

inCider

AN IDG COMMUNICATIONS
PUBLICATION
May 1990

Interactive

Classroom

Projects

Editors' Choice: Hyperscreen, p. 96



Apple II / Macintosh

RED APPLES

Soviets Clone The II

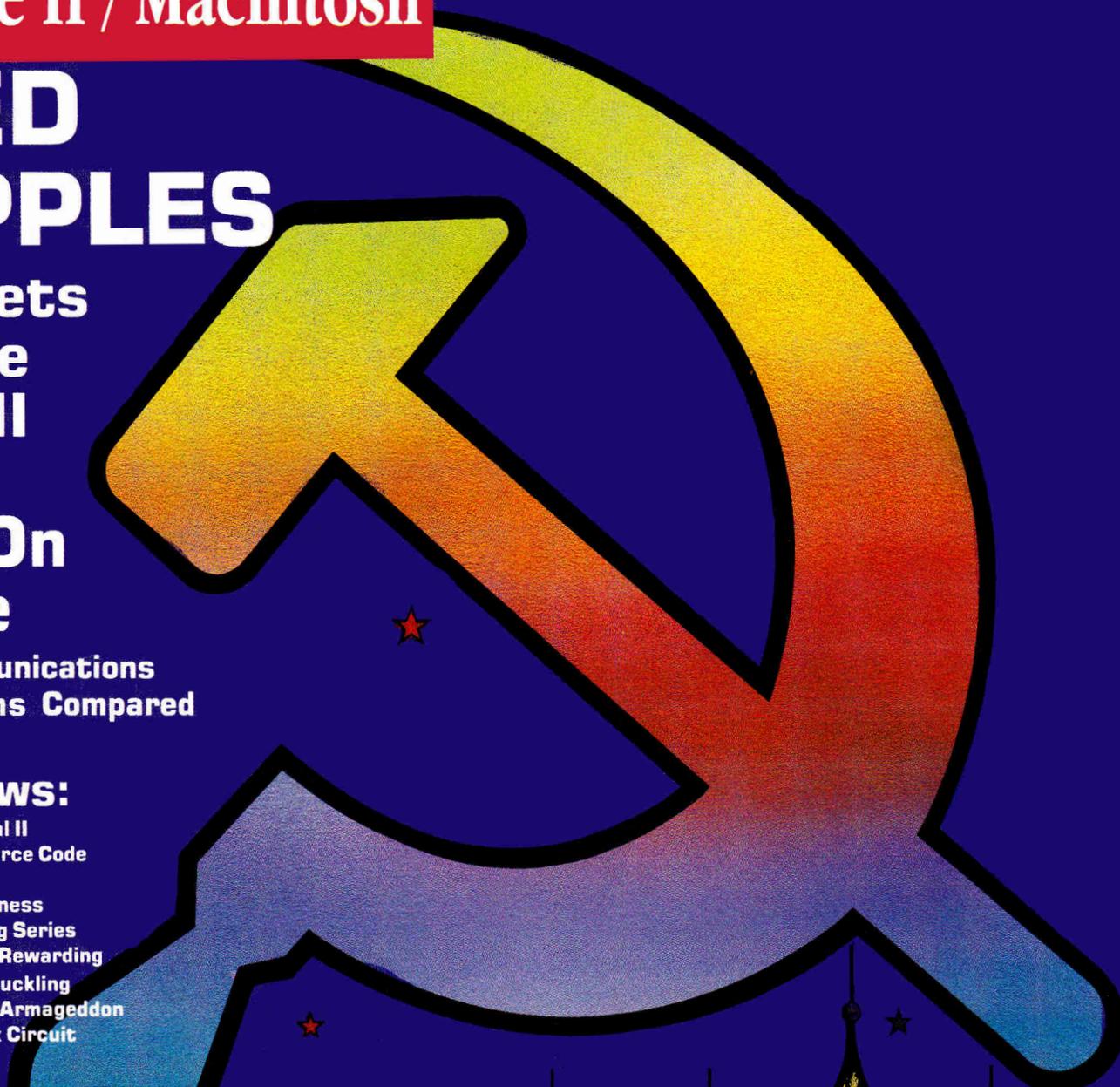
Go On Line

7 Communications Programs Compared

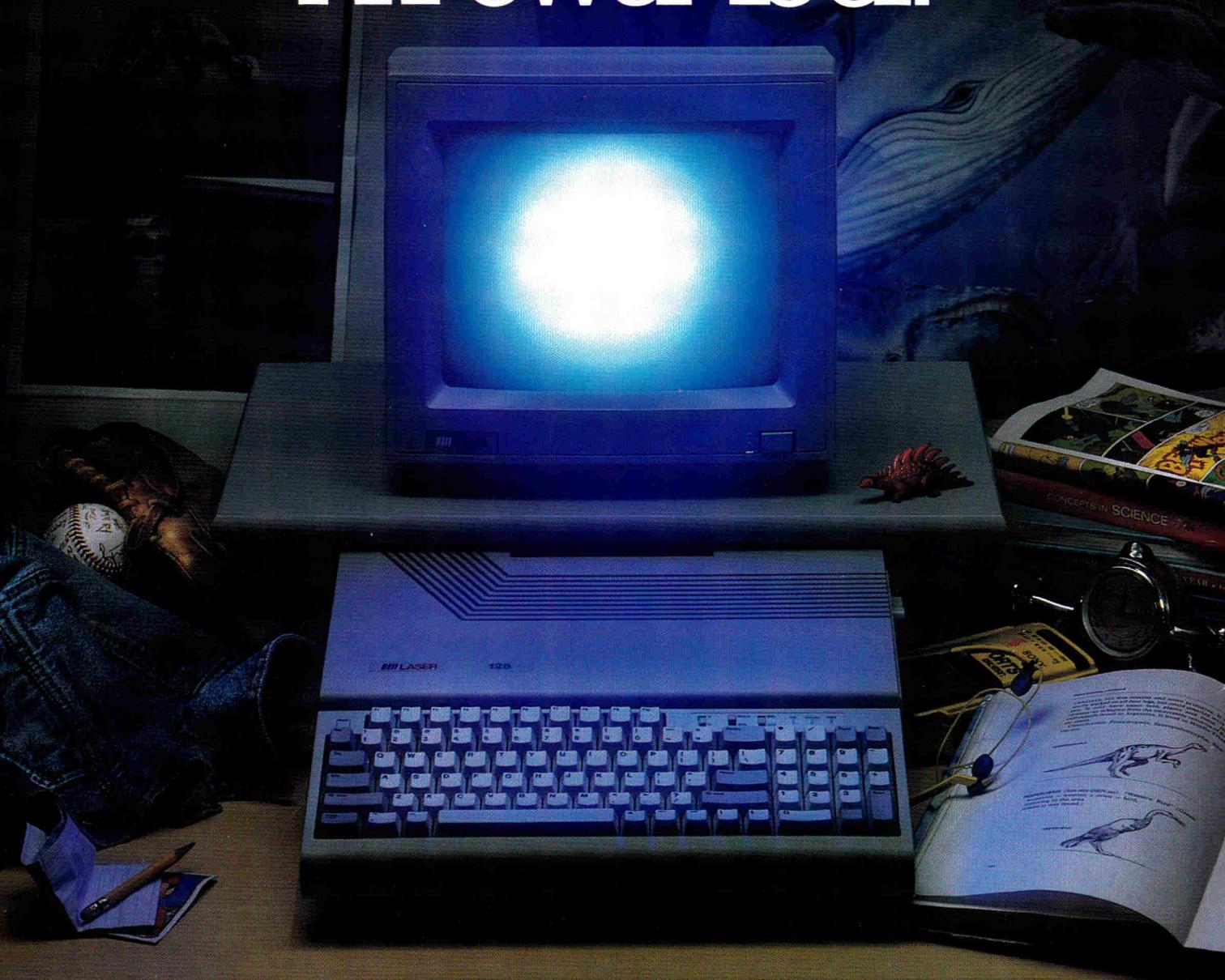
Reviews:

- TML Pascal II
& TML Source Code
Library II
- Small Business
Accounting Series
- Positively Rewarding
- The Ugly Duckling
- Tunnels of Armageddon
- Grand Prix Circuit
- Orbizone

USA \$3.95
Canada \$4.50



Let Your Child Play With A Power Tool.



This is one power tool you'll be glad to put in your children's hands. While other kids compete for time on school computers, the LASER 128® enables yours to get ahead at home.

And what an advantage they get. The LASER 128 is Apple®-compatible, so your children gain access to the world's largest library of educational software. Plus thousands of other programs.

The LASER 128 puts you ahead, too. It sells for nearly a third less than an Apple with fewer features.

With savings like that, you can buy a monitor and a printer for a complete setup. And teach your child a

valuable lesson in getting more for your money.

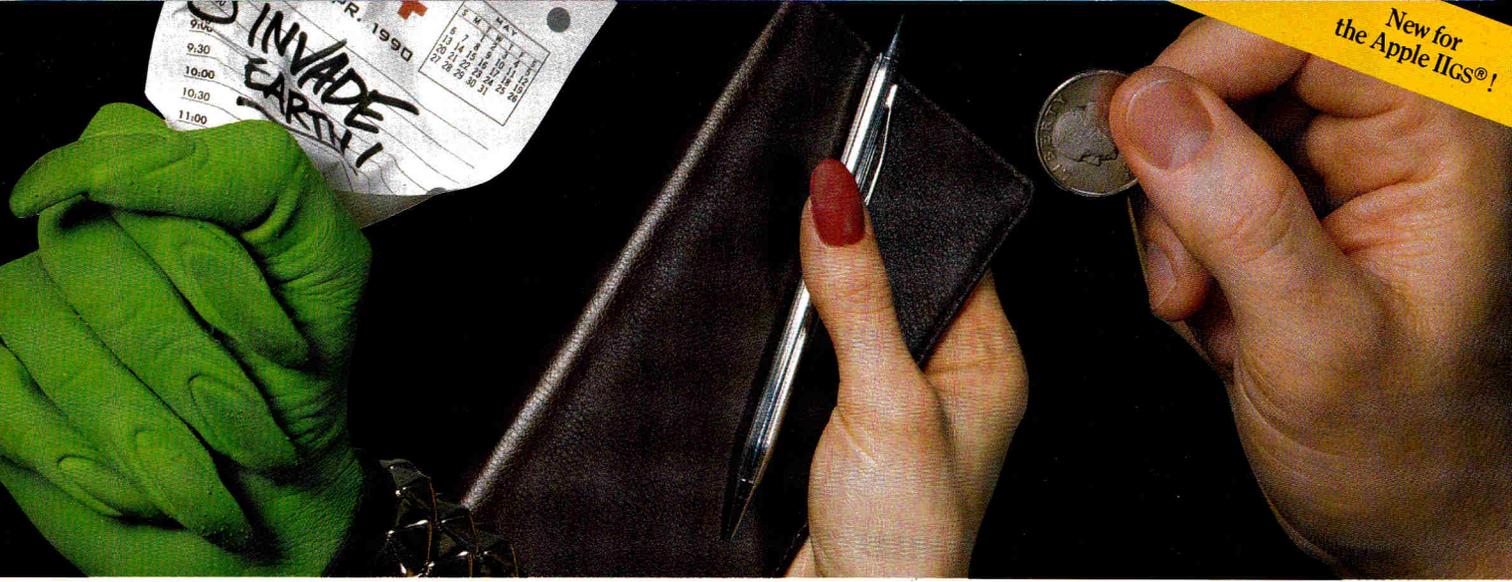
How good of a computer will you get? Let's put it this way. The leading Apple magazine, *InCider*, suggests you "look at today's LASER if you want to see tomorrow's Apple."

Follow their advice. Call 708/540-8911 (in Canada 416/477-2818) for your nearest dealer. Or write LASER Computer, Inc., 800 Church Street, Lake Zurich, IL 60047.

Then let your children play with a real power tool. That is, when you're finished using it.

LASER
Laser Computer, Inc./A Video Technology Company

New for the Apple IIgs®!



DEFEND THE PLANET, BALANCE A CHECKBOOK, PLAY THE JUKEBOX, AND SHOW YOUR COLORS.

