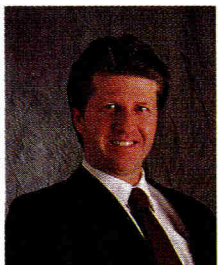
Apple IIGS is a registered trademark of Apple Computer, Inc.



# Complete Apple Solutions



## What makes CDA different?



*We offer complete Apple solutions.*

At CDA you will find everything you need in one place — complete ready-to-run systems, add-on hardware, software and a large selection of accessories. Every order is backed by our 30 Day Money Back Guarantee as well as our full One Year Performance Warranty. From our knowledgeable sales staff and customer service representatives, to our technical support team and warehouse

crew, every order receives personal care — from start to finish.

Since 1980 CDA has been serving customers world wide.

Growing along with the personal computer industry has enabled us to acquire the knowledge and experience necessary to help you get what you need, when you need it, at the right price — with full support and service. Marc Daniels, President

### The Apple IIGS Power System

- Apple IIGS CPU w/1 Mb of Memory
- AppleColor RGB Monitor
- Applied 3.5" Disk Drive
- 20Mb Vulcan Hard Drive
- ImageWriter II Printer
- All necessary cables
- Extra Black Ribbon
- Color Rainbow Ribbon
- System Dust Cover Set
- Printer Dust Cover
- 10 - 3.5" Diskettes
- Disk Storage Box
- Package of Paper
- Mouse Pad

Package #9084

**CDA Price \$2569**

### The Affordable Apple IIGS System

Complete System Includes:

- Apple IIGS CPU w/1 Mb of Memory
- Magnavox Color RGB Monitor w/Stereo Sound
- Applied 3.5" Disk Drive
- Olympia NP-30 Printer
- 3 - Extra Black Ribbons
- System Dust Cover Set
- Printer Dust Cover
- 10 - 3.5" Diskettes
- Package of Paper
- Mouse Pad
- All necessary cables

Package #9086

**CDA Price \$1699**

### ImageWriter II Printer Package

Package Includes:

- ImageWriter II Printer
- Printer Cable
- Extra Black Ribbon
- Color Rainbow Ribbon
- Printer Dust Cover
- Package of Paper

**IIGS Pkg - \$475**

**Ile Pkg - \$529**

Apple IIGS - Package #9071

Apple IIC - Package #9072

Apple Ile - Package #9073

(Ile pkg includes the SMT Envoy interface card)

### Olympia NP-30 Printer Package

Package includes:

- Olympia NP-30 Printer
- Printer Cable
- Printer Dust Cover
- Package of Paper
- **Bonus!** 3 - Extra Black Printer Ribbons

**IIGS Pkg - \$299**

**Ile Pkg - \$359**

Apple IIGS - Pkg #9074B

Apple IIC - Pkg #9075B

Apple Ile - Pkg #9076B

(Ile pkg includes the SMT Envoy interface card)

### Apple Computers

Apple IIGS w/1 Meg ..... \$879

Apple IIC Plus ..... \$520

### Monitors

Apple Color Analog (IIGS) ..... \$465

Color Composite Ile ..... \$339

Color Composite IIC/IIGS ..... \$312

Apple Monochrome ..... \$135

Magnavox Color RGB ..... \$299

Magnavox Amber ..... \$99

IIGS Anti-Glare Screen ..... \$39

### Applied Engineering 3.5" Disk Drive

The AE 3.5

Drive

offers

all the

reliabil-

ity & 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



### Drives & More

Apple 3.5 Disk Drive ..... \$349

Applied 3.5" Disk Drive ..... \$209

Apple 3.5 UniDisk IIe/IIC ..... \$319

UniDisk 3.5 Controller ..... \$59

Apple 5.25 Disk Drive ..... \$259

Laser 5.25 Disk Drive (IIC) ..... \$89

Apple 5.25 Controller ..... \$59

Apple High Speed SCSI ..... \$109

CV Technologies RAM Fast

SCSI Controller w/256K ..... \$209

AE 5.25 Disk Drive ..... \$118

AE Vulcan HD/20 ..... \$519

AE Vulcan HD/40 ..... \$659

AE Vulcan HD/100 ..... \$1299

### Scanners

ComputerEyes IIGS ..... \$199

ThunderScan ..... \$159

LightningScan GS ..... \$219

### Quickie Scanner by Vitesse



*Editors Choice A+ / InCider!*

Now you can integrate crisp, clean line art, text & halftones into your newsletters, reports & flyers. The Quickie hand-held image scanner scans images at up to 400DPI within seconds! (IIGS) ... **\$199**

## Compuserve's Electronic Mall


*Enjoy the convenience of shopping at home*

For a large selection of Apple hardware, software and accessories — "GO CDA" 24 Hours a Day!



# CDA Offers Free Freight\*

AD #16-11



**ProTERM by InSync**  
**Rated #1 by A+InCider**  
 ProTERM is a complete telecommunications solution with features such as Rotary Dialing List, Protocol File Transfer, Scroll-back, built-in Editor, Terminal Emulation, & Auto-Learn Macros. ProTERM is simple enough for the novice, but powerful enough for the professional. .... \$79

**Modems**

AE DataLink 2400 .....	\$175
DataLink Express w/cable .....	\$199
Supra 2400 w/cable .....	\$129
Prometheus 2400 w/cable .....	\$179

**Printers & More**

ImageWriter II w/cable .....	\$465
ImageWriter Sheet Feeder .....	\$189
Olympia NP-30 w/cable .....	\$289
Apple Super Serial Card .....	\$109
Orange Grappler 9 Pin .....	\$79
Grappler Plus .....	\$69
SMT Envoy Serial Card .....	\$54
SMT Printech II .....	\$39

**Sound & Music**

Apple MIDI Interface .....	\$79
Opcode 1x3 Interface .....	\$59
AE Sonic Blaster .....	\$94
AE Audio Animator .....	\$174
Bose Roommates (white) .....	\$199



**Publish-It! 3 by Timeworks**  
 Produce your own newsletters, reports, ads and more! Prepare text on screen or import from AppleWorks 3.0, or any ASCII file. 200 graphic images included.  
**Special** - includes a free copy of Graph-It! (limited supply) . \$89

**Memory Upgrades**

We sell only pure Applied Engineering cards — complete with 5 year warranty!

GS-RAM Ultra 256K .....	\$159
GS-RAM Ultra 512K .....	\$179
GS-RAM Ultra 1 Meg .....	\$215
GS-RAM Ultra 2 Meg .....	\$289
GS-RAM Plus 1 Meg .....	\$215
GS-RAM Plus 2 Meg .....	\$289
RamWorks - all sizes available	
RamFactor 1 Meg .....	\$245
RamExpress II 256K .....	\$149
RamExpress II 512K .....	\$159
RamExpress II 1 Meg .....	\$179
SMT 64K Ext 80 Col Card .....	\$39
SMT No Slot Clock .....	\$35

**Accelerators**

TransWarp GS .....	\$269
Zip Chip Iie, Iic (8 Mhz) .....	\$149
Zip Chip IIGS .....	\$279

**IBM & Apple**

TransDrive Single 360K .....	\$185
PC Transporter 768K .....	\$269
IIGS Installation Kit .....	\$39
Iie Installation Kit .....	\$32

**Software by Vitesse**  
*New!*  
 Wings is a high performance disk management utility combined with an extremely flexible program launcher. And, it supports the Clipboard completely, allowing you to cut and paste text & graphics .....


Salvation Renaissance .....	\$34
Salvation Guardian .....	\$34
Salvation Exorciser .....	\$28
Salvation Deliverance .....	\$34



**Seven Hills Software**  
**Graphic Writer III**  
 Graphic Writer III is a fast, flexible, desktop publishing program that offers enormous appeal for GS users who want authentic 16-bit software. Features include 3 view modes, 30 type styles, word processor with expanded search-replace functions, spell checker, painting & more. .... \$75  
 Font Factory (IIGS) .....

Font Factory (IIGS) .....	\$23
Disk Access (IIGS) .....	\$32

**Input Devices**

Apple Iic Mouse .....	\$79
Apple Iie Mouse w/card .....	\$119
Mach III Joystick .....	\$35
Mach IV ADB Joystick (GS) .....	\$58
CH Flight Stick .....	\$47
Kensington Turbo Mouse .....	\$109
Koala Pad Plus w/software .....	\$82

**Surge Protection**

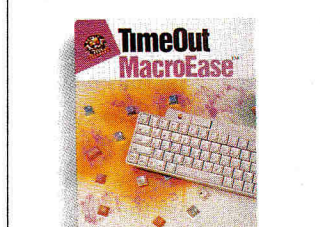
6 Outlet Surge Protector .....	\$29
Iie Heavy Duty Power Supply .....	\$59
GS Heavy Duty Power Supply .....	\$79
Kensington System Saver GS .....	\$69
Conserver .....	\$79

**Software Abracadata**

Design Your Own Train .....	\$35
Design Your Own Home Series	
Landscape, Architect, Interior .....	\$64
<b>Accolade</b>	
Grand Prix Circuit .....	\$28
Test Drive II Bundled w/European Challenge (GS) .....	\$43

**Beagle Brothers**

Appleworks Companion .....	\$28
BeagleDraw .....	\$54
BeagleWrite GS .....	\$57
Point to Point .....	\$65
TimeOut Graph .....	\$49
TimeOut Quickspell .....	\$38
TimeOut SpreadTools .....	\$38
TimeOut SuperFonts .....	\$38
TimeOut TeleCom .....	\$38
TimeOut TextTools .....	\$32
TimeOut Thesaurus .....	\$32
<b>Big Red Computer</b>	
PS Lover Utility Set 5.25 or 3.5 .....	\$28
<b>Britannica Gnarly Golf</b> .....	\$17
Designasaurus (GS) .....	\$27
Jigsaw .....	\$26
LaserForce (GS) .....	\$17
Taskforce .....	\$26
<b>Broderbund PrintShop GS</b> .....	\$36
New PrintShop (5.25) .....	\$34
New BannerMania (5.25) .....	\$32
Down Hill Challenge (GS) .....	\$22
McGee .....	\$26
Katie's Farm .....	\$26
The PlayRoom (5.25 or 3.5) .....	\$27
Where in Time is Carmen San Diego (3.5 or 5.25) .....	\$27



**TimeOut MacroEase by Beagle Brothers**  
*Now you can teach AppleWorks some new tricks!* With MacroEase you will discover loads of macro secrets & techniques. It also contains a Macro Tour for programming beginners. .... \$32

Where in the USA is Carmen San Diego (3.5 or 5.25) .....	\$27
Where in the USA is Carmen San Diego (IIGS) .....	\$32
Where in Europe is Carmen San Diego (3.5 or 5.25) .....	\$27
Where in the World is Carmen San Diego (5.25) .....	\$27
<b>Claris AppleWorks GS</b> .....	\$192
<b>AppleWorks (3.5 &amp; 5.25)</b> .....	\$169
<b>CompuTeach</b>	
Once Upon a Time II (5.25) .....	\$27
StudyMate - The Grade Booster (5.25 or GS) .....	\$27
Joshuas Reading Machine Premium Pack (5.25 or GS) .....	\$24
<b>Davidson AlgeBlaster Plus</b> .....	\$29
<b>Talking Math Blaster Plus</b> .....	\$29
<b>Spell it Plus (3.5 or 5.25)</b> .....	\$29
<b>Talking Reading &amp; Me (GS)</b> .....	\$29
<b>Word Attack Plus</b> .....	\$29

**Electronic Arts**

Block Out (GS) .....	\$27
Earl Weaver Baseball .....	\$27
Tunnels of Armageddon (GS) .....	\$27
<b>ECLAT GeoGraphic Jigsaw</b> .....	\$27
<b>Fractal Explorer (GS or 5.25)</b> .....	\$27
<b>Intuit Quicken (3.5 &amp; 5.25)</b> .....	\$38
<b>Manzanita</b>	
BusinessWorks Bundle .....	\$267
BusinessWorks Payroll .....	\$109
MECA World Geograph (GS) .....	\$56
<b>MicroRevelations</b>	
Xenocide (GS) .....	\$29
Nolo Press Will Maker (5.25) .....	\$35
<b>Roger Wagner</b>	
Graphic Exchange (GS) .....	\$32
HyperStudio (GS) .....	\$82
Taito Qix (GS) .....	\$22
<b>The Learning Company</b>	
Talking Reader Rabbit (GS) .....	\$32
Childrens Writing & Publishing Center (3.5 or 5.25) .....	\$32
Math Rabbit (3.5 or 5.25) .....	\$24
<b>Virgin Mastertronic</b>	
Risk (5.25) .....	\$27
Clue Master Detective (5.25) .....	\$27

**The CDA Guarantee**

**30 Day Money Back Guarantee**  
 If you're not 100% satisfied with your purchase you may send it back. (some items subject to restocking fees)

**One Year Performance Guarantee**  
 We guarantee all products to be free of defects for one full year.



**\*Free Freight!**

Stock items under 15 lbs. will be shipped free to any destination within the continental US via UPS Ground (order must be \$100 or more). Hawaii, Alaska, APO/FPO, foreign orders, systems and items over 15 lbs please call for rates.

**In N J (908) 832-9004**

Fax# (908) 832-9740

**Hours: Mon-Fri 9am-10pm**

Saturday 9am-6pm EST

1 CDA Plaza, P.O. Box 533

Califon, New Jersey 07830

All prices subject to change without notice. CDA is not an authorized Apple dealer. Apple & the Apple logo are registered trademarks of Apple Computer, Inc.

Circle 9 on Reader Service card.

**US/Canada Call Toll Free 800-526-5313**

**CDA Computer Sales**



# IN THE BALANCE 2

**Secure your assets, plan your budget, and assess your liabilities — with this spreadsheet you won't need an accountant after all.**

By **RUTH K. WITKIN**

ALTHOUGH YOU MAY NOT CONSIDER yourself part of the "corporate culture," all aspiring businesspeople must play the game of "number crunching" to keep their company's finances running smoothly. If evaluating your company's business affairs usually yields nothing but wasted time and troublesome arithmetic errors, let our spreadsheet do the work for you. Last month we created a *balance sheet* and *income statement*, to help you summarize your company's business activities. (See "In the Balance," p. 58.) This month we'll help you set up *financial ratios* to assess the managerial performance of your business.

For example, this spreadsheet divides your current assets by your current liabilities to produce the *current ratio*, a barometer of your company's ability to pay bills when due. This program also divides gross profit by sales to produce the *gross profit margin*, your company's profitability in relation to sales and costs. If you need to convince a bank to give you a loan, a trade creditor to extend you credit, or an investor to put his money into your company, let these financial ratios do the talking.

Now load the AppleWorks program and display the spreadsheet named **BALINCRAT**. And here's the *Review/Add/Change* screen. Last month you entered the labels,

lines, formats, and formulas for the balance sheet and income statement. Let's pick up from there and enter the financial-ratio labels, formats, and formulas.

Refer to the **Figure** and enter the ratio labels in column G. Here are a few instructions to guide you.

- In G32 type quotation marks to tell AppleWorks the asterisk is part of a label, and not a mathematical operator.
- In I32 and K32 type quotation marks before you enter the year to tell AppleWorks that the numbers are labels. (If you don't, the program will insert a comma because the standard numbers format is set at *Commas, no decimal places*.)
- Type a space after the column entries, so that they'll be aligned correctly.
- When you finish typing, press Open apple-S (OA-S) to store the spreadsheet.

Now use OA-L and *Value format* to override the standard format in these cells.

- Format I34 through I36 and I38 through I41 for *commas* with two decimal places.
- Format I43 through I45 for *commas* with one decimal place.
- Format I46 through I49 for *percent* with one decimal place.
- Format I50 for *dollars* with two decimal places.
- Use OA-L and *Label format* to right-justify the labels in I32 and K32.

The unshaded cells in the **Figure**

contain the ratio formulas. Read how the formula works, then place the cursor on the cell receiving the formula. Move the cursor to the cells shown in the formula description and type everything else. After you finish the formula, compare each character on your screen with the following description. If everything agrees, press Return. If something's amiss, press Escape and start again. Even with automatic recalculation turned off, AppleWorks produces the result for each formula.

Protect each formula immediately after you create it, so that you can copy the protection along with the formula: With the cursor on the formula cell, press OA-L and hit Return to confirm *Entry*. Type **PN** to select *Protection Nothing*.

Now take a look at the financial ratios and formulas you'll include in the spreadsheet. We divided the financial ratios into four groups: liquidity, debt, funds management, and profitability.

## LIQUIDITY RATIOS

Liquidity refers to a company's cash or near-cash position — or its ability to convert assets quickly to cash. Liquidity ratios measure a company's cash solvency and its ability to remain solvent under adverse conditions.

### FORMULA 13: CURRENT RATIO

The *Current Ratio* indicates a company's ability to meet its short-term obligations — in other words, pay bills when they're due. The spreadsheet calculates the current ratio by dividing *Total current assets* (C13) by *Total current liabilities* (I12). In general, you want a current ratio of at least two to one. You should have at least \$2 available in current assets for each \$1 of current liabilities.

Cell location: I34

Formula: +C13/I12



#### **FORMULA 14: QUICK ASSETS OR ACID-TEST RATIO**

The *Quick Assets or Acid-Test Ratio* measures a company's ability to meet its current obligations with assets it can convert quickly if sales revenue ceases. The spreadsheet calculates this ratio by dividing *Total current assets* (C13), less *Inventories* (C10) and *Prepaid expenses* (C11), by *Total current liabilities* (I12). We've excluded your inventory for two reasons — it's subject to a decline in market value, and it takes time to convert to cash. In general, you want a quick assets ratio of at least one to one.

Cell location: I35

Formula:  $(C13-C10-C11)/I12$

#### **FORMULA 15: CASH RATIO**

The *Cash ratio* measures the company's ability to service its short-term obligations from cash and marketable securities — the two most liquid assets. Your spreadsheet calculates this ratio by dividing *Cash* (C7) plus *Marketable securities* (C8) by *Current liabilities* (I12).

Cell location: I36

Formula:  $+C7+C8/I12$

#### **FORMULA 16: NET WORKING CAPITAL (IN THOUSANDS)**

*Net Working Capital* is a dollar amount (not a ratio) that results from subtracting *Total current liabilities* (I12) from *Total current assets* (C13). Use it to evaluate the resources you have available to meet current liabilities. This indicator is significant particularly for small companies that have limited access to long-term capital markets, and must rely on trade credit and short-term bank loans — both of which affect net working capital by increasing current liabilities. The spreadsheet shortens this value by dividing it by 1000.

Cell location: I37

Formula:  $(C13-I12)/1000$

#### **DEBT RATIOS**

Debt is the amount of financing supplied by creditors. Debt ratios measure the relative proportion of funds supplied by the owners of the company compared with the funds supplied by creditors, and the company's ability to meet its long-term obligations to nonequity suppliers of funds.

#### **FORMULA 17: DEBT-TO-ASSETS RATIO**

The *Debt-to-Assets Ratio* indicates the percentage of total assets financed by cred-

itors. In general, the lower the ratio the greater the buffer against creditors' losses in case of liquidation. This ratio is calculated by dividing *Total liabilities* (I17) by *Total assets* (C27).

Cell location: I38

Formula:  $+I17/C27$

#### **FORMULA 18: DEBT-TO-EQUITY RATIO**

The *Debt-to-Equity Ratio* indicates the relationship of money you borrow to money you invest — a measure of a company's ability to meet its total obligations from equity. In general, the lower the ratio the higher the proportion of equity relative to debt, and the better the firm's credit standing. The higher the ratio the lower the proportion of invested money relative to borrowed money, and the less solvent the business. As this ratio approaches 100, creditors' interests in the business approach that of a stockholder. The spreadsheet calculates this ratio by dividing *Total liabilities* (I17) by *Total stockholders' equity* (I25).

Cell location: I39

Formula:  $+I17/I25$

#### **FORMULA 19: LONG-TERM DEBT-TO-EQUITY RATIO**

The *Long-Term Debt-to-Equity Ratio* indicates the relative importance of long-term debt in the company's capital structure. The spreadsheet determines this ratio by dividing *Long-term liabilities* (I15) by *Total stockholders' equity* (I25).

Cell location: I40

Formula:  $+I15/I25$

#### **FORMULA 20: TIMES INTEREST EARNED RATIO**

The *Times Interest Earned Ratio* measures a company's ability to pay annual interest obligations out of its earnings. Inability to meet annual interest costs can result in legal action by creditors. The closer the ratio to industry norms, the better the rating. To calculate this ratio the spreadsheet divides *Operating income before taxes* (C47) plus *Interest expense* (C43) by *Interest expense* (C43).

Cell location: I41

Formula:  $(C47+C43)/C43$

#### **FUNDS-MANAGEMENT RATIOS**

Funds-management ratios measure how well (or how poorly) a company uses its resources. The value of certain assets, such

as receivables and inventories, can fluctuate widely during the year. In calculating the ratios for a company, analysts often use the average dollar value of the asset for the year (obtained from company records) instead of the dollar value from the balance sheet. For demonstration purposes, use the number from the balance sheet.

#### **FORMULA 21: AVERAGE COLLECTION PERIOD**

The *AVG Collection Period* is the average number of days from the date of a sale on credit until the company collects its cash. A longer-than-normal period may mean uncollectible bills. In general, the average collection period shouldn't exceed the net maturity of the selling terms by more than 10 or 15 days. Therefore, if the company offers 60 days to pay, the average collection period should be no longer than 70 to 75 days. Slow collections without adequate finance charges hurt a company's profits and tie up working capital.

The spreadsheet calculates the average collection period by dividing *Average accounts receivable* (C9) by *Credit sales* (C34) divided by 365 days. For this example, assume that all of this company's sales are on credit.

Cell location: I42

Formula:  $+C9/(C34/365)$

#### **FORMULA 22: RECEIVABLES-TURNOVER RATIO**

The *Receivables-Turnover Ratio* indicates the number of days in which the receivables are paid off — a measure of a company's efficiency in using the funds it invests in receivables. Money tied up in receivables may make a company short of cash and unable to take advantage of cash discounts. The spreadsheet calculates the receivables-turnover ratio by dividing *Credit sales* (C34) by *Average receivables* (C9).

Cell location: I43

Formula:  $+C34/C9$

#### **FORMULA 23: INVENTORY-TURNOVER RATIO**

The *Inventory-Turnover Ratio* indicates the number of times inventory turns over (is replaced). Each time inventory turns over, it generates more profit. In general, if the ratio is high the company manages its inventory efficiently. A downward trend may be a warning sign of obsolete or slow-moving inventory. The spreadsheet calculates the ratio by dividing the *Cost of*



COMPARATIVE BALANCE SHEET					
	June 30, 1990	June 30, 1989		June 30, 1990	June 30, 1989
<b>ASSETS</b>			<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
61 Current assets:			Current liabilities:		
71 Cash	\$ 185,890	\$ 182,506	Notes payable (current portion)	\$ 447,500	\$ 355,670
81 Marketable securities	36,503	30,090	Accounts receivable	152,897	140,800
91 Accounts receivable	771,080	807,289	Accrued taxes	41,234	110,560
101 Inventories	1,234,567	1,115,876	Other accrued liabilities	185,670	159,323
111 Prepaid expenses	19,880	16,540	Total current liabilities	\$ 827,301	\$ 766,353
121 Total current assets	\$ 2,247,920	\$ 2,152,301	Long-term liabilities:		
131 Fixed assets:			Notes payable (long-term)	626,017	829,371
141 Plant, property, and equipment	1,579,150	1,494,235	Total liabilities	\$ 1,453,318	\$ 1,595,724
171 Less: Accumulated depreciation	876,820	766,031	Stockholders' equity:		
181 Total fixed assets	\$ 702,330	\$ 728,204	Common stock (\$10 par value, 40,000 shares outstanding)	400,000	400,000
191 Other assets:			Paid-in capital	344,550	344,550
211 Investments	63,589	0	Retained earnings	1,015,971	740,231
231 Goodwill	200,000	200,000	Total stockholders' equity	\$ 1,760,521	\$ 1,484,781
241 Total other assets	\$ 263,589	\$ 200,000	Total liabilities and stockholders' equity	\$ 3,213,839	\$ 3,080,505
251 Total assets	\$ 3,213,839	\$ 3,080,505			
261					
271					
281					
291					
301					
311	Year Ended	Year Ended	<b>** FINANCIAL ANALYSIS RATIOS **</b>		
321 COMPARATIVE INCOME STATEMENT	June 30, 1990	June 30, 1989		1990	1989
331			CURRENT RATIO	2.72	13
341 Sales	\$ 3,895,870	\$ 3,694,760	QUICK ASSETS OR ACID TEST RATIO	1.20	14
351 Cost of goods sold	2,528,090	2,423,800	CASH RATIO	.27	15
361			NET WORKING CAPITAL (\$THOUSANDS)	1,421	16
371 Gross profit	\$ 1,367,780	\$ 1,270,960	DEBT TO ASSETS RATIO	.45	17
381			DEBT TO EQUITY RATIO	.83	18
391 Operating expenses:			LONG-TERM DEBT TO EQUITY RATIO	.36	19
401 Selling expense	377,295	334,890	TIMES INTEREST EARNED RATIO	5.92	20
411 General & admin expense	326,780	292,230	AVG COLLECTION PERIOD (DAYS)	72	21
421 Depreciation	110,789	107,324	RECEIVABLES TURNOVER RATIO	5.1	22
431 Interest expense	93,350	124,406	INVENTORY TURNOVER RATIO	2.0	23
441			ASSETS TURNOVER RATIO	1.2	24
451 Total operating expenses	\$ 908,214	\$ 858,850	GROSS PROFIT MARGIN	35.1%	25
461			NET PROFIT MARGIN	7.1%	26
471 Operating income before taxes	\$ 459,566	\$ 412,110	RETURN ON ASSETS	8.6%	27
481 Income taxes	183,826	164,844	RETURN ON STOCKHOLDERS' EQUITY	15.7%	28
491			EARNINGS PER SHARE	\$6.89	29
501 Net income	\$ 275,740	\$ 247,266			
511					
521					
531					

**Figure.** The powerful BALINCRAT spreadsheet, combining balance sheet, income statement, and financial ratios.

goods sold (C35) by Average inventory (C10) during the period studied.

Cell location: I44

Formula: +C35/C10

**FORMULA 24: ASSETS TURNOVER**

The *Assets-Turnover Ratio* indicates the number of times fixed assets turn over — a measure of a company's efficient use of its assets to generate sales. In general, a higher-than-normal ratio (normal based on a broad economic analysis) indicates that the company generates sales from its assets faster and better than similar companies or industry averages. The program calculates this ratio by dividing Sales (C34) by average Total assets (C27).

Cell location: I45

Formula: +C34/C27

**PROFITABILITY RATIOS**

Profitability ratios measure management's effectiveness in using the resources invest-

ed in the business to generate a dollar return. These ratios show return on investment in relation to sales, assets, and equity.

**FORMULA 25: GROSS PROFIT MARGIN**

*Gross Profit Margin* indicates profitability in relation to sales after deducting the cost of producing the goods. It provides a measurement of the company's pricing, purchasing, and production policies. The spreadsheet calculates this ratio by dividing Gross profit (C37) by Sales (C34).

Cell location: I46

Formula: +C37/C34

**FORMULA 26: NET PROFIT MARGIN**

*Net Profit Margin* indicates the profit per dollar of sales — a measure of the relative efficiency of the combined operations of the company after you deduct expenses and income taxes. A higher-than-normal

ratio indicates that sales are good, that expenses are low, or both. The spreadsheet calculates the ratio by dividing Net income (C50) with Sales (C34).

Cell location: I47

Formula: +C50/C34

**FORMULA 27: RETURN ON ASSETS**

*Return on Assets* is another indicator of profitability in relation to investment. It measures the efficiency with which the company generates a return on the use of its assets. The spreadsheet calculates the ratio by dividing Net income (C50) by average Total assets (C27).

Cell location: I48

Formula: +C50/C27

**FORMULA 28: RETURN ON STOCKHOLDERS' EQUITY**

*Return on Stockholders' Equity* indicates earnings generated by capital and invested by all owners of the business. It lets management measure the effects of its policies on the firm's profitability in comparison with other types of investments. It's the single most important measure of a firm's financial position — a kind of bottom line for the bottom line. The spreadsheet calculates the ratio by dividing Net income (C50) by average Stockholders' equity (I25).

Cell location: I49

Formula: +C50/I25

**FORMULA 29: EARNINGS PER SHARE**

*Earnings per Share (EPS)* is the net income available to common stockholders. This represents the current yearly earnings that the corporation can attribute to each share of common stock. The denominator of the EPS ratio is usually a weighted average of the amount of stock outstanding during the year. For purposes of this example, the spreadsheet calculates Earnings per Share by dividing Net income (C50) by average Common shares outstanding (I21). The formula divides the dollar value of the shares by ten (*par value*) to get the number of shares.

Cell location: I50

Formula: +C50/(I21/10)

**THE HOME STRETCH**

Now copy the ratio formulas from the 1990 column to the 1989 column: Place



# 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.. \$129  
**AE GS-RAM Plus 6 MEG RAM board.** DMA comp. Expands GS to 6.25 Meg. w/1 MEG Above w/2 to 6 Megabytes ..... Call  
**256K RAM Set (8pc)** 120ns 5 Yr Wty ..... \$29  
**1 MEG RAM Set (8pc)** 100ns 5 Yr Wty ..... \$75  
**TRANSWARP GS** by Applied Engineering. \$285

#### 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

#### 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)  
**Plusworks II** (A.W. ver 1.0 thru 2.1) ..... \$35  
**Plusworks III** (A.W. 3.0 only/128K req) .... \$35  
**16K RAM BD.** Expands II+ from 48K to 64K \$34  
**128K RAM BD.** Legend/Titan Compatible . \$64  
**DOS/ProDOS Emulator** for above 128K BD \$24  
**80 Column II+ Board** Videx compatible ... \$48  
**Shift Key Modification** ..... \$7  
**Lower Case Adapter.** Rev. 7 & up ..... \$12

#### NO SLOT CLOCK IIe/IIc

Fits underneath your CD or CF ROM. Appleworks compatible. Free software. .... \$39

#### 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 Pscal 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

#### 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% diskette ..... \$15  
 9.0 w/5% & 3½ 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

**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

Circle 105 on Reader Service Card.

the cursor on I34. Press OA-C and hit Return. Press OA-9 to reach I53, and hit Return again. Now press Right Arrow twice and hit Return once more.

Every cell reference in every formula is *relative*, so press OA-R. Press OA-K to calculate the 1989 results. Press OA-S to store the spreadsheet on disk.

#### ROLL THE PRESSES

The print settings you made last month are fine, so all you need do is turn on your printer.

Now press OA-P to start the *Print* command. Confirm *All*, select the printer, enter the date (or type an @ — the *at* sign — if your computer has a clock), and confirm one copy.

The all-in-one BALINCRAT spreadsheet rolls off the printer, showing every section in all its glory.

Although ratio analysis provides valuable insights into the strengths and weaknesses of a company, be aware that it has limitations. Because the information we used to derive these ratios is based on accounting rules and personal judgment, don't consider them the final word. Ratios are meaningful tools only if you consider them in light of the company's past performance, trends over time, and industry norms.

#### HINTS

If you prepare balance sheets and income statements regularly, it's a good idea to keep BALINCRAT as a master template with formats, formulas, labels, and lines intact — but without the numbers. Simply give BALINCRAT another name (OA-N) before you enter the new data. This eliminates the chore of blanking out old entries over and over.

Practice with your templates and get your finances in order, because the holidays are almost upon us. Next month you'll design some snappy invitations to get the season off to a grand start. □

RUTH K. WITKIN IS THE AUTHOR OF THE TEMPLATE/HANDBOOK SERIES *SUCCESS WITH APPLEWORKS* (IN CIDER, IDG COMMUNICATIONS/PETERBOROUGH), *THE BEST BOOK OF APPLEWORKS* (HOWARD W. SAMS & CO.), AND *PERSONAL MONEY MANAGEMENT WITH APPLEWORKS* (JOHN WILEY & SONS). WRITE TO HER AT 3 PATRICIA ST., PLAINVIEW, NY 11803. ENCLOSE A STAMPED, SELF-ADDRESSED ENVELOPE IF YOU'D LIKE A REPLY.





# LABEL FRENZY

Present yourself in style  
with mailing labels that dress up  
any envelope, disk, or package.

By **CYNTHIA E. FIELD, Ph.D.**

WITH THE EXCEPTION OF GREETING cards, perhaps no desktop-publishing (DTP) endeavor has more widespread appeal than printing mailing labels. Although you can find specialized software such as **Labels, Labels, Labels, Publish It! 3**, the most popular Apple II DTP program, provides more design choices for label makers than ever before, thanks to newly enhanced graphics importing and color-printing capabilities.

This month we'll describe Edward C. Hinckley's template so that you can produce personal or business return-address labels in bulk. As with most of our Press Room projects, you can adapt the layout of our mailing-label template to other DTP programs. Although you may use different commands, or recognize features by different names, most DTP programs are essentially similar.

## GEAR UP

Start up Publish It! (any version is compatible with this project) and work in *Size to Fit* mode. Press Open apple-4 (OA-4) or select the *Size to Fit* viewing option from the *Special* menu.

Ed Hinckley's original template consisted of eight labels on an 8-by-11-inch Publish It! page. Continuous-form mailing labels

usually come 12 to a sheet, so we opted for a 14-inch long Publish It! page to accommodate a dozen labels at a time. We also found that for small "publications" such as labels, using the centimeter as our unit of measure gave us a more precise fit.

To implement these adjustments, pull down the *Page* menu and select *Set Page Size*, then select the legal 8-by-14-inch page size. Next, pull down the *Special* menu, click on *Select Unit Measure*, and choose *centimeters*. Note that screen rulers reflect these alterations immediately.

Now choose the text tool from the tool box that appears on the left-hand side of the screen. On the drawing board, rubber-band a 9-by-2.5-centimeter text frame. When you *rubber-band* an object, you move the cursor to a location on screen, then hold the mouse button as you drag the mouse across the page (about 9 centimeters in this case) and down the page (about 2.5 centimeters). Because an elastic, rectangular text frame expands (or contracts) as you move the mouse, the technique is called *rubber-banding*. When the text frame looks about right — use the screen rulers as rough guides — let go of the mouse button to drop the text frame into position.

If you're a loyal Press Room reader, you know we rave about Publish It!'s unique *Show Specifications* feature. Instead of

fussing about drawing an object precisely, we can draw the object by eyeballing the screen rulers, then fine-tune the object's dimensions and placement by entering values in a special dialog box.

To set the specifications for the text frame you just drew, select the frame with the pointer. (This action places *handles* at the object's four corners.) Now press OA-M (or choose *Show Specifications* from the *Objects* menu) and type the values for label #1 in the window that pops up on screen. (See the values in the accompanying **Table**.) Press the return key when you're finished.

When you create the remaining 11 labels on the template, use this shortcut: Make sure label #1 is selected, then press OA-C to copy the object into the computer's memory. Press OA-V to paste a duplicate on the page. Now press OA-M and enter the specifications for label #2 from the values in the **Table**. Continue this procedure (OA-V followed by OA-M) to create and place label #3, label #4, and so on, until your template has a dozen labels in all. Save the template as MAIL.LABELS — it should look similar to the screen-dump diagram in **Figure 1**.

## BEYOND THE BASICS

Each text frame you created is the same size as a standard mailing label. Continuous-form one-across labels of this size come in boxes of 5000 customarily. Although buying smaller quantities at an office-supply store may seem more economical, that's probably not the case. An excellent source of inexpensive, good-quality labels is MEI/Micro Center, 1100 Steelwood Road, Columbus, OH 43212, (800) 634-3478 — a box of 5000 was \$10.95 at press time.

Five thousand labels may seem gargantuan as you embark upon your first label-creation adventure, but you'll be amazed at



**54%**  
**SAVINGS**  
off cover price

**54%**  
**SAVINGS**

**FOR the best coverage  
on new Apple II prod-  
ucts and applications,  
subscribe to the Apple  
II magazine today!**

APPLE is a registered trademark of Apple Computer, Inc.

Please make checks payable  
to **inCider/A+**. Basic two-year  
(12 issues). U.S. subscription  
price is \$43.00. All foreign  
orders must be prepaid in  
U.S. funds drawn on a U.S.  
bank. One year rates: Can-  
ada \$34.97, Mexico \$32.97,  
Foreign Surface \$47.97,  
Foreign Airmail \$82.97.

Please allow 6-8 weeks for delivery.

**inCider/A+**

Send me 24 issues of **inCider/A+** for \$43.00.  
**I save 54%!**

Send me 12 issues of **inCider/A+** for \$27.97.  
**I save 40%!**

Savings based on annual single-copy price of  
\$47.40.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

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

Payment enclosed  Bill me

414A1

**inCider/A+** — The Apple II Magazine—  
the best in software and hardware  
reviews, entertainment, education and  
answers to your most pressing questions.

**54%**  
**SAVINGS**

**inCider/A+**

Send me 24 issues of **inCider/A+** for \$43.00.  
**I save 54%!**

Send me 12 issues of **inCider/A+** for \$27.97.  
**I save 40%!**

Savings based on annual single-copy price of  
\$47.40.

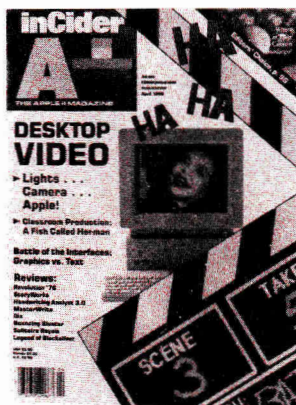
NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

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

Payment enclosed  Bill me

414A1



Please make checks payable  
to **inCider/A+**. Basic two-year  
(12 issues). U.S. subscription  
price is \$43.00. All foreign  
orders must be prepaid in  
U.S. funds drawn on a U.S.  
bank. One year rates: Can-  
ada \$34.97, Mexico \$32.97,  
Foreign Surface \$47.97,  
Foreign Airmail \$82.97.

Please allow 6-8 weeks for delivery.

**inCider/A+**  
The perfect gift  
for the Apple II user

**SPECIAL  
HOLIDAY  
OFFER**

**inCider/A+**

**GIFT SUBSCRIPTION**

Yes! I want to send the perfect gift to an Apple II user  
— a one year subscription (12 issues in all!) for \$27.97.

GIFT DONOR \_\_\_\_\_

ADDRESS \_\_\_\_\_

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

Please enter a one year subscription for:

GIFT RECIPIENT \_\_\_\_\_

ADDRESS \_\_\_\_\_

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

Payment enclosed  Bill me after the holidays

214A3

Send your friends a gift that will  
add to their computing skills  
with monthly features like:

- Reader interaction for more helpful information
- An ongoing course on Applesoft BASIC and GS BASIC
- In-depth articles to increase your personal productivity
- Ready-to-run program listings

Please make checks payable  
to **inCider/A+**. Basic two-year  
(12 issues). U.S. subscription  
price is \$43.00. All foreign  
orders must be prepaid in  
U.S. funds drawn on a U.S.  
bank. One year rates: Can-  
ada \$34.97, Mexico \$32.97,  
Foreign Surface \$47.97,  
Foreign Airmail \$82.97.

Please allow 6-8 weeks for delivery.



|||||

---

**BUSINESS REPLY MAIL**

---

First Class Permit No. 1247, Boulder, CO

POSTAGE WILL BE PAID BY ADDRESSEE

IDG Communications/Peterborough  
inCider/A+  
P.O. Box 50358  
Boulder, CO 80321-0358



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



|||||

---

**BUSINESS REPLY MAIL**

---

First Class Permit No. 1247, Boulder, CO

POSTAGE WILL BE PAID BY ADDRESSEE

IDG Communications/Peterborough  
inCider/A+  
P.O. Box 50358  
Boulder, CO 80321-0358



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



|||||

---

**BUSINESS REPLY MAIL**

---

First Class Permit No. 1247, Boulder, CO

POSTAGE WILL BE PAID BY ADDRESSEE

IDG Communications/Peterborough  
inCider/A+  
P.O. Box 50358  
Boulder, CO 80321-0358



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

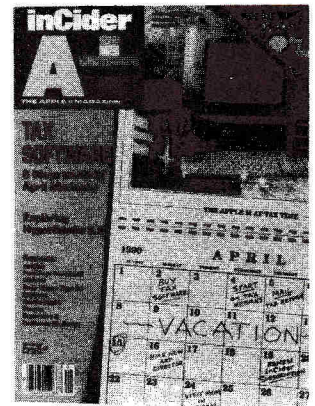


**54%**  
**SAVINGS**  
off cover price

**FOR the best coverage  
on new Apple II prod-  
ucts and applications,  
subscribe to the Apple  
II magazine today!**

APPLE is a registered trademark of Apple Computer, Inc.

inCider A+ — The Apple II Magazine — the  
best in software and hardware  
reviews, entertainment, education and  
answers to your most pressing questions.



**UNCONDITIONAL GUARANTEE**

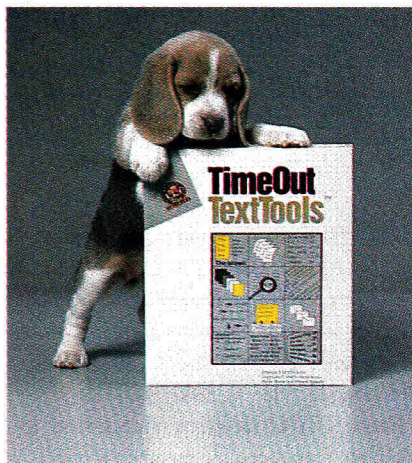
If inCider A+ doesn't prove to be everything  
we say it is, just tell us. We'll  
refund your money for all undelivered  
issues — no questions asked.

**Add to your computing skills with  
monthly features like:**

- Off-the-shelf solutions to your computing problems.
- Reader interaction for more helpful information.
- An ongoing course on Apple-soft BASIC and GS BASIC.
- In-depth articles to increase your personal productivity.
- Ready-to-run program listings.



# Three New Pups in the Beagle Family.



## TimeOut TextTools

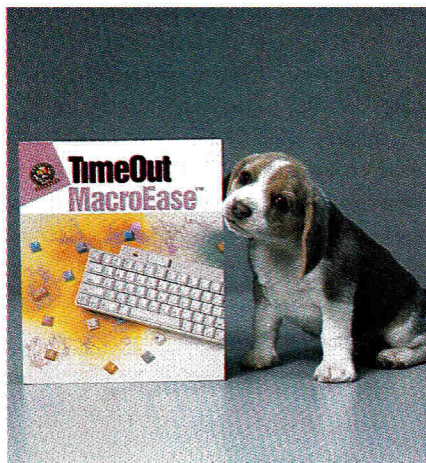
TextTools applications take the drudgery out of producing complicated documents—thesis papers, newsletters, even your Great American Novel.

Glossary lets you pick boilerplate text from a menu—enter names, addresses, even whole paragraphs faster than you can type. What Glossary does for text, QuickStyles does for printer options. Just choose a style from a menu, such as “Bulleted Paragraph,” and your printer options are entered for you. Speaking of printer options, SuperFind will let you find and replace them!

## Easily Create Columns

CopyBlock is the quickest way to get multiple columns of text exactly the way you want. Just highlight a rectangular block of text, pick the new location, and presto! Instant multi-column publishing.

With MarkMerge, you can print onto any type of pre-made form. And MultiPrint lets you print up to 100 word processor files at once. \$49.95



## TimeOut MacroEase

AppleWorks and UltraMacros can do just about anything you tell them to do—if you know what to say. Learn the macro language with MacroEase!

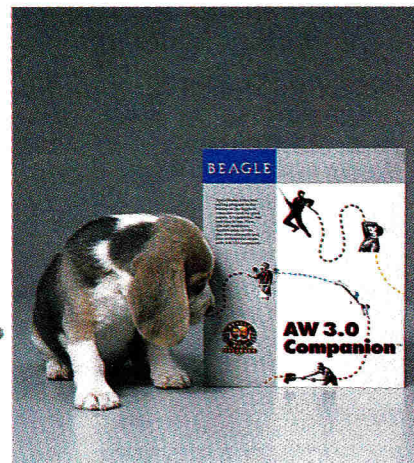
## Jumbo Size Collection

You'll discover loads of macro secrets. Techniques expressed in clear, how-to form will let you teach AppleWorks new tricks.

- Auto-save files at preset intervals.
- Make your own custom AppleWorks menus.
- Write your own interactive multiple choice quizzes.
- Check spelling in the data base.
- Take out the trash. (Not quite. We're working on it.)

## Macro Tour for Beginners

You'll be taken step-by-step through several samples that show you how to write your own macros. \$39.95



## AW 3.0 Companion

Customize AppleWorks 3.0 for your own computer and your own special needs with AW 3.0 Companion, the official AppleWorks customization program from the developers of AppleWorks 3.0.

Start up the AW 3.0 Companion disk and you'll be greeted by familiar AppleWorks-style menus. Just select the changes you want made and you're all done. AppleWorks will be personalized to your liking!

## Over 70 Customizations

You can change the default printer options in new word processor files and spreadsheets, speed up loading and recalculating spreadsheet files, leave the cursor where it is after canceling record selection rules, disable the disk formatter and use expanded memory as both Desktop memory and a RAM disk.

Other time-saving and unique features allow you to eliminate all those “Do you really want to do this?” questions, add MouseText to screens and menus and change the AppleWorks beep to something less obnoxious. \$39.95

Circle 177 on Reader Service Card.



**Order from your local  
software dealer.  
To order directly from Beagle Bros  
call (800) 345-1750.**



Beagle Bros, Inc. • 6215 Ferris Square, Suite 100 • San Diego, CA 92121 • (619) 452-5500





**M.E.D., Inc.**

**The Dr. of Discount Software**

**Minford Express Data**

P.O. Box 156

Minford, OH 45653

Orders **1-800-6484-MED**

Tech Support & Questions

1-614-820-2978

FAX # 1-614-820-2883

**BEAGLE BROTHERS**

TIMEOUT STYLE PAK	80.95
TIMEOUT DECISION PAK	92.95
TIMEOUT PERFORMANCE PAK	68.95
AW 3.0 COMPANION	24.95
TIMEOUT THESAURUS	27.95
TIMEOUT REPORTWRITER	49.95
POINT TO POINT	60.95
CALL FOR OTHER BEAGLE TITLES	

**NEW PRINT SHOP**

APPLE	29.95
llgs	36.95

**PRODUCTIVITY & BUSINESS**

APPLEWORKS 3.0	169.95
AW GS 1.1	199.95
HYPER STUDIO 2.1	89.95
QUICKEN	37.95

**EDUCATION**

WHERE IN TIME, WORLD, U.S., OR	
EUROPE IS CARMEN	each 27.95
NEW MATH BLASTER PLUS	29.95
WORD ATTACK PLUS	29.95
OREGON TRAIL	25.95
THE PLAY ROOM	24.95
MAVIS BEACON TYPING	28.95
ALL STICKY BEAR TITLES	each 23.95
CHILDREN'S WRITE & PUBLISHING	36.95

**ENTERTAINMENT & GAMES**

PRINCE OF PERSIA	24.95
CHAMPION OF KRYNN	34.95
HUNT FOR RED OCTOBER	21.95
KINGS QUEST I & II	each 30.95
LEISURE SUITE LARRY	24.95
ROBO COP	24.95
TETRIS	24.95
ULTIMA TRILOGY	35.95

Shipping \$4.95 min. U.S. C.O.D.s \$6.00 extra. No Charge For VISA & M.C. Canada & Mexico. 10% min. \$10.00. All Other Countries 30%. \$30.00. Checks Allow 3 Weeks. Sales Tax In Ohio. U.S. FPO & APO 3% min. \$4.00.

Defectives Replaced In 20 days. Prices Subject To Change Without Notice.

Call For MAC Prices.

**Time To Go  
To The Doctor**

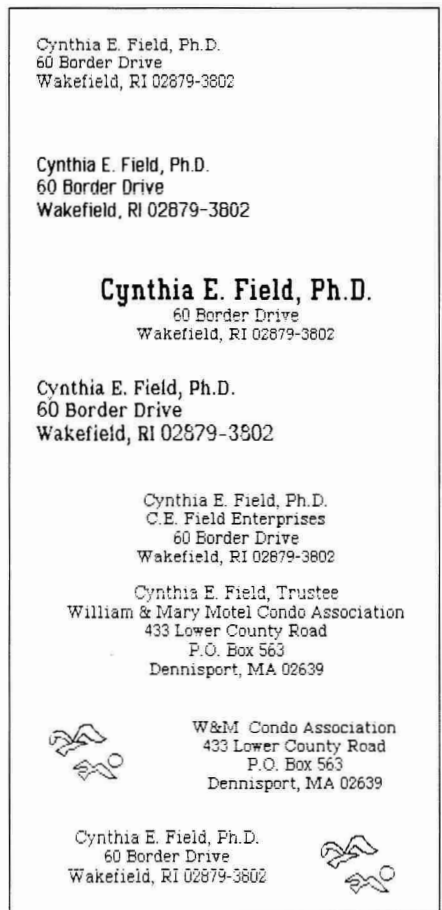


**PRESS  
ROOM**

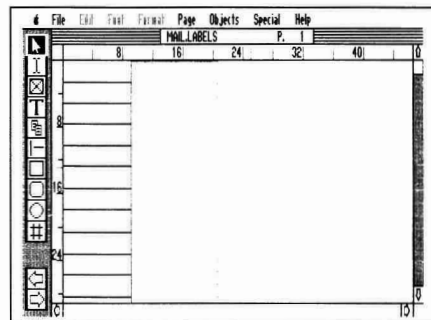
how quickly the pile shrinks — create custom floppy-disk labels, "Fragile" or "Perishable" mail labels, and holiday-gift tags.

A page-layout program such as Publish It! opens all kinds of possibilities for designing custom labels. We fooled around with just a few of those possibilities when we created the labels shown in **Figure 2**.

Generating a batch of return-address labels similar to ours is a snap. Insert the I-beam into label #1's text frame, and select the font you want to use: Press OA-W, scroll through the font directory that appears, and press the return key when the font you want is highlighted. Now type your name



**Figure 2.** Sample output created with MAIL.LABELS template.



**Figure 1.** Screen dump showing MAIL.LABELS template layout.

and address into label #1, then select the text in one of three ways: Place the I-beam at the beginning of the text and press OA-E, drag the I-beam across and down the entire text, or pull down the *Edit* menu and choose *Select to End*.

Press OA-C to copy the name and address into your computer's memory. Now place the I-beam in label #2 and press OA-V. The name and address should flow into the second label. Place the I-beam in label #3 and press OA-V. It's that simple. Now continue pasting copies of your name and address onto all 12 labels.

In our sample batch of labels we restricted ourselves to the fonts that came with the Publish It! program, but there are hundreds more we could have used. (For more information about using fonts with Publish It!, see our October 1990 Press Room column, "All the News That Fits," p. 62.)

We also tried a few formatting options and incorporated clip art from the Artwork disk that comes with Publish It! 3. Remember that this version of the program supports **Print Shop** graphics, double-high-resolution graphics, and even super-high-resolution graphics.

**Figure 3** shows just a few of Ed Hinckley's designs, which include rules, boxes, and transparent text. You can make each label unique, or make them all the same. To copy a graphics element (clip art, rules, and shapes) from one label to the next,

**PRODUCT INFORMATION**

**Labels, Labels, Labels**  
Big Red Computer Club  
423 Norfolk Ave.  
Norfolk, NE 68701  
(402) 379-4680  
\$39.95

**The New Print Shop.**  
\$49.95  
**The Print Shop GS.**  
\$59.95  
Broderbund Software  
17 Paul Drive  
San Rafael, CA 94903  
(415) 492-3200

**Publish It! 3**  
Timeworks Inc.  
444 Lake Cook Road  
Deerfield, IL 60015  
(708) 948-9200  
\$129.95



select the object with the pointer, copy it (OA-C), and paste it (OA-V). When a page of labels is complete, save it under a special name such as *Mail.Labels.XXX* (substitute your initials for XXX).

### STICK WITH IT

When it's time to print your labels, insert the continuous-form label stock into your printer. On the ImageWriter II, line up the left edge of the label itself (not the backer paper) with the vertical red line on the metal paper-bail bar. Line up the label's top edge with the top edge of the hole in the plastic paper guide. On other printers you must experiment to find appropriate alignment settings.

Print a "page" of 12 labels at a time. You can use Publish It!'s double-strike printing mode for optimum results, but first try regular printing mode — it's adequate for most situations. Before generating another

	Left Start	Top Start	Width	Height
<b>TEXT FRAMES</b>				
<b>Label # 1</b>	0.000	0.000	9.000	2.500
<b>Label # 2</b>	0.000	2.700	9.000	2.500
<b>Label # 3</b>	0.000	5.200	9.000	2.500
<b>Label # 4</b>	0.000	7.700	9.000	2.500
<b>Label # 5</b>	0.000	10.300	9.000	2.500
<b>Label # 6</b>	0.000	12.800	9.000	2.500
<b>Label # 7</b>	0.000	15.400	9.000	2.500
<b>Label # 8</b>	0.000	17.900	9.000	2.500
<b>Label # 9</b>	0.000	20.450	9.000	2.500
<b>Label #10</b>	0.000	23.000	9.000	2.500
<b>Label #11</b>	0.000	25.500	9.000	2.500
<b>Label #12</b>	0.000	28.100	9.000	2.500

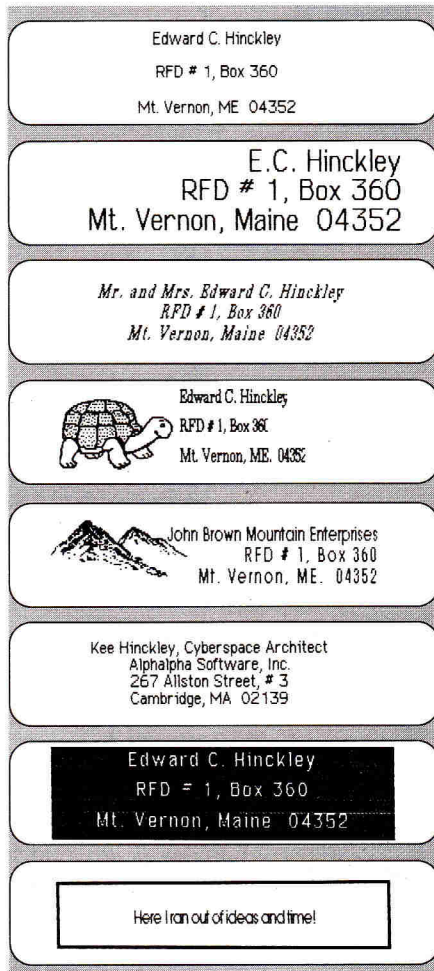
**Table.** Specifications (all dimensions in centimeters). All labels are text frames.

batch of labels, check to see if the label stock in your printer needs adjusting.

Be careful not to roll labels backwards in your printer — labels tend to loosen and stick to the printer's innards. If you need to realign label stock, always advance the stock by turning the platen knob or pressing the line-feed button manually. Wasting a label or two beats paying a big repair bill.

Besides, who wants to suffer printer deprivation when you're about to enjoy the final results of a new DTP project? □

CYNTHIA E. FIELD IS A CONTRIBUTING EDITOR FOR *inCIDER*. SHE IS A FREE-LANCE 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.



**Figure 3.** Note the wide variety in Edward C. Hinckley's labels.

## Never buy another ribbon!

**MacInker** Over 140,000 sold since 1982



\$45.00

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

MacInker™, the automatic ribbon re-inker. The Imagewriter MacInker (mod 234IM) re-inks Imagewr. I/II black & single color cartridges. The Universal MacInker re-inks hundreds of different cartridge types (including the Imagewr. LQ) with suitable adapters. Extra dark, dot matrix, lubricated ink yields a truly better than new print quality and helps extend print-head life. Average re-inkings/cartridge is 60-100. With the **Multicolor Adapter (mod M422, \$40.00)** your MacInker can re-ink the multicolor Imagewriter II cartridges. We have a full range of optional accessories, inks & cartridges: indelible ink, heat transfer etc. Colors: red, green, blue, yellow, purple, brown, orange, silver, gold. Free catalog.

Imagewriter I/II MacInker (mod 234IM).....	45.00
Multicolor Adapter (mod M422).....	40.00
Epson MacInker (mod 271EP).....	42.00
Universal MacInker.....	75.00
Imagewriter cartridges.....3.15/ea (qty 6)	4-color.....10.00/ea
ImageWriter LQ cartridges.....14.50/ea	LQ 4 Color.....16.90
Extra ink bottle.....3.00/ea	pint.....18.50

### Apple Autoswitch - Data Switches - Accessories



4 port 8 pin.....	50.00	MouseTamer*.....	12.50
Apple Autoswitch (4:1).....	149.00	*(eliminates interference of cord with mouse)	
BothWay Autoswitch.....	89.00	Accurate Electronic Pedometer.....	15.00

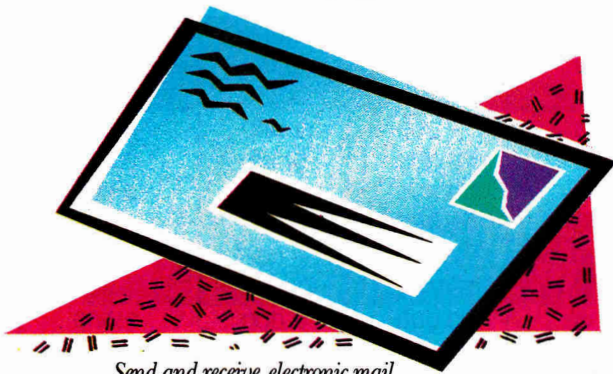
Order Toll Free (800)547-3303

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

Major credit cards accepted, cod, immediate shipment, 30 days money back guarantee



# Now \$4.95 Stops The Clock



Send and receive electronic mail

Learn from our online encyclopedia



Get top news and weather reports



Enjoy lively sports talk

Play single player games



Laugh at the latest jokes



Exchange leisure time tips



Cover legal topics

For the first time ever, enjoy unlimited non-prime time\* usage of many popular GEnie™ Service features. For just \$4.95 a month. Choose from over 100 valuable services including everything from electronic mail and stock closings to exciting games and bulletin boards. Nobody else gives you so much for so little.