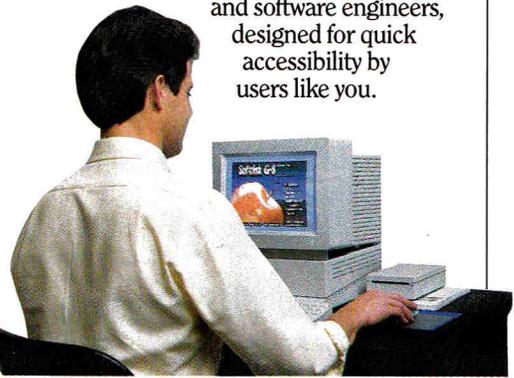
Those are just some of the adventures you'll have with your 3-month, \$29.95 subscription to Softdisk G-S®. Subscribe now and each month you'll receive a collection of ready-to-run, original software for your Apple IIgs.

A 3-1/2"-disk full!

Just think, a 3-1/2-inch diskette filled with home-office productivity tools, AppleWorks™ GS templates, educational software, games, utilities, clip art, professional fonts, and more — delivered to your home!

New software every month!

Every month a Softdisk G-S subscription brings carefully selected quality software to help you get more value from your personal computer. Moreover, Softdisk G-S programs are *not* public domain! They are original programs written by professional programmers and software engineers, designed for quick accessibility by users like you.



Here are some recent Softdisk G-S programs:

- Check-Might** — Reconcile your checkbook with this AppleWorks GS spreadsheet.
- Zappa Roidz** — Improve your reflexes as you pilot a space fighter.
- Soft Palette** — Show your 256 colors from 16 palettes in this fully implemented paint program.
- QuickTime DA** — Gain a little time with this clock desk accessory.
- Beachhead V** — Play 18 holes on the electronic links with this new Mean 18 course.

Different Apple IIgs and II versions available.

And Softdisk is available for both the Apple IIgs and the Apple II. Softdisk G-S and Softdisk each contain completely different programs so that a combination order gets you twice the software for less than twice the price!

Free Premium Graphics Collection.

And when you subscribe to Softdisk G-S, you'll receive FREE the Softdisk Premium Graphics Collection • Volume 4 as our way of saying, "Thank you." With 200 all-new original graphics designed to work with Brøderbund's popular Print Shop® programs, Volume 4 contains signs, animals, sports figures, and people...plus, maps and symbols!

SOFTDISK PUBLISHING
monthly software

P.O. Box 30008 • Shreveport • LA 71130-0008
(318) 221-8718 • Toll Free 1-800-831-2694



1/3 off regular retail price!

Subscribe now by calling toll-free 1-800-831-2694 or use the attached coupon to start building your library of educational software, games, templates, utilities, and personal productivity programs. You can check out Softdisk G-S for a special three-month trial subscription price of only \$29.95. That's over 1/3 off our regular retail price, so order today!

Only \$29.95

1-800-831-2694
3-Month Softdisk G-S Trial

<input type="checkbox"/> \$29.95 (\$34.95*/\$37.95**)	<input type="checkbox"/> Softdisk \$19.95 (\$24.95*/\$27.95**)
	<input type="checkbox"/> 5-1/4" <input type="checkbox"/> 3-1/2"
<input type="checkbox"/> Softdisk Combo \$39.95 (\$49.95*/\$55.95**)	<input type="checkbox"/> *Canada/Mexico Price
	<input type="checkbox"/> **other (foreign)

Check or money order to **Softdisk Publishing** in U.S. funds enclosed.

Discover VISA MC American Express

Card # _____ Exp. _____

Signature _____

Name _____

Street Address _____

City / State / Zip _____

Phone (____) _____

Louisiana residents add 4% state sales tax. **IN050**

Softdisk & Softdisk G-S © 1990 Softdisk Publishing. All rights reserved. Photography by Jerry Jones. Softdisk and Softdisk G-S are registered trademarks of Softdisk Publishing. Apple II, Apple IIgs, and AppleWorks are registered trademarks licensed to Apple Computer Corporation. Print Shop is a registered trademark of Brøderbund. Softdisk requires an Apple II, II+, IIc, IIe, IIgs, Laser 128, or IIc+ computer with one floppy drive and 64K RAM. Softdisk G-S requires an Apple IIgs computer with one floppy drive and 768K RAM; 1.25 Mb recommended. Programs not copy protected.

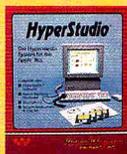
SPECIALS

MEMORY CHIPS



Expand your RAM with these high-quality ramchips. Fully Apple IIc, IIe, IIGS compatible. 5 year warranty.
256K **\$32/bank**
1 meg. .. **100/bank**

HYPERSTUDIO



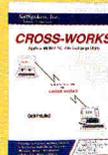
The hypermedia system for the IIGS. Integrates text, graphics and sound. Comes with paint tools, text editor, sound editor, sound digitizing hardware, and microphone. **\$89.00**



GS JUICE +

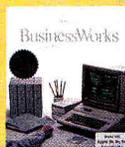
Ingenuity's 1, 2 or 4 meg. 100% DMA compatible memory card
1 meg. **\$179**
2 meg. **259**
4 meg. **459**

CROSS-WORKS 2.0



Copy and convert files between Apple II and IBM. Exchange AW files with Microsoft Works WordPerfect, Lotus 1-2-3 and dBase. **\$69.95**

BUSINESSWORKS Bundle



Includes General Ledger, A/P, A/R, and Inventory Control functions. Each can be used alone, or fully integrated via the System Manager **\$269.00**

ORCA Programming Environments



ORCA/M Assembler **\$39.00**
ORCA/C Compiler **80.00**
ORCA/Pascal system **80.00**

ATTENTION: CANADIAN RESIDENTS

All of these products, with the same great service, are available to you from **Dandam Software**. Avoid import-export delays.
Laser 128EX/2 w/2-year Canadian warranty **\$595 Can.**
with color monitor **\$995 Can.**
20 meg. Overdrive **\$595 Can.**
DataLink 2400 **\$269 Can.**
Dandam is an authorized AE dealer with a large selection of Apple II, Amiga & IBM software.

Call for Free Catalogue:
1-800-265-9576

8408 Wyandotte St., E. • Windsor, Ont. N8S 1T6
(519) 974-3011 • Fax (519) 974-6643

SOFTWARE

BUSINESS

- Alpha Check 32.00
- AppleWorks
3.0 170.00
- GS 199.00
- BeagleWrite 48.95
- GS 59.95
- Book Ends 74.95
- BW Bundle 269.00
- BW Payroll 109.00
- DB Mast. Pro 189.95
- Dot. & Sense 74.95
- Font Factory GS 24.95
- Graphic Writer III 84.95
- Labels, Labels 28.95
- MYM 4.0 89.95
- Point to Point 59.95
- Prgrm. Writer 29.95
- ProTerm 79.00
- Publish It! 3 74.95
- Quicken 38.00
- Report Card II 42.95
- Sens. Gram 52.95
- Sens. Spell 79.95
- TimeOut Series
DeskTools 29.95
- FileMaster 29.95
- PowerPack 29.95
- Thesaurus 29.95
- SideSprd 29.95
- MacroTls 16.95
- SprdTools 37.95
- Ultramcrs 37.95
- Rpt. Writer 45.95
- Graph 52.95
- SprFonts 39.95
- Telecomm 39.95
- QuickSpell 37.95
- WordPerfect
IIe 99.95
- GS 104.95

EDUCATION

- Call for free catalog
- Alge-Blaster 29.95
- Carmen
(World) GS 29.95
- (Time) 29.95
- (USA) 29.95
- (Europe) 29.95
- Designrs 24.95
- Math Blaster + 29.95
- (Europe) 29.95
- Math Rabbit 25.95
- Read. Rabbit 36.95
- Revolution 76 29.95
- Wrtr. Rabbitt 29.95

GRAPHICS

- Dazzle Draw 33.95
- Dsgn Your Own Home
Arch. GS 59.95
- Int. GS 59.95
- Ldscp. GS 59.95
- Train 35.95
- Libraries 21.95
- Draw Plus 64.95
- Grphcs. Exch. 35.95
- PaintWorks
Plus 32.95
- Gold 45.95
- Print Magic 25.95
- PrintShop 29.95
- GS 36.95
- Comp. 25.95
- Libraries 25.95

UTILITIES & LANGUAGES

- Bag of Tricks 29.95
- Copy II Plus 23.95
- CrossWorks 69.95
- Merlin 8/16 75.00
- Orca/M 39.00
- Orca/C 80.00
- Orca/Pascal 80.00
- TML Pascal II 84.00
- TML Basic 84.00
- Vitesse
Exorcizer 29.95
- Guardian 34.95
- Genesis 54.95
- Renaissance 34.95
- Salvation 34.95

GAMES

- Arkanoid II 24.95
- Battle Chess 34.95
- The Duel 24.95
- Hardball 27.95
- Hunt for R.O. 34.95
- HyperStudio 89.00
- Jck. Nick. Golf 34.95
- Mean 18 27.95
- Test Drive 27.95

Q LABS

RAMUP



Stop the floppy shuffle. RAMUP lets you load several applications on your ramcard at once. Third year as the top-selling ram disk utility. **\$39.95**

REPAIRWORKS



AppleWorks data repair and retrieval program. Reduces or eliminates the need to recreate your work. *inCider Magazine* Editors' Choice. **\$39.95**

EASYDRIVE



The complete hard-disk management system for the Apple II. Makes getting started quick and easy. A must for every hard-disk owner. **\$59.95**

SUPERPATCH



AppleWorks enhancements and modifications. Install over 150 patches on 2.0 and 2.1. Over 100 on 3.0. Installs and de-installs patches as you wish. **\$39.95**

POLICY: VISA, MasterCard, and Discover - no added surcharge.
C.O.D. certified - add \$3.95. If order is split, we pick up freight on balance of items.
Shipping UPS, Airborne, Federal Express and U.S. Mail. Saturday deliveries available.
Prices subject to change without notice.

PRICE MATCHING POLICY is at manager's discretion. All price matched sales are final.

RETURNS: Returns of defective items for replacement accepted within 30 days of ship date. Items returned for credit subject to a 15% restocking fee. Software is non-returnable after the original factory seal is broken. Call Quality Computers Customer Service for exceptions and details.

SCHOOLS: Schools are half of our business. We accept school P.O.'s by mail or by fax.

DEALERS: Call

USER GROUPS: Volume discounts on group purchases. Call us for details.

BUSINESS HOURS

Sales: (800) 443-6697 Mon.-Fri. 9 a.m. - 6 p.m. (Eastern)
Technical Support (313) 331-1115 Mon.-Fri. 10 a.m. - 5:30 p.m. (Eastern)
Customer Service: (313) 331-0700 Mon.-Fri. 9 a.m. - 5:00 p.m. (Eastern)



Circle 136 on Reader Service Card.

Quality Computers

POWER FOR PERFORMANCE

15102 Charlevoix • Grosse Pointe, MI 48230 • 313/331-0700
Orders & P.O.'s by FAX 313/331-0663

800-443-6697 or 800-966-1508

ZIMCO

INTERNATIONAL, INC.