**JUST \$4.95**

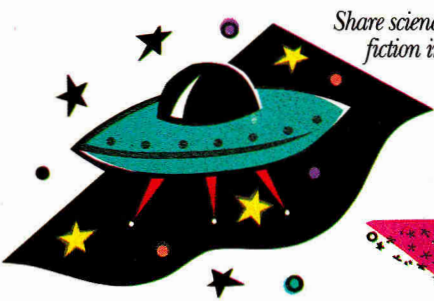
**Moneyback guarantee**  
Sign up now. If you're not satisfied after using GEnie for one month, we'll refund your \$4.95.

You can also enjoy access to a wide variety of features like software libraries, computer bulletin boards, multi-player games, Newsbytes, and the Computer Assisted Learning Center (CALC) for just \$6 per non-prime hour for all baud rates including 2400. That's less than half of what some other services charge. Plus with GEnie

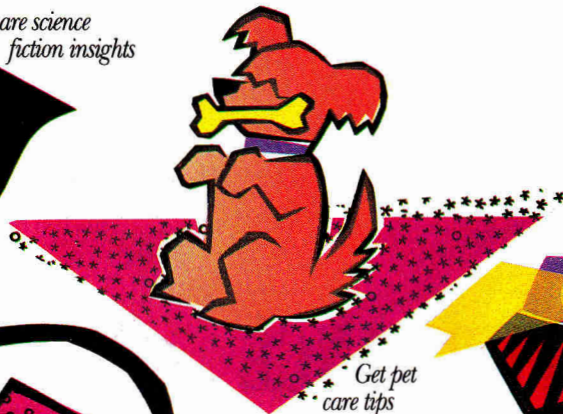
\*Applies only in U.S. Mon.-Fri., 6PM-8AM local time and all day Sat., Sun., and select holidays. Prime time hourly rate \$18 up to 2400 baud. Some features subject to surcharge and may not be available



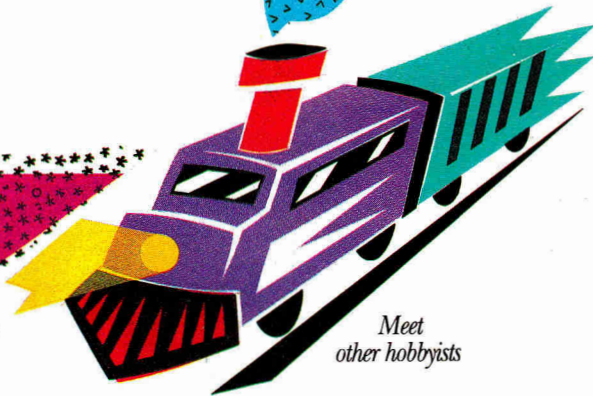
# On Over 100 GENie Services.



Share science  
fiction insights



Get pet  
care tips



Meet  
other hobbyists

Shop over 25  
popular stores



## WALL ST.



Check current stock closings



Discuss medical issues

Book flights with  
EASy Sabre



Catch movie  
news and reviews

there's no sign-up fee.

Now GENie not only gives you the information and fun you're looking for. But the time to enjoy them, too.

**Sign up today.**

Follow these simple steps.

1. Set your modem for half duplex (local echo), at 300, 1200 or 2400 baud.

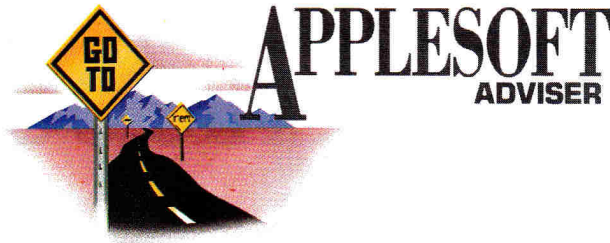
2. Dial toll free 1-800-638-8369. Upon connection, enter HHH.
3. At the U#=prompt, enter XTX99505, GENIE then press RETURN.
4. Have a major credit card or your checking account number ready.

For more information in the U.S. or Canada, call 1-800-638-9636.



**We bring good things to life.**





# COMMAND PERFORMANCE

With the wealth of features in  
Applesoft BASIC, you'll create top-notch  
animations in no time.

By DAN BISHOP

DREAMING UP ANIMATIONS ALL ON your own is one of the most enjoyable ways to use BASIC programming. After all, where else can you create a world in which characters run through thin air, remain suspended from the ceiling, or crash to the ground only to stand up and walk away?

In our last column, "The Big Screen," (September 1990, p. 72) we discussed using Applesoft BASIC's HPlot command to create simple high-resolution graphics and animation. Although our program produced some interesting results, we had to keep our images small — BASIC renders images so slowly that larger images yield animations that seem "clunky." This month we'll delve into an Applesoft BASIC technique called *shape-table animation*, so that you can create complex figures and designs that move smoothly on screen.

Although programming an animation in machine language is quicker than in BASIC, most people aren't assembly-language wizards. Instead, if you use the techniques we describe in this column you can define and store shapes in your computer's memory, then use BASIC's DRAW and XDRAW commands to draw or erase these shapes at any screen location. And if you define your shape carefully, you can use the SCALE

command to double or triple its size, and the ROTATE command to draw the shape on screen at different angles.

Let's cover some fundamentals first. A *shape table* is a group of geometric figures you define for use with the Applesoft DRAW and XDRAW commands. Think of DRAW and XDRAW as pens, and a shape as a series of instructions you give to the pens. You can tell the pens to move up, down, left, or right, and whether or not to plot a point. Constructing a shape is as simple as deciding how you want the pen to move, and translating those instructions into the numerical language your computer understands.

The letters and numbers used with the DRAW and XDRAW commands define the starting point of each shape. To continue drawing the shape, your computer uses the numbers you see in the program's DATA statements. These are your shape tables, and they contain information about the relative locations of the other pixels defining your shape. The numbers in the DATA statements aren't pixel coordinates themselves; instead they describe locations of pixels relative to your starting pixel.

## SHAPE UP

Let's start by using shape tables to define our stick figure, whom we've named Waldo Wall Walker. We used two simple shapes to create this figure: One is a standing stick

figure, and the other is a shot of Waldo midstride. (See the accompanying **Figures** and **Program listings**.) Although getting the hang of shape definition is difficult, once you've mastered it we'll move on to something more fun. With four Applesoft commands we'll show you an animation technique that will put Waldo into motion.

To determine the numbers that define a shape, start with a sheet of graph paper and sketch Waldo by filling the squares. (See **Figures 1** and **2**.) Keep in mind the color/column problem we discussed in September. If you don't fill your squares with double horizontal dots, and you use colors other than 3 and 7, a vertical line in your shape may disappear. (For details see "The Big Screen," p. 75.)

Once you sketch the figure, decide on XX, YY, which will be both the starting pixel of your shape definition and the point about which the figure will rotate. You can select a filled or empty square in the center, on the edge, or outside the figure.

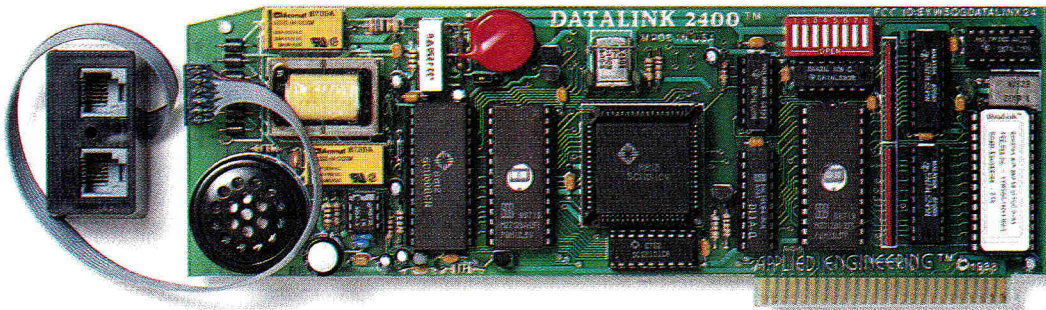
Starting with this square, draw an arrow to the center of an adjacent square. Your arrow must point up, down, left, or right, and in the direction of either a shaded or a blank square. *No* arrow can point diagonally. Now draw another arrow from this new square to an adjacent square other than the first square. You may draw arrows to blank squares or to filled squares as long as they form a continuous string.

These first two arrows constitute your first pair of shape vectors — a pair of lines that have direction. Continue drawing pairs of arrows to connect adjacent squares until all the filled squares connect with arrows and the last arrow exits the figure (ends in a blank square). The second arrow of each pair, however, can't move up from an empty space.

When you've connected all the filled



# Everything you need in a modem. Including confidence.



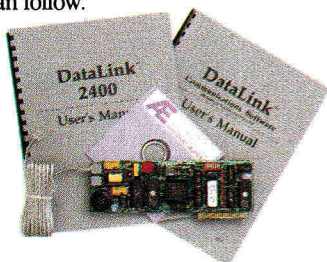
Applied Engineering's DataLink 2400. Simply put, the finest modem on the market for your Apple IIGS, IIe or II+.

### Twice the speed.

At transmission speeds up to 2400 bps (bits-per-second), Applied Engineering's new DataLink 2400 is capable of putting text on the screen faster than the human eye can follow.

That means you can capture a great deal more material in less time than with 1200 bps modems.

And *unlike competitor's modems*, the DataLink 2400 comes complete with powerful, easy-to-use communications software.



### Complete communications software included.

All three DataLink modems (1200, 2400 and Express) feature AE's communications software - on disk and in ROM - everything needed to get you immediately up and running. Our powerful DataTerm software for the IIGS and IIe supports VT-52 screen emulation, macros, file transfers, on-line time display, recording buffer and more. It even handles hundreds of phone numbers for auto-dialing and log on.

### New Send-Fax option.

With the new AE Send-Fax™ option, DataLink 2400 and DataLink Express owners can fax text and graphics at 4800 bps directly from their computer screen, without even printing a "hard copy" of the information. And an upgrade path is being made available for AE customers with earlier versions of the DataLink 2400.

### Worldwide compatibility.

The DataLink 2400 is fully compatible with Bell 103 and 212 protocols, as well as European protocol CCITT V.22 BIS, V.22 and V.21. It operates at varying transmission speeds from 0-300, 1200 and 2400 bps.

All DataLinks carry a full five year warranty and come complete with two modular phone jacks for data and voice calls. We also include an extra long telephone cable, in case your computer is across the room from your telephone jack. You can track the progress of calls either electronically or via on-board speaker. And built-in diagnostics reliably check transmission accuracy.

### Packed with important features.

AE's DataLink 2400 includes:

- Non-volatile memory for modem configuration
- Full Hayes AT compatibility
- Point-to-Point, ASCII Express, Access II compatibility, in addition to AE's included DataTerm and OnLine 64 software.
- Super Serial Card "Front End" for highest software compatibility (unlike some competitors)
- Adaptive equalization and descrambling
- Hardware configuration for DSR and DCD
- PC Transporter (MS-DOS) compatibility
- FCC certified design

### \$204.90 in freebies.

We also throw in a nice collection of goodies - a free subscription to the GENie network worth \$29.95, \$60 of free on-line time from NewsNet, a free \$50 subscription to the Official Airline Guide and a fee-waived membership to The Source worth \$49.95 plus \$15 of free on-line time.



### DataLink Express™ External.

AE also makes a top-quality external modem. Featuring a twelve-lamp status light array and AE's exclusive "Line Engaged" indicator, the DataLink Express™ can be upgraded to include MNP-5 and AE Send-Fax™.

### DataLink 1200 reduced.

Loaded with all the features of the new 2400, (except CCITT, DSR/DCD and non-volatile ROM configurations) our 1200 bps DataLink modem, complete with software and freebies, is an affordable alternative.



<b>DataLink 1200</b> .....	<b>\$119</b>
<b>DataLink 2400</b> .....	<b>\$219</b>
<b>DataLink Express</b> .....	<b>\$249</b>
<b>AE Send-Fax option</b> .....	<b>\$79</b>

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

(214) 241-6060

P.O. Box 5100, Carrollton, TX 75011



squares in your figure, use the accompanying **Table** to substitute the appropriate decimal value for each pair of arrows, starting with the first arrow at the figure's reference point. If an arrow begins in an empty square it's called a *move up*, a *move down*, a *move right*, or a *move left*, depending on the direction in which it travels. If the arrow begins in a filled square it's called a *plot & move up*, a *plot & move down*, a *plot & move right*, or a *plot & move left*. Match the descriptions for each pair of arrows with those in the accompanying **Table** to determine the code value for each pair.

For example, **Figure 2** has a code value of 42 because it's a *move down*, then *plot & move right* — an arrow starts in a blank square and points down, then is followed by a second arrow that starts in a filled square and points right. A *plot & move up*, then *plot & move left* has a code value of 60 and describes an arrow that starts in a filled square and points up, then is followed by a second arrow that starts in a filled square and points left. Continue following your maze of arrows, two at a time, and make a list of the code values for each pair. End the list with a 0 (zero).

In your program, this list of code values appears as numbers in one or more DATA statement(s) and defines the shape of the object. The 0 (zero) at the end of the list tells Applesoft that it's reached the end of a particular shape definition. If your program has one or more shapes, repeat the process of following arrows and recording values for each shape. Be sure to end each shape definition with 0 (zero). In **Listing 1**, lines 1005 and 1010 contain the code lists for the two shapes shown in **Figures 1** and **2**.

## FIND THE ADDRESS

In order for your Apple to find the shapes when you issue a DRAW or XDRAW command, you must protect high RAM with the HIMEM command and use two POKE commands to tell your computer where to store the shapes in memory. If you plan to use hi-res page 1 for your graphics, or if you have only 20K of RAM, you should set HIMEM to 8192. If you have the necessary memory, and you want to save room for more program code, you can set HIMEM to 16384 and use only hi-res page 2. (The

### Listing 1. Waldo Wall Walker demonstrates the use of shape tables in Applesoft BASIC to create realistic animations.

```

1 REM WALDO WALL-WALKER [3609]
2 REM BY DAN BISHOP [2746]
3 REM APPLESOFT ADVISOR [3476]
4 REM INCIDER, NOV. 1990 [3717]
5 REM ***** [3588]
6 REM [186]
10 HIMEM: 8192 [808]
15 HGR [173]
20 HCOLOR= 7 [331]
24 REM READ SHAPE DATA [3173]
25 GOSUB 900 [642]
29 REM DRAW BACKGROUND [2901]
30 GOSUB 700 [679]
35 SCALE= 1 [360]
40 ROT= 1: GOSUB 100 [669]
45 ROT= 48: GOSUB 200 [773]
50 ROT= 32: GOSUB 300 [792]
55 TEXT 3,HOME [396]
60 END [248]
94 REM [330]
95 REM ***** [4692]
96 REM HORIZONTAL WALK [3163]
97 REM ***** [4908]
98 REM [306]
100 FOR I = 3 TO 130 STEP 2 [1561]
105 DRAW 1 AT I,85: GOSUB 800 [1899]
110 XDRAW 1 AT I,85 [939]
115 DRAW 2 AT I + 1,85: GOSUB 800 [1721]
120 XDRAW 2 AT I + 1,85 [1477]
125 NEXT I [562]
130 RETURN [181]
194 REM [306]
195 REM ***** [2348]
196 REM VERTICAL WALK [1172]
197 REM ***** [2436]
198 REM [314]
200 FOR I = 85 TO 14 STEP - 2 [1314]
205 DRAW 1 AT 130,I: GOSUB 800 [2058]
210 XDRAW 1 AT 130,I [1415]
215 DRAW 2 AT 130,I + 1: GOSUB 800 [2154]
220 XDRAW 2 AT 130,I + 1 [1519]
225 HCOLOR= 0: HPLLOT 138,I: HCOLOR= 7 [2068]
230 NEXT I [375]
235 RETURN [325]

```

```

294 REM [188]
295 REM ***** [3494]
296 REM UPSIDE DOWN WALK [3029]
297 REM ***** [3494]
298 REM [196]
300 FOR I = 136 TO 3 STEP - 2 [1506]
305 DRAW 1 AT I,22: GOSUB 800 [1240]
310 XDRAW 1 AT I,22 [584]
315 DRAW 2 AT I - 1,22: GOSUB 800 [2196]
320 XDRAW 2 AT I - 1,22 [1477]
325 NEXT I [407]
330 RETURN [325]
695 REM [196]
696 REM ***** [614]
697 REM DRAW BACKGROUND [1195]
698 REM ***** [702]
699 REM [204]
700 HPLLOT 0,97 TO 142,97 TO 142,10 TO 0,10 [3350]
705 RETURN [309]
795 REM [202]
796 REM ***** [3284]
797 REM PAUSE ROUTINE [2739]
798 REM ***** [3500]
799 REM [178]
800 FOR J = 1 TO 100: NEXT J: RETURN [1841]
894 REM [180]
895 REM ***** [918]
896 REM READ SHAPE DATA [1174]
897 REM ***** [1006]
898 REM [188]
900 FOR I = 0 TO 38 [858]
905 READ A% [336]
910 POKE 24576 + I,A% [1359]
915 NEXT I [263]
920 POKE 232,0 [331]
925 POKE 233,96 [372]
930 RETURN [185]
994 REM [316]
995 REM ***** [2414]
996 REM SHAPE DATA [932]
997 REM ***** [2342]
998 REM [324]
1000 DATA 2,0,6,0,17,0 [1486]
1005 DATA 53,55,46,62,46,62,54,54,46,4,0 [3280]
1010 DATA 53,55,46,62,63,42, 41,45,30,59,55 [3487]
1020 DATA 41,62,54,63,46, 9,41,28,36,63,0 [3247]

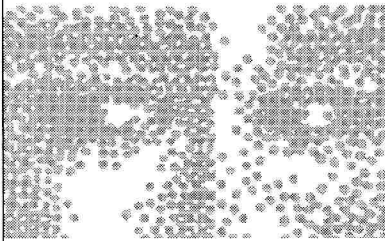
```







# Video In.



Capture color or b/w images into your Apple IIgs from any standard video camera or VCR. Create personalized newsletters, computer T-shirts or printouts. Or use images with Paintworks, Publish It!, HyperStudio, AppleWorks GS, etc. Fun, affordable, and a real tool for the Apple IIgs enthusiast.

Versions available for IIe and IIgs.

Call today for more information and free demo disk.

Digital Vision, Inc.  
270 Bridge St., Dedham, MA 02026  
(617) 329-5400  
To order call (800) 346-0090

Apple IIgs  
Color  
Video  
Digitizer  
For Under  
**\$250.**

Digital Vision

COMPUTEREYES™

Circle 184 on Reader Service Card.

# APPLESOFT ADVISER

1.92578, and  $0.92578 \times 256 = 236.999$ ).

You can use this calculation to find corresponding page and byte values for any decimal memory address. If you decide not to begin the shape definition at address 16384 or 24576 (by POKEing values into 232 and 233 as 0,64, and 0,96, respectively), you can select any address and calculate its byte and page number. POKE the byte number into address 232 and the page number into address 233.

At this point you've finished the real work. All you need do is write the FOR/NEXT loop that READs the data into memory, then count the DATA values in your shape table, starting with the shape-count value. In **Listing 1** there are 39 DATA values, so write your loop to cycle 39 times. Inside that loop READ a value, then POKE that value into successively higher memory locations. In Applesoft BASIC, you can define an integer variable by adding a percent sign (%) after the variable name. To illustrate this technique, **Listing 1's** lines 900-915 use the starting address of 24576 for the shape-definition table. If you start your definition at 16384 or some other address, use the number in line 910.

**Listing 2** is a generic format you can use to write the codes necessary for shape tables. This format assumes you want to protect both pages of hi-res graphics (HIMEM :8192), and start your shape table just above hi-res page 2. In **Listing 2**, SC is the shape count, or the number of shapes you're defining. The number of hyphens you use to finish the line should be twice the number of shapes you're defining. X1, X2, X3, and so on correspond to the code values for the pairs of vectors that define the first shape. Y1, Y2, Y3, and so on are the code values for the pairs of vectors that define the second shape. DC is the Data Count, the total number of DATA values the program reads into memory.

## TAKE COMMAND

Now let's try to put some life into Waldo. Four Applesoft BASIC commands — DRAW, XDRAW, ROTATE, and SCALE — manipulate the shapes you've defined in memory. As you manipulate these shapes, the still pictures flash so fast that your brain blends them together in the illusion of movement. Your Apple numbers each shape sequentially as you define it, and you access a shape by using its specific reference number. Therefore, to draw a defined shape on screen, simply use the command DRAW ## AT XX,YY where ## is the shape's reference number and XX and YY are the object's on-screen reference points. (An object's reference point is the first vector you list when you define its shape.) Because the full hi-res screen measures 280 columns across and 192 rows down, XX may be a value between 0 through 279, and YY may be a value of 0 through 191.

To keep Waldo marching along the walkway you must erase him, then draw him again at another location. To erase a defined shape, replace the DRAW with the XDRAW command and repeat the values. XDRAW ## AT XX, YY erases shape ## by drawing it in the background color. Unlike using the HCOLOR command, you don't need to use the HCOLOR command to change the color — the XDRAW command draws the shape in the background color automatically. If you want to enlarge the image, change the scale factor before you use the DRAW command. Use the format SCALE = #, where # is a value between 1 and 255. A

1-800-544-7638  
Inquiries & Oregon buyers  
1-503-246-0924

SCHOOLS  
OUR  
SPECIALTY

**DATA SWITCHES, 1 YEAR REPLACEMENT GUARANTEE**

AaBb=2 to 2 AB= 2 way	A-D= 4 way A-F= 6 way	A-K=11 way
5 PinDin..AaBb..49.95 AB..29.95	A-D..39.95 NA.....	A-K..89.95
6 PinDin..AaBb..49.95 AB..29.95	A-D..39.95 NA.....	A-K..99.95
8 Mini....AaBb..32.95 AB..24.95	A-D..29.95 NA.....	NA.....
DB 9.....AaBb..32.95 AB..19.95	A-D..29.95 NA.....	A-K..89.95
DB 15.....NA.....AB..29.95	A-D..39.95 NA.....	
DB 25.....AaBb..32.95 AB..19.95	A-D..29.95 A-F..49.95	
Parallel..AaBb..34.95 AB..22.95	A-D..32.95 A-F..49.95	
Keybd/Mon..NA.....AB..29.95	NA.....NA.....	
RJ-11.....NA.....AB..24.95	A-D..34.95 NA.....	
BNC.....NA.....AB..26.95	A-D..36.95 NA.....	

<b>APPLE CABLES</b>	<b>5 YR GUARANTEE</b>	<b>IBM PRINTER CABLES</b>
HAYES TYPE MODEM to: ImageWrII/XT or AT.19.95	6 ft.....6.95	
ApIIC+, IIgs.....#202 LaserWrII/XT or AT.19.95	10 ft.....8.95	
ApIIC+, Iie.....#204 LaserWr +/XT or AT.19.95	15 ft.....12.95	
ApIIC.....#205 Mac+/XT null modem.19.95	25 ft.....16.95	
IMAGEWRITER I to: Mac+/AT null modem.19.95	<b>DB25 (serial)</b>	
ApIIC+, IIgs.....#303 Mac+/Epson DX-20...19.95	6 ft..MM..MF...6.95	
ApIIC+, Iie.....#309 Mac+/FX80,185...19.95	10 ft..MM..MF...8.95	
ApIIC, Laser128.#310 Mac+/LQ850,1050...19.95	25 ft..MM..MF...18.95	
IMAGEWRITER II to: Mac+/LQ1000,800...19.95	<b>PARALLEL (36 pin)</b>	
ApIIC+, IIgs.....#305 Laser128/parallel..14.95	6 ft..MM..MF...9.49	
ApIIC+, Iie.....#307 Laser128/Hayes mod.16.95	10 ft..MM..MF...10.95	
ApIIC, Laser128.#308		

<b>ABOVE CABLES:</b>	<b>APPLE DESKTOP BUS BOX for IIgs</b>	<b>SHIPPING: \$4.00 per order including APO</b>
6 ft.....9.95	Do you have a mouse and a joystick...weary of endless cable tangle?..	DB15..MM..MF...9.95
10 ft.....19.95	The Bus Box has sockets and plugs into the back of the computer.	DB15 'Y' 1M/2F.9.95
4 mini.MM..6ft.14.95	AB, 2 way.....24.95	AT serial 9/25.7.95
4 mini.MF..6ft.16.95	ABCD, 4 way.....29.95	Power com/wall.3.95
8 mini.MM..6ft..9.95	ABCDE, 6 way....34.95	Power mon adap.3.95
8 mini.MF..12ft.14.95		XT floppy dr...3.95
8 mini.MF..6ft.10.95		XT floppy dr...3.95
8 mini.MF..12ft.16.95		XT hard dr set.4.49
5 pin..MM..6ft..5.95		XT hard dr set..7.95
5 pin..MF..6ft..5.95		
DB9.MM/MF..6ft..5.95	Iie Numeric keypad..29.95	FPO, etc. COD \$3.00
DB9.MM/MF.10ft. 7.95	Iie Cooling fan...24.95	plus UPS charges.

VSI 3641 S.W. Evelyn, Portland, OR 97219, VISA, MC accepted.



# Public Domain & Shareware Disks

## Only \$3.50 each!

### Why Pay More?

#### Apple IIGS 3.5" Disks

❑ **GS88 PixMix** - This disk contains a fantastic freeware program which creates on-screen jigsaw puzzles from SHR graphics.

❑ **GS83 Customize GS/OS** - Loads fonts and desk accessories on the fly, plus several other very useful utility programs.

❑ **GS94 Modulae** - If you liked Nucleus, then you'll love this sound and graphic demo program which really shows off the IIGS's capabilities.

❑ **GS95 FTA Mini Prix** - Rev up your race car and enjoy this fast-paced racing game from France. It requires a joystick.

❑ **GS96 3200-Color Pictures** - This disk contains some of the neatest GS graphics that we've seen.

❑ **GS53 SoundSmith** - The hottest music maker & playback program for the IIGS.

❑ **GS54, GS55, GS56, GS57 & GS66** - Five full disks of Sound Smith music files.

❑ **GS47 GS/OS Goodies** - Over 20 brand new desk accessories including Desk Top Painter, Screen Saver & GS Catalog. Also includes IconEd & SCSI Utilities.

❑ **GS48 GIF Graphics & SHRConvert** - This disk contains over 75 colorful graphics in the GIF format. These can be viewed using the shareware program, SHRConvert.

#### Games

❑ **GS72 Cartus Primus & Sheepshead** - Play cribbage, pinochle, hearts, pitch, gin rummy, euchre, and sheepshead with these new shareware programs.

❑ **GS65 Entertainment** - IIGS Super Hi Res entertainment with Wheel of Fortune, Yahtzee, Senseless Violence 2, Mathemusic, and more.

❑ **GS30 Card Games** - Five great shareware card games: Casino Solitaire, Slot Poker, Monte Carlo, Pyramid and Poker Solitaire.

#### Graphics, Clip Art & Fonts

❑ **GS77 Print Shop Graphics, Fonts & Borders** - A collection of all new Print Shop GS multi-color graphics. Plus borders and fonts.

❑ **GS78 Print Shop Graphics** - More new graphics for Print Shop GS..

❑ **GS67 Joe's Clip Art Disk #1** - Clip art for use with HyperStudio or AppleWorks GS. Stored in Apple preferred format.

❑ **P350 Multi-colored Graphics for The NEW Print Shop** - This collection of graphics has a theme of sports and travel.

❑ **P351 Multi-colored Graphics for The NEW Print Shop** - This collection of graphics has a theme of school mascots and holidays.

#### HyperStudio Stacks

❑ **HS10 & HS11 Visit Colonial Williamsburg** - This two-disk stack will take you on a tour of colonial Williamsburg. It has good graphics!

❑ **HS13, HS14 & HS15 Star Trek Stack** - This three-disk stack contains an encyclopedia of Star Trek - The Next Generation info.

#### Christmas Items

❑ **GS99 SoundSmith Carols** - A collection of Christmas carols.

❑ **GS100 Print Shop GS Graphics** - Lots of all new graphics with a holiday theme for use with Print Shop GS.

❑ **GS101 SHR Christmas Pics** - Full-color scans and other Christmas clip art. Great for using with HyperStudio or other GS Paint programs.



All the disks listed in this ad (plus hundreds more) are available from Big Red for only \$3.50 a piece. Why pay more for public domain and shareware disks? And if you order ten or more disks the price drops even lower to only \$3.10 per disk. All disks listed in this ad are 3.5" disks and the price includes all shipping and handling fees (U.S. addresses only). You do not have to be a member to order. We also have a large collection of 5.25" disks for Apple IIe & IIc computers. Big Red has been in business for over nine years and is one of the largest distributors of Apple II public domain software in the world. We will be happy to provide technical support for any disk we offer.

# Big Red

COMPUTER CLUB

423 Norfolk Avenue  
Norfolk, NE 68701

To order, write or call today. We'll ship your order within 48 hours. We accept MasterCard, Visa, school purchase orders, money orders and personal checks as payment. Please note: Some of the programs listed here are shareware. If you use these programs you're asked to make additional payment to the program's author. *Help Support Shareware!*

## Free Catalog Available - Call Now! - (402) 379-4680

First vector doesn't plot before the move:	Move up, then plot & move up	32
	Move up, then move right	8
	Move up, then plot & move right	40
	Move up, then plot & move down	48
	Move up, then move left	24
	Move up, then plot & move left	56
	Move down, then plot & move up	34
	Move down, then move right	10
	Move down, then plot & move right	42
	Move down, then move down	18
	Move down, then plot & move down	50
	Move down, then move left	26
	Move down, then plot & move left	58
	Move right	1
	Move right, then plot & move up	33
Move right, then move right	9	
Move right, then plot & move right	41	
Move right, then move down	17	
Move right, then plot & move down	49	
Move right, then plot & move left	57	
Move left	3	
Move left, then plot & move up	35	
Move left, then plot & move right	43	
Move left, then move down	19	
Move left, then plot & move down	51	
Move left, then move left	27	
Move left, then plot & move left	59	
First vector plots before the move:	Plot & move up	4
	Plot & move up, then plot & move up	36
	Plot & move up, then move right	12
	Plot & move up, then plot & move right	44
	Plot & move up, then plot & move down	52
	Plot & move up, then move left	28
	Plot & move up, then plot & move left	60
	Plot & move down, then plot & move up	38
	Plot & move down, then move right	14
	Plot & move down, then plot & move right	46
	Plot & move down, then move down	22
	Plot & move down, then plot & move down	54
	Plot & move down, then move left	30
	Plot & move down, then plot & move left	62
	Plot & move right	5
Plot & move right, then plot & move up	37	
Plot & move right, then move right	13	
Plot & move right, then plot & move right	45	
Plot & move right, then move down	21	
Plot & move right, then plot & move down	53	
Plot & move right, then plot & move left	61	
Plot & move left	7	
Plot & move left, then plot & move up	27	
Plot & move left, then plot & move right	47	
Plot & move left, then move down	23	
Plot & move left, then plot & move down	55	
Plot & move left, then move left	31	
Plot & move left, then plot & move left	63	

*Note: Make sure your second vector isn't a simple move up. If your vector ends in an upward movement, you must plot it first; this table includes a code value for plot & move up, but not for moveup.*

**Table.** Vector-pair codes you can use with shape-table definitions. You must represent each pair of arrows in your drawing with one code value.



Pay  
As Little As  
\$3.33 Per Disk  
(See Special Below)

# Software Plus Support At Affordable Prices!

- ★ FREE 800 Order Line ★ 24 HOUR Turnaround ★ FREE Technical Support Service
- ★ Largest And Most Up-to-Date Libraries of Apple II/III/IV Software in the World!
- ★ 100's of New Software Selections Offered Every Quarter!
- ★ Most Complete, well-indexed public domain/shareware directories in the World!
- ★ Complete Line of Print Shop™ Graphics—over 6,000 Individual Graphics

## APPLE IIgs 3 1/2" DISKS

### 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
- GS178 100 pictures of fonts and color borders\* \$9
- GS196 100+ color pictures, Holidays and Religion\* \$9
- GS197 100+ color pictures of business and computer symbols\* \$9
- NEW GS207 100 color pictures saluting the wonders of nature\* \$9
- NEW GS208 100 fancy new fonts, perfect for every occasion\* \$9
- NEW GS209 100 bodacious borders to put the finishing touch on that latest creation\* \$9



NOTE: Ask about our full line of Print Shop™ Users Club Graphics (over 5,000 original graphics).  
\* Requires Print Shop™ IIgs to use.

### Graphics/Graphic Utilities

- GS63 Cheap Paint—full-featured color painting program (768K REQ.) (SHAREWARE) \$9
- GS131, GS132 84 fonts (typesets) for desktop publishing, (2 DISK SET) \$18
- NEW GS202, 203 AppleWorks™ GS Clip Art and borders for home & biz (2 DISKS) \$18
- NEW GS204 21 pictures of animals, people, and places—all are 3200-color images \$9
- NEW GS205 Second Chance: Utilities to enhance, display, and print graphics. (SW) \$9

### Adult Graphics

- GS136, GS137 Adults-only slide show of 44 beautiful ladies (2 DISK SET) \$18
- GS154 Treasures In The Sand—adults-only, 24 lovely poses \$9
- GS187, 188: 50 more beautiful women to dazzle and delight you. (2 DISK SET) \$18

### Education/Business

- GS184 Metrics Primer: learn about metrics, algebra, trigonometry, more \$9
- GS185, 186 Hyperstudio™ Stacks: learn about past presidents, solar system. (2 DISK SET) \$18
- GS189 DB Master: Powerful database program—easy to use, w/100 page doc (SW) \$9
- NEW GS210 Sounds from US world history + history of music (REQ. HYPERSTUDIO™ 2.0) \$9

### Games/Entertainment

- GS86 Solitaire plus Wheel: Vanna's game on the IIgs! ★ Best Seller \$9
- GS117 Flight Simulator, Pinball, Galaxy, plus more games (SHAREWARE) \$9
- GS180 Worm Hole: arcade, Cartus Primus card games, more (SHAREWARE) \$9
- GS183 Sheepshead—German bridge game, Fourplay, Death Hunt (SHAREWARE) \$9
- NEW GS206 Rush Hour, GS: plus other new arcade and puzzle games \$9
- NEW GS211, 212, 213 Trek Stack: All about Star Trek, The Next Generation. (REQ. HYPERSTUDIO™ 2.0) (3 DISK SET) \$27

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
- 941 70+ b/w educational pics, geog, sci, history, flags\* \$5
- 942 70+ b/w pictures of fonts and borders\* \$5
- 963 70+ b/w pics of Holidays and Religion\* \$5
- 964 70+ b/w pictures of business symbols\* \$5

\*Requires Print Shop™ to use.

### Business

- 948, 949, 950, 951 DB Master: Powerful database that's easy to use w/100 pg of doc (4 DISK SET) (SW) \$20

### Education

- 954, 955 Learn about algebra+trig. (2 DISK SET) (†) \$10

### Games

- 127 Defender—defend the astronauts from aliens \$5
- 813 Four pinball games including Superblast! \$5
- 814 Monopoly: The popular board game \$5

### Graphics

- 921, 922, 923 Stunning graphics Old TV shows (3 DISKS) \$15

### Passion

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

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

Add \$4 US & Canada (\$14 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 # \_\_\_\_\_ Exp. \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

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

## 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

- 36 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)

APPLESOFT  
ADVISER

scale factor of 1 produces the image in the original size, while 2 doubles the size, 3 triples the size, and so on.

With Applesoft BASIC you can also control your shape's rotation. The command ROT = # followed by DRAW commands rotates the shape around its reference point. Although the value for # must be between 0 and 255, the angle of rotation depends on the scale factor. With a scale factor of 1 the object can rotate in 45-degree increments. Add eight to the rotation value in the ROT command for each additional 45-degree angle. For example, to turn an object upside down, which is four 45-degree rotations, use the command ROT = 32.

To illustrate these commands, Waldo Wall Walker marches along a horizontal path toward a well. (See Listing 1.) Subroutine 100 uses a FOR/NEXT loop to move Waldo across the walkway. The loop counter, I, along with DRAW and XDRAW, specifies Waldo's horizontal (XX) position; the pause routine at line 800 slows his movement. With a series of commands — DRAW shape 1 at I, pause, XDRAW shape 1, DRAW shape 2 at I+1, pause and XDRAW shape 2 — we completed one phase of the animation, then incremented I by two and did it again.

Now if you change line 800 to read 800 FOR J = 1 TO 1000: NEXT J : RETURN, Waldo will march to a different drummer — a very slow one. With such a long pause, you can determine the two shapes we used for this demonstration. To make Waldo run along the path, remove the GOSUB 800 command entirely.

Waldo has a few other surprises up his sleeve: When he reaches the wall he rotates clockwise 270 degrees and marches up it. Line 45 rotates Waldo with the ROT = 48 command (270 degrees is six 45-degree increments, and 6 x 48 = 270), then calls subroutine 200 with GOSUB 200. Subroutine 200 also uses a sequence of DRAW and XDRAW commands within a loop, but this time the loop counter, I, decreases the vertical position of our traveling acrobat (decreasing values of YY), so that the program draws the image closer and closer to the top of the screen. Although at this value of rotation XDRAW doesn't erase the image completely, the last command in the loop uses HPLLOT and HCOLOR = 0 to erase the remaining pixels.

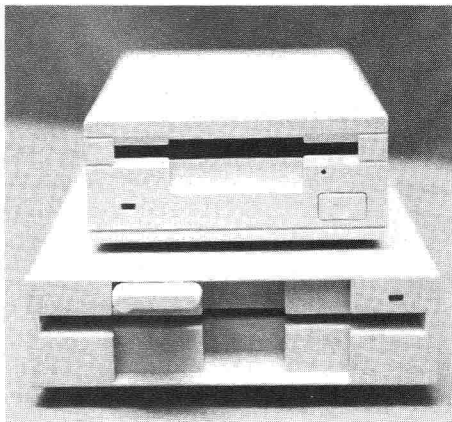
When Waldo reaches the top of the wall, he rotates once more upside down and marches back along the ceiling. At line 50 the ROT = 32 command turns him upside down, then GOSUB 300 calls subroutine 300, which is merely the reverse of subroutine 100. The loop counter, which decreases by two each cycle, along with the DRAW and XDRAW commands, specifies Waldo's horizontal position as he heads to the left.

When you animate a design use your creativity — don't let those shape tables constrain your imagination. Start with a simple figure and go wild with animation. Draw a ball, an arrow, or a rocket, then animate it by DRAWing and XDRAWing it at different positions along the screen. Or, practice with the animation in Listing 1. After all, it's simply two figures we set into motion with the DRAW and XDRAW commands. Once you get the hang of using shape tables, you'll create animations that'll astonish any assembly-language programmer. □

WRITE TO DAN BISHOP AT 4124 BEAVER CREEK DRIVE, FORT COLLINS, CO 80526. ENCLOSE AN SASE IF YOU'D LIKE A PERSONAL REPLY.

TO ORDER: 800-331-8125





## 5 1/4" DISK DRIVES FOR APPLE

1 Year Warranty  
Parts & Labor  
100% Compatible  
Super Quiet  
Cable  
Included

Apple II, II+, IIe  
Franklin Ace 1000  
Apple IIc, IIc+, IIGS  
Apple IIe UniDisk  
Laser 128  
Apple IIc+, IIGS  
Daisy Chain

**\$79.00**  
**\$79.00**  
**\$99.00**

AMR 3 1/2" Disk Drive  
For Apple IIc+ & IIGS

**\$199.00**

<b>ZIP CHIP 8 Mhz . . . . \$158.00</b> <b>NEW MPD DUAL SYSTEM</b> We did it . . . You can now run Apple and IBM software on the same computer! Complete Systems . . . from \$999.00 Call for details.		Extended 80 Column Card With 64K For Apple IIe 100% Appleworks Compatible <b>\$38.95</b> 5 Year Warranty	<b>UNIVERSAL Disk Controller</b> Run 800K Disc Drives on your II+ and IIe <b>\$64.95</b> <b>800K DISK DRIVE 3 1/2"</b> for II+, IIe, MAC, LASER 128 <b>\$179.00</b>
Do you have an IBM System? Want to run Apple software . . . You need TRACKSTAR . . . \$399.00		Super Serial Card 100% Apple Compatible 5 Year Warranty <b>\$48.95</b>	<b>Disk Controller Card</b> For Apple II, II+ & IIe <b>\$34.95</b> 5 Year Warranty
<b>CHECKMATE PRODUCTS</b>		Graphics Printer Card w/Cable or Apple II+ & IIe <b>5 Year Warranty</b> Parallel <b>\$44.95</b>	<b>CPM Card . . . . . \$34.95</b> <b>IIe Numeric Keypad . . . . \$34.95</b> <b>II+ &amp; IIe RF Modulator . . . \$15.95</b>
<b>PRO TERM \$78.50</b>	<b>MultiRam RGB IIe 0K to 1 Meg. from \$121.00</b>	<b>LASER 128 Computer</b> 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	
<b>MultiRam IIe 0K to 768K from \$88.50</b>	<b>MultiRam IIc 0K to 1 Meg. from \$105.00</b>	<b>DISKETTE STORAGE W/Lock</b> 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 50 Disks . . . . \$6.95 3 1/2 Holds 100 Disks . . . . \$8.95	
<b>Memory Chips . . . . . Call</b>		<b>II+ Owners</b> 16K Card . . . . . \$34.95 128K Card . . . . . \$64.95 80 Column Card . . . . . \$48.95 Plus Works . . . . . \$49.00 5 Year Warranty	
<b>MPD 4 Meg GS Card 0 Meg to 4 Meg from \$59.00</b>		<b>ACCESSORIES</b> Mouse Pad . . . . . \$4.95 Disk Notcher . . . . . \$4.50 Disk Clean 5 1/4 . . . . . \$4.00 Disk Clean 3 1/2 . . . . . \$4.00 LASER Add on's . . . . . Call Mouse . . . . . \$49.00 Printers . . . . . Call	
<b>Super Expander</b> IIe 0K to 1 Meg . . . . . from \$52.50 IIc 0K to 1 Meg . . . . . from \$65.50		<b>Cooling Fan For Apple II+ &amp; IIe With Surge Suppressor . . . . \$26.95</b> <b>Cooling Fan For Apple IIGS No Noise Interference \$19.95</b>	
<b>GS Mouse . . . . \$59.00</b>		<b>Replacement Keyboard for IIe \$55.00</b>	
<b>Green or Amber Monitor . . . . \$99.00</b>		<b>5 Amp Pwr. Supp. II, II+ &amp; IIe \$49.00</b>	
<b>SWITCH BOXES</b> 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		<b>Cables From . . . . \$9.95</b> IIe to Modem IIc to Modem IIe to IMG I IIc to IMG II IIe to IMG II Others Talk & Data Kits SCSI Cables Prices subject to change without notice	
<b>Replacement Keyboard for IIe \$55.00</b>		<b>Joystick for Apple IIe, IIc, IIc+, &amp; IIGS \$24.95</b> With Fire Button Same as Mach III	

We Ship 2nd Day Air Continental US Only

VISA & MASTERCARD — NO EXTRA CHARGE DEALER PRICING  
 Shipping Most Items \$5.00 / Drives \$7.00 / Computers Call / C.O.D. + \$3.50

We Ship 2nd Day Air Continental US Only

### 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



lenging tasks as their skills develop.

My daughter, who is almost 7, quickly tired of the activities. The only game she wanted to repeat was Bus Route. She seemed to get more enjoyment from adjusting the sound volume and clicking on the repeat command than from solving the Aquarium math problems or painting the fruit and vegetables at the Farmer's Market. She wanted to know why she couldn't paint the apples green and why she always had to paint the carrots orange. Overall, she found the program too restrictive. Younger children, who still have to learn how to count or identify colors, will find Talking School Bus more stimulating. They may not tire of it as quickly.

Still, \$49 is quite an expense for a program with little growth potential. Even with all its natural-sounding speech and painstakingly drawn hi-res, 16-color graphics, Talking School Bus is limited because there's no way to tailor the activities to the needs of individual children.

**Carol S. Holzberg, Ph.D.**  
**Shutesbury, MA**

## EXPLORING TIDEPOOLS

**WINGS FOR LEARNING**  
P.O. Box 660002, Scotts Valley, CA 95067,  
(408) 438-5502, (800) 321-7511

Simulation of tidepool ecosystem;  
128K Apple II; copy protection; \$75



What may seem like a scattering of temporary puddles peppering the rocky California coastline is actually an ecosystem rich in plant and animal life. You and your students can find out more about this saltwater environment and its inhabitants with Exploring Tidepools. The program is directed at students in grades 4 through 9. It lets youngsters examine high-, medium-, and low-level tidepool ecosystems over a 24-hour cycle.

High-level tidepools are the first to be exposed when the tide goes out and the last to be covered when the tide comes in, remaining uncovered for the longest period of time. Low-level tidepools are the last to be exposed when the tide goes out and the first to be covered then the tide comes

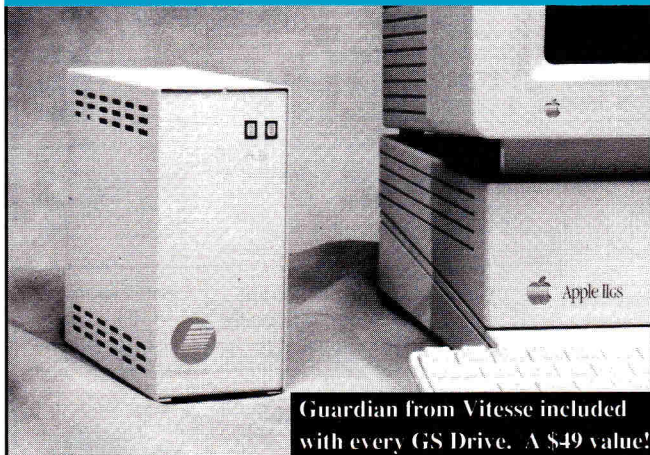
in, forming shallow aquatic habitats for the shortest duration.

The plant and animal types found in a particular tidepool depend largely on the length of time the habitat is uncovered. As the tide recedes, tidepool flora and fauna become more susceptible to the sun's rays and to land predators. The salt content of the water increases, the temperature climbs, and the oxygen level decreases.

Kids can examine tidepools at eye level (the macroscopic view) and observe plant and animal interactions. They can also switch to a microscopic view to investigate life forms not visible to the naked eye. At both levels, the richly illustrated graphics sport bright colors and realistic animation. You can almost taste salt in the air.

Kids don't have to memorize complex keyboard commands to operate this program — budding naturalists will enjoy the easy-to-use, point-and-click graphics interface. For example, selecting the text-page icon calls up descriptive information about the current scene; choosing the notebook icon presents specific data. Youngsters can

## YOU NEED SCSI AND CHINOOK IS IT!



Guardian from Vitesse included with every GS Drive. A \$49 value!

*"According to our benchmarks results, Chinook's CT-40 connected to the Apple II High Speed SCSI Card is the best performer of the lot -- that is, if you want a compact, competitively priced, fast, quiet fixed external hard-disk drive."*

inCider Magazine, July 1990

### The Software

Excellent utility software comes with every drive. IIG owners receive the Chinook SCSI Utilities and Backup II™ from Apple. IIGS owners receive Guardian from Vitesse and the Chinook SCSI Utilities™. Also included is a demo version of Hyperstudio™ (GS owners only) and the shareware version of DB Master™. Drives come formatted with the latest system software and are "ready to run".

All drives come with a 30 day money back guarantee and a one year warranty. To place an order or for additional information, call us today at (800)999-7034. We accept Visa / MC/Money order/School Purchase Orders.

### The Hardware

Chinook sells only Voice Coil Actuator (VCA) disk drives -- the most reliable technology available. Unlike other technologies, VCA keeps the data heads aligned directly with your data using a technique known as closed loop servo positioning. This technique assures fast, error free data transfer every time. A Chinook VCA hard drive translates to a worry free hard drive.

Drive	Access Time	Auto-head Parking	Price
CT-20	27ms	Yes	\$449
CT-40	25	Yes	529
CT-80	25	Yes	769
CT-100	25	Yes	799
Apple SCSI Card (req'd)			99
RAMFast SCSI			199



**CHINOOK**  
Chinook Technology  
615 Main Street., #635  
Longmont, CO 80501  
303/678-5544  
FAX: 303/772-1395



navigate with minimal adult supervision.

The program works best with a mouse or trackball: The pull-down menus, icons, dialog boxes, and other objects are easy to control by pointing, dragging, and clicking. The keyboard seems awkward by comparison, yet youngsters shouldn't have too much difficulty using the program on a mouseless Apple II.

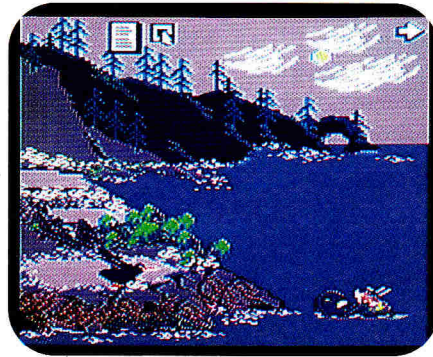
Kids explore all three ecosystems at the macroscopic and microscopic levels, while studying interesting information about various aquatic inhabitants at both stages of the tidal cycle. They'll learn the names of plants and animals, characteristics and behavior of microscopic plankton, and the nature of predator/prey relationships.

By pressing the escape key, students can call up an icon menu bar with the cast of animated characters and stationary objects. They can add these animals and objects to the tidepool screens, or modify any tidepool scene by changing the background.

Youngsters can enter brief descriptive titles and identification labels, or type a

short paragraph anywhere on screen. Editing text on the screen is a breeze. Kids can save their modified scenes to disk and print them (in color on a suitably ribboned ImageWriter II).

The program ships on two double-sided 5.25-inch disks. One side serves as the



An ecosystem revealed in rich detail.

boot disk, which features configuration utilities to customize the program for your particular hardware.

You can set up the application for use with one or two drives, and it works with a variety of printers; students will have to

contend with frequent disk swapping, though. Copy protection on the boot disk (you may copy the other three sides) prevents you from installing Exploring Tidepools on a hard disk. Disk swapping could be eliminated entirely if the program were available on a 3.5-inch floppy.

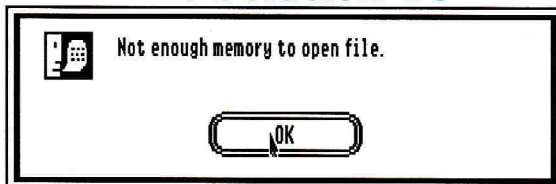
## TIDEPOOL ACTIVITIES

After students familiarize themselves with tidepool conditions, they can move on to the five related activities on the flip side of the program disk. These exercises are nonsequential, so kids may do them in any order. Each serves as a supplementary resource, providing useful information about tidepool life cycles.

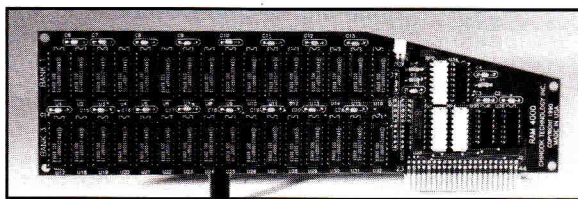
In Tidal Cycles, students learn that gravitational pull of the moon is the major cause of tides. Tidal heights shift as the orbiting moon goes through its phases, and the gravitational affects of the sun and moon creates different kinds of tides.

Plankton Life Cycles offers information on the animals that form the foundation of tidepool food chains. Students learn to

## The Solution To



IS



## The RAM 4000

- DMA Compatible, 100% compatible with the Apple II High-Speed SCSI card and the RAMFast SCSI Card
- Supports 1,2 and 4MB configurations
- Supports both ROM 1 and ROM 3 IIGS, no alterations
- Multi-layer printed circuit board construction
- 5 year warranty and 30 day money back guarantee

**RAM 4000™, 1MB \$149**  
**Additional Memory 69.95/1MB bank**



615 Main St., #635  
Longmont, CO 80501  
303/678-5544  
FAX: 303/772-1395

To Order, or for additional  
information call:  
**800/999-7034**

### Shipping information:

Hard drives, \$9 UPS Gnd, \$18 2nd day.  
RAM cards, \$3 UPS Gnd, \$7 2nd day.

## Hard Drive Utilities

Hard drives are a tremendous enhancement for your Apple II computer system. Unfortunately, they also bring along the added responsibility to keep them in peak operating performance. Chinook has surveyed the hard drive utility marketplace and we are offering the top of the line utilities to you.

### Vitesse

Vitesse products are fast, smooth and uncomplicated. All Vitesse products feature an intuitive graphical user interface.

Guardian™ (backup/restore)	\$34.95
Renaissance™ (optimizer)	34.95
Wings (Finder™ replacement)	57.95
Deliverance™ (directory repair)	34.95
Exorciser™ (virus detector and cure)	28.95

### Glen Bredon

Glen Bredon's products feature power and speed.

ProSel 8™	\$38.95
The ultimate ProDOS 8 program selector and utilities.	
ProSel 16™	\$59.95
Power/\$\$\$, Prosel can't be beat. Program selector and all the hard drive utilities you will ever need.	
DOSMaster	\$24.95
Need DOS 3.3 on your hard drive? DOS Master is the answer.	

### NAUG

The Apple II Hard Disk Primer (122 pg book) \$15.95  
...Tells you everything you need to know to use a hard drive on a Apple II computer.

### Chinook Technology

Chinook SCSI Utilities™ v1.5 \$29.95  
Compatible with the new High Speed SCSI card. Features include partitioning, interleave selection, media verification, SCSI bad block re-assignment and drive geometry (#heads, sectors/trk, drive serial #, etc).

**Canadian Customers contact:**  
Canadian Computer Outlet  
Box 7081  
Oakville, ONT L6J-6J5  
416/849-0737



# REVIEWS

diagram plankton life cycles, match adult tidepool animals with plankton larvae, and classify different types of plankton.

In *Who Eats Whom*, youngsters can diagram the complexities of food relationships in a low-tidepool life cycle. They'll learn about differences between food chains and food webs, and that all food chains begin with plants converting the sun's energy to a form animals can eat.

East/West Tidepools challenges young scientists to build their own low-level West

Coast tidepool. They decide which plants and animals to import into the environment. If they choose incorrectly, the animal turns black and disappears. East/West Tidepools also provides an opportunity to study an East Coast (New England) tidepool. Kids are encouraged to note the similarities and differences between the two ecosystems.

In the final activity, Reports/Graphs, youngsters write a brief report by entering their observations on a blank report page.

They can also generate either a line graph or a bar chart to illustrate tidepool diversity or plants and animals observed. All the tools needed for designing graphs are in the inanimate objects category in the icon menu. Kids may save and print their reports and graphs.

## DOWN BY THE SEA

The documentation for Exploring Tidepools is richly detailed; it includes operating instructions, teaching objectives, activity sheets, and suggestions for all sorts of followup exercises. One caveat for GS users: The teacher's manual suggests changing your machine's system speed to normal. The program's animation runs more smoothly when you set the speed to fast, however.

Exploring Tidepools is educational software at its very best. It's more than just a suitable alternative to class field trips. Kids can examine an entire tidepool life cycle without getting their feet wet or getting bogged down in real-time observations. Students even can compare tidepools on different computers from the comfort of their desktop.

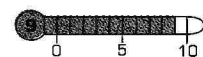
When it's impossible to trek to the seashore, Exploring Tidepools is the next best thing to being there. Even though the program has no sound, the simulations are true-to-life. The animation is vivid and life-like. With a bit of imagination, it's easy to hear waves crashing against the rocky shore and the cries of seagulls as they soar overhead.

**Carol S. Holzberg, Ph.D.**  
Shutesbury, MA

## GEOGRAPHIC JIGSAW

**ECLAT MICROPRODUCTS**  
P.O. Box 570-756, MIAMI, FL 33257-0756,  
(305) 233-4666

United States geography education game;  
128K Apple IIe/IIc or 512K IIGS; no copy  
protection; \$39.95 (either version)



**H**ow well do your kids know the states and their capitals? Can they identify a state by its shape? Do they know which eight states surround Missouri? Can they guess when Texas was admitted to the Union? If their knowledge of American

Continued on p. 82



### ALLTECH ELECTRONICS CO., INC.

1300 E. Edinger Ave., Suite D., Santa Ana, CA 92705  
2018 Lomita Blvd., Suite 1, Lomita, CA 90717  
602 Garrison St., Oceanside, CA 92054

Minimum Shipping &  
Handling Charge \$5.00

PHONE ORDERS: (619) 721-7733 — FAX: (619) 721-2823

#### Other Expansion Cards

80 Col. (II+)	\$45.00
UniDisk 5.25 Controller	\$45.00
UniDisk 3.5" Controller	\$75.00
Z-80 CP/M	\$29.00
Graphic Parallel Printer Card	\$35.00
Super Serial	\$69.00
Apple Parallel Interface	\$35.00
Mountain CPS, Clock, Parallel, Serial	\$45.00

#### RAM Chips

64K (4164) -15/20	ea.\$75/\$50
256K (41256) -12/-15	ea.\$275/\$250
256 x 8 SIMM	each \$29.00
1024 x 8 SIMM	each \$85.00
Other memory chips available	CALL!

#### Parts & Misc.

Apple II+ Case	\$35.00
Apple IIe Case	\$75.00
ProFILE Case & Power Supply	\$75.00
II+, IIe Power Supply*	\$39.00
Mac 400K Drive Assembly	CALL
EPROMS! 2716, 32, 64, 128 & 27512	CALL
Dealer Enquires Invited	

#### Monitors

AMBI 9" Composite Monitor	\$49.00
Apple Monitor III (used)	\$65.00
Color Comp. (Not for 80 Col. Txt.)	\$

#### Keyboards

Apple II+, IIe, IIc, III* Keyboards*	\$65.00
Mac 512/128 Keyboard*	\$65.00
Mac Numeric Keypad (128/512)*	\$39.00
IIGS + Mac ADB.	CALL
*\$10.00 + Shipping for your old part.	