85-39 213 Street, Queens Village, NY 11427

FREE SHIPPING ON ALL ORDERS*

VICE PRESIDENT/PUBLISHER **Paul Boule**
 EDITOR IN CHIEF **Dan Muse**
 MANAGING EDITOR **Eileen T. Terrill**
 SENIOR EDITOR **Paul Statt**
 SENIOR TECHNICAL EDITOR **William Kennedy, Ph.D.**
 REVIEW EDITOR **Lafe Low**
 COPY EDITOR **Joseph J. Fatten**
 EDITORIAL ASSISTANT/ **Janet Cote**
 SPECIAL-PRODUCTS COORDINATOR
 WEST COAST EDITOR **Jeff Cable**
 CONTRIBUTING EDITORS **Joe Abernathy,**
Cynthia E. Field, Eric Grevstad, Owen W. Linzmayer,
Scott Mace, Tom Sherman, Ruth K. Witkin
 FIELD EDITOR **Babs Cringely**

Computers:

Apple IIC+	\$520	ColorSwitch anlg.RGB adapter \$31	
Apple IIE	\$638	RamFactor OK	\$142
Apple IIGS	\$885	RamFactor 256K	\$178
All MAC's Available	Call!	RamFactor 512K	\$214
Laser 128	\$365	RamFactor 1 Mg.	\$285
Laser 128EX	\$423	RamFactor Expander Kit	\$21
Laser 128 EX2 w/ 5.25	\$425	RamFactor Expander 0 Mg.	\$142
Laser 128 EX2 w/ 3.5	\$475	RamFactor Expander 1 Mg.	\$285

Disk Drives

Apple or Mac or Unidisk 3.5	\$330	Plug-In options for Parallel Pro:	
Apple Hard Disk 20SC	\$692	Buffer Pro 32K	\$78
Apple Hard Disk 40SC	\$999	Buffer Pro 128K	\$114
Apple Drive Cont. Card	\$59	Buffer Pro 256K	\$149
Central Point 3.5" Drive	\$187	Serial Pro (ser. int. & clock)	\$99
Universal Controller Card	\$69	Timemaster II H.O.	\$71

Applied Engineering

5.25" Drive	\$115	Z-80 Plus	\$107
Drive Controller Card	\$25	16 Channel, 12 Bit A/D	\$199
Vulcan 20 Meg Hard	\$500	Signal Conditioner	\$56
Vulcan 40 Meg Hard	\$645	I/O 32 Card	\$64

Hardware

Genuine Apple	GS-Ram OK	\$85
Iic Mouse \$79	GS-Ram 256K	\$121
Ile Mouse \$119	GS-Ram 512K	\$157
Ile Enhancement kit	GS-Ram 1 Mg.	\$228
Ile Numeric Keypad	GS-Ram 1.5 Mg.	\$300
SCSI Card	GS-Ram Plus 0 Mg.	\$128
Super Serial Card	GS-Ram Plus 1 Mg.	\$271
Additional Hardware	GS-Ram Ultra OK	\$128
16K Ram Card (2+)	Ext. 80 Col. Card	\$29
Fan & Surge Prot	Phasor	\$121
Kensington System Saver	A/D + D/A Card	\$142
Koala Pad Plus	16 Channel, 12 Bit A/D	\$199
SMT Par. Printer	Signal Conditioner	\$56
Card/Cable \$59	I/O 32 Card	\$64
SMT Super Serial Card		
Thunder Scan \$179		
Street Elec. Cricket Iic		
Street Elec. Echo Iib		
Prograppier Iie/IIGS		
Pro-Grappier Ii+/Iic without buffer		
with buffer		
Serial Grapler Plus		

Joysticks from \$30

Kraft 3-button	\$30
----------------------	------

Modems

Apple Personal Modem	\$221
DataLink 2400	\$177
Hayes SmartModem 1200	\$221
Hayes SmartModem 2400	\$221

Monitors

Apple Color Comp.	\$310	GS-Ram Ultra 256K	\$467
Apple Monochrome	\$125	Ultra 512K	\$467
Apple RGB Analog GS	\$479	chip (Ii+)	\$17
Magnavox Amber/Green	\$125	5 1/4" 1/2 ht. floppy drive ..	\$107
Magnavox RGB 14"	\$269	Disk Controller Card	\$49
		(Ii, Ii+, Iie, and IIGS)	
		High Output Power Supply	\$56
		(Ii, Ii+, and Iie)	

Printers

Apple ImageWriter II	\$465	Accolade Test Drive	\$21
Epson LX-810	\$195	Addison-Wesley	\$23
FX-850	\$350	Baudville Award Maker +	\$23
LQ-510	\$337	Beagle Brothers	\$28
Panasonic KXP-1180	\$181	Timeout Desktools1 or 2	\$28
KXP-1191	\$219	Timeout Filemaster	\$28
KXP-1592	\$385	Timeout Graph	\$49
KXP-1524	\$535	Timeout Power Pkter	\$28
Star NX-1000	\$185	Timeout Program Writer	\$28
Star NX-1000 Rainbow	\$235	Timeout Quicksell	\$40

Ii+, Iie, IIGS

PC Transporter:	2 Meg Plus w/ 2 Mg.	\$250
PCT w/768K (640K IBM)	2 Meg Plus w/ 2 Mg.	\$429
PCT Installation Kit (IIGS)	R.G.B. Digital Prism Option	\$92
PCT Installation Kit Ii+, Iie	ColorLink RGB Option	\$92
PCT 80087-2 Math Co-proc.	Extended 80 Column Card	\$71
TransDrive:	TransWarp Accelerator	\$125
TD 360K Single-Drive		
TD 360K Dual-Drive		
IBM-style Keyboard w/ Cable	Z-Ram Ultra 3 w/ 0K	\$214
IBM-style Keyb'd Cable alone	Z-Ram Ultra 3 w/ 256K	\$250
Digital RGB Adapter	Z-Ram Ultra 3 w/ 512K	\$285

Chips, Drives, Etc.

Z-Ram Ultra 3 w/ 1 Mg.	\$357
Z-Ram Ultra 2 w/ 0K	\$157
Z-Ram Ultra 2 w/ 256K	\$192
Z-Ram Ultra 2 w/ 512K	\$228
Z-Ram Ultra 2 w/ 1 Mg.	\$350
Z-Ram Ultra 1 w/ 0K	\$99
Z-Ram Ultra 1 w/ 256K	\$149
Z-Ram Ultra 1 w/ 512K	\$199
65c816 16-Bit Chip (for Z-RU)	\$56
Z-80c	\$114
Ram Express 256K	\$178
Ram Express 512K	\$228
Ram Express 1 Mg.	\$300
DClock (Ram Ex. clock op.)	\$42

II +

Viewmaster 80	\$114
Pocket Rocket 16K RAM Card	\$71
TransWarp Accelerator (doubles as 16K card)	\$121
Macintosh	\$56
256K RAM Chips 150ns set/8 \$60	
256K RAM Chips 120 ns set/8 \$65	
1 Meg RAM Chips (Set of 8) \$157	
128K ZIP memory chips (for PC Transporter)	\$57
65C802 Chip (Ii+, Iie, and Iic) \$49	

Electronic Arts

Bard's Tale	\$28
Chessmaster 2100	\$34
Chuck Yeager's AFT	\$25
Demon's Winter	\$20
Hunt For Red October	\$25
Madden Football	\$31
Magic Candle	\$34
Mavis Beacon Teaches Typing	\$25

Epyx

California Games	\$24
Championship Wrestling	\$13
Death Sword	\$19
Destroyer	\$13
Print Magic	\$30
Street Sports Football	\$13
The Games: Summer or Winter	\$30
Funk Software	\$42
Sideways Pro Dos 2.0	\$42
Learning Company	\$32
Children's Writing/Publishing	\$36
Math Rabbit	\$21
Math Rabbit Early	\$24
Math Skills	\$27
Reader Rabbit	\$27
Think Quick	\$27
Writer Rabbit Early Writing	\$27

Microprose

Battle Tech	\$32
Crossbow	\$25
Rampage	\$21
Shogun	\$30
The Last Ninja	\$21
F-15 Strike Eagle	\$25
Pirates	\$29
Mindscape	\$24
Mastertype	\$30
Mastertype Bundle	\$24
Paperboy	\$24
Monogram	\$72
Dollars & Sense 128K	\$53
Sensible Software	\$24
Sensible Grammar	\$24
Siera On-Line	\$30
Gold Rush	\$24
King's Quest 1, 3 or 4	\$24
Leisure Suit Larry	\$21
Thxtr	\$18
Simon & Schuster	\$24
Star Trek: First Contact	\$24
Typing Tutor IV	\$36
Webster's Spelling Checker	\$36
Sir-Tech Software	\$30
Wizardry I	\$32
Wizardry V	\$32
Software Publishing	\$63
PFS: File/Report Bundle	\$63
PFS: Write w/Spellcheck	\$63
Springboard Software	\$28
Atlas Explorer	\$22
Certificate Maker	\$17
Certificate Lib	\$21
The Newsroom	\$21
Sublogic Corp.	\$95
Word Perfect	\$95

NO EXTRA CHARGE
MasterCard/VISA/Discover

Call 1-800-227-6647
Inquires, Tech Support & New York :
Call 1-718-479-7888

*Free shipping offer valid in continental US only. Add handling & insurance to all orders. We carry everything for your Apples, MAC's or IBM's. We cannot guarantee weather or prices; both tend to change. Call for current prices & sale flyer. Minimum restocking fee 20% for non-defective merchandise. (Incider/A+ 3/90)

DESIGN

ART DIRECTOR **Roger Goode**
 SENIOR DESIGNER/AD GRAPHICS **Dianne K. Ritson**
 PRODUCTION MANAGER/DESIGNER **Varvara Auer**

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) 328-3470

MARKETING SERVICES/PROMOTION

MARKETING MANAGER **Peg Brown**
 MARKETING ASSISTANT **Rita Rivard**

CORPORATE PRODUCTION

MANUFACTURING MANAGER **Sue Gross**
 TYPESETTING MANAGER **Lindy Palmisano**
 TYPOGRAPHER **Heidi N. Thomas**

IDG COMMUNICATIONS/PETERBOROUGH

PRESIDENT **Roger J. Murphy**
 EXECUTIVE VICE PRESIDENT/ **Stephen D. Twombly**
 PUBLISHING DIRECTOR
 VICE PRESIDENT **Dennis S. Christensen**
 MANUFACTURING/OPERATIONS
 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. Seaman**
 CUSTOMER SERVICE (800) 289-0619
 DIRECTOR OF CREDIT, SALES, AND COLLECTION **William M. Boyer**
 AUDITS AND STATISTICS **Cecile Giguere**
 FOUNDER **Wayne Green**

incider's BBS (bulletin-board system) on line 24 hours: (603) 924-9801

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 per one year, \$34.97 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), \$52.97 prepaid, U.S. funds drawn on U.S. bank, one year only. Postmaster: Send address changes to incider, Subscription Services, P.O. Box 58818, Boulder, CO 80392-8618. (Send Canadian changes of address to: incider, P.O. Box 1051, Fort Erie, Ontario L2A 5N8.)



Now That's Portable!



Wasn't it great when the IIC came out? A low cost, compact portable computer. Portable? Without a hard drive and a flat screen what's portable about it?

We set out to make the IIC and IIC+ a true portable. CDrive is the first step in making the IIC portable and more powerful. Simply replace your internal floppy drive with the

CDrive and you have a very fast, low power, light weight internal hard drive. With an optional kit turn your internal floppy drive into an external floppy drive. CDrive is compatible with ProDOS and DOS 3.3 so you can have all of your files instantly at your finger tips. Just leave your box of disks at home and take along your IIC. \$499



Ingenuity, Inc
Formerly Applied Ingenuity

CALL: 800-346-0811
In CA 818-960-1485
14922M Ramona Blvd
Baldwin Park, CA 91706

"It takes ingenuity to make quality affordable."

Circle 47 on Reader Service Card.

4 Steps to a Better Apple.



Step 1. Manage Your RAM.

How do you take the top-selling ramdisk utility and make it better? You tear it down and rebuild it. That's what we did with RAMUP. The new, improved RAMUP 4.3 is packed with impressive features like backup/restore, Tree Surgeon, autoload, partition, and more. RAMUP 4.3 gives you a work station of disks that automatically load to your ramcard. You flip from program to program like turning pages. No more floppy shuffle. Get RAMUP 4.3. Find out what speed and manageability are all about. **\$39.95**

Step 2. Tame Your Drive.

Setting up a hard-disk can be tedious, frustrating work. But, with new EasyDrive 1.7, you can tame your drive. EasyDrive is the easy-to-use, hard-disk manager that automatically installs itself onto

your hard-disk, then goes to work installing your favorite software. Upon installation, complete hard-disk management is at your finger tips with EasyDrive's launcher, file maintenance, image backup/restore, optimizer, and more. EasyDrive 1.7 also comes with an informative guide to ProDOS. Get control of your drive with EasyDrive. **\$69.95.**

Step 3. Save the Lost.