#### Bulk Diskettes

5.25" DSDD	100 for \$24.00
3.5" DSDD	50 for \$25.00
Alignment Disk (Techs only)	\$29.00

#### Manuals

AppleWorks v1.2 w/disks	\$35.00
AppleWriter II w/disk	\$29.00
*ImageWriter, Color Plotter	\$12.00
*LaserWriter Plus, Scribe	\$12.00
*HyperCard w/Disks	\$29.00
*Mac Project (Supports SE, II)	\$29.00
*Misc Apple Manuals Avail	CALL

#### Storage Devices

IIe External Full Height FD*	\$65.00
IIc, Laser 128 External*	\$75.00
IIc Internal*	\$95.00
AMR 3.5 IIGS, IIc+	\$189.00
ProFILE 5 Meg.	\$120.00

#### Apple® Chips

MMU, IOU For IIe, IIc.	CALL
Apple IIe Enhancement Kit	\$79.00
Chips for Disk II	CALL
Apple II+ ROM Set	CALL
Apple IIGS ROM 01, VGC Chips	CALL
68882 Math Co-Processor	CALL
Dealer Enquires Invited	

#### Ram Expansion

Super Expander GS w/1 Meg.	\$139.00
Super Expander IIe (1 Meg) OK	\$69.00
Super Expander II+ (1 Meg) OK	\$79.00
Super Expander IIc (1 Meg) OK	\$89.00
64K/80 IIGS RAM w/64K	\$39.00
512K/80 IIGS RAM w/512K	\$75.00
128K RAM, II+, IIe Slot 0-7	\$69.00
Language Card/16K II+	\$39.00

#### Accessories & Cables

No Slot Clock	\$29.00
Apple IIc Carrying Case	\$29.00
ImageWriter Black Ribbons	.6 for \$10.00
Phone NET Compatible Connector	\$29.95
CPrint (Use EPSON RX/MX on IIc)	\$39.00
ImageWriter LQ Sheet Feeder, Second Bin, and envelope attachment	\$275.00
ImageWriter LQ 4 Color Ribbon	\$19.95
ImageWriter LQ Black Ribbon	\$14.95
ImageWriter II 4 Color Ribbon	\$5.95
Serial to Parallel Converter	\$49.95
20 to 19 Pin Disk II Cable	\$14.95
*ImageWrt. I Accs. Kit, Mac 512	\$29.00
*ImageWrt.-I Accs Kit, //e	\$29.00
*Apple Parallel Cable Kit	\$15.00
*AppleModem Accs Kit //c	\$29.00
*DaisyWheel Accs. Kit, Lisa	\$25.00
*AppleModem Accs Kit, Apple II	\$29.00

#### Mother Boards

IIc Mother Board	\$200.00
IIe Mother Board	\$200.00
II+ Mother Board	\$100.00
Mac 128 Mother Board	\$100.00
Mac 512 Mother Board	\$150.00

We will buy your old or non-functional units for \$10.00 plus shipping charges.

\*\*Minimum shipping and handling charges will be \$5.00.

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. All prices are cash and carry. Shipping, COD, and insurance charges extra.

NOTE: School purchase orders accepted!

\*\*New this month

inCider-Oct. 90



# Free

# Product Info

**Want To Know More**  
About Products Or  
Services Advertised In  
This Issue?


## HERE'S HOW.

• **PRINT** your name and address where indicated.

• **TELL US** about yourself by answering the questions.

• **CIRCLE** the numbers on the card corresponding to the reader service number for products or services that interest you.

• **TEAR OUT** and mail the card—the postage is on us.

• **SUBSCRIBE** to *inCider* by checking off the  where indicated. We'll bill you \$27.97 for 12 issues of *inCider* delivered to you monthly. **That's 40% off the cover price.** Look for your subscription in 6 to 8 weeks.

**NO OBLIGATION.** Literature on products and services will be sent to you directly from advertisers, free of charge.

***DIRECT TO YOU***  
at no cost or obligation

## INCIDER READER SERVICE CARD

NOVEMBER ISSUE, valid until January 15, 1991

Name \_\_\_\_\_ Phone ( ) \_\_\_\_\_  
Title \_\_\_\_\_  
Address \_\_\_\_\_  
City/State/Zip \_\_\_\_\_

**Check here** to start your subscription to *inCider*. You will be billed \$27.97 for one year (12 issues).

**I Please indicate which of the following computers you currently own and/or plan to buy in the next 3 months.**

	Own	Plan to Buy
Apple IIcs	<input type="checkbox"/> a	<input type="checkbox"/> f
Apple IIe/IIc/IIc Plus	<input type="checkbox"/> b	<input type="checkbox"/> g
Macintosh	<input type="checkbox"/> e	<input type="checkbox"/> j

**III If you purchase, or influence the purchase of, computer-related products, indicate the number of computers involved.**

1- 5 (x)   
6-10 (y)   
11-20 (z)

**II Are you an educator?**

Yes  
 q

1	6	11	16	21	76	81	86	91	96	151	156	161	166	171	226	231	236	241	246	301	306	311	316	321
2	7	12	17	22	77	82	87	92	97	152	157	162	167	172	227	232	237	242	247	302	307	312	317	322
3	8	13	18	23	78	83	88	93	98	153	158	163	168	173	228	233	238	243	248	303	308	313	318	323
4	9	14	19	24	79	84	89	94	99	154	159	164	169	174	229	234	239	244	249	304	309	314	319	324
5	10	15	20	25	80	85	90	95	100	155	160	165	170	175	230	235	240	245	250	305	310	315	320	325
26	31	36	41	46	101	106	111	116	121	176	181	186	191	196	251	256	261	266	271	326	331	336	341	346
27	32	37	42	47	102	107	112	117	122	177	182	187	192	197	252	257	262	267	272	327	332	337	342	347
28	33	38	43	48	103	108	113	118	123	178	183	188	193	198	253	258	263	268	273	328	333	338	343	348
29	34	39	44	49	104	109	114	119	124	179	184	189	194	199	254	259	264	269	274	329	334	339	344	349
30	35	40	45	50	105	110	115	120	125	180	185	190	195	200	255	260	265	270	275	330	335	340	345	350
51	56	61	66	71	126	131	136	141	146	201	206	211	216	221	276	281	286	291	296	351	356	361	366	371
52	57	62	67	72	127	132	137	142	147	202	207	212	217	222	277	282	287	292	297	352	357	362	367	372
53	58	63	68	73	128	133	138	143	148	203	208	213	218	223	278	283	288	293	298	353	358	363	368	373
54	59	64	69	74	129	134	139	144	149	204	209	214	219	224	279	284	289	294	299	354	359	364	369	374
55	60	65	70	75	130	135	140	145	150	205	210	215	220	225	280	285	290	295	300	355	360	365	370	375

4AAA1

## INCIDER READER SERVICE CARD

NOVEMBER ISSUE, valid until January 15, 1991

Name \_\_\_\_\_ Phone ( ) \_\_\_\_\_  
Title \_\_\_\_\_  
Address \_\_\_\_\_  
City/State/Zip \_\_\_\_\_

**Check here** to start your subscription to *inCider*. You will be billed \$27.97 for one year (12 issues).

**I Please indicate which of the following computers you currently own and/or plan to buy in the next 3 months.**

	Own	Plan to Buy
Apple IIcs	<input type="checkbox"/> a	<input type="checkbox"/> f
Apple IIe/IIc/IIc Plus	<input type="checkbox"/> b	<input type="checkbox"/> g
Macintosh	<input type="checkbox"/> e	<input type="checkbox"/> j

**III If you purchase, or influence the purchase of, computer-related products, indicate the number of computers involved.**

1- 5 (x)   
6-10 (y)   
11-20 (z)

**II Are you an educator?**

Yes  
 q

1	6	11	16	21	76	81	86	91	96	151	156	161	166	171	226	231	236	241	246	301	306	311	316	321
2	7	12	17	22	77	82	87	92	97	152	157	162	167	172	227	232	237	242	247	302	307	312	317	322
3	8	13	18	23	78	83	88	93	98	153	158	163	168	173	228	233	238	243	248	303	308	313	318	323
4	9	14	19	24	79	84	89	94	99	154	159	164	169	174	229	234	239	244	249	304	309	314	319	324
5	10	15	20	25	80	85	90	95	100	155	160	165	170	175	230	235	240	245	250	305	310	315	320	325
26	31	36	41	46	101	106	111	116	121	176	181	186	191	196	251	256	261	266	271	326	331	336	341	346
27	32	37	42	47	102	107	112	117	122	177	182	187	192	197	252	257	262	267	272	327	332	337	342	347
28	33	38	43	48	103	108	113	118	123	178	183	188	193	198	253	258	263	268	273	328	333	338	343	348
29	34	39	44	49	104	109	114	119	124	179	184	189	194	199	254	259	264	269	274	329	334	339	344	349
30	35	40	45	50	105	110	115	120	125	180	185	190	195	200	255	260	265	270	275	330	335	340	345	350
51	56	61	66	71	126	131	136	141	146	201	206	211	216	221	276	281	286	291	296	351	356	361	366	371
52	57	62	67	72	127	132	137	142	147	202	207	212	217	222	277	282	287	292	297	352	357	362	367	372
53	58	63	68	73	128	133	138	143	148	203	208	213	218	223	278	283	288	293	298	353	358	363	368	373
54	59	64	69	74	129	134	139	144	149	204	209	214	219	224	279	284	289	294	299	354	359	364	369	374
55	60	65	70	75	130	135	140	145	150	205	210	215	220	225	280	285	290	295	300	355	360	365	370	375

4AAA1

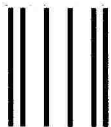


# Free Product

# Info

**DIRECT TO YOU**  
at no cost or obligation

**Want To Know More**  
About Products Or  
Services Advertised In  
This Issue?



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED  
STATES

**BUSINESS REPLY MAIL**  
FIRST-CLASS MAIL PERMIT NO. 1217 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE



**inCider**  
**ATTN: Reader Service Dept.**  
**P.O. Box 8987**  
**Boulder, CO 80328-8987**



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED  
STATES

**BUSINESS REPLY MAIL**  
FIRST-CLASS MAIL PERMIT NO. 1217 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE



**inCider**  
**ATTN: Reader Service Dept.**  
**P.O. Box 8987**  
**Boulder, CO 80328-8987**



## HERE'S HOW.



- **PRINT** your name and address where indicated.
- **TELL US** about yourself by answering the questions.
- **CIRCLE** the numbers on the card corresponding to the reader service number for products or services that interest you.
- **TEAR OUT** and mail the card—the postage is on us.
- **SUBSCRIBE** to *inCider* by checking off the  where indicated. We'll bill you \$27.97 for 12 issues of *inCider* delivered to you monthly. **That's 40% off the cover price.** Look for your subscription in 6 to 8 weeks.

**NO OBLIGATION.** Literature on products and services will be sent to you directly from advertisers, free of charge.



# READER SERVICE INDEX

Reader Service	Page
40 Abracadata	81
103 Alltech Electronics Co. Inc.	80
* Applied Engineering	9, 43, 57, 71, 87, 88, 89
179 Beagle Bros Inc.	6
178 Beagle Bros Inc.	45
177 Beagle Bros Inc.	65
87 Bible Research Systems	92
151 Big Red Apple	75
* Broderbund Software	46
9 CDA Computer Sales	58, 59
115 Chinook Technology	78, 79
* Choice Computer Products	93
* Compucraft	92
252 Computer Enhancers	93
288 Computer Friends	67
134 Dayton Computer Supply	93
184 Digital Vision	74
220 Educational Resources	52, 53
85 Fas-Track Computer Products	16
* GENie	68, 69

Reader Service	Page	Reader Service	Page
74 Golem Computers	20, 21	269 Public Domain Exchange	76
84 Golem Computers	19	136 Quality Computers	2, 3
27 Gosselin Computer Services	92	136 Quality Computers	5
23 International Software Lib.	92	155 Quality Computers	4
57 Kelvin Electronics	93	7 Ramco Computer Supplies	92
* Kensington Microware	CV4	90 Roger Coats	12, 13
226 Lance Haffner Games	91	93 Roger Coats	14, 15
175 Laser Computer Inc.	CV2	185 S.A. AuTeur Co., The	93
44 LRO Computer Sales	84	292 Softdisk	1
248 Memory Plus Distribution	77	127 SoftSpoken, Inc.	91
149 M.E.D.	66	270 Software Discount of America	83
4 Merritt Computer Products	93	18 Sports Software Assoc.	92
55 National AW User Group	91	60/3 Springbranch Software, Inc.	92
247 Nature Boy Software	27	20 Stone Edge Technologies	91
75 New Apple Print Shop Club	91	49 Techware, Inc.	29
39 New Concepts, Inc.	44	140 Timeworks	85
173 New Science Prospects	93	231 Tulin Corp.	81
71 Nite Owl Productions	91	297 USA Micro	82
237 Orange Cherry Software	CV3	17 VMC Marketing Technologies	92
48 Orange Micro	11	214 VSI	74
59 Perfect Solutions Software	91		
* Preferred Computing	25		
105 Price Busters	63		
128 Programs Plus	30, 35		

This index is provided as an additional service. The publisher does not assume liability for errors or omissions.

## DESIGN YOUR OWN HOME™

on your Apple II's, IIGS, IBM, Macintosh



Winner of American Library Association Software's Greatest Hits award 1989

### Architecture

Draw floor plans or side views with architectural scales, grids, overlays. Use the stud/beam repeater to calculate lumber. Dozens of architectural symbols included.

### Interiors

Draw room plans, arrange furniture and explore color schemes. Includes hundreds of furniture pieces. Automatic side view feature.

### Landscape

Create a full-color plan of your property. Dozens of plants included. 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!

### Landscape Regional Image Libraries

Contain specific plants and landscape elements for five different regions: South, East, Midwest, Southwest, and Northwest/ Mountain. \$29.95 each.

CK/MO/VISA/MC/AmEx

\$4 shipping (add \$1 for each additional package)

### LIBRARIES

- Architecture Library 1 (vacation, solar, A-frame, country)
- Architecture Library 2 (traditional, ranch, colonial)
- Architecture Library 3 (modern, Spanish, Tudor, Cape Cod, Victorian, French)
- Architecture Library 4 (offices)
- Interiors Library 1 (homes)
- Interiors Library 2 (offices)
- Landscape Library 1 (homes)

Each library is \$29.95 and includes four dozen plans.

### SYSTEM REQUIREMENTS

- Apple II series with 64K... \$69.95
- Apple IIGS with 1MB... \$89.95
- \*Macintosh with 1MB... \$99.95
- IBM with 640K... \$99.95
- All libraries... \$29.95 ea.

Compatible with Laser 128

\*Call for availability  
1-800-451-4871



DEPT D PO Box 2440  
Eugene, OR 97402  
(503) 342-3030

## Hard Disk Subsystem (plug & play)

- **Half Shell-compact 1.4"x5.5"x7.5"**  
same drive as the Mac portable

20MB \$509 40MB \$609

- **A-Hive-hard disk (expandable)**

Compleatw/Apple High Speed SCSI Card  
and latest GS/OS 5.02 system software

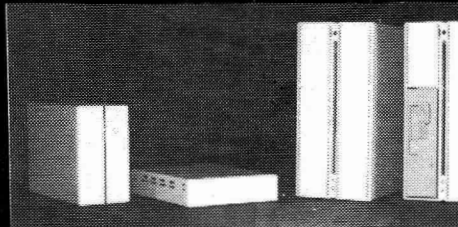
32MB--\$529

48MB--\$579

65MB--\$599

85MB--\$619

100MB--\$859



- **Cartridge Drive --44MB per cartridge \$739**

- **Hermit Crab--portable 20MB\$509 40MB\$609**

## Tape Subsystem w/ backup software

155MB--\$599

50MB--\$519

## A-Hive & Jr. (3.5")∞∞ a disk enclosure

40watts -- \$119 65watts -- \$169

Subsystems are Mac & PC compatible

## TULIN CORPORATION

2156H O'Toole Avenue

Tel: 408-432-9025

San Jose, CA 95131

Fax: 408-943-0782

Apple is a registered trademark of Apple Computer, Inc.



geography needs improvement, check out Geographic Jigsaw — it may be just what they need to sharpen their expertise.

Geographic Jigsaw consists of four activities — Jigsaw, Map Quiz, Map Facts, and Statistical Maps — that reinforce basic geographic skills. Jigsaw and Map Quiz are game-like challenges enhanced with colorful graphics and sound effects. (If the sound is too much, however, you can turn it off.) Kids can compete at three difficulty levels, each one building on facts and fig-

ures learned in previous activities. As they play each game they learn geographic, historical, and cultural tidbits about the 50 states Americans call home.

Both the IIe/IIc and the GS versions are menu driven, with point-and-click activity selection, on-screen instructions, and on-line help. Using the program is so intuitive that kids can work through the activities without even consulting the documentation. Although the GS edition requires a mouse, the IIe/IIc version lets youngsters

input information with either keystrokes or a mouse. (They'll probably find that its easier to use the mouse.) While both versions of Geographic Jigsaw have virtually identical contents, the GS edition features super-hi-res graphics and a finer resolution for map images.

Jigsaw is the program's flagship activity. It presents youngsters with a jumbled map of the United States and challenges them to solve the puzzle by repositioning the states. At the easiest level, kids simply have to match the mystery state with its outline on a blank map; it's suitable for children as young as six. Then when they place a state in its correct position, the program tells them its name and its capital.

At a more difficult level, kids must flip the puzzle pieces before they try to position them on the map, then name the state and its capital. At the highest level, youngsters have to position the puzzle pieces within a blank outline of the United States.

When youngsters reach the higher levels, Jigsaw provides some hints. For example, if a child starts to type a wrong state name, the computer beeps and highlights the first three spelling errors. If a youngster can't decide whether a state is Iowa or Missouri, for instance, they can type either *I* or *M* and know the answer immediately.

Although the hints help children learn geography, Jigsaw has some drawbacks: Kids must hit Return to receive any audiovisual reinforcement, there's no hint button, and incorrectly spelled state names and capitals count as wrong answers.

Map Quiz, Jigsaw's second activity, builds on what young geographers learned in Jigsaw. At the easiest level, it challenges kids to answer questions about states or capitals. At higher levels, it tests their knowledge of cities, native flowers, capitals, nicknames, and other tidbits. Youngsters respond to questions by placing the cursor over a state's outline and clicking (or pressing Return). When children choose the correct answer, they receive positive audiovisual reinforcement. If their answer is wrong, the correct state flashes briefly.

Map Quiz keeps track of the correct and incorrect answers, and places the top ten scores in a special Hall of Fame. The program saves new names to the list automatically when you quit the program from the main menu.

## The Sensational Lasers Apple IIe/IIc Compatible

# \$335

Includes 10 free software programs!

**New!** Now Includes  
**COPY II PLUS®**



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 even includes 10 free software programs! Take advantage of this exceptional value today. . . . **\$335**

**Super High Speed Option!**  
only **\$375**

The LASER 128EX has all the features of the LASER 128, plus a triple speed processor and memory expansion to 1MB . . . . . \$375.00

The LASER 128EX/2 has all the features of the LASER 128EX, plus MIDI, Clock and Daisy Chain Drive Controller . . . . . \$415.00

### DISK DRIVES

- \* 5.25 LASER/Apple 11c . . . . . \$ 99.00
- \* 5.25 LASER/Apple 11e . . . . . \$ 99.00
- \* 3.50 LASER/Apple 800K . . . . . \$179.00
- \* 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 . . . . . \$599.00

THE SUPERSTAR a LASER 128 Computer with 14" RGB Color Monitor and the LASER 145E Printer . . . . . \$699.00

### ACCESSORIES

- \* 12" Monochrome Monitor . . . . . \$ 89.00
- \* 14" RGB Color Monitor . . . . . \$249.00
- \* LASER 190E Printer . . . . . \$219.00
- \* LASER 145E Printer . . . . . **New!** \$189.00
- \* Mouse . . . . . \$ 59.00
- \* 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

**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

Your satisfaction is our guarantee!

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.

Circle 297 on Reader Service Card.



# Software Discounters Of America

Est 1984

## WE ARE THE #1 SOFTWARE SOURCE FOR THOUSANDS OF COMPUTER OWNERS

If you've never shopped with us before, now is the time to find out why so many valued customers have!

- Speedy Delivery
- Deep Discounts
- Astronomical Selections
- Free shipping on orders over \$100
- No surcharge on MC/VISA
- Overnight & 2 day shipping available

### Broderbund

You're the hunter and the hunted. A lone warrior flying a fighting machine over the pacific. A U.S. Navy FGF Hellcat. Superb graphics and animation.

**WINGS OF FURY SDA**  
List \$34.95 **Discount Price \$23**



#### ACCESS

World Class L.B. Golf ... \$9.88

#### ACCOLADE

Fast Break GS ... \$29  
Grand Prix GS ... \$29  
4th & Inches Football GS ... \$29  
4th & Inches  
Team Const. GS ... \$9.88  
Hardball ... \$9.88  
Hardball GS ... \$25  
Jack Nicklaus Golf GS ... \$32  
JN Golf 1990 Courses GS \$16  
JN Golf Chp. Courses GS \$16  
JN Golf Int'l Courses GS \$16  
Mean 18 Golf GS ... \$29  
Test Drive 128K ... \$23  
T.D. 2: The Duel GS ... \$29  
T.D. 2: Europe Scen. GS ... \$16  
T.D. 2: Muscle Cars GS ... \$16  
T.D. 2: Calif. Scen. GS ... \$16  
T.D. 2: Super Cars GS ... \$16  
Third Courier GS ... \$32

#### ACTIVISION

Battle Chess ... \$29  
Battle Chess GS ... \$32  
Crossbow ... \$25  
Dragon Wars ... \$32  
Last Ninja 128K ... \$9.88  
Last Ninja GS ... \$14  
Music Studio 2.0 GS ... \$44  
Neuromancer 128K ... \$9.88  
Neuromancer GS ... \$14  
Rampage 128K ... \$9.88  
Teleworks Plus GS ... \$65

#### AEC FUN LEARNING

Human Biology ... \$6.88  
Life Science ... \$6.88  
U.S. Geography ... \$6.88  
U.S. History 1 or 2 ... \$6.88 Ea.

#### ARTWORX

Bridge 6.0 GS or 64K ... \$25 Ea.  
Kaleidokubes  
48K or GS ... \$14 Ea.

### Broderbund

There has never been a banner maker like this before! Packed with spectacular features. Destined to be a #1 best seller.



**BANNER MANIA SDA**  
List \$34.95 **Discount Price \$23**

Geometry GS ... \$49  
Jam Session GS ... \$32  
Karateka ... \$6.88  
Loderunner ... \$6.88  
Playroom 128K ... \$25  
Prince of Persia ... \$23  
Print Shop GS ... \$39  
P.S. Graphics Library  
Party Edition GS ... \$23  
Sampler Edition GS ... \$23  
New Print Shop ... \$32  
P.S. Sampler Graphics ... \$16  
P.S. Party Graphics ... \$16  
P.S. School/Business Gr. ... \$16  
Toy Shop ... \$28.88  
VCR Companion 128K ... \$23  
Wings of Fury 128K ... \$23

**CINEMAWARE — ON SALE!**  
Rocket Ranger GS ... \$28.88  
The Three Stooges GS ... \$28.88

**DATA EAST**  
Heavy Barrel ... \$23  
Ikari Warriors 128K ... \$9.88  
Platoon 128K ... \$9.88

**DAVIDSON**  
Algebra 1st Semester ... \$32  
Grammar Gremlins 64K ... \$32  
Math Blaster Mystery 128K ... \$32  
Math Blaster Plus 128K ... \$32

**THE ULTIMATE JOYSTICK**  
**500XJ Joystick**  
Now at the Lowest Price Ever  
Was \$25 Now \$18.88  
Right-handed players

Math Blaster Plus GS ... \$32  
Math & Me 128K ... \$19  
Read N Roll 128K ... \$32  
Reading & Me 128K ... \$32  
Spell It Plus 128K ... \$32  
Talking Math & Me GS ... \$32  
Talking Reading & Me GS ... \$32  
Word Attack Plus 128K ... \$32

**DESIGNWARE**  
Algebra 1st Semester ... \$25  
Designasaurus 128K ... \$25  
Designasaurus GS ... \$32  
Jigsaw GS ... \$25

**ELECTRONIC ARTS**  
Bard's Tale 2 GS ... \$19  
Blockout GS ... \$25  
Chessmaster 2100 ... \$32  
Cribbage/Gin King GS ... \$26  
Earl Weaver Baseball ... \$26  
Empire ... Call  
Hunt For Red October ... \$21  
Hunt For Red October GS ... \$21  
Keef The Thief GS ... \$14  
Kings Bounty ... \$26  
Life & Death GS ... \$32  
M. Beacon Typing GS ... \$32  
Madden Football ... \$32  
Maniac Mansion ... \$23  
Marble Madness 128K ... \$9.88  
Marble Madness GS ... \$14  
Might & Magic 1 ... \$23

Might & Magic 2 ... \$32  
Pipe Dream ... Call  
Skate or Die GS ... \$14  
The Immortal GS ... Call  
Tunnels Armageddon GS ... \$26  
Vegas Gambler GS ... \$26  
Wasteland ... \$9.88  
World Tour Golf GS ... \$14  
Zany Golf GS ... \$26

**EPYX — ON SALE!**  
Legend of Black Silver ... \$17.88  
Graphics Scrapbook  
1 or 3 ... \$8.88  
Sporting News Baseball ... \$17.88  
Sub Battle Simulator ... \$9.88  
Winter Games ... \$8.88

**FTL**  
Dungeon Master GS ... \$25

**GAMETEK**  
Double Dare ... \$9.88  
Super Password 128K ... \$9.88

**HI-TECH EXPRESSIONS**  
Big Bird's Spc. Delivery ... \$6.88  
Ernie's Magic Shapes ... \$6.88  
Fun House ... \$8.88  
Looney Tunes Print Kit ... \$9.88  
Muppet Adventure ... \$9.88  
Muppet Print Kit ... \$9.88  
Print Power ... \$9.88

**Combine the best features of fantasy role playing w/ combat simulation and arcade games. Superb hand drawn graphics. Intricate animation**  
**Call For Price & Availability**

**MICROILLUSIONS**  
Blackjack Academy GS ... \$25  
Firepower GS ... \$23  
Sky Travel ... \$34

**MICROLEAGUE**  
M.L. Baseball ... \$25  
M.L.B. 89 Team Disk ... \$14

**MICROPROSE/MEDALIST**  
F-15 Strike Eagle ... \$14  
Magic Candle ... \$32  
Magic Candle 2 ... Call  
Pirate 128K or GS ... \$29 Ea.  
Silent Service 128K or GS ... \$14

**MINDSCAPE**  
Balance of Power 1990 GS ... \$32  
Deja Vu 2 GS ... \$32

**MY SOFTWARE**  
My Label Maker ... \$14  
My Mail List (w/Labels) ... \$14

**ORIGIN**  
Knights of Legend ... \$32  
Omega ... \$32  
Quest For Clues Book 2 ... \$19  
Space Rogue ... \$32  
Tangled Tales ... \$19  
Times of Lore ... \$25  
Ultima 4 or 5 ... \$39 Ea.  
Ultima Trilogy ... \$39  
Windwalker ... \$25

**ROGER WAGNER**  
Hyperstudio GS ... \$89

**SIERRA**  
Black Cauldron ... \$21.88  
Gold Rush 128K or GS ... \$25  
King's Quest 1, 2, 3 or 4  
128K or GS ... \$32 Ea.  
Leisure Suit Larry  
128K or GS ... \$25

Manhunter N.Y. 128K ... \$32  
Manhunter N.Y. GS ... \$32  
Mother Goose 128K or GS ... \$19  
Police Quest 128K or GS ... \$32  
Silphed GS ... \$23  
Smart Money GS ... \$49  
Space Quest 128K ... \$32  
Space Quest 2 128K ... \$32  
Space Quest 1 or 2 GS ... \$32

**SIR TECH**  
Heart of Maelstrom ... \$32  
Return of Werdna ... \$14  
Wizardry Trilogy ... \$32

**SPECTRUM HOLOBYTE**  
Solitaire Royale GS ... \$23

**SPRINGBOARD**  
Certificate Maker ... \$24  
Newsroom ... \$23  
N.R. Clip Art 1, 2, 3 ... \$14  
Publisher 5 1/2 or 3 1/2 ... \$89 Ea.