In a perfect world a program like RepairWorks wouldn't be necessary. Unfortunately the world isn't perfect. But, RepairWorks can soften the blow of cruel fate when it involves your damaged AppleWorks files. RepairWorks examines those damaged files and removes the offending problems, reducing or eliminating the need to recreate your work. If you can't afford to lose your data, you can't afford to be without RepairWorks. **\$39.95.**

Step 4. Do It Your Way.

There are few areas in life where you can do things your own way. Now, running AppleWorks is one of them. SuperPatch 6.1 will install and de-install over 100 interesting, useful, and compatible patches to AppleWorks making it run the way you want it to. SuperPatch includes: time/date display, error tone customization, cursor modifications, plus hundreds more! Have your way with SuperPatch. **\$39.95.**

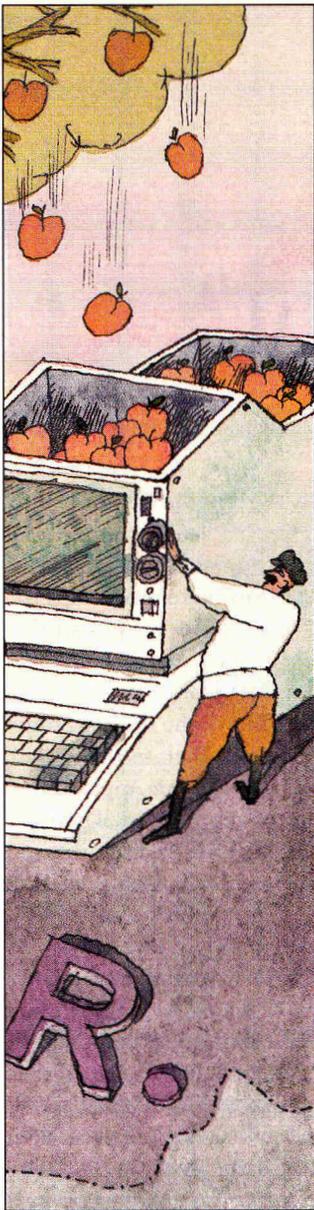
Q Labs products are available from:
Quality Computers, Roger Coats,
Silicon Express, Golem Computers,
Dandam Software,
or your favorite dealer.



DIVISION OF QUALITY COMPUTERS

1066 Maryland • Detroit, MI 48230
(313) 331-0941 • Tech. Support (313) 331-1115

Dealer inquiries welcome.



p. 38



p. 50

MAY

1990 • Vol. 8 No. 5

ARTICLES

38 Red Hot Apples

The Russians are coming! Designed in Bulgaria and assembled in a Soviet factory in Tashkent, an Apple IIe clone called the Pravetz is opening new channels of communication between East and West.

45 Desktop Video: Making Movies with Your Apple II Part 2

And the envelope, please... In this second installment of a two-part series, *inCider* shows you how to use the equipment described last month to its fullest and presents some basic guidelines for creating professional-looking video productions. Lights, camera...

50 Link Up with Telecommunications Software

From commercial database services to user-group bulletin boards to electronic mail sent across town or around the globe, the world of shared information depends on fast, efficient telecommunications software. *inCider* analyzes seven current Apple II programs, offering a number of standard functions that make life easier for today's on-line navigator.

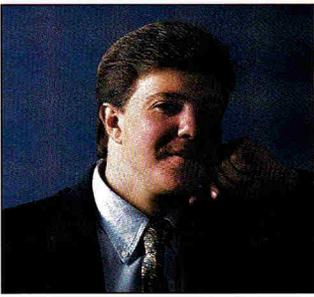
COLUMNS

<i>inCider's View</i> • Dan Muse	
What's the Deal?	8
AppleWorks in Action • Ruth Within	
Spreadsheet Shenanigans	60
Press Room • Cynthia E. Field	
Squaring Off	66
Applesoft Adviser • Dan Bishop	
Draw It in BASIC	72
Learning Curve • David D. Thornburg	
Motivating Forces	86

DEPARTMENTS

Letters to the Editor	12
What's New	
Hardware, Software, Apple Bits	14
Apple Clinic	
Modifying Paintworks: Paint the Town Gold, Initializing Disks, Hi-Res Graphics Dump . . .	20
Reviews	
TML Pascal & TML Source Code Library II, Small Business Accounting Series, Positively Rewarding, The Ugly Duckling, At a Glance . . .	24
Game Room	
Tunnels of Armageddon, Grand Prix Circuit, Orbzone	30
Hints & Techniques	
AppleWorks Power: ProDOS Conversion . . .	88
Editors' Choice	
On the Button: Scholastic Hyperscreen . . .	96

Status Report and Speaking of Graphics will return in June.



**INCIDER'S
VIEW**

WHAT'S THE DEAL?

By **DAN MUSE** * EDITOR IN CHIEF

**I'm not saying
don't trust your
Apple dealer, but
I'd hate to see you
rely on trust.**

DO YOU REMEMBER WHAT IT WAS LIKE to buy a car 20 years ago? I remember my father always bought Fords, and he always bought them from the same dealership. The amazing thing (of course I didn't realize it was amazing then) was that every time we went back, the same salesman was there.

Today you're lucky if the person who sold you the car is still there when you bring it back for its 5000-mile checkup. Buying a new car isn't fun anymore — because no matter how much faith you have in people, you have to be tough when you walk onto the showroom floor. You have to be willing to play on their level, because a car salesperson's job, to use the words of the philosopher Thomas Hobbes, is “nasty, brutish, and short.”

Now when I go into a dealership I'm prepared. My wife and I actually rehearse our roles — sort of a good-spouse/bad-spouse approach. Things have come to that.

I hate to compare car dealers with computer dealers, but I can't help it. The letters and phone calls I've received lately make me wonder whether dealing with Apple dealers is becoming as difficult as the automotive scene. If you sell computers, I'm not saying you're as loathsome as a reptilian car salesperson, but I wonder how knowledgeable and courteous you are. I also have to doubt your common sense.

I can handle the car salesperson, because once I sign the papers our relationship is over. But when you buy a computer, you have to rely on your dealer for upgrades, peripherals, software, and advice. Most people trust the salesperson to tell them how much memory they need, or whether or not they need a hard-disk drive. And you have to count on your dealership to provide the free upgrades Apple says it has to provide.

Recently a reader from Pennsylvania told us that several dealers refused to upgrade his GS to ROM version 01 because he bought the computer in Alabama. Another reader scolded us

for writing about the new version of GS/OS (System Disk 5.02); his dealer told him he didn't need it because it was only for “techie.” We've heard of dealers who refuse to copy the new GS system disk to a blank floppy—preferring to get the \$49.95 price for disk and manuals whenever possible. Stories such as these make you wonder if Floyd, the smiling Studebaker salesman, has gone high-tech.

I'm not saying don't trust your Apple dealer, but I'd hate to see you rely on trust. There are some excellent computer dealers out there and some smart, conscientious salespeople. (In fact, some of my closest friends sell computers—really.) It's just a matter of finding them.

If you're planning on buying a new computer soon, start visiting dealers now. Prepare some questions to test their knowledge. For example, ask them to describe the benefits of an accelerator versus extra memory for a RAM disk.

If you buy your Apple in one store and then move to another area, find out who the Apple dealers are right away. Any salesperson with business sense will welcome you to town — you're new business. Let him or her know that you may soon need a hard-disk drive, a printer, a modem, or some other peripheral. Also let the salespeople know that support after the purchase is important to you.

As far as upgrades go, we'll keep you posted on what dealers have to provide for no or a nominal fee. (See “Get What You Paid For,” September 1989, p. 64.) If you have problems with a dealer, let us know. We can't promise immediate results; if a certain issue seems endemic among all Apple dealers, however, or if certain dealers prove to be especially uncooperative, we'll try to get some results for you.

We don't want you to be cynical (that's what journalists are for) and distrust every computer salesperson in the world. But, just as in buying a car, it pays to do your homework. Apple takes a lot of pride in its dealer network. So if your dealer doesn't deliver, be a squeaky wheel. □



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.

AE
Applied Engineering®
The Apple enhancement experts.

A Division of AE Research Corporation

(214) 241-6060

P. O. Box 5100
 Carrollton, TX 75011

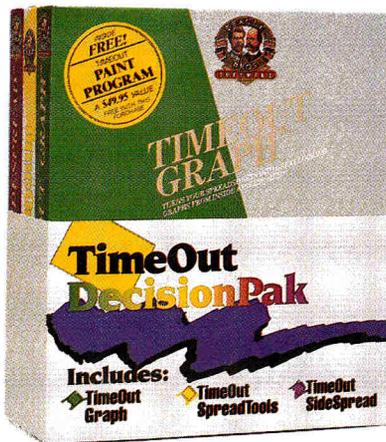


©1990. AE Research, Inc. All rights reserved. Prices subject to change without notice. Brand and product names are registered trademarks of their respective holders

Make AppleWorks

TimeOut™ programs have been supercharging AppleWorks® for three years—with over 250,000 copies sold. Now, Beagle Bros, the developer of AppleWorks v3.0, announces TimeOut Paks—sets of three TimeOut programs bundled at great prices.

All of the TimeOut programs have been updated for use with AppleWorks v3.0 (and they are still compatible with v2.0 and 2.1). An Apple IIe, IIc, IIc+ or IIGS with either a 5.25 or 3.5 inch disk drive is all you need to use TimeOut.



Graph, SpreadTools and SideSpread for only \$149.95—save \$49.90!

DecisionPak

TimeOut Graph gives you the whole picture. You'll be surprised how fast and easy graphs are to make. Just choose the graph type and it appears instantly—all ready to print—with titles, legends, borders, and more.

Graph creates nine graph types, including Bar, Line, Pie, XY, Area, and Hi-Lo, prints your finished graphs in three different sizes, and works with all popular dot-matrix printers. Includes a full-featured paint program, *free*. Regularly \$89.95

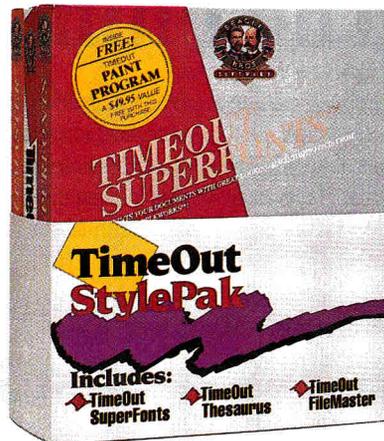
TimeOut SpreadTools adds muscle to AppleWorks' spreadsheet.

Analyzer - Check your spreadsheets for common errors. *CellLink* - Link cells together from up to eleven different spreadsheets at once! *Block Copy* - Copy blocks without adding new columns or rows to your spreadsheet!

Plus *Quick Columns*, *Data Converter*, *Rows <-> Cols*, and *Formula to Value*. Get spreadsheet power! Regularly \$59.95

TimeOut SideSpread prints your spreadsheet files sideways! SideSpread prints in two different fonts in a range of sizes. Adjust the size to make your spreadsheet fit the paper.

Best of all, you never have to leave AppleWorks. Just print the way you always do. SideSpread prints in draft, standard and high quality on all popular dot matrix printers. Regularly \$49.95



SuperFonts, Thesaurus and FileMaster for only \$129.95—save \$39.90!

StylePak

TimeOut SuperFonts prints out your AppleWorks files in fancy fonts and graphics. See your documents in eye-catching, proportionally spaced characters that print in a variety of styles. You can even mix graphics with your text.

SuperFonts supports all popular dot matrix printers, includes 47 fonts and a full-featured paint program *free*! Regularly \$69.95

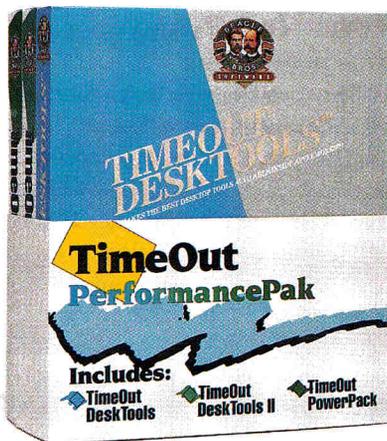
Three Times Better.

TimeOut Thesaurus gives you words with similar meanings—synonyms—for any word in your word processor document. The new word you choose automatically replaces the first one.

Thesaurus contains more than 45,000 synonyms! And it's fast—a growing list of synonyms appears on the screen instantly. Thesaurus is truly amazing, incredible, fantastic, wonderful, terrific... Regularly \$49.95

TimeOut FileMaster gives you the tools you need to do the right thing: regularly back up your files and disks. With these file management tools right inside AppleWorks, doing the right thing is a lot easier—and faster!

Copy both files and disks. Other features include Format, Compare, Rename, Lock/Unlock and more. Regularly \$49.95



DeskTools, DeskTools II and PowerPack for only \$109.95—save \$39.90!

PerformancePak

TimeOut DeskTools adds thirteen time-saving conveniences to AppleWorks:

Calculator - Includes an electronic tape you can edit and print. *Calendar* - Easily keep track of your appointments. *File Encrypter* - Protect important files!

Plus *Data Converter, Note Pad, Envelope Addresser, Dialer, Word Count, Clock, Puzzle* and more. Regularly \$49.95

TimeOut DeskTools II is another collection of accessories our customers demanded!

Calculator+ - A powerful scientific and financial calculator. *Directree* - Find and load any file without typing a thing! *File Search* - Find data anywhere—in any file on the disk! *Print Manager* - Send codes to your printer!

Plus *Disk Tester, Stop Watches, Clipboard Viewer, Screen Out* and more. Ten powerful applications—a fantastic deal! Regularly \$49.95

TimeOut PowerPack earned the Editor's Choice Award in the August 1988 issue of InCider Magazine.

Triple Desktop - 36 desktop files at once! *Triple Clipboard* - Three clipboards, too! *Program Selector* - Leave Appleworks and come back fast! *ASCII Values* - Convert ASCII, decimal, hex and binary. *Help Screens* - Create customized AppleWorks help screens. *File Librarian* - Organize your disks with the AppleWorks database.

Plus *Desktop Sorter, Category Search, Line Sorter* and more. Ten in all. Regularly \$49.95

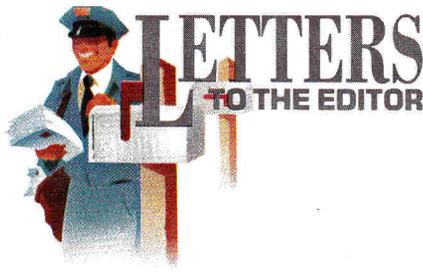
Go to your local dealer and buy TimeOut Paks today!

To order directly from Beagle Bros, Call (800) 345-1750. In California call (800) 992-4022.



UNLEASH THE POWER®

Circle 179 on Reader Service Card.



EASY MAC/II SWITCH

I'd like to add a few examples to Owen Linzmayer's article about sharing Apple II and Macintosh technology ("The II/Mac Connection: Bit by Bit," January 1990, p. 64). My Apple IIGs and Mac SE sit on adjacent desks and share peripherals via switch boxes. The first box connects the two computers to an ImageWriter II printer; a flip of the switch directs printing from one computer to another.

In the article, Linzmayer mentions SyQuest 44-megabyte removable drives and their use in the Mac community. My second switch box connects a SyQuest drive to the Mac (which has a built-in SCSI port) and to the GS (with an Apple SCSI card, revision C). When I need to use the GS, I remove the Mac cartridge, insert the GS cartridge, and boot into GS/OS in a flash. On the disk I have HyperStudio, AppleWorks Classic and GS, The Print Shop GS, and so on, which all work fine. It's unfortunate that both computers can't use the drive simultaneously without networking software, but with the cost savings of my setup, I'll survive.

Preparing the cartridge for use with the GS was easy, though time-consuming. It comes Mac-formatted from the manufacturer, so it must be reformatted and partitioned for ProDOS. I followed the directions that came with the utilities Disk Timer and SCSI Hacker by Joe Jaworski (available on line and from So What Software, 10221 Slater Avenue, Suite 103, Fountain Valley, CA 92708) to put a low-level format on the disk, then used Advanced Disk Utilities and Hard Disk Partition from GS/OS to partition and put a high-level format on the disk.

A little-known fact is that the two systems

can share graphics. For example, I've transferred images used in my HyperCard stacks to the GS for use in HyperStudio, effectively developing my stacks on both machines. Apple users who want detailed directions on exactly how to transfer graphics between the GS and the Mac can download my instructions posted on the GENie BBS. The filename is MACGS.TRANS.BXY for the Apple II (file number 9282 in the ProDOS.16/Graphics library; unpack with ShrinkIt 2.1) or GRAFX.XFER.SIT for the Mac (file number 15771 in the MacPaint library; unpack with StuffIt).

The directions list all software needed; all files are present on GENie. The Mac version also includes the FileType Changer program mentioned in the directions. Users without access to GENie can contact me and I'll send a hardcopy version of the directions for \$1.

Bob L. Allen
Eat-a-Bug Software
22916 Via Pimiento
Mission Viejo, CA 92691

NOT A VULCAN FAN

Your review of the Vulcan hard drive (January 1990, p. 30) hit the mark in all aspects but one. The Vulcan comes with a cooling fan that is so cheaply constructed that its noise quickly becomes not only distracting but irritating. Calls to Applied Engineering brought the response, "We know it's a problem; loosen the fan screws to see if that helps."

Two friends who bought Applied Ingenuity's internal hard drive have had no problems with fan noise. The reason is obvious. AI installed a well-built fan, while the Vulcan's is cheap plastic. The Vulcan is

more expensive; it seems that AE was penny wise and pound foolish in not maintaining a high standard for all its equipment parts. At this point I'm trying to find out who supplies AI fans to see if I can put one in my Vulcan and never mind the warranty.

Elias Drobotij
Box 6102 c/o Aramco
Dhahran 31311, Saudi Arabia

Look for a head-to-head comparative review of the Vulcan and the Inner Drive in an upcoming issue.
—eds.

NEVER TOO OLD

Thank you for your insightful editorial, "Journalist, Teach Thyself" (January 1990, p. 8). After months of waiting for a Laser 128EX/2 with 3.5-inch drive, despair drove me to consider IBM compatibles with cheap hard-disk drives. Your magazine snatched me from the flames once again.

Old technology? Yes. Antiquated functionality? No; the Apple II is perfect for my limited office work and educational help for my kids. (It's fun, too!) Advertising hype and mass prejudice do not a good report make.

George Hutto
505 South Main Street
Madrid, IA 50156

BRING ON THE BRIDGE

Please make "The II/Mac Connection" (January 1990, p. 64) a permanent feature of *inCider*. Like many of my colleagues here at the University of Southwestern Louisiana, I use an Apple II at ►

home and a Mac at the office (simply because I need its foreign-language and formatting capabilities). I think the time for a bridge machine has come; we applaud *inCider's* efforts to show Apple the way.

Carl A. Brasseaux
Humanities Department
University of Southwestern Louisiana
Lafayette, LA 70501

MEETING THE CHALLENGE

I've read your magazine for almost a year and have been impressed with its content. My daughter Melissa and I are Apple IIe users. Melissa is physically handicapped and uses a single-switch system to access her Apple, along with a scanning-technique/adaptive-firmware card and compatible software. It would be great if you could publish information on how the handicapped can use software with the adaptive aids available to them.

Perhaps when you review software you can also tell your readers whether the program can be used by the handicapped and what adaptive aids it requires.

Vicki Pepper
8 Colwell Circle
Litchfield, NH 03051

Look for an article on special-needs products in our September 1990 issue. In addition, see "Partners in Special Achievement," April 1989, p. 54, for a discussion of adaptive hardware and software. —eds.

UPDATE

In "Make the ADB Connection" (February 1990) we state on p. 52 that "even Applied Engineering's PC Transporter — a plug-in board that lets your Apple II run MS-DOS programs — requires a custom input-device driver to take advantage of the IBM features of these ADB keyboards. Applied Engineering reports that it currently has no plans to write such a driver."

According to Tom Milks at Applied Engineering, the company does indeed now have a new version of the PC Transporter system software that will support the features of the extended keyboards available from Apple and the other manufacturers mentioned in the article.

CORRECTIONS

In column 3, p. 70, of January 1990's *AppleWorks in Action* ("One for the Money"), the second paragraph should begin, "Now type RM and press Return. Type .3 [not 3] and hit Return again."

The program listing for "Decision Maker" (January 1990, p. 112) contains a minor error; to print the string, line 550 should include quotation marks after the word *criteria*. In the program

"Domino Puzzle" (February 1990, p. 92), line 180 should state as follows:

```
180 N=INT(RND(1)*9+1):M(X,Y,2)
=N:IF X<NX THEN M(X+1,Y,4)=N
```

Compu-Teach's phone number is incorrect as it appears on p. 94 of the March 1990 Reviews section. The correct number is (203) 777-7738.

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.

The Sensational Lasers

Apple IIe/IIc Compatible

SALE **\$375** 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 packages! Take advantage of this exceptional value today..... **\$375**

Super High Speed Option!
only \$425

The LASER 128EX has all the features of the LASER 128, plus a triple speed processor and memory expansion to 1MB \$425.00

The LASER 128EX/2 has all the features of the LASER 128EX, plus MIDI, Clock and Daisy Chain Drive Controller \$465.00

DISK DRIVES

- 5.25 LASER/Apple 11c \$ 99.00
- 5.25 Apple 11e \$ 99.00
- 3.50 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 \$645.00

THE SUPERSTAR a LASER 128 Computer with 14" RGB Color Monitor and the LASER 145E Printer \$825.00

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
- 1200/2400 Baud Modem Auto \$149.00

U.S.A. 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

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.

WHAT'S NEW



edited by Paul Statt

BLOW UP

"First of all," assures the *Apple IIc Owner's Manual*, "computer blow-ups and smoke-outs are a thing of a past."

Young Kevin Butts of Atlanta, Georgia, disagrees. According to his attorney, Gilbert Deitch, Butts "is 100 percent certain that he did nothing unusual" to his Apple IIc—he was running a BASIC "Hello" program—when the Apple-brand color monitor "exploded and/or imploded" in his face. Butts filed suit in Fulton County Superior Court for damages against Apple and Hitachi, the manufacturer of the monitor, in January.

Yolanda Davis, coordinator for public affairs at Apple, says that "Apple considers the case without merit. Based on the opinions of our experts who have looked into the case, we believe that some external force must have caused the problem." Deitch, on the other hand, says he suspects a "stress fracture in the picture tube."

Jim Nystrom, another attorney for Butts, notes that Apple's statement in the IIc manual at least implies that blow-ups are a possibility, and that "implosion-protection devices are installed on TVs and computer monitors, according to our research; implosion

is recognized as a problem by the industry."

Attorney Deitch says that Apple has "strict liability": "If a product is defective, it isn't necessary to prove negligence" in court. He claims that Apple may not have been aware of the problem, but is still responsible.

Deitch admits that "there have been no other reported cases of this sort of thing." No exploding monitor has ever been reported to *inCider*. But "statistics don't prove anything," says Deitch. "If it's happened to others, it would certainly give credibility to our case." If it's happened to you, you can contact Gilbert H. Deitch at Bauer, Deitch, and Raines PC, 6111 Peachtree-Dunwoody Road, Atlanta, GA 30328, (408) 974-5193. —P.S.

CHEAP PAINT

—AND EVEN CHEAPER

If your meager artistic abilities—or your pocketbook—just can't justify dropping 50 bucks on a GS paint program that may not work on the next version of the machine anyway, consider **Cheap Paint**, from the Public Domain Exchange, for half that price.

Despite the low price tag, Earl Gehr's super-hi-res program includes almost all features the higher-priced programs have. Basic drawing tools are available in a number of sizes and shapes; tools for drawing lines, circles, rectangles, arcs, and patterns are all here. You can fill or draw with any of 16 colors or 16 patterns you create.



SOFTWARE

The color-cycling feature simulates animation; you can enlarge any part of a screen for detail work, too. You can even work on two screens at once. We could say more, but why not try it yourself? Cheap Paint is available from PDE for \$9 plus \$4 shipping. If you like it and want to keep it, send a \$10 shareware payment to Earl Gehr.