**SSI**  
Champions of Krynn ... \$32  
Curse of Azure Bonds ... \$32  
Overrun ... \$32  
Pool of Radiance ... \$29  
War of the Lance ... \$26

**SUBLOGIC**  
Flight Simulator 2 ... \$32  
Jet ... \$26  
Scenery Disks On Sale ... Call

**TAITO**  
Qix ... \$9.88  
Renegade ... \$9.88

**TIMEWORX**  
P. I. Font Pack 1 or 2 ... \$25 Ea.  
Publish It! 3 128K/GS ... \$84

**UNICORN — ON SALE!**  
All About America  
GS 768K ... \$29.88  
Animal Kingdom ... \$17.88  
Decimal Dungeon ... \$17.88  
Fracton Action ... \$17.88  
Math Wizard GS ... \$24.88

**WEEKLY READER**  
Stickybear ABC's ... \$24  
Stickybear Math 1 or 2 \$24 Ea.  
Stickybear Numbers ... \$24  
Stickybear Opposites ... \$24  
Stickybear Reading ... \$24  
Stickybear Spellgrabber ... \$32  
Talking Alphabet GS ... \$32

**VIRGIN/MASTERTRONIC**  
Spirit of Excalibur GS ... Call

**WORD PERFECT**  
Word Perfect 128K ... \$97

**ACCESSORIES**  
Animation Station ... \$65  
Big Mouse Pad 8 1/2 x 11 ... \$7  
Disk Case 5 1/4 or 3 1/2 ... \$6.88 Ea.  
Drive Clnr. 5 1/4 or 3 1/2 ... \$4.88 Ea.  
Sony 3 1/2 DSSD ... \$9.99 Bx.  
Sony 5 1/4 DSSD ... \$5.49 Bx.  
Wico Ergostick ... \$27  
500XJ Joystick ... \$18.88  
Suncom Analog Joystick \$25

**SDA CLOSEOUT!!!**  
Bards 1 GS or 128 ... \$9.88  
Corruption/Firebird ... \$18.88  
Desk Power/Hi Tech ... \$7.88  
Echelon/Access ... \$9.88  
Karate Champ/Kung Fu ... \$7.88  
P.H.M. Pegasus/E. Art. ... \$8.88  
Paintworks Plus GS ... \$26.88  
Speed Reading Tutor 4 ... \$18.88  
Indoor Sports ... \$14.88  
TheXder/Sperra ... \$16.88  
Wipeout/Share Data ... \$7.88  
Writers Choice Elite GS ... \$32.88

### POLICIES & PROCEDURES

- SHIPPING: Continental U.S.A. — orders under \$100 add \$4; Free shipping on orders over \$100: Call for details on overnight & 2 day shipping. AK, HI, FPO, APO - shipping is \$5 on all orders. Canada and Puerto Rico — shipping is \$7.50 on all orders. PA residents add 6% sales tax on the total amount of orders including shipping charges.
- UPS 2 day and overnight shipping available — Call.
- Orders with cashiers checks or money orders shipped immediately on in stock items. Personal and company checks, allow 14 business days clearance. No C.O.D.'s!
- Defective merchandise replaced within 60 days of purchase. Other returns subject to 20% restocking charge. You must call customer service for return authorization — 412-361-5291, 9-5:30 EST.
- Prices and availability are subject to change.

### HOW TO ORDER

• Call us & use your Mastercard or Visa  
**USA/CANADA 1-800-225-7638**

**Order Line Hours:** Mon-Thurs 9:00 A.M.-9:00 P.M.,  
Fri-9:00 A.M.-7:00 P.M., Sat-10:00 A.M.-4:00 P.M. EST.

- Send Money Orders or Checks to:

**SOFTWARE DISCOUNTERS**  
P.O. Box 11327 - Dept. INC.  
Blawnox, PA 15238

- Fax MC/VISA orders with our fax #1-412-361-4545
- Order Via Modem on CompuServe, GENie & QLink.
- School purchase orders accepted.



When kids play Jigsaw, the first activity, they must select a level of difficulty before they begin. If they exit to the option menu and switch levels during play, they must begin the game from scratch. Map Quiz, however, doesn't penalize kids for changing levels during play. When they exit to the option menu and change the level of difficulty, they can return to the game and continue where they left off.

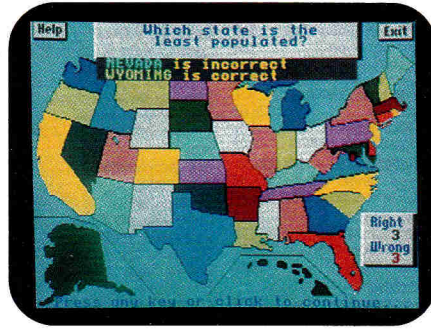
Map Facts is Geographic Jigsaw's third activity, and it contains a wealth of information about each state. To call up a particular state, youngsters simply place the cursor on its outline and click: A screen with 16 categories of information, such as state capital, largest city, state bird, highest elevation, and population, appears.

Unfortunately, Map Facts has no printing option for either individual screens or the entire file. Moreover, you can't access Map Facts information from within Map Quiz — you can't use the file as a desktop reference. Map Facts is essentially an electronic textbook. Although the file consists of 50 individual "pages" (every state fills a page), and each page includes a roster of data categories, kids can't call up information by state name, nor can they research particular states by category.

In the final activity, young geographers can look at seven statistical maps, each showing either population, elevation, summer temperatures, winter temperatures, precipitation, waste dumps, or the years in

which individual states joined the union. Each of these theme maps appears on screen with only the outlines of state borders — state names aren't filled in.

Because this activity doesn't include the states' names, these maps mean little to those youngsters who haven't learned to identify the states. If children examine the color-coded map of *Environmentally Hazardous Waste Sites*, for example, they see



Can puzzle games teach geography?

that some states have 60 or more waste sites, but may not be able to list them. On the other hand, if youngsters study the state's locations, you can use these theme maps to test their knowledge. When older kids examine the map, you can ask them to identify states with a large number of sites — if they answer *New York, Pennsylvania, and New Jersey*, they know their states.


Geographic Jigsaw is an interesting, entertaining way to learn the subject, but the program has some irritating features:

The map in the manual shows Hawaii as a group of islands off the east coast of Texas, and it locates Alaska below California and Arizona — no lines drawn in to indicate that these states are located elsewhere. The electronic map, however, does show Alaska and Hawaii as geographic insets.

Another of the program's drawbacks is that once kids place a state in the Jigsaw activity, they can't move it. If they click on a state again, instead of the program responding with the state's name and capital, it merely informs them that the state is already in place. Because Jigsaw has no provision for reviewing a state's name, it's difficult for children to identify a state in relation to its neighboring states. Also, Geographic Jigsaw has no save-game options: If kids quit in the midst of play, they can't pick up where they left off.

Geographic Jigsaw's user-friendly interface is its best feature: Kids don't have to memorize any complex commands to operate the program, and fitting the states into a map of the country is a good way to teach youngsters the states' locations. When I determine the success of an educational program, however, I examine more than the ease with which I operate it. Geographic Jigsaw would be a better program if it sported print capabilities and a save-game option, and if Eclat were to revise the Map Facts activity. □

**Carol S. Holzberg, Ph.D.**  
Shutesbury, MA

<p><b>COD's</b> Visa MasterCard</p>  	<p><b>LRO Computer Sales</b>  665 West Jackson St., Woodstock, IL 60098 <b>Orders (800) 869-9152</b> Inquiries / Tech. Support (815) 338-8913 FAX Orders (815) 338-8597</p>	<p><b>American Express</b> <b>School PO's</b> <b>American Express</b> <b>Discover</b> <b>Discover</b></p>																										
<p><b>Hard Drives</b></p> <table border="0"> <tr><td>Stor-Mate 46 meg ext. SCSI HD .....</td><td>\$ 429</td></tr> <tr><td>Stor-Mate 60 meg ext. SCSI HD .....</td><td>\$ 479</td></tr> <tr><td>Stor-Mate 80 meg ext. ProDrive .....</td><td>\$ 519</td></tr> <tr><td>Stor-Mate 100 meg ext. ProDrive .....</td><td>\$ 679</td></tr> <tr><td>Stor-Mate 200 meg ext. ProDrive .....</td><td>\$1199</td></tr> <tr><td>CMS 60 meg. HD .....</td><td>\$ 589</td></tr> <tr><td>AE Vulcan 20...\$489; 40...\$624; 100 .....</td><td>\$1219</td></tr> </table> <p><b>CV Tech Ramfast DMA SCSI card with 256k Cache .....</b> \$ 185 Apple DMA SCSI card .....</p>	Stor-Mate 46 meg ext. SCSI HD .....	\$ 429	Stor-Mate 60 meg ext. SCSI HD .....	\$ 479	Stor-Mate 80 meg ext. ProDrive .....	\$ 519	Stor-Mate 100 meg ext. ProDrive .....	\$ 679	Stor-Mate 200 meg ext. ProDrive .....	\$1199	CMS 60 meg. HD .....	\$ 589	AE Vulcan 20...\$489; 40...\$624; 100 .....	\$1219	<p><b>Product Spotlight</b></p> <table border="0"> <tr><td>Quickie Handscanner II+/Ile/Iigs.....</td><td>\$197</td></tr> <tr><td>Lightningscan Ile/Iigs.....</td><td>\$197</td></tr> </table> <p><b>Salvation:</b></p> <table border="0"> <tr><td>Guardian .....</td><td>\$29</td><td>Renaissance .....</td><td>\$22</td></tr> <tr><td>Exorciser .....</td><td>\$24</td><td>Wings .....</td><td>\$55</td></tr> </table>	Quickie Handscanner II+/Ile/Iigs.....	\$197	Lightningscan Ile/Iigs.....	\$197	Guardian .....	\$29	Renaissance .....	\$22	Exorciser .....	\$24	Wings .....	\$55	<p><b>Memory Boards and Expansion</b></p> <p>NCS-GS expansion board - 100% DMA and RamKeeper compatible Ok.....\$79; 1 meg.....\$129; 2 meg.....\$189; 4 meg .....</p>
Stor-Mate 46 meg ext. SCSI HD .....	\$ 429																											
Stor-Mate 60 meg ext. SCSI HD .....	\$ 479																											
Stor-Mate 80 meg ext. ProDrive .....	\$ 519																											
Stor-Mate 100 meg ext. ProDrive .....	\$ 679																											
Stor-Mate 200 meg ext. ProDrive .....	\$1199																											
CMS 60 meg. HD .....	\$ 589																											
AE Vulcan 20...\$489; 40...\$624; 100 .....	\$1219																											
Quickie Handscanner II+/Ile/Iigs.....	\$197																											
Lightningscan Ile/Iigs.....	\$197																											
Guardian .....	\$29	Renaissance .....	\$22																									
Exorciser .....	\$24	Wings .....	\$55																									
<p><b>Hardware</b></p> <table border="0"> <tr><td>Apple MIDI Interface .....</td><td>\$ 89</td></tr> <tr><td>AE Audio Animator .....</td><td>\$ 107</td></tr> <tr><td>AE Sonic Blaster .....</td><td>\$ 96</td></tr> <tr><td>AE Transwarp GS 7 Mhz Accelerator .....</td><td>\$ 259</td></tr> <tr><td>Zip Chip Ile 8 Mhz.....\$154 Zip GS 8 Mhz .....</td><td>\$ 249</td></tr> <tr><td>AE PC Transporter 768k .....</td><td>\$ 259</td></tr> <tr><td>GS installation Kit.....\$35 Ile installation kit .....</td><td>\$ 29</td></tr> <tr><td>8087 coprocessor for PC Transporter .....</td><td>\$ 185</td></tr> <tr><td>AE Conserver GS fan/surge prot./power organizer .....</td><td>\$ 79</td></tr> <tr><td>Track Star Ile for IBM and compatibles .....</td><td>\$ 369</td></tr> <tr><td>AE Ile / II+ heavy-duty power supply...\$64 Iigs .....</td><td>\$ 79</td></tr> </table>	Apple MIDI Interface .....	\$ 89	AE Audio Animator .....	\$ 107	AE Sonic Blaster .....	\$ 96	AE Transwarp GS 7 Mhz Accelerator .....	\$ 259	Zip Chip Ile 8 Mhz.....\$154 Zip GS 8 Mhz .....	\$ 249	AE PC Transporter 768k .....	\$ 259	GS installation Kit.....\$35 Ile installation kit .....	\$ 29	8087 coprocessor for PC Transporter .....	\$ 185	AE Conserver GS fan/surge prot./power organizer .....	\$ 79	Track Star Ile for IBM and compatibles .....	\$ 369	AE Ile / II+ heavy-duty power supply...\$64 Iigs .....	\$ 79	<p><b>InnerExpress</b> - Speeds up Inner/ OverDrives and Falcons by 200-300%...\$79</p> <p><b>Visionary</b> A realtime color and B/W video digitizer...\$249</p> <p><b>Emerald Visions</b> Fullscreen 16, 256, 3200 color paint program...\$79</p>	<p><b>Ramfast DMA SCSI card w/256k cache</b> <b>\$185</b></p> <p><b>GS Numerics</b> Full-features Algebra II/ Trig. II math program <b>\$104</b></p>				
Apple MIDI Interface .....	\$ 89																											
AE Audio Animator .....	\$ 107																											
AE Sonic Blaster .....	\$ 96																											
AE Transwarp GS 7 Mhz Accelerator .....	\$ 259																											
Zip Chip Ile 8 Mhz.....\$154 Zip GS 8 Mhz .....	\$ 249																											
AE PC Transporter 768k .....	\$ 259																											
GS installation Kit.....\$35 Ile installation kit .....	\$ 29																											
8087 coprocessor for PC Transporter .....	\$ 185																											
AE Conserver GS fan/surge prot./power organizer .....	\$ 79																											
Track Star Ile for IBM and compatibles .....	\$ 369																											
AE Ile / II+ heavy-duty power supply...\$64 Iigs .....	\$ 79																											
<p><b>Modems</b></p> <table border="0"> <tr><td>Cardinal 2400 BPS/DSP external modem .....</td><td>\$109</td></tr> <tr><td>Zoom 2400 BPS external modem .....</td><td>\$115</td></tr> <tr><td>AE 1200/2400/9600 BPS DataLink modems.....</td><td>\$CALL</td></tr> <tr><td>US Robotics Courier HST 14,400 BPS ext. modem .....</td><td>\$599</td></tr> <tr><td>US Robotics Courier HST/V.32 14,400 BPS ext. modem .....</td><td>\$999</td></tr> </table> <p><b>Iigs Systems</b></p> <table border="0"> <tr><td>Apple Iigs 1 meg CPU with keyboard and mouse .....</td><td>\$859</td></tr> <tr><td>Apple Iigs RGB color monitor.....\$469 Apple 3.5 drive .....</td><td>\$323</td></tr> <tr><td>Apple Imagewriter II with 32k buffer .....</td><td>\$459</td></tr> <tr><td>HP DeskJet+ / DeskJet 500 .....</td><td>\$CALL</td></tr> </table>			Cardinal 2400 BPS/DSP external modem .....	\$109	Zoom 2400 BPS external modem .....	\$115	AE 1200/2400/9600 BPS DataLink modems.....	\$CALL	US Robotics Courier HST 14,400 BPS ext. modem .....	\$599	US Robotics Courier HST/V.32 14,400 BPS ext. modem .....	\$999	Apple Iigs 1 meg CPU with keyboard and mouse .....	\$859	Apple Iigs RGB color monitor.....\$469 Apple 3.5 drive .....	\$323	Apple Imagewriter II with 32k buffer .....	\$459	HP DeskJet+ / DeskJet 500 .....	\$CALL	<p><small>No surcharge for Visa / MasterCard / Discover. Add 4% for American Express. Add \$4 for C.O.D. Illinois Residents add 6.5% sales tax. Free upgrade to UPS Blue for faxed orders. We will beat any advertised price in this issue or free upgrade to UPS Blue. All merchandise may be returned within 15 days of receipt of order with no restocking fee.</small></p>							
Cardinal 2400 BPS/DSP external modem .....	\$109																											
Zoom 2400 BPS external modem .....	\$115																											
AE 1200/2400/9600 BPS DataLink modems.....	\$CALL																											
US Robotics Courier HST 14,400 BPS ext. modem .....	\$599																											
US Robotics Courier HST/V.32 14,400 BPS ext. modem .....	\$999																											
Apple Iigs 1 meg CPU with keyboard and mouse .....	\$859																											
Apple Iigs RGB color monitor.....\$469 Apple 3.5 drive .....	\$323																											
Apple Imagewriter II with 32k buffer .....	\$459																											
HP DeskJet+ / DeskJet 500 .....	\$CALL																											



New!  
Version 1.2

# Publish It!™



## In Less Than an Hour.

**PUBLISH IT!**—A full-featured desktop publishing powerhouse with word processing, page layout, typesetting and graphics.

For all its state-of-the-art ability, *PUBLISH IT!* is incredibly easy to learn—refreshingly so. *PUBLISH IT!* combines the familiar GEM User Interface, our Quick-Start Mini-Manual and a full complement of Help Screens. All designed to get you up and running in less than one hour!



### SPECIAL FEATURES:

- **Flexible Page Layout:** With your mouse or keyboard, you can overlap, reposition, resize, & reshape the text, columns, graphics.
- **More Typefaces and Sizes:** Choose from over 1350 possible type-style combinations! Opt for bold, italic, underlined, light, white, & superscript or subscript characters. Type sizes range from 7 to 72 point.
- **Premium Quality Printouts:** Gives you superior quality printouts on your laser or dot matrix printer.
- **Built-in Word Processor:** All the features necessary for everyday word processing, plus most of the sophisticated ones found only in more expensive programs.
- **Text Importing:** Load documents from WORDPERFECT, MICROSOFT WORD, WORDSTAR, WORD WRITER PC, or from programs with an ASCII text format.
- **Built-in Graphic Toolbox:** Draw lines, boxes, circles, curved corners, and "free-hand" graphics. Plus, choose from a wide variety of built-in line and fill patterns.
- **Graphics Importing:** Directly import graphics from LOTUS 1-2-3, GEM DRAW, GEM GRAPH, GEM SCAN, PC PAINTBRUSH, and PUBLISHERS PAINTBRUSH. Then crop and size them to fit.
- **Automatic Text Flow and Word Wrap.**
- **Multiple Size Page Views.**
- **Kerning and Leading.**
- **Over 150 Professionally Drawn Graphics & Illustrations.**

### NEW FEATURES:

- **More than 85 Professionally Designed Layouts:** DESIGN IDEAS™. Choose from over 85 pre-designed formats. Easily create layouts for ads, brochures, newsletters & more.
  - **Single Step Undo Function.**
  - **More Compatibility!** Now compatible with: Hewlett-Packard Soft Fonts and DeskJet Printers, TIFF, Encapsulated PostScript and Splash! graphic formats.
  - **Monospacing:** When using Typographica or Bitstream mono-space fonts, you can now work in a monospacing mode.
  - **Supports Downloadable PostScript fonts:** Now you can add additional PostScript fonts from sources such as Bitstream and Adobe.
  - **Imports Encapsulated PostScript Graphics:** Now you can rotate your EPS graphics in 90 degree increments.
  - **Extended Print to Disk Capability:** Now you can print to disk no matter what printer configuration you have.
- Suggested Retail Price:** \$249.95  
Includes 5¼" & 3½" disks;  
supports hard drive.
- Upgrade Price:** \$29.95 + \$4.70\*  
(shpg. & handling). Total \$34.65  
Send inside manual cover.
- PUBLISH IT!** is backed by a full 60-day, money-back guarantee.

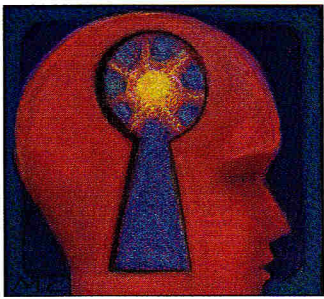


## TIMWORKS

See your favorite Dealer or order direct from Timeworks, 444 Lake Cook Rd., Deerfield, IL 60015. Or call 1-708-948-9202. Fax: 1-708-948-7626.

PUBLISH IT! is a trademark of Timeworks, Inc. © 1990 Timeworks, Inc. All Rights Reserved. All other trademarks are of their respective companies.  
\*Prices apply to shipments within the Continental U.S.





LEARNING  
L CURVE

# THE BEAUTY OF CHAOS

By DAVID D. THORNBURG, Ph.D.

**M**uch like Michelangelo, who used his hammer to set statues free from the bondage of stone, you can use mathematics to find complex graphics patterns within a simple design.

OVER THE YEARS, THE COLUMNS I'VE written about *chaos* — a branch of mathematics that produces exquisitely complex graphics patterns — have generated more mail than all of my other writings combined. Whether the letters are from students, teachers, or those who use computers at home, all discuss projects and share discoveries.

Because of your continuing interest in exploring this topic, I've decided to spend the next two columns continuing our quest in this infinitely rich domain. Each of you who tinkers with these math programs is a conceptual space explorer — your space ship is your trusty Apple II. Now sit back, fasten your seat belt, and prepare to go where no thoughts have gone before.

## SUBTRACTION AS ART

I once read that Michelangelo would look at a piece of stone and see his finished statue — he'd chip away the stone to get to the statue. This subtractive approach to creating sculptures is evident in some of his unfinished pieces — the characters look as if they're straining to free themselves. Much like Michelangelo, who used his hammer to set statues free from the bondage of stone, you can use mathematics to find complex graphics patterns within a simple design.

To start your journey, imagine an equilateral triangle. (See **Figure 1**.) Next, imagine shrinking the triangle toward each corner by a factor of one half to produce three smaller triangles within the original space. (See **Figure 2**.) Now imagine repeating this process with each of these three triangles, the next three triangles, and so on, until the new triangles

shrink to an infinitesimal size. This design is a *Seirpinski gasket*. (See **Figure 3**.)

Although a simple set of rules builds this design, the shape is complex. After all, any region of the gasket contains an infinite network of triangular holes of various sizes. If you follow the method we explore, you can create magnificent pictures of shapes ranging from geometric figures to the diaphanous forms of living organisms such as ferns. By applying randomly selected rules to a single point, you can form

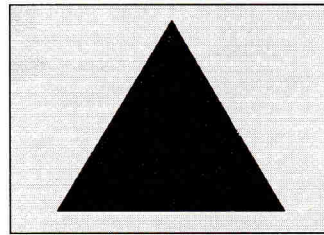
order out of chaos — something you almost have to see to believe.

## THE PROGRAM

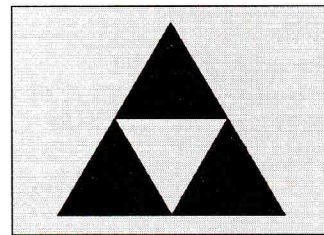
Now type in the GASKET program in **Listing 1**. This program lets you explore the triangular gasket at any level of detail. The first part of the program asks for the desired number of points (start with 50,000), the magnification (80 gives a nicely sized picture), the coordinates for the center of the display screen (1, 0.5), and the coordinates for the first point. (We'll talk about this pair of numbers later.)

Note the subroutine starting at line 1000, which selects a random number less than one. Based on this number's value, the program chooses one of three sets of numbers, or *rules*, to determine the next plotted point: The new point

is moved either halfway from its present location to the origin (determined by the values of R and S); halfway to the origin, then translated to the right by one unit (H and K are the translation values); or halfway to the origin, then translated up and to the right. Although you won't know which rule the program will choose,



**Figure 1.** An equilateral triangle.



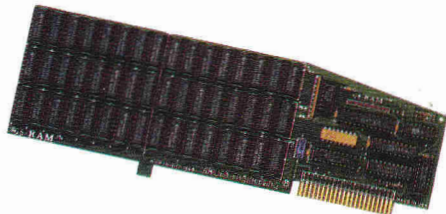
**Figure 2.** Three triangles in one.



# Three ways to grow a IGS.

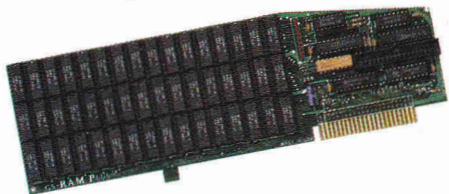
Applied Engineering makes three different memory cards for the IGS because every IGS owner is different. Each card was designed to suit specific needs:

**1.** **GS-RAM™** Start with as little as 256K of memory and grow in affordable 256K increments to 1.5 MEG (an amount that once sounded large, but is now considered a moderate amount of memory expansion.) Incorporates 256K x 1 chips.



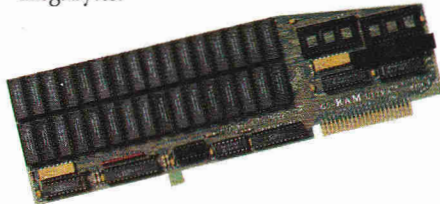
<b>GS-RAM w/256K</b>	<b>\$169</b>
<b>1 MEG</b>	<b>\$319</b>
<b>1.5 MEG</b>	<b>\$419</b>

**2.** **GS-RAM Plus™** Expands from 1 to 6 MEG in 1 MEG increments. Originally designed for power-users requiring a great deal of internal memory, this card has recently found favor with many moderate users. MEG-sized jumps in memory have now become practical for many users because of the enormous memory requirements of today's software titles. Incorporates 1 MEG x 1 chips.



<b>GS-RAM Plus w/1 MEG</b>	<b>\$279</b>
<b>2 MEG</b>	<b>\$379</b>
<b>3-6 MEG</b>	<b>CALL</b>

**3.** **GS-RAM Ultra™** AE's newest memory card incorporates a new chip - the 256K x 4, which has four times the density of 256K x 1 chips. GS-RAM Ultra offers incremental expansion like the GS-RAM and ultimate size like the GS-RAM Plus. It's expandable from 256K to 4 MEG in 256K increments, so you can start small and still grow to a massive 4 megabytes.



<b>GS-RAM Ultra 256K</b>	<b>\$204</b>
<b>512K</b>	<b>\$229</b>
<b>768K-4 MEG</b>	<b>CALL</b>

We've also added ROM sockets to the GS-RAM Ultra. ROM sockets allow hardware-based applications to be loaded permanently into EPROMs...an increasingly important feature when applications become available from Applied Engineering and others.

### Consider your needs.

Need a moderate amount of memory? **GS-RAM** lets you start small and takes you up to 1.5 MEG. Need lots of memory right away? **GS-RAM Plus** is your best bet. Want to start small and leave open the possibility of a huge internal memory? **GS-RAM Ultra** is your card. And our **GS Expander™** piggyback card adds up to 2 MEG to any of the three cards. Call AE for prices.

### Talk to us.

Your decision should be based on anticipated maximum memory need and growth path. Initially, it's less expensive to add 256K than 1 MEG, but buying a MEG at a time could save you money over the long haul. Call us. We'll be happy to discuss your particular applications.

### DMA compatibility.

All three of our GS memory cards are fully DMA compatible (and they're the ONLY large-format cards that are), so they not only run all GS software, they also support *current and future* DMA peripherals.

Installation couldn't be easier, the cards just plug in. And all three cards feature Applied Engineering's meticulous craftsmanship, along with our 5-year warranty, our 15-day money-back guarantee\* and our American-made pride.

### Still more:

Each of our GS memory cards comes with many other exclusive features, *disk caching* that tremendously speeds up many programs, including AppleWorks, by virtually eliminating disk access. Our *diagnostic utility* feature graphically detects the presence of bad or improperly installed chips and tests for CAS before RAS chips. And our *AppleWorks enhancement* package dramatically increases AppleWorks' word processor lines (from 7,250 to 22,500), database records (from 6,350 to 22,500), clipboard capacity (from 255 lines to 2,042) and more.

### 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% sales tax. Add \$10 outside U.S.A.

**AE APPLIED ENGINEERING®**

*The Apple enhancement experts.*

A Division of AE Research Corporation.

(214) 241-6060

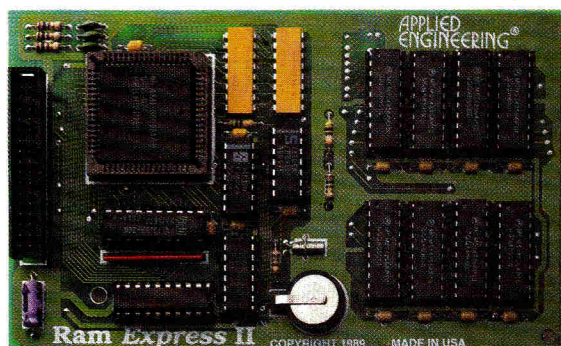
P.O. Box 5100, Carrollton, TX 75011

Prices subject to change without notice. Brand and product names are registered trademarks of their respective holders.

\*When purchased from Applied Engineering or thru a participating dealer.



# Ram Express II™



## Memory/clock card for the IIc and IIc Plus

**Ram Express II™** is the fully compatible memory/clock card for the IIc Plus and original IIc's with memory expansion connectors. Available in user-upgradeable 256K, 512K and 1 MEG sizes, Ram Express II adds the memory you need, and a whole lot more.

**Ram Express II's built-in clock** displays the time and date on screen and automatically time and date stamps AppleWorks files.

**You'll also get AppleWorks enhancement** with Ram Express II. AppleWorks word processor lines and records rocket from 16,000 to more than 23,000! Ram Express II even automatically segments large files so they can be saved on two or more disks. And Ram Express II runs AppleWorks 10 times faster with one disk drive than an ordinary IIc could with two drives.

**Ram Express II is also** a high-speed, solid-state disk drive controller, loading and saving your programs more than 20 times faster. Copy a disk in one pass by simply inserting and removing the original, and inserting a blank disk.

**And installation** in the IIc Plus is easy. Remove the cover, lift the keyboard and plug in Ram Express II.

**Ram Express II w/256K** ..... \$189  
**Ram Express II w/512k** ..... \$209  
**Ram Express II w/1 MEG** ..... \$234

**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% sales tax. Add \$10 outside U.S.A.

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

A Division of AE Research Corporation

(214) 241-6060

P.O. Box 5100  
 Carrollton, TX 75011



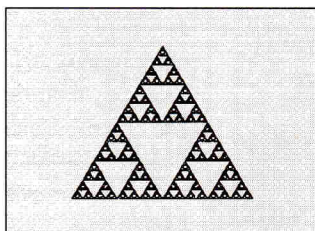
©1990. AE Research, Inc. All rights reserved. Prices subject to change without notice. Brand and product names are registered trademarks of their respective holders.

each moves the point in the direction of one of the three corners.

### ROLLING THE DICE

If this pattern isn't strange enough, let's see the effect our original starting point has on the result. Run **Listing 1** and choose the coordinates 0,0 as the starting value. You should get a picture like **Figure 3**.

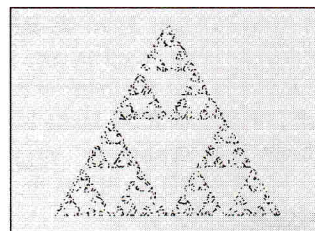
If you think the program produces this design only with



**Figure 3.** A Sierpinski gasket.

these values, guess again. Almost any pair of starting values will yield virtually the same final picture. Try starting with the values 12, 0.1 — or choose values of your own. Except for a few scattered points in the beginning, you'll find that the pattern settles down quickly to produce the same picture each time. This result is so counter-intuitive, it still amazes me. After all, you pick a random starting point, select each successive point by the random application of rules, and achieve the same figure each time.

To see this process working at any level of detail, try the program again with a larger mag-



**Figure 4.** A portion of Figure 3 blown up 800 times.

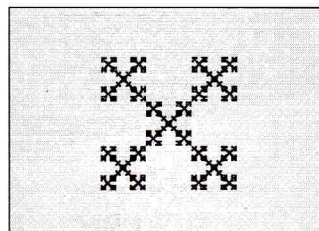
nification. **Figure 4** shows the gasket centered at 0.1, 0.1 and blown up 800 times. Any small region of the gasket contains an infinite number of copies of the

original pattern — a compelling example of creating order out of chaos.

### MORE SHAPES

To see another pattern this program can create, enter the set of five rules in **Listing 2**. These rules contain translations to the four corners of a square and to a point at the center of the square. Prior to translation, the coordinates of the point are shrunk by one third instead of one half. (Experiment with different values to see what happens.) Because there are five rules from which to choose, the random-number range for each rule is adjusted accordingly.

Before running the program, see if you can guess the shape of the pattern. **Figure 5** displays the actual shape with a magnification of 80 centered at 1, 0.5. As with the triangular gasket, this shape isn't sensitive to the starting coordinates



**Figure 5.** A pattern created with five rules.

(except for the first few points), and settles down to produce a highly symmetrical figure that also replicates itself on magnification.

### WHAT'S GOING ON

The orbit of points that's produced by the random application of rules is infinitely complex, yet highly constrained. This oxymoronic behavior has a name — such orbits are *strange attractors*. An attractor is a description of the steady-state behavior of an orbit. For example, a simple pendulum (with friction) will slow and stop at its attractor — the lowest point in its movement. A metronome



### Listing 1. The GASKET program.

```
0 REM GASKET program
10 HGR : HOME : VTAB (21) : HCOLOR= 3
20 INPUT "Number of points "; N
30 INPUT "Magnification = "; M
40 INPUT "Center coordinates = ";XC,YC
60 INPUT "Start at ";X,Y
70 FOR J = 1 TO N
80 U = 140 - M * XC + M * X
90 V = 90 + M * YC - M * Y
100 IF U < 0 or U > 279 THEN GOTO 130
110 IF V < 0 or V > 180 THEN GOTO 130
120 HPLLOT U,V
130 GOSUB 10000
140 XN = R * X + H
150 YN = S * Y + K
160 X = XN : Y = YN
170 NEXT J
180 END
1000 Z = RND (1)
1010 R = .5 : S = .5 : H = 0 : K = 0
1020 IF Z < .667 THEN R = .5 : S = .5 : H = 1 : K = 0
1030 IF Z < .333 THEN R = .5 : S = .5 : H = .5 : K = .866
1050 RETURN
```

has an orbit of two fixed points as it oscillates back and forth. These are two examples of well-behaved systems.

What makes our program a strange attractor is that the resulting dots never reach a steady state. Although the coarse resolution of the display screen hides the individual points, each point in the orbit is unique.

Once the program plots a point, it won't choose that

from different numbers of rules to see if you can reproduce a seashell pattern. Or explore changing the shrinkage values (R and S in the **Program listings**). Change the values for all rules, then change the values so that each rule has a different value. See what happens when S has a different value from R. With our five-rule example, you could even move the point outside the square. As you can see,

### Listing 2. A new set of rules.

```
1000 Z = RND (1)
1010 R = .33333 : S = .33333 : H = 0 : K = 0
1020 IF Z < .8 THEN R = .33333 : S = .33333 : H = 1 : K = 0
1030 IF Z < .6 THEN R = .33333 : S = .33333 : H = 1 : K = 1
1040 IF Z < .4 THEN R = .33333 : S = .33333 : H = 0 : K = 1
1050 IF Z < .2 THEN R = .33333 : S = .33333 : H = .5 : K = .5
1060 RETURN
```

coordinate again. Even so, the result is far from random.

### ON YOUR OWN

Next month we'll extend this program and teach you how to create complex pictures, such as ferns, with a few simple rules. In the meantime, continue to experiment on your own. Many seashells have patterns that look remarkably like triangular Sierpinski gaskets. Experiment with gaskets made

there is much to explore and the results are amazing. □

DAVID THORNBURG IS INVOLVED IN THE CREATIVE USES OF COMPUTERS IN EDUCATION. A MORE DETAILED PUBLIC-DOMAIN COPY OF THE SOFTWARE, INCLUDING A COLLECTION OF OTHER CHAOS PROGRAMS AND THE BOOK *CHAOTIC MICROWORLDS*, WITH NUMEROUS PROJECTS FOR FURTHER EXPLORATION, IS AVAILABLE. SPECIFY 5.25- OR 3.5-INCH FORMAT AND SEND \$10 TO D. THORNBURG, MICROWORLDS, 1561 LAUREL, SUITE A, SAN CARLOS, CA 94070.



## 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 IIGs, 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 2.5 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.

**IIGs Power Supply** .....\$99  
**IIe, II+ Power Supply** .....\$79

**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. Add \$10 outside U.S.A.

**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.





# COOKIN' UP A BATCH

Apple users know there's always an easier way to get the job done. A shortcut here, an elegant twist there — that's what *Hints & Techniques* is all about. It's an information swap for readers who want to share their programming pointers, hardware secrets, AppleWorks applications, and all kinds of other insights.

## SHORTCUTS TO SUCCESS

By Susan W. Rollinson

DO YOUR FRIENDS AND associates with MS-DOS computers ridicule your Apple IIe "toy"? Are you green with envy over their AUTO EXEC.BAT files? Well, cheer up. With Applesoft BASIC your Apple IIe can give you a powerful "batch" language — and Applesoft is just as easy to learn.

If you use an Apple IIe with an attached hard-disk drive, for instance, you're probably tired of typing PREFIX /HARD2/APPLEWORKS -APLWORKS.SYSTEM every time you want to start AppleWorks. Instead of typing long commands, consolidate them into an EXEC file and save your keystrokes. Simply use AppleWorks (or another word-processing program) and

save the two lines to the main directory of your startup partition as a text or ASCII file named WORKS.BAT. (My main directory was /HARD1.) Press Open apple-P (OA-P) and choose *A text (ASCII) file on disk*. Next time you start your Apple IIe, type EXEC WORKS.BAT, and the two lines in the WORKS file will execute as if you typed them from the keyboard.

Repeat this procedure for other programs you use regularly. In fact, the MS-DOS batch facility has only one advantage over the Apple EXEC command: When you reboot a program, MS-DOS batch files pick up where they left off.

Many MS-DOS systems utilize batch files to set up a program-selection menu. This process is even easier (and more versatile) in Applesoft. The accompanying **Program listing** is a sample menu program. If you name it STARTUP, ProDOS will execute it

automatically when you start your computer — it's similar to the AUTOEXEC.BAT file on an MS-DOS system. You'll need to modify the **Program listing**, however, to suit your system.

If you have an Applesoft STARTUP program, save the **Program listing** as MENU. Find the line with the END statement in your current STARTUP program, then add the text PRINT CHR\$(4)"RUN MENU": between the line number and END.

If your STARTUP program isn't an Applesoft program, save the **Program listing** as MENU, then type RUN MENU when your STARTUP program ends. If you'd rather have the menu program run automatically, change the name of your current STARTUP program to something else, such as STARTUP.OLD, before you save the **Program listing** as STARTUP. And next time you hear someone put down the Apple IIe because it can't write batch files, set the record straight. □

Write to Susan W. Rollinson at 849 Lou Avenue, Clifton Forge, VA 24422.

GOT A HINT OF YOUR OWN? *inCIDER* WOULD LIKE TO SEE IT. IF WE CAN USE IT IN *HINTS & TECHNIQUES*, WE'LL BUY IT FROM YOU. SEND YOUR TIP TO *inCIDER*, 80 ELM STREET, PETERBOROUGH, NH 03458.

**Program listing.** Set up a menu-selection program with batch files.

```
90 REM COPYRIGHT INCIDER, DEC. 90
100 REM SAMPLE MENU SYSTEM FOR APPLE IIE
110 REM NAME THIS FILE STARTUP FOR AUTOMATIC EXECUTION
120 D$ = CHR$(4):BEEP$ = CHR$(7)
130 TEXT : HOME
200 VTAB 5: PRINT "<1> APPLEWORKS"
210 VTAB 7: PRINT "<2> LOGO"
220 VTAB 9: PRINT "<3> SIDEWAYS"
230 VTAB 11: PRINT "<4> EXIT TO BASIC"
```

```
240 REM LOTS OF ROOM HERE FOR EXPANSION
300 VTAB 22: INPUT "ENTER SELECTION: ";A$
310 IF A$ = "" THEN PRINT BEEP$: GOTO 300
320 A = VAL (A$)
330 IF (A < 1) OR (A > 4) THEN PRINT BEEP$: GOTO 300
340 ON A GOTO 410,420,430,440
400 REM SELECTIONS ROUTED HERE
410 PRINT D$;"EXEC WORKS.BAT"
420 PRINT D$;"EXEC LOGO.BAT"
430 PRINT D$;"EXEC SIDEWAYS.BAT"
```



## FOOTBALL • BASKETBALL

**SPORTS FANS...  
THE SPORTS SIMULATIONS YOU HAVE  
BEEN WAITING FOR ARE HERE!**

### 3 IN 1 FOOTBALL

- with Stats Compiler for each player and team
- you choose from 14 offensive plays and 6 defensive formations
- includes 180 college teams and the 28 Pro teams from the '89 • season PLUS 174 great college and 189 great pro teams of the past

### BASKETBALL: THE PRO GAME

- each player contributes as they did in real life • Stats Compiler • you determine starting lineup, substitutions, shot selection, passing, offensive and defensive styles of play and more • the Pro Game features the 23 Pro teams from '89-'90 and more than 190 great teams of the past

Send check or money order for \$39.99 each. Visa and MasterCard accepted on phone orders only. Please add \$2.00 for postage and handling.

**LANCE HAFFNER GAMES**

P.O. Box 100594 • Nashville, TN 37224 • 615/242-2617

Circle 226 on Reader Service Card.

# MARKETPLACE

Marketplace Ads get results! You can place an ad in this attention-getting section at a very reasonable cost. Call Diane toll-free at **800-441-4403** for helpful advice and reservations. Start seeing your ad here next month.

## The New Apple Print Shop Club

NOT just a "NEW" Print Shop club, but a NEW club for users of The New Print Shop and The Print Shop GS.

Your lifetime membership fee of \$35 includes a disk of 50 fonts, and a one year subscription to our bi-monthly newsletter, packed with hints, tips, Q & A, reviews, interviews, and special offers. The first 500 charter members will also receive a full color NAPSC badge, so don't delay — send or call your order today!

NAPSC also has 10 disks of 50 fonts at \$10 per disk (TNPS or PSGS), and \$10 graphic disks (TNPS only) of: Holidays, Misc. Art, Cute Critters, Religious, and Christmas. The New Print Shop \$37.46, TNPS libraries, 1-Sampler 2-Holidays and 3-School/Business, \$18.70 each. All three libraries for \$52. All libraries and TNPS for \$85. Please add \$4 S & H per order. CA residents add 6% sales tax.

Please remember to specify PSGS or TNPS, and specify 3.5 or 5.25 disks.

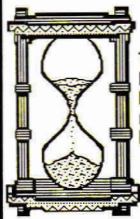
P.O. Box 13774  
San Rafael, CA 94913-3774  
(415) 898-9031 (recorder)

**Visa & Mastercard Accepted**

Circle 75 on Reader Service Card.

## Your IIGS out of time?

### Slide-On™



Thousands of satisfied owners have found our replacement battery kit is the best way to replace the soldered on clock battery on a 256/512K IIGS.

- Complete Instructions
- No Solder Required
- Heavy Duty Lithium Battery
- 10 Year Shelf Life
- \$14.95 ea. or \$120 for 10 Kits

Patent Pending

### NEW for Iie, Iic, & IIGs on 3.5" Disk

Nite Owl Journal 3.5 - Incredible Collection  
WRAITH Adventure Game - Devil's Demise  
Software \$14.95 ea. - only \$9.95 before 12/31/90

Please include \$2 S/H per Order (\$5 overseas)

FAX: 362-5798

Call (913) 362-9898



Nite Owl Productions  
5734 Lamar Street  
Mission, KS 66202

Circle 71 on Reader Service Card.

## Outline 3.0 for AppleWorks

- An integrated outliner for AppleWorks 3.0
  - Developed by Randy Brandt
    - Creator of TimeOut UltraMacros
    - Co-developer of AppleWorks 3.0
  - Compatible with all TimeOut products
  - inCider's "Editor's Choice"
- Pricing and details
  - List price: \$69.95
  - NAUG special: \$29.95 plus \$2.50 s/h
    - Offer expires 10-31-90
  - NAUG accepts Visa, MC

National AppleWorks Users Group  
Box 87453, Canton, MI 48187; (313) 454-1115  
Satisfaction guaranteed or your money back.

Circle 55 on Reader Service Card.

## DB Master Products

Fast. Powerful. Easy to use. DB Master Version Five for simple record handling and reports. DB Master Professional for serious relational data base jobs.

The most power you can put in your Apple III!

**DB Master Version Five - \$45 Prof'I - \$189**

**Medical Billing Template\* - \$150**

**Basic Programmer's Pak\* - \$129**

**Developer's Pak & Run-Time Pgm\* - \$195**

\*requires DB Master Professional

## IIGS Desktop Publishing

**GraphicWriter III - \$75 Medley 2.0 - \$65**

## RamFAST Hard Disk Bundles

Top quality Rodime drive & top speed RamFAST/SCSI caching controller. **20 MB-\$625; 40 MB-\$725**

## Stone Edge Technologies, Inc.

P.O. Box 3200, Maple Glen, PA 19002  
(215) 641-1825

Add \$5 shipping, \$10 for hard disks. Mastercard, Visa, Checks and PO's OK. Add \$5 for COD.

Circle 20 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 5¼ and 3½ 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.

## LASER 128

EX/2 3.5 \$439  
EX/2 5.25 \$399  
EX 5.25 \$369

**128 Color System....\$510**

LASER 128 w/RGB Color, Printer Cable, Word Processor  
**Amber System....\$399**



IIILASER

LASER Authorized Repair Center & Educational Dealer.	LASER 128.....329
	LASER Amber Monitor.....89
	New - AppleWorks 3.0.....149
	Special - Copy II+ version 9.0.....15
	LASER Mouse for 128 & IIc.....45
	Toshiba 3200 FAX: phone, FAX, copier.....575
	LASER 5.25 drive...89 Daisy 5.25...99 Daisy 3.5...159
	LASER 14" RGB color monitor + green + tilt & swivel...219
	Universal Disk Controller: connect 3.5 Drive to IIe.....49
	80 col 128K card for IIe...25 Laser 128 RAM card...25

**1-800-726-7086** LASER & Apple Experts

**RAM for LASER & Apple...\$25** 256K-120ms set of 8 chips

**LASER 190A Printer...\$195** Image-Writer Compatible  
190M + cable for IIgs, c+, Mac...\$235

Call for lowest shipping charge. School PO's, COD & Charge accepted.  
**Perfect Solutions** (407) 471-7786  
3701 Savoy Lane, Suite 106-D West Palm Beach, FL 33417

Circle 59 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 RESEARCH SYSTEMS

Thousands of customers use our software and Bible text for KJV or NIV. Create your own concordances by searching for word and phrase combinations. Immediate display or print of any portion of the Bible. Also available: a Greek transliterator and topical concordances. For ProDos, Macintosh & MS-DOS.

Bible Research Systems  
2013 Wells Branch Pkwy. #304  
Austin, Texas 78728

(512) 251-7541 (Tech Support)  
(800) 423-1228

Circle 87 on Reader Service Card.

## APPLE MEMORY CHIPS

### Small Ad, Small Prices

- ★ 256K Chip Set (Standard) \$25.00
- ★ 256KX4 Chip Set (AE Ultra) \$19.00
- ★ 1MB Chip Set (AE Plus) \$68.00
- ★ Chinook 4000 4 MB card w/1MB \$155.00
- ★ SE 1 MB card for IIC w/256K \$110.00
- ★ SE 1 MB card for IIE w/256K \$105.00
- ★ 5 year warranty

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.

## FREE -15 DISKS - FREE FULL OF SOLID GOLD HITS

### TRY US!

Get our Winter 1991 edition of bestsellers. 15/5.25" Apple ][ disks or 6/3.5" Apple GS disks.

Games, Business, Graphics, Education, Programmers' Utilities, Finance, Desktop publishing, more.

YOURS FREE!

PAY ONLY \$5.00 FOR SHIPPING

VIRUS FREE FOR APPLE ][ OR GS

SMC SOFTWARE PUBLISHERS  
ORDER TODAY - CALL

VISA 619 942-9998 since 1985 MasterCard

Circle 23 on Reader Service Card.

## ATTENTION ROLE PLAYERS

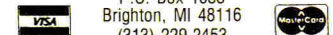
Use our editors to greatly enhance the powers of your characters or get our hint books for complete solutions.

- CHARACTER EDITORS - \$19.95 each  
Might and Magic (1 or 2), Deathlord, Ultima (2, 3, 4 or 5), Wasteland, Bard's Tale (1, 2 or 3), Space Rogue, Wizardry (1-3), Wizardry 4, Wizardry 5, The Magic Candle, Pool of Radiance, Dragon Wars, Curse of the Azure Bonds, Knights of Legend, Champions of Krynn, Secret of the Silver Blades, Autoduel, Centauri Alliance, Kings Bounty.
- HINT BOOKS - \$9.95  
Might and Magic, Wizardry (1, 2, 3, 4 or 5), Legacy of the Archer, Curse of the Azure Bonds, Magic Candle, Knights of Legend, Champions of Krynn.

Commodore and IBM versions also available. Add \$3.00 for shipping and handling.

GOSSELIN COMPUTER CONSULTANTS

P.O. Box 1083  
Brighton, MI 48116  
(313) 229-2453



Circle 27 on Reader Service Card.

## COLOR RIBBONS & PAPER

Colors: Black, Red, Blue, Green, Brown, Purple, Yellow

Ribbons: price each	Black	Color	T-Shirt Ribbons
Apple Image, I & II	\$3.75	\$4.50	\$6.50
Apple Image, II 4-Color		\$6.75	\$10.00
Citizen GSX140	\$4.50	\$5.50	\$7.50
Citizen GSX140, 4-Color		*	
Epson MX-80	\$3.75	\$4.50	\$6.75
Okidata 182/192	\$5.50	\$7.50	\$6.00
Panasonic 1180/1124	\$5.75	\$7.75	
Star NX 1000	\$3.75	\$4.75	\$6.75
Star NX 1000 4-color		\$6.75	\$10.00

### T-Shirt (Heat Transfer Ribbons)

Colors: Black, Red, Blue, Green, Brown, Purple, Yellow

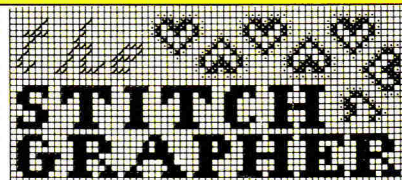
COLOR PAPER		
Color Paper	200 sheets assorted	
Bright Pack:	9 1/2 x 11	\$10.90/pk
Pastel Pack:	9 1/2 x 11	\$ 8.90/pk
Color Certificate Paper:	100 sheets	\$ 9.95/pk
Color Banner Paper:	45 ft./roll	\$ 8.95/roll
Holiday Paper:	50 sheets	\$ 6.90/pk

Min. orders: \$25.00. Minimum S&H: \$4.00. Call for other ribbons and supplies. Price and spec. are subject to change w/o notice.

### RAMCO COMPUTER SUPPLIES

PO 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.

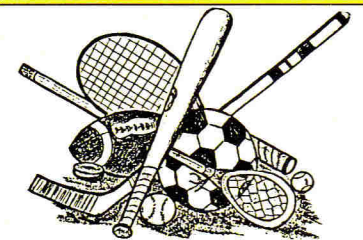


## DESIGN NEEDLECRAFT CHARTS

for Counted Cross-Stitch, Needlepoint, Latch Hook, Knitting, etc. using a revolutionary new computer program - The Stitch Grapher. Graphs up to 240 X 400 counts with up to 30 symbols may be generated & printed with any of 3 grid styles along with a color chart. A unique windowing feature allows the artist to move, copy, rotate, mirror image, save & re-use previous designs.

The Stitch Grapher is compatible with the 64K Apple II and 256K IBM-PC microcomputers. Disk plus 90 pg. manual - \$89.95. For complete information contact: COMPUCRAFTS, P.O. Box 326, Lincoln Ctr., MA 01773 or call (508) 263-8007.

Apple version supports only the Imagewriter printer with depicted grid style (dot matrix printers, other than the Imagewriter will require graphics capable interface card or separate support software). IBM version supports all IBM Graphics / Epson compatible printers.



## Sports Scheduler

### FEATURES:

- Any league or category with 4 to 22 teams.
- No limit on the number of categories that can be scheduled.
- Equal distribution of teams in playing slots.
- Up to 231 games per schedule.
- Dates calculated automatically.
- Schedules list date, day, time, location, game number and opponents for each game.
- Only minutes to schedule a league or category.
- Includes Referee/Facility Scheduler

APPLE IIE (128K) IIC, IIGS 109.95  
IBM PC & Compatibles + 3.00 S&H \$112.95

Send check or money order to:  
SPORTS SOFTWARE ASSOCIATES  
P.O. Box 459, Hingham, MA 02043  
(617) 749-7880

Circle 18 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
DIABLO HT II M/S	2.25	—
EPSON LX-80/90	2.10	3.25
EPSON MX-FX 80	2.70	4.50
EPSON MX-FX 100	3.50	4.50
IBM PROPRINTER	3.50	—
NEC P1, 2, 6	4.50	—
OKIDATA 182-192	3.50	4.50
PANASONIC 1080	3.50	4.50
PANASONIC 1124	4.95	5.95
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

Circle 134 on Reader Service Card.

## ZIP CHIP

4 MHz — \$89.95

8 MHz — \$119.95

The Zip Chip accelerates the Apple II series (II, II+, IIe, IIc) plus compatibles up to 4-Times normal speed. It uses no slots as it replaces the CPU and is compatible with virtually all software. Accelerates all main memory and up to 2 Meg auxiliary memory. inCider's number 2 product of the year in 1988.

**MONEY BACK GUARANTEE** — Try it Risk-Free for 30 days with an ironclad, unconditional, no-questions-asked money back guarantee. If dissatisfied for any reason, return it to us for an immediate full cash refund.

**SHIPPING FROM STOCK** — We ship product from inventory on hand so there is no delay in receiving your Zip Chip.

**\*LOWEST PRICE GUARANTEE**

If you find a nationally advertised lower price for the 4 MHz Zip Chip, we will better it—guaranteed. Send ad with advertised price, publication and date for verification.

Check & money orders to: COMPUTER ENHANCERS, 2905 Davison Road, Flint, MI 48506. VISA, MASTERCARD & COD orders call 313-232-1825. Add \$5.00 shipping, insurance & handling. MI residents add 4% sales tax.

Circle 252 on Reader Service Card.

LASER 128 .....	\$335.00
LASER 128 Refrb. Sys. . .	\$369.00
LASER 128 E-X. ....	\$369.00
LASER 128 EXII-5.25 . . .	\$399.00
LASER 128 EXII + 3.5 . . .	\$439.00

12" Monochrome . . . . .	96	UDC Card . . . . .	65
13" Magnavox RGB/COM . . .	259	256K Memory (EX) . . .	30
Laser 145 (Epson) . . . . .	169	Monitor Stand . . . . .	29
Laser 190 (Epson) . . . . .	199	Keyboard Protector . . . .	24
Laser 190 (Apple) . . . . .	199	Joy Stick . . . . .	25
Laser 190 (Apple Serial) . . .	245	Mouse . . . . .	59
Laser 190 Pull Tractor . . . .	45	2400 Modem . . . . .	125
Star NX-1000 . . . . .	199	Modern Software . . . . .	75
Star Rainbow . . . . .	259	PC Viewer . . . . .	729
Ribbons (Black) . . . . .	4 (6)	Apple II Serial Card . . . .	85
Laser 128E Memory Card . . .	35	Apple II Parallel Card . . .	49
Laser 3.5" Drive . . . . .	178	Laser RGB Monitor . . . . .	219

All Units 1 year warranty  
90 Days Free Pick-Up and Return

## NEW SCIENCE PROSPECTS

Your full Laser® Computer Service Center  
1200 Bialock Ln., Ste. 380, Houston, TX 77055  
713-464-8303

School orders welcome

Circle 173 on Reader Service Card.

## Choice Computer Products

PO BOX 8432, CEDAR RAPIDS, IA 52408  
CUSTOMER SATISFACTION IS OUR #1 PRIORITY

AUTHORIZED **AE** APPLIED ENGINEERING® DEALER

FACTORY INSTALLED / WARRANTED RAM

PC TRANSPORTER . . . . .	245	DATALINK 2400 . . . . .	168
SINGLE TRANSDRIVE . . . . .	182	DATALINK EXPRESS . . . . .	175
DUAL TRANSDRIVE . . . . .	273	SERIAL PRO . . . . .	98
IIGS KIT . . . . .	35	PARALLEL PRO . . . . .	70
IIE KIT . . . . .	28	BUFFER PRO 32K . . . . .	77
RAMWORKS III 256K . . . . .	126	COLORLINK . . . . .	91
RAMFACTOR 256K . . . . .	161	Ile H.D. POWER SUPPLY . . . .	56
RAMCHARGER . . . . .	126	IIGS H.D. POWER SUPPLY . . . .	70
GS RAM 256K . . . . .	105	AE 5 1/4" DISK DRIVES . . . . .	105
GS-RAM ULTRA 256K . . . . .	143	AE 3 1/2" DISK DRIVES . . . . .	198
GS RAM + 1MEG . . . . .	196	AE 3.5 CONTROLLER . . . . .	56
RAM EXPRESS II 256K . . . . .	133	CONSERVER . . . . .	70
TIMEMASTER . . . . .	70	TRANSWARP Ile . . . . .	84
SONIC BLASTER . . . . .	91	TRANSWARP GS . . . . .	245
AUDIO ANIMATOR . . . . .	168	VULCAN 20 . . . . .	490
PHASOR . . . . .	105	VULCAN 40 . . . . .	630

## OTHER FINE PRODUCTS

KENSINGTON SYSTEM SAVER IIGS . . . . .	75	AMR 3 1/2" DISK DRIVE . . . . .	195
KENSINGTON SYSTEM SAVER IIE . . . . .	75	BEAGLE BROS. TIMEOUT . . . . .	CALL

For the Lowest Prices on all **AE** Products Call 319-396-2306 (9 am to 9 pm)

MasterCard, Visa, COD, P.O. & Checks Accepted

Prices subject to change

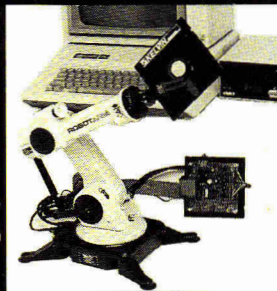
## EXPLORING ROBOTICS

TECHNOLOGY  
ACTIVITY

\$199

COMPLETE  
SYSTEM

- Robotic Arm
- 2 Joysticks
- Power Supply
- K.I.S. Interface Module
- Demonstration Video
- Software



IBM or APPLE II, II+, IIe, gs COMPATIBLE

UPGRADABLE - ADDS THE ABILITY TO CONTROL AN ADDITIONAL 4 DC MOTORS UP TO 1 AMP EACH FOR PROBLEM SOLVING ACTIVITIES SUCH AS CONVEYORS, ELEVATORS, PLOTTERS & ROBOTIC CARS.

**KELVIN** Electronics  
7 Fairchild Avenue, Plainview, NY 11803  
(516) 349-7620 FAX (516) 349-7830

Circle 57 on Reader Service Card.

## Protects while you type!



- Remains in Place while you type.
  - Protects from dust, spills, smoke, ashes, staples.
  - Soft, Flexible, retains normal keyboard feel.
  - Washable, Durable High-Tech Polymer lasts years.
  - Hundreds of Models. PCs, laptops, clones.
  - Office • Home • Factory • Classroom • Laboratory
- List Price \$29.95. Please call or write for free color brochure. Dealer inquiries encouraged.

**SafeSkin**  
KEYBOARD PROTECTOR

Merritt Computer Products, Inc. 5565 Red Bird Center Drive  
Suite 150, Dallas, Texas 75237/(214) 339-0753 • FAX (214) 339-1313  
In Canada call 1-800-663-1061

Circle 4 on Reader Service Card.