If you're really just a doodler, try **Desk Top Painter**, a

public-domain new desk accessory (NDA) for the Apple II GS, also by Earl Gehr.

It doesn't have all the features of Cheap Paint, but it's still cheaper and accessible at lightning speed from any other application.

Desk Top Painter costs \$9 plus \$4 shipping, from PDE, 2078C Walsh Avenue, Santa Clara, CA 95050, (408) 496-0624, or dial (800) 331-8125 with your order. For more information, circle number 352 on the Reader Service card.

—P.S.

GS INVASION

МОЩНЫЙ И МНОГОКРАСОЧНЫЙ

Как на экране, так и в жизни...
 А если вы хотите увидеть...
 Система Apple II GS...
 Apple II GS...
 Для 10 лет...
 модель Apple II GS

Apple promised last year to advertise the GS, and so it did. In the April and May issues of *MIR PC*, the Soviet Union's biggest computer magazine, we noted a two-page color spread touting the advantages of the IIGS. The ad is in Russian; the program on screen is in French. Translations are welcome. ("Powerful but multi-colored" is our best attempt at the ad—anybody have a better one?)

あまのこがた
 本がた
 ДЁЖЗНИК
 ホ

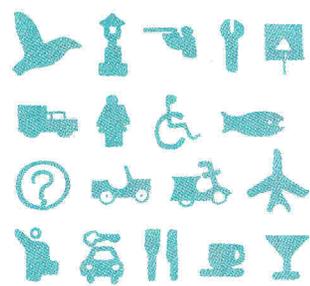
FOREIGN FONTS



SOFTWARE

Apple II users who want to produce text in foreign languages that use non-Roman characters can try **Fontrix 1.55** for quick and easy multilingual typesetting.

Fontrix 1.55 addresses many of the problems inherent in Apple II typesetting. It lets you place special punctuation and diacritical marks over characters as needed, thanks to a special overlay mode, for instance. The program also lets you mix an unlimited number of fonts on a single printed page, a feature sure to appeal to language teachers. Most importantly, the Fontrix 1.55 package includes a number of



standard fonts; in addition, its Font Editor program lets you draw your own if you need to.

Fontrix 1.55 also incorporates a number of drawing and painting features for graphics creation. It works with almost any printer (it supports 120 models) and sells for \$95, from Data Transforms, 616 Washington Street, Denver, CO 80203, (303) 832-1501. For more information, circle number 351 on the Reader Service card. —P.S.

HOW FAST IS THE VULCAN?



HARDWARE

Many readers have asked, "How fast is Applied Engineering's Vulcan internal hard-disk drive?" (See *inCider's* review in January 1990, p. 30.)

The speed at which any hard-disk drive runs depends on three aspects of your system.

First, the size of your Vulcan makes an important difference: The 100-megabyte model uses a higher-quality seeking mechanism than the smaller-capacity units, which means that the 100-megabyte drive can access files faster.

Second, the Apple IIgs operates faster than an Apple IIe or II Plus; a Vulcan in a GS runs faster than one in a II Plus.

Zip Chip and TransWarp accelerators help you achieve top speed; the Rocket Chip, used in a IIe, makes it possible to "cache" the data on your Vulcan, resulting in even faster performance.

(Be sure to back up frequently if you cache your hard drive; a power failure could lose information you may think is on your hard disk, but is only cached.)

The Apple IIgs operating system GS/OS offers an additional advantage: its ability to use a custom device driver such as the one Applied Engineering supplies for the Vulcan. It results in faster performance.

Finally, the speed of any hard-disk drive depends on the way you use your drive: If you have a large number of files in a single directory on your desktop, it's simply going to take GS/OS a while to display

them all. After you've used a hard drive for a time, its memory will become fragmented; that is, not every part of a given file will be physically near all the other parts of the file on the disk.

You can remedy a fragmented hard drive with the help of a special utility program; ProSel 16 (Glen Bredon, 521 State Road, Princeton, NJ 08540) and EasyDrive (Quality Computers, 15102 Charlevoix, Grosse Pointe, MI 48230, 313-331-0700), for example, both offer defragmenters.

My January review was of the 100-megabyte Vulcan on an original Apple IIgs (ROM 01) with a TransWarp GS accelerator and 1.75 megabytes of RAM (random-access memory). I used 32K of that memory as a cache.

I filled approximately 75 megabytes of the Vulcan hard disk: Using subdirectories, I organized more than 4000 files in a tree structure several levels deep. I loaded most of these files at one time; thus, they were probably not badly fragmented.

But that caveat aside, I found that the 100-megabyte Vulcan had an average access time of 30 milliseconds; with a TransWarp GS installed, the average access time was 15 milliseconds.

A 30-millisecond access means that the Finder loads in about 15 seconds and AppleWorks GS in about 10 seconds—which makes the 100-megabyte Vulcan hard drive almost as fast as loading programs from RAM or ROM (read-only memory).

—Joe Abernathy



APPLE BITS

■ The Computer Musician Coalition (3010 North Sterling Avenue, Peoria, IL 61604, 309-685-4843) is looking for a thousand new members in its Campaign for Advancement. Join now at the special low

fee of \$100 and you'll never pay more than \$100 a year in dues. You get a button, a t-shirt and \$75 off any purchase from the *CMC Computer Musician's Source Book*. Sounds great, but will it play . . . ?

Quality Software at Affordable Prices



APPLE IIGS 3 1/2" DISKS

Graphics/Graphic Utilities

- GS63** Cheap Paint—full-featured color painting program (768K REQ.) (SHAREWARE) . . \$9
- GS88** Viewer: View super hi res graphics quickly and easily \$9
- GS133,134,135** 60 color pics: King Tut, Earthshine, Seascape, BlastOff (3 DISKS) \$27
- GS136,GS137** Adults-only slide show of 44 beautiful ladies (2 DISK SET) \$18
- GS138** Anishow—view animated files. Includes 5 animation shows \$9
- GS141,142,143** Illusion, Mindscape, + 75 graphics, w/display utility (3 DISKS) \$27
- GS144** Nucleus: stunning animated display of graphics and sounds \$9
- NEW GS154** Treasures In The Sand—adults-only, 24 poses \$9

Print Shop™ Holiday Graphics

- GS61,62** 200+ holiday color & b/w graphics & borders for Print Shop™ (2 DISK SET) \$18
- GS30** Color pictures for Print Shop™ plus customize your startup screens \$9

Education

- GS147** Tonight's Sky: find your lucky star & learn about astronomy \$9

Desk Accessories

- NEW GS131,GS132** 84 fonts like San Francisco, Manhattan, symbols, pictures, special characters (2 DISK SET) \$18
- NEW GS152** Find.It NDA file finder, Key Caps, plus 41 DAs, (WORKS WITH SYSTEM 502) \$9

Games

- GS27** Bounce-It!: IIGS adaptation of the Little BrickOut™ game (SHAREWARE) \$9
- GS36,GS37** Play the treacherous fairways of 12 courses (REQ. MEAN 16™) (2 DISK SET) . . \$18
- GS58** F1 Race: Formula one racing game (SHAREWARE), Mastermind ★ *Best Seller* \$9
- GS86** Wheel: Vanna's game is now on the IIGS! ★ *Best Seller* \$9
- GS104** Lotto,GS lottery number generator, Poker \$9
- GS106** Play Quodomino arcade game & Colossal Caves adventure game \$9
- GS117** Flight Simulator, Galaxy, Pinball, plus more games \$9
- GS149** Senseless Violence: the best new arcade games, *Inclider Editor's Choice* (NEED SYSTEM 502 OR NEWER) \$9
- GS150** Romulan.GS: 18 games, Worm, Shooting Gallery, plus more! \$9
- GS151** Orbizone—like Asteroid™. + Othello, (REQ. SYSTEM 502) *Editor's Choice* . . . \$9

Music

- GS64,94** Sit back and enjoy 28 slide shows with Rock 'N Roll tunes (2 DISK SET) \$18

Utilities

- GS146** Photonix: fast disk copying utility & anti-virus, verify, format \$9
- GS124** Font.Edit.8 & Font.Doctor: create custom fonts, change existing ones \$9
- GS126** Utility Works Launcher: bypass the Finder and directly launch any application (SHAREWARE) \$9

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

ANY 10 DISKS FOR ONLY \$59.95

APPLE II 5 1/4" DISKS

Business

- 846,847,850** Appleworks™ templates: 32 spreadsheets & dbases for home/biz/sports (3 DISK SET) . . \$15

Communications

- 903** Eve Terminal: powerful yet simple, w/one-letter commands & instructions on disk \$5

Education

- 863** Aircraft almanac w/full-color hi res graphics . \$5
- 887,888,889** Spanish story, or write your own, with dictionary (3 DISK SET) \$15
- 890** Talking Calculator—four functions \$5
- 892** JoyPaint: fully-functional paint program. Uses joystick (or Koala Pad). Paints in 8 colors, etc. (28K REQ.) \$5
- 894** Tonight's Sky Astronomy for the star gazer . \$5

Games

- 813** Pinball games: Flip-It, Super Blast, Max's Madness, more \$5
- 814** Monopoly: Apple II version of the popular board game ★ *Best Seller* \$5
- 874** Make your own Word Search puzzle, prints puzzle and answers \$5

Graphics

- NEW 921,922,923** Stunning hi-res graphics converted from the IIGS: Old TV shows: Star Trek, Bugs Bunny, plus planets, Space Shuttle, more (3 DISK SET) . . \$15
- NEW 924,925,926** More great hi-res graphics converted from the IIGS: Garfield, Sesame Street, nature scenes, more (3 DISK SET) \$15

Passion

- 190,800** X-Rated graphics and games for adults only (2 DISK SET) \$10

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 _____ 2078-C Walsh Ave., #781

Address _____ Santa Clara, CA 95050

City _____ State _____ Zip _____ DEALER INQUIRIES INVITED

TO ORDER: 800-331-8125 In CA 408-496-0624

WHAT'S NEW

WHERE WERE WE?



SOFTWARE

As a part of its long-term campaign to improve the geographic knowledge of Americans, who lag behind their peers in international surveys, the National Geographic Society has joined Apple Computer, Lucasfilm, and the California State Department of Education in an innovative new project: production of a computer and videodisc program for social-studies instruction in grades 5-12. It's called **GTV: A Geographic Perspective on American History**, and it's the National Geographic Society's first venture into interactive multimedia—combining video and computer technologies to give the user complete control over visual, auditory, and text information.

A Geographic Perspective on American History, the introductory unit, combines the introductory unit, combines images from *National Geographic* magazine with custom Apple IIGS software in an overview of American history. The videodisc holds two hours of moving pictures, divided into 40 segments. The advantage of multimedia over videotape is that the students or teacher can rearrange the pictures as they choose, creating a lesson or researching a topic.

In addition to the motion pictures, the video material includes 1600 still images and 200 maps. Using the accompanying GS software,

a teacher or student can use a detailed index of captions to search for a particular image.

"GTV is designed to engage and entertain, as well as to educate," says George Peterson, director of educational media at the Society. "The material tells the story of American history in ways that capture the imagination of even the most jaded or 'tuned-out' students." The biggest turn-on for tuned-out kids will probably be the "Map Rap," a hip-hopping history of the acquisition of United States territory.

You can see GTV at the California Computer Using Educators Conference in Palm Springs, California (May 11-12), or at the National Educational Computing Conference in Nashville, Tennessee (June 25-27).

GTV requires an Apple IIGS, two 3 1/2-inch drives, and a videodisc player (Pioneer LD-V2000, LD-V4200, LD-V6000, or LD-V6000A, or any Sony model LDP-1000 and up). Including two videodiscs, two disks of software, a cable to connect computer and videodisc player, a teacher's guide, a quick-reference guide, and library catalog cards, the package costs \$650.

For more information, write to Sherrie Smith, Educational Services, National Geographic Society, Washington, DC 20036, or circle number 353 on the Reader Service card. Orders only, call (800) 368-2728.

SPECIAL!

Any 6 disks
plus Directory
1 Yr. Membership
(files disks may be included)

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

- 1. Choice of Apple II or IIGS directory
- 2. Quarterly magazine
- 3. Special discounts!

P.D.E.

MASTERS OF DB MASTER



Programmers and developers who use DB Master Professional now have two more relational-database management tools to work with. Stone Edge Technologies has introduced the *DB Master BASIC Programmer's Pak* and the *DB Master Developer's Pak*. "DB Master brought the power of a database manager to Apple II users," notes Barney Stone, president of Stone Edge and developer of DB Master. "These programs open the DB Master system to programmers, developers, and consultants who wish to develop and market their own custom programs."

SOFTWARE

The *BASIC Programmer's Pak* lets you use simple BASIC commands to find, edit, and delete files. The program can work on more than one DB Master file at a time; it also interacts with ProDOS 8 text files.

The *Developer's Pak* provides custom menu screens, functions, and automated operations. It also includes a run-time version of DB Master Professional, which can automatically import and export data between files and handle bookkeeping.

Stone Edge first shipped DB Master in November 1980. DB Master Professional made its debut in 1987. It's the only relational database-management system for the Apple II.

The *Developer's Pak* costs \$295, which includes a license for the run-time program. The *BASIC Programmer's Pak* is priced at \$129. Distribution licenses are available from Stone Edge Technologies, P.O. Box 3200, Maple Glen, PA 19002, (215) 641-1825. For more information, circle number 350 on the Reader Service card. —J.F.

COLOR LASER



Laser 128 Color System—the right computer at the right price. System includes Laser 128 computer with 128K of RAM, built-in disk drive, serial port (Ile/c compatible), 14-inch color monitor, Copy II Plus, and other software—all for \$699. Still too expensive? Monochrome system is \$599, from Laser Computer, 800 North Church St., Lake Zurich, IL 60047, (708) 540-8086.



Seatbelts Suggested

Buckle your seatbelts for TransWarp III. More than eight times as fast as the IIe's native speed, with upgradeability to more than twelve times as fast! Frankly, we're obsessed with keeping your Apple II going at maximum speed and TransWarp III for the Apple IIe, II+ and II is the latest result.

TransWarp III is the fastest, most compatible and ONLY upgradeable accelerator on the market. At either 8 MHz or 12 MHz, TransWarp III gives you more speed and compatibility than any accelerator ever designed. Get an 8 MHz model now and upgrade (when available) to 12 MHz by merely switching out a couple of chips. And for II and II+ owners, the card can be upgraded to emulate a 16K card and work in slot 0.

Full DMA (Direct Memory Access) compatibility means you'll never have problems with DMA peripherals like the Corvus Hard Disk and the Ohio Cache Card. And to make everyone in the family happy, we made sure TransWarp III is compatible with all joysticks and sound programs.

Get up and running in no time flat, because unlike older designs, you never need special configuration or pre-boot disks. The built-in Control Panel lets you easily control the warp speed and set slot configurations. TransWarp III works in any slot and comes complete with built-in diagnostics to insure a healthy, fast-running system.

Buckle up and take her to warp speed with TransWarp III!



Transwarp III (8MHz).....\$199

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



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



EXTRA EX...

Read All About It! (But the savings

APPLIED ENGINEERING

- Timemaster HO \$67
- Z-RAM Ultra 2, 256K \$189
- GS-RAM Ultra, 256K \$159
- GS-RAM Ultra, 1 Meg \$234
- GS-RAM PLUS, 1 Meg \$239 (limited quantity)
- RamWorks Basic, 256K \$119
- RamWorks III, 256K \$135
- RamWorks Expander 256K \$103
- 512K \$129
- 1 Meg \$174
- 2 Meg \$274
- Color Link RGB Option \$94
- Ram Factor, 256K \$169
- Ramcharger \$129
- 16K Ram Card \$74
- Viewmaster 80 \$119
- Phasor (II+, //e Stereo Card) \$124
- DataLink 2400 (Internal Modem) \$174
- DataLink Express \$181
- GS RamKeeper (GS Battery B/U) \$139
- Slot Mover Option for RamKeeper \$31
- Ram Express, 256K (//c+) \$186
- Ram Express Clock Option \$44
- Sonic Blaster (GS Stereo Card) \$94
- Audio Animator (GS MIDI Interface) \$174
- Parallel Pro (Parallel Card w/Cable) \$74



APPLIED ENGINEERING

- Buffer Pro, 32K (for Parallel Pro) \$81
- Transwarp GS (GS Accelerator) \$285
- PC Transporter (640/768K) \$359
- PC Transporter GS installation kit \$37
- PC Transporter //e installation kit \$29
- 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 \$1299 (specify computer)
- ReadyLink Terminal Software \$59
- Conserver (GS Surge Protector & Fan) \$77
- Fastmath (Math co-processor) \$129
- Serial Pro (Serial Card w/Clock) \$101
- Power Supply (//+, //e) \$58
- Ext. 80 col card (//e) \$54



LASER

- Laser 128 Computer \$349
- Laser 128EX Computer \$389
- Laser 128EX/2 Computer (5.25 Drive) \$429
- Laser 128EX/2 Computer (3.5 Drive) \$469
- Laser 190 A Printer \$189



BEAGLE BROS

- TIMEOUT SERIES:**
- Macro Tools \$81
 - Macro Tools II \$16
 - Desktools \$29
 - Desktools II \$29
 - Filemaster \$29
 - GS Font Editor \$29
 - Power Pack \$29
 - Program Writer \$29
 - SideSpread \$29
 - Thesaurus \$29
 - Ultra Macros \$29
 - Spread Tools \$34
 - Quicksell \$39
 - Superfonts \$39
 - Telecomm \$39
 - Beagle Compiler \$41
 - Report Writer \$44
 - BeagleWrite (//e, c) \$44
 - Graph \$49
 - BeagleWrite GS \$57

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

GLEN BREDON

- Prosel 8 \$37
- Prosel 16 \$54

RENAISSANCE by Vitesse

The 2nd in a series of awesome utilities for your GS. Optimize your hard drive for maximum speed and performance.

List \$49.95
NOW \$29

Matt

HOT GAMES

- ACCOLADE \$27
 - Test Drive II (GS)
 - Grand Prix Circuit (GS)
- CALIFORNIA DREAMS \$25
 - Tunnels of Armageddon
- MEDIAGENIC \$31
 - Battlechess
- MICRO REVELATIONS \$29
 - Xenocide (GS)
- PBI SOFTWARE \$27
 - Alien Mind
- VICTORY SOFTWARE \$39
 - 2088 The Cryllan Mission

Catch what's on:
 → **Hunt for Red October (GS)**
 You've read the book, you've seen the movie, now live the game.
STEVE NOW \$31

DISKETTES

- SONY 3.5 Diskettes Pack of 10 \$15

CHIPS

All Memory Chips Carry a 7-Year Warranty! (User Installed)

- CHIPS:**
- (set of 8) 256K, 120ns, for 256K memory boards like GS RAM & Apple Memory Card \$29
 - (set of 8) 1 Meg 100ns or faster for 1 Meg memory boards like GS RAM plus & RAM Pro //GS \$100
 - (set of 2) 256K X 4 for memory boards like GS RAM Ultra \$25

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 92117



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

Get even more! \$300 orders receive FIVE BARNEY BUCKS; \$500 orders receive NINE BARNEY BUCKS.

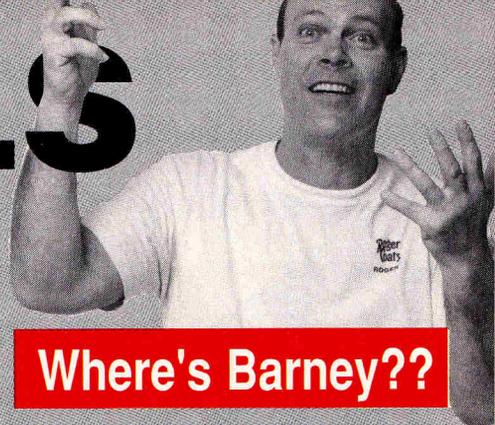
Details available with every order.

Circle 90 on Reader Service Card

WE ACCEPT: VISA and MasterCard • Bank Wires • School Purchase Orders • Certified Checks • Money Orders • NO PERSONAL or COMPANY CHECKS
 • Sorry, no shipping, handling, or insurance refunds • Not responsible for product compatibility • Prices subject to change without notice • NO C.O.D.s

TRA DEALS

Barney's Missing! are still here.)



Where's Barney??

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

APPLE COMPUTER GS/OS v5.02
\$41 (in stock)

BRODERBUND

Printshop GS \$36
VCR Companion \$30
Where in Europe/Time/USA/
World is Carmen SD \$28
Wings of Fury \$23

CENTRAL POINT SOFTWARE
Copy II Plus \$24

CHECKMATE TECHNOLOGIES
Proterm v2.1 \$79

CLARIS

AppleWorks 3.0 \$169
AppleWorks GS \$194

INTUIT Quicken (//e, c, GS)
\$32

JEM SOFTWARE MiniPaint-GS
Paint Program, VERY Powerful
\$19

MEDIAGENIC

PaintWorks Gold (GS) \$49
Music Studio (GS) \$49

Q LABS

RamUp (RAM Disk Utility) \$29
RepairWorks (Repair AW Files) \$29
Easy Drive (Program Selector) \$54
Super Patch \$29

PYGRAPHICS (specify computer)

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

ROGER WAGNER

Graphics Exchange \$29
Hyperstudio \$87
Macromate \$29
Merlin 8/16 \$77
SoftSwitch \$34

STONE EDGE TECHNOLOGIES

DB Master Professional \$189

SOFTWARE

TIMEWORKS
Graph It! \$44
Publish It! 2
(II Desktop Publishing) \$79
Swiftax \$44

VITESSE

Salvation Guardian
(GS Backup Utility)
\$29

Salvation Renaissance
(HD Optimizer)
\$29

Salvation Exorcizer
(Virus Protector)
\$24

Quickie (GS Hand Held Scanner)
\$199

KENSINGTON

Kensington System Saver GS
\$69

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

APRICORN

Apricorn //c (Parallel
Interface)
\$49

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

No Slot Clock Pro
\$37

RamPro GS 1 Meg
(Lifetime
Warranty!)
\$159

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

AMR

AMR 20 Meg HD w/SCSI (//e, GS)
\$519

AMR 30 Meg HD w/SCSI (//e, GS)
\$589

AMR 45 Meg HD w/SCSI (//e, GS)
\$649

AMR 60 Meg HD w/SCSI (//e, GS)
\$749

AMR 3.5 Drive (//e, c+, GS, Mac,
PC Transporter)
\$185 FREE SHIPPING

AMR C3 3.5 Disk Controller Card
\$44

AMR 45 Meg Removable Media
w/SCSI (//e, GS)
\$989

45 Meg Removable Cartridge
\$99

HARDWARE

Supra 2400 Baud External Modem
\$109

Numeric Keypad (//e)
\$49

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

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

HARDWARE

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

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

Meiji 5.25 1/2 Height TransDrive
5.25 Single \$139
5.25 Dual \$209
5.25 Add-on \$99

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

AB Switchbox (Ser/Par)
\$19

ABCD Switchbox (Ser/Par)
\$29

AB Switchbox (Mini 8)
\$29

ABCD Switchbox (Mini 8)
\$39

//e Fan and Surge Protector
\$34

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

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

Apple //e Enhancement Kit
\$68

Cables (all types, 10 ft)
\$13

CH Mach III Joystick
\$35

CH FlightStick
\$47

ImageWriter II Printer
\$459

FingerPrint GSi vII
\$84

Computer Eyes:
Black and White \$99
Color \$199

don't miss out on Roger's
EXTRA EXTRA DEAL

ZIP CHIP 8 MHZ
by ZIP Technology

BLAZIN'
and blowin' away GS!

Now your //e or c can run
faster than a GS. Run
software at a blazing 8 Mhz
on your //e or c.

list \$199
NOW \$154

BARNEY'S DOG DAY SPECIALS



Look for Barney's Bone next to a
price point. Order that product on
any Wednesday between 11-
2PM(PST) You pay UPS Ground
Shipping, We Ship it 2nd-day AIR!

Roger Coats

P.O. BOX 171466
SAN DIEGO, CA 92117



PRICE QUOTES & TECHNICAL SUPPORT

1-619-274-1253

8am - 5pm PST

Monday-Friday

Committed to value since 1985

• Dunn and Bradstreet Number Upon Request • *FREE Second Day Air Upgrade on Dog Day Special Product Only • F.O.B. San Diego

* WE'RE COUNTING ON YOUR HELP TO FIND BARNEY!--Roger

WE ACCEPT SCHOOL PURCHASE ORDERS





MODIFYING PAINTWORKS

Let Paintworks Gold out of the doghouse—
a simple program helps you get around
its hunger for memory.

By **WILLIAM P. KENNEDY, Ph.D.**

PAINT THE TOWN GOLD

IN "THE YEAR IN REVIEW" (December 1989, p. 70), *inCider* put Activision's Paintworks Gold in the doghouse because it isn't compatible with GS/OS versions 4 and 5. I, too, have found the situation quite disappointing, because launching Paintworks Gold from a 3½-inch disk is so much slower than from my hard-disk drive, on which most of my applications are stored and work fine with GS/OS v.5.

With GS/OS v.4, you can make Paintworks Gold work as long as it's the first application launched in a session. If not, I found that executing Purge.Mem, a ProSel-16 utility, before launching Paintworks Gold, helped.

Unfortunately, neither method worked when I booted into GS/OS v.5. I gave up and called Activision. Apparently, Paintworks Gold needs a lot of "page 0" memory. There's a place in the program code you can change to satisfy that hunger for memory: Using a block read/write utility such as ProSel's Block.Warden or Copy II Plus, search for the hex sequence C9 08 00 D0 CE. Replace the 08 with 7F. That's it.

The only quirk I've found is that it slows

the mouse speed. I certainly can't guarantee there won't be other problems, but so far so good.

Mark Ruskin
London, England

Great tip, Mark. Thanks for pursuing this one to a satisfactory end. But I don't want to know about your phone bill.

We've found several other ProDOS-16 programs that aren't compatible with GS/OS. You can't blame the publishers too much for their reluctance to update the software, given Apple's history of changing the operating system every six months or so. Nonetheless, many won't even attempt to solve the problem. Kudos for Activision.

Those of you who don't have a block read/write utility or are afraid to use it (and rightfully so, because you really do need an excellent understanding of GS/OS or ProDOS to figure out what's going on), I've identified where that ►

Program listing. Paintworks Gold modification.

```

10 REM Modifies Paintworks Gold for use with [7379]
20 REM GS/OS Version 5.0 [3753]
30 REM by Dr. Bill [2165]
40 REM Copyright 1990, inCider [4946]
50 N$ = "/PAINT.GOLD/PAINTWORKS.GOLD" [5981]
60 D$ = CHR$(4) [799]
70 ONERR GOTO 200 [687]
80 PRINT D$;"BLOAD";N$;",";A$2000,B$1FFDF,L5,T$B3" [7669]
90 FOR I = 0 TO 4: READ N: REM Test byte sequence [5146]
100 IF PEEK(8192 + I) < > N THEN 210 [1670]
110 NEXT I [511]
120 POKE 8193,127: REM Make modification [3578]
130 PRINT D$;"BSAVE";N$;",";A8193,B$1FFE0,L1,T$B3" [2627]
140 PRINT D$;"PR#3" [1020]
150 PRINT "Modification successful!": END [1870]
200 A$ = "Cannot find Paintworks Gold program!": GOTO
220 [3806]
210 A$ = "Incorrect sequence of bytes!" [2411]
220 PRINT D$;"PR#3" [684]
230 PRINT A$: PRINT "Modification not completed." [6094]
240 PRINT "Insert the Paintworks program disk: ": PRINT
N$ [3524]
250 PRINT "into a disk drive, or" [1894]
260 PRINT "change line 50 to correct pathname." [7253]
270 PRINT "Then re-RUN this program." [5268]
280 END [178]
300 DATA 201,8,0,208,206 [2634]

```



“Elegant, innovative, flexible and in all aspects the leader of the field.” — Incider Magazine

Accolades continue to pour in. Vulcan hard drives were recently awarded FIVE stars by Incider Magazine, a rating reserved for products judged “excellent and remarkable”. Incider went on to say, “*The Vulcan sets a new performance standard for hard drives . . . Applied Engineering has done it again.*”

Hard drives tremendously boost your productivity. The Apple II’s operating system, hardware and memory-gobbling software take on a new agility and finesse with the addition of a hard drive.

Speed? The IIGS Buyer’s Guide put it this way, “*Everything this drive does is fast. TimeOut modules, installed in AppleWorks and configured as disk-based, came up as fast as if they were memory-based. Graphics load almost immediately. Even that damnable lie, ‘One Moment Please’ suddenly delivers its promise. We recommend the Vulcan wholeheartedly.*”

And Incider said, “*The Vulcan walks all over the competition. Twelve seconds to the GS Finder; 10 seconds to AppleWorks GS. Sounds good doesn’t it? It is. That sizzling speed is achieved thanks to a high-quality internal tracking unit.*” Vulcan incorporates an ultra-fast 16-bit data bus controller, not the less expensive 8-bit others use.

Features? As Nibble Magazine said, “*AE drives support more operating systems and have more features in the supporting software.*” And Incider added, “*Applied Engineering has put together the most complete set of utilities to date for an internal hard drive that leads the market.*” And since Vulcan’s made by Applied Engineering, you’re assured of full compatibility with current and future AE products.

Power? Vulcan’s high-efficiency power supply is rated in excess of 70 watts, *nearly double* the capacity of other hard drives. The power supply components are heatsinked to the aluminum case for cool operation and long life. To harness all that power, Vulcan incorporates an ultra-quiet, flush mounted cooling fan, keeping the temperature inside the Vulcan, and inside your Apple lower than before.

Flexibility? Choose a Vulcan from 20, 40, 100 — all the way to 200 MEGs. Upgradeable Vulcan grows as your needs grow. And we don’t mean by daisy-chaining additional hard drives. When you upgrade Vulcan, you pop one out and *replace* it with another.

Only Vulcan lets you use virtually any operating system: GS/OS (v5.0 is included), ProDOS 8, DOS 3.3, CP/AM or Pascal 1.3. Vulcan supports them all with sixteen partitions

(access four simultaneously). Choose slot 1, 2, 4, 5, 6 or 7. Even pseudo-slot to slot 7 from elsewhere. Vulcan works on 110/220 VAC, even European 115/230 VAC at 50-60 Hz.

Ease of Use? Incider says, “*The true test of a hard drive lies in its ease of use and maintenance. In that respect, the Vulcan brings together a more complete package than any of its current competitors.*” Vulcan simply pops in; replacing the Apple power supply under your computer’s hood. Our built-in firmware automatically installs itself as a Desk Accessory for write protection and partitioning. The software we provide lets you easily park heads, back up and reformat.

Order today! To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days.

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.

sequence of bytes Mark mentioned occurs in the Paintworks Gold program and have written a short BASIC program that'll make the modification for you.

Type in the accompanying BASIC Program listing and SAVE it as PWG.Mod. Then insert a non-write-protected backup copy of your Paintworks Gold disk into a drive and RUN the modification program. The program's path-name is set in line 50. If you're using a hard-disk copy of Paintworks Gold, change that path-name to the correct location.

INITIALIZING DISKS

CAN I INITIALIZE 3 1/2-INCH DISKS just as I do my 5 1/4-inch ones? I want to use them for BASIC programming.

Kenny Caudell
Richmond, KS

Yes and no, Kenny. Yes, initialize your 3 1/2-inch 800K disk just as you might 5 1/4-inch disks under ProDOS. No, you can't simply INIT the 3 1/2-inch disk under DOS 3.3 as you do the 5 1/4-inch one.

Rather, to use your 3 1/2-inch disks under DOS 3.3, consider purchasing UniDOS for \$49.95 from MicroSparc, 52 Domino Drive, Concord, MA 01742; AmDOS 3.5 for \$20 from Gary Little, 3304 Plateau Drive, Belmont, CA 94002; or Profix for \$49.95 from Nordic Soft-

ware, 3939 North 48th Street, Lincoln, NE 68504. The first two packages are modified versions of DOS 3.3 that initialize and partition your 800K disks into two 400K volumes that are accessed as drives 1 and 3, respectively. Profix allows multiple DOS volumes of 143K-400K each.

To use your 3 1/2-inch disk drive as a BASIC program disk under DOS 3.3, you needn't do anything special; all the appropriate disk-management software is automatically appended when it's initialized.

Under ProDOS, you also needn't do anything special if you're using the disk only to store your BASIC programs and data. If you want to use that disk to boot (start up) your Apple, however, copy these files to it from your ProDOS System Disk or equivalent source: PRODOS and BASIC.SYSTEM. Those of you with GSes, copy the file named P8 (instead of PRODOS) in the SYSTEM subdirectory or folder on your GS SYSTEM.DISK and rename it to PRODOS on your 3 1/2-inch disk BASIC startup disk.

HI-RES GRAPHICS DUMP

I'D LIKE TO PRINT MY HI-RES graphics from Applesoft BASIC on my ImageWriter I. I've been using the ImageWriter Toolkit, but that requires I stop my own program, execute the utility,

then restart my program. There's got to be an easier way.

Fulton Farquhar
Stuart, FL

There are several utilities available from a number of sources, including freeware from any bulletin-board system, that you can incorporate into your own BASIC programs to "dump" high-resolution graphics to an ImageWriter printer.

You can obtain one of the most versatile graphics-dump routines commercially—Triple-Dump from Beagle Bros (6215 Ferris Square, Suite 100, San Diego, CA 92121, 619-452-5500, \$39.95). You can execute this collection of machine-language routines directly from the distributed disk or incorporate them into your own BASIC programs and execute them with a simple CALL. Besides the full range of graphics and text-mode dumps, Triple-Dump also includes special-effects options that'll rotate, inverse, and magnify your graphics printouts. And Triple-Dump supports a variety of printers, not just the ImageWriter.

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. BECAUSE OF THE VOLUME OF LETTERS, MOST WON'T APPEAR IN PRINT, BUT WE'LL TRY TO RESPOND IF YOU ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE.



1-800-544-7638
Inquiries & Oregon buyers
1-503-246-0924

SCHOOLS
OUR
SPECIALTY

CABLES. 5 YEAR REPLACEMENT GUARANTEE

ADAPTOR, Mac-, SE II, Aplics 8 Mini DB9... #101	\$9.95
HAYES COMPATIBLE MODEM to	
Mac- SE, II, Aplic- ilgs 6 ft. #202	\$9.95
Mac 512 6 ft. #203	\$9.95
Appl II+ Ile 6 ft. #204	\$9.95
Aplic Laser 128 6 ft. #205	\$9.95
APPLE PERSONAL MODEM to	
Mac- SE, II, Aplic- ilgs 6 ft. #305	\$9.95
Mac 512 6 ft. #306	\$9.95
Appl II+ Ile 6 ft. #307	\$9.95
Aplic Laser 128 6 ft. #308	\$9.95
IMAGEWRITER II to:	
Mac- SE, II, Aplic- ilgs 6 ft. #303	\$9.95
Appl II+ Ile 6 ft. #309	\$9.95
Aplic Laser 128 6 ft. #310	\$9.95
IMAGEWRITER II to	
Mac- SE, II, Aplic- ilgs 6 ft. #305	\$9.95
Mac 512 6 ft. #306	\$9.95
Appl II+ Ile 6 ft. #307	\$9.95
Aplic Laser 128 6 ft. #308	\$9.95
IMAGEWRITER IQ to:	
Mac 512 6 ft. #306	\$9.95
Aplic Laser 128 6 ft. #308	\$9.95
Laser 128 to Parallel, DB*5 36 Pin	#AL*28P \$2.95
ImageWriter II to PC, text only	#AIPC \$9.95
Mac- SE II Aplic- ilgs to XT* (send data)	#A XT \$9.95
Mac- SE II Aplic- ilgs to AT* (send data)	#A AT \$19.95

FREE CATALOG, send a post card with your name & address.




Installation's a breeze!

DATA SWITCHES

VSI switches and cable swapping share equipment. Need extra cables