FRENCH GERMAN ITALIAN  
**EuroWorks**™ v3.0  
v2.0  
PORTUGUESE SPANISH

Type accented foreign text quickly and simply with the classic AppleWorks® word processor. Then, from inside AppleWorks, EuroWorks prints your foreign text on an ImageWriter® or compatible printer.

Foreign word processor files may include every character on your American keyboard plus 13 French, 7 German, 10 Italian, 13 Portuguese, or 10 Spanish: just two sensible keystrokes per foreign character.

EuroWorks requires an Apple DMP; ImageWriter I, II, or LQ; Scribe; an MT85/86; or a Seikosha SP-1000AP printer. EuroWorks is compatible with, but does not require, the TimeOut™ series from Beagle Bros, Inc.

EuroWorks v3.0 for AppleWorks v3.0  
EuroWorks v2.0 for AppleWorks v2.0 or v2.1

French...\$24 Spanish...\$24  
**ALL FIVE...on one disk...\$39**

USA, Canada, Mexico postpaid; others add \$3

AppleWorks®, ImageWriter® by Apple Computer, Inc.

Check, MO, Net-30 School PO, Visa, MC  
**The S.A. AuTeur Co: A66**  
P.O. Box 7459 Beaverton, OR 97007

(503) 645-2306



Circle 185 on Reader Service Card.

## BACK ISSUES

Back issues of inCider can be purchased, subject to availability, for \$4.50 per issue plus shipping (1-9 copies, add \$1.00 per issue; 10+ copies, add \$7.50 per order). Currently, most issues from 1987 to present are in stock. If you wish to purchase back issues, send in a written request with a check, money order, or credit card information to:

**inCider Back Issues**  
80 Elm Street  
Peterborough, NH 03458

Or, you may charge your order to your credit card by calling 1-800-343-0728 (inside N.H. call 924-9471).

All foreign orders must be paid in U.S. funds drawn on a U.S. bank.



Designed especially  
for teachers!  
Ten Easy-to-use  
Templates  
from *inCider!*

**Classroom Management  
Disk for AppleWorks 3.0**

Reduce class preparation time! Manage your classroom more effectively! Make your teaching life more productive with the power of AppleWorks 3.0 and *inCider's* Classroom Management Disk. Ease the paperwork crunch for good, and build a convenient "data bank" of lessons, tests, reports, grades, statistics, and more!

It features specially designed templates, ready-to-run as they are, or modify them as you choose. Each disk comes with a documentation manual that will guide you quickly and easily through these useful, convenient templates:

- **Homeroom Database**
- On-Screen Drill**
- Grade Equivalent**
- Lesson Plan**
- Planning Calendar**
- Letter Form**
- Test Bank**
- Test Construction Kit**
- Gradebooks**
- Quiz Machine**
- 

**Only \$29.97! That's less than  
\$3.00 per template!**

Foreign Airmail, add \$3.95  
AppleWorks is a registered trademark of  
Apple Computer, Inc., licensed to Claris  
Corporation. Requires AppleWorks 3.0.

**ORDER NOW!**  
**CALL TOLL-FREE**  
**1-800-343-0728**  
**(inside NH: 924-0100)**

*inCider* Magazine  
80 Elm St  
Peterborough, NH 03458

IBAC

**Public  
Domain**

**PUBLIC DOMAIN &  
SHAREWARE**

Big 48 page catalog with descriptions of many programs Over 40 programs on some disks. Program disks cost as low as \$1.99 each. Thousands of programs available. Our catalog gives you descriptions of many programs, not just a program name. Our seventh year. No membership fee to pay. Software programs in all fields, Education & School, Games, Art & Graphics, Astronomy, Business & Finance, Chemistry & Biology, Electronics, Ham Radio, Math & Statistics, Music & Sound, Appleworks™ templates, plus much more. Something for everyone no matter what your age or occupation. Send only \$2 for big 48 page catalog sent by return First Class Mail.

**COMPUTER BUDGET SHOPPER  
(CBS)**

2203 Park Ave., Suite 17  
Cheyenne, Wyoming 82007

**APPLE PUBLIC DOMAIN DISKS**

Request free catalog or send \$2 for sample disk & catalog (REFUNDABLE). 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

**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, Eamon, 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

**Ribbons**

**FACTORY FRESH RIBBONS**

Ribbon	Black	Color
Apple Imagewriter I, II	\$ 2.25	\$ 2.95
Imagewriter II 4 color		\$ 4.95
Imagewriter II 4 color Heat transfer	\$ 9.95	
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 \$3.50 per order  
(over \$50 we pay S/H).

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

**Computers &  
Supplies**

**SUPER DEALS ON APPLES!**  
**BUY \*\* SELL \*\* TRADE**  
**USED \*\* NEW**

- Apple IIc . . . . . \$349
  - Apple IIe . . . . . Lowest
  - Apple IIgs . . . . . Lowest
  - All other Apple Systems . . . . . CALL
  - Imagewriter I . . . . . \$275
  - Imagewriter II . . . . . \$349
  - Apple 3.5" Unidisk 800k . . . . . \$269
  - AMR 3.5" 800k IIc+/IIgs . . . . . \$182
  - 45 MEG Removable HD. . . . . \$579
  - 20 MEG External HD . . . . . \$265
  - 40 MEG External HD . . . . . \$419
  - All Mac Systems . . . . . CALL
  - Peripherals & Software. . . . . CALL
  - Price List & PD Catalog \$.50 SASE
- Also open evenings & weekends
- M.P.-Computer Micro Systems**  
P.O. Box 1141 Dept. ICAP  
Mountain View, CA 94042  
(415) 968-9026  
(415) 968-0509 (FAX)

**\*\*\*Gsoft's ANNIVERSARY SALE\*\*\***

**\*\* IIGS SOFTWARE RENTALS \*\***  
Rent software for 15-20% of list price or buy for less than mail order prices. The most complete line (over 200 titles) of software anywhere.

**\*\* SCSI HARD DISK SALES \*\***  
All external Seagate hard disks come complete. Just plug in and go. 40 Meg — \$450, 60 Meg — \$520, 80 Meg — \$570, 44 Meg removable w/cartridge — \$650. For more information and a complete catalog please send \$1.00 (refundable) to:

**GSoft**  
7350 Urmerton Road  
Suite 924A  
Largo, Florida 34641

**Insurance**

**INSURES YOUR COMPUTER**

SAFWARE 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).

**SAFWARE, THE INSURANCE  
AGENCY INC.**  
2929 N. High St.  
P.O. Box 02211  
Columbus, OH 43202  
(800) 848-3469 Nat;  
(614) 262-0559 (OH)

**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: 1-800-835-2246 x121.**  
Info 1-718-317-1961



## 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 116  
Lexington, MA 02173  
617-641-2930 (Mass.)  
800-637-7668 (USA & Canada)

### PROJECT MANAGEMENT PLUS, AND DESIGN

**EVERYBODY'S PLANNER** (Apple II+, IIe, IIc, IIc+, IIcs, IBM), the only full-featured project manager for Apples. PERT charts have projects up to 5 years, 54 tasks, 216 resources, optional costing, critical path, early & late, start & finish dates, 8 reports and graphs. Includes FLOWCHART with 19 shapes, 3 fonts: \$99.95. 13 more **Reports**: \$39.95. Enhance your projects with **WELCOME!** for databases of project milestones, tasks, resources, etc. \$79.95. **SPECIAL:** all 3 programs: \$199. **DESIGN YOUR OWN HOME: ARCHITECTURE, INTERIORS, or LANDSCAPE** Apple II: \$69.95, IIcs: \$89.95, IBM, MAC: \$99.95. **DESIGN YOUR OWN TRAIN:** Apple II, Mac: \$49.95, IBM: \$59.95. **RUN YOUR OWN TRAIN:** Apple II: \$34.95. **ELECTRONIC DRAWING:** Apple II, IBM \$49.95. **ADVENTURE OF LEARNING:** Apple II: \$69.95. Check/Visa/MC.

### ABRACADATA

PO Box 2440 Dept. DD  
Eugene, OR 97402  
Orders: 800-451-4871  
503-342-3030

### INEXPENSIVE CHURCH MANAGEMENT SOFTWARE

Special church management and Christian school administration programs for Apple II compatible computers. AppleWorks templates also available. Send for details.

### SOFTWARE SHARING MINISTRIES

2020 North Fremont St.  
Tacoma, WA 98406  
206-756-7980

### CARDMASTER DEALS AGAIN

Another masterpiece for the //GS.

### SOLITAIRE VOLUME II:

Eight new and exciting games. ACCORDION-CORNERS-BELEGUERED CASTLE-GOLF-PATIENCE-FIVE PILES-CALCULATOR-POKER.

### SOLITAIRE/CRIBBAGE:

KLONDIKE (1&3 at a time)-PICTURE FRAME-PYRAMID-MONTE CARLO and the best CRIBBAGE program available anywhere. Outstanding color graphics, lots of options, including color change, statistic files, and our famous alarm clock are standard features. Both programs require Apple //GS, 512K, mouse & 3.5" drive. \$34.95 ea.

### Apple II, IIc, IIe owners:

Original Solitaire/Cribbage and Computer Gin Rummy, less options, 5 1/4 drive. \$19.95 ea.

PUBLISHED BY COMPUTREK

Distributed Exclusively by

Golem Computers

PO Box 6698

Westlake Village, CA 91360

(800) 248-0363

CA (805) 499-7785

Mon.-Fri. 7am-6pm

Sat. 9am-4pm Pacific Time

### PORTFOLIO/ASSET ANALYSIS — LONG TERM

ASSET ANALYSIS is a combined PORTFOLIO and ASSET ANALYSIS program in the AppleWorks spreadsheet format. Gain (loss), % annual & total return, portfolio/asset value, etc. calculated for each investment, portfolio and all combined assets. Portfolios include stock, bond, mutual fund, CDs, pension, IRA, real estate, brokerage accts & even cash and liabilities. Emphasis is on total asset performance over time. Input friendly and *errors rejected*. No similar SS on market.

ASSET (V2.1.1) BEST BUY \$49.95

(requires 132K AppleWorks desktop)

ASSET (V1.1.1) \$39.95

(requires 55K AppleWorks desktop)

(II residents add 6 1/4% sales tax.)

### FRANKSOFT PUBLISHING

3300 33rd Ave. Ct.

Rock Island, IL 61201

309-788-7663

FAX 309-788-7664

### ENHANCEMENT FOR ULTRAMACROS

AmperMacros adds even more commands to your favorite macro program. Twenty (20!) new functions: floating point math, calculated goto, nested loops, boolean and string functions and more! Also, 6502 programmers can use AmperMacros as a host to load their own routines into memory.

Requires AppleWorks 3.0 and UltraMacros 3.1. Send \$25.00 (includes S&H) or \$5.00 (for manual only) to:

O.P. Software, P.O. Box 1042,  
Mahomet, IL 61853.

## Music

### ELECTRONIC MUSIC--MIDI ANY APPLE

Apple II+, IIe, MIDI Card 1x2 channels \$69. GS MIDI Opcode 1x3 \$59, with Serial Thru Switch and Diode Lights 1x3 Interface \$89. Sequencing Software: MasterTracks Jr. GS \$79, MT PRO GS \$269, MasterTracks \$159, Dr. T's KCS V. 2.0 IIe/II+ \$159, GlassTracks \$89, Super Sequencer GS, IIe \$199, Apple II or GS MIDI Music Pack: MIDI Interface & Cables & Software \$169. Music Printing Software \$99. Sound Editor/Librarian: Casio CZ Rider \$89, Yamaha DX/TX7 \$129. Kids MIDI Software for note reading/ear training/fingering \$39-\$79. SysExGS Librarian \$33.95, MIDI Music Shapes IIe/GS \$129. 5' MIDI Cables \$7.95. Books \$2.50 S/H each: *A Guide to Computer Music*, 2nd edition \$19.95; *Electronic Music Dictionary* \$16.95; *MIDI for Musicians* \$17.95; *Music and the Mac* \$16.95. Audio Animator \$179.00, IIe/GS Ram \$159.00, Transwarp \$299.00, Vulcan 20 Meg \$489.00, Casio Polyphonic full-size MIDI Keybrd. with speakers \$389, or Kawai PH50 MIDI Keybrd. \$379. MIDI Software for any level user: Apple II, Mac, C-64/128, IBM, Atari, Schools Welcomed.

### SOUND MANAGEMENT

P.O. Box 3053

Peabody, MA 01961

Check, MO, VISA, MC, School P.O.

Call (800) 548-4907 orders USA

Call (508) 531-6192 MIDI catalog

and foreign countries only

## inCider/At+

*Problems with Advertisers:* Send a description of the problem and your current address to *inCider*, 80 Elm Street, Peterborough, NH 03458, attn. Rita Rivard, Customer Service Manager. If urgent, call (800) 441-4403.

*Problems with Subscriptions:* Send a description of the problem and your current and/or most recent address to: *inCider*, Subscription Department, P.O. Box 58618, Boulder, CO 80322-8618. Or call (800) 289-0619, between 9 a.m. and 5 p.m. Mountain time, Monday through Friday. If you have a problem with payment, please have your mailing label and your cancelled check or credit card statement in front of you.

*Change of Address:* Send an old label or a copy of your old address and new address to: *inCider*, P.O. Box 58618, Boulder, CO 80322-8618. Please give eight weeks' advance notice.

*Microfilm:* This publication is available in microform from University Microfilms International. United States address: 300 North Zeeb Road, Dept. P.R., Ann Arbor, MI 48106. Foreign address: 18 Bedford Row, Dept. P.R., London, WC1R4EJ, England.

*Dealers:* Contact Linda Ruth, Direct and Newsstand Sales Manager, *inCider*, 80 Elm Street, Peterborough, NH 03458. Call (800) 343-0728.

*Back Issues:* Send \$4.50, plus \$1.00 postage for each copy to *inCider*, Back Issues Dept., 80 Elm Street, Peterborough, NH 03458. For ten or more copies postage is a blanket \$7.50. To order by telephone using VISA, MasterCard or American Express call (800) 343-0728, or (603) 924-9471 in New Hampshire.

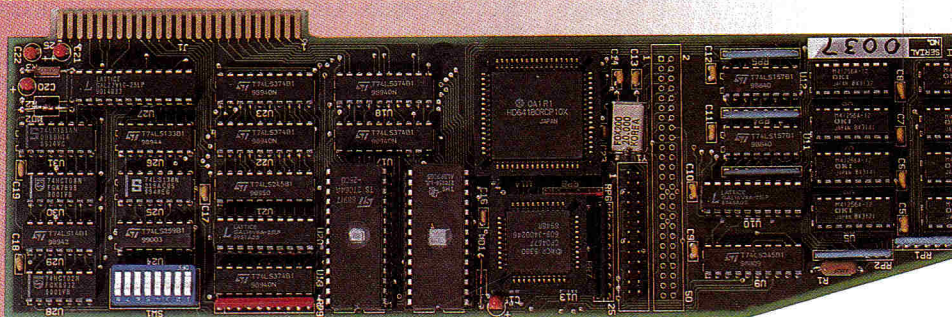
*inCider* magazine is published monthly by IDG Communications/Peterborough, Inc. Entire contents copyright 1990 IDG Communications / Peterborough, Inc. No part of this IDG Communications publication may be reprinted, or reproduced by any means, without prior written permission from the publisher. All programs are published for personal use only. All rights reserved.

Use *inCider's* Classified Section to showcase your Apple II products. Contact Diane Maguire at 1-800-441-4403 for further details.



## Faster Than a Speeding...

S



peed and storage have always been important issues for computer users. As if weren't hard enough to figure out whether you need a hard drive, what type of hard drive you need, and what size you need, you also have to make some choices when it comes to your hard-drive controller. Now CV Technologies makes that a little easier — thanks to its new **RamFast SCSI** card, a speedy alternative.

As its name implies, the new card combines the speed of SCSI (small-computer-systems interface) with the speed of RAM (random-access memory). You know how fast RAM is if your computer has more than 128K of it and you run AppleWorks: New screens appear instantly. SCSI is the most up-to-date way to attach a hard-disk or CD-ROM drive to your computer: Not only is SCSI fast, but because millions of Macs also use SCSI drives, the prices of those drives have been coming down.

RamFast SCSI uses a couple of different methods of accelerating data retrieval. First, a 10-megahertz on-board processor means that the card operates on a true 1:1 interleave (reading one entire drive track per revolution). It also uses DMA (direct memory access) to relieve your computer's processor of the time-consuming drudgery of disk reads: It keeps up to 256K of the disk data you use most often in a bit of RAM called a *cache*, a scheme perfected by Ohio Kache Systems. That extra 256K means, for instance, that you can keep the entire GS operating system (the Finder) in RAM even if you have only 1 megabyte. If you use a IIe with AppleWorks, all three of the program's modules, even the printer information and spell-checker dictionaries, will stay in RAM (if you use those portions frequently).

In addition to the 256K of dedicated memory on board, other notable features include compatibility with the Apple IIe or IIgs, compatibility with older SASI drives (Shugart Associates standard interface, SCSI's precursor), simultaneous support for up to eight drives or partitions, and a data-transfer rate of up to 1 megabyte per second.

Installation is straightforward. Once you've properly set the card's DIP switches (clearly explained in the manual), just plug it into an available slot, run the cable through an opening in the back, and connect your hard drive. Fire up your system and the startup utility program (stored in ROM) appears. Your choices include configuring your system, adding or deleting partitions, and formatting drives.

The RamFast manual includes a list of popular memory and accelerator boards and indicates DMA compatibility for each. There's also a handy troubleshooting list, outlining possible problems with probable causes and solutions, and a tech-support phone number. If all your equipment is compatible, though, you shouldn't run into trouble — RamFast is pretty much plug-and-play.

What's the best way to speed up your computer — a RAM card or a hard disk? Get RamFast SCSI and a hard disk and get the benefits of both. It's priced at \$289, from CV Technologies, 9431 Saddlebrook Lane, Suite #2C, Miamisburg, OH 45342, (513) 453-5743. Keep an eye on *inCider's* Reviews section for a more detailed look at the ins and outs of RamFast SCSI in an upcoming issue. □

EDITORS' CHOICE SINGLES OUT ONE PRODUCT EACH MONTH THAT THE INCIDER EDITORS FEEL IS A SIGNIFICANT ADDITION TO THE APPLE II FAMILY. PRODUCTS EVALUATED ARE AMONG THE MOST RECENT RELEASES AND MAY NOT BE AVAILABLE YET FOR RETAIL DISTRIBUTION.

*If you need  
hard-disk-drive  
speed, RamFast  
SCSI should  
fill the bill.*

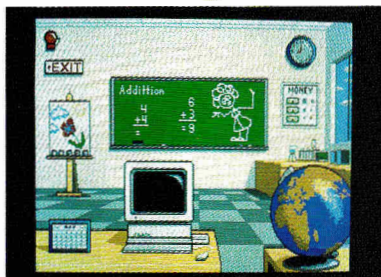


**GREAT GIFT IDEA!**

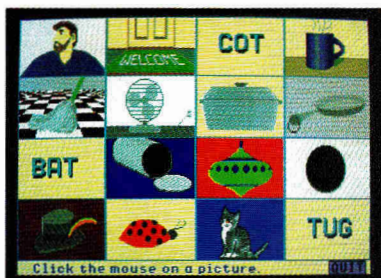
# ANNOUNCING . . . 3 more GS programs that STAND UP and SHOUT!

Talking Schoolhouse now has 18 programs that take full advantage of the Apple IIGS with real human voice and super high-res graphics. No speech board is required.

Our 3 Newest Programs . . .



**Talking Classroom** offers a thrilling assortment of multisensory learning activities in the areas of time, money, science, map, and calendar skills.



**Talking First Words** uses voice and animation to introduce children to nouns and verbs.

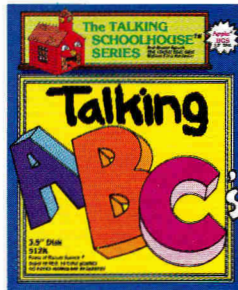
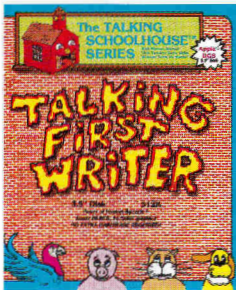
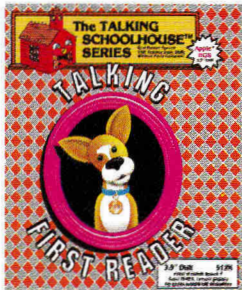
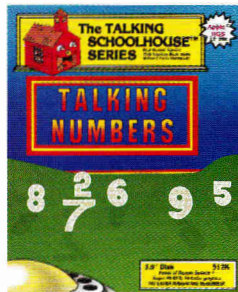
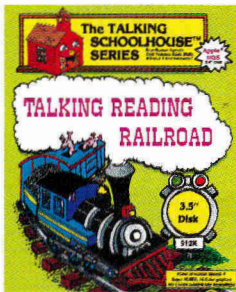
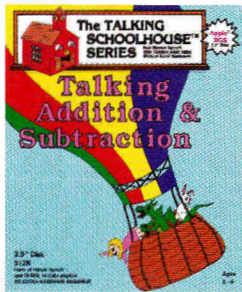
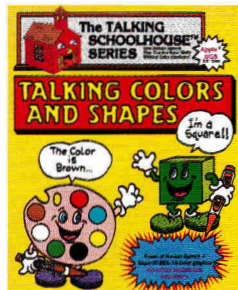
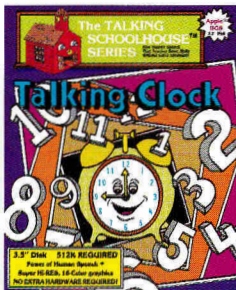
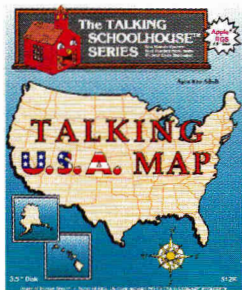
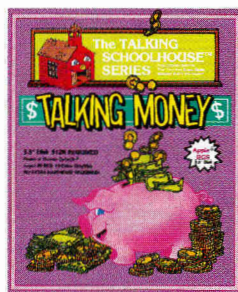
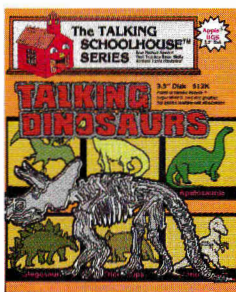
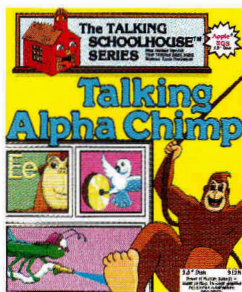
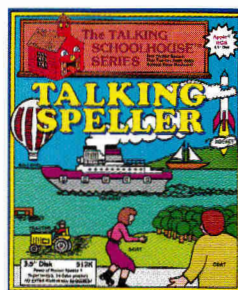
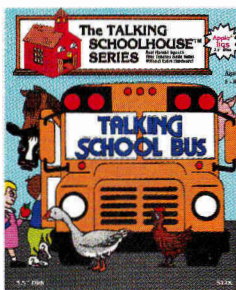
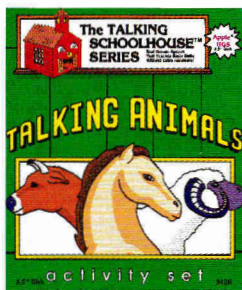
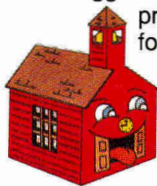


**Talking Multiplication & Division** provides a human voice to help kids with basic math skills.

These new programs join the 15 others listed here to form the Talking Schoolhouse Series, which educators and parents across the country are hailing as the most outstanding software available for the IIGS. IBM PS/2 and TANDY 1000 versions will be ready for shipment shortly.

The suggested retail price for each program is \$49, or \$59 for the School Edition (with backups).

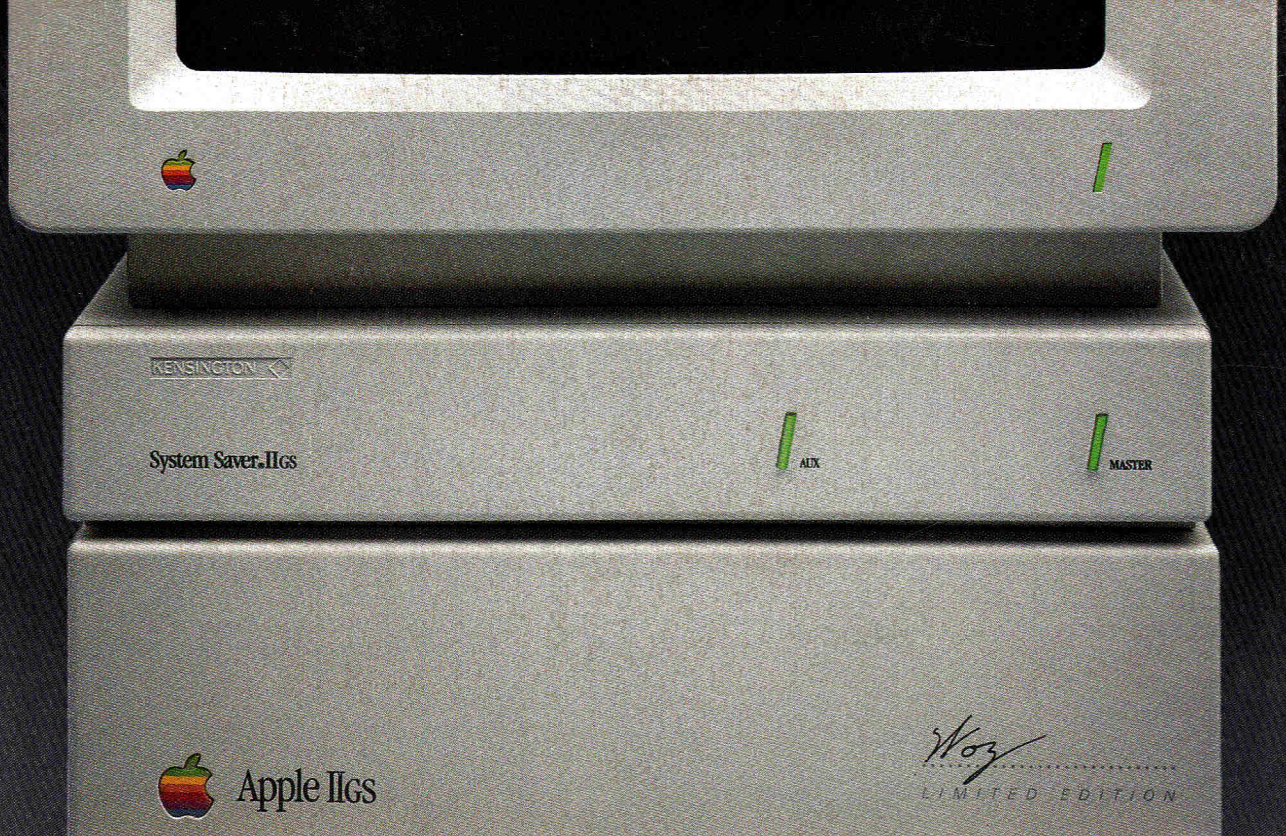
To order or obtain information contact your dealer or call (800) 672-6002.



**Toll Free Hotline (800) 672-6002**

ORANGE CHERRY/TALKING SCHOOLHOUSE SOFTWARE  
Dept. I, P.O. Box 390, Pound Ridge, NY 10576



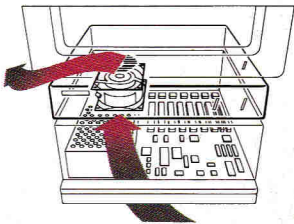


# COOL, CALM, COLLECTED... SYSTEM SAVER® IIGS.

There are two major threats to the life of every Apple IIGS. And one minor annoyance. The threats? Heat and power impurities. The annoyance? Not enough outlets and too many switches. The solution? System Saver IIGS.

## **Keeps your IIGS cool.**

More quietly and efficiently than Apple's optional internal fan. The bottom of the System Saver IIGS forms a seal with the top of the IIGS case, so its whisper-quiet fan draws air up and through the IIGS, instead of just pushing it around inside. It pulls air through the back and bottom vents of the IIGS, over the power supply (the main source of heat), and out the vents in the top at 17 cubic feet per minute. And with nothing to install inside the computer, it won't block two slots like Apple's fan.

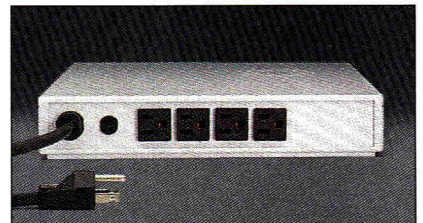


## **Keeps your IIGS calm.**

Its UL Listed surge suppression circuitry protects your valuable equipment and data from dangerous power surges and spikes. And its noise filter smooths out disruptive EMI and RFI. It makes your whole IIGS system more reliable and longer lasting.

## **Keeps your IIGS collected.**

It provides four outlets for your computer, monitor, and two peripherals. And it puts everything at your fingertips with two front-mounted switches. (One controls your IIGS and monitor. The other controls your peripherals.)



For more information, or a dealer near you, call 800-535-4242. Outside the U.S. call 212-475-5200.

**KENSINGTON®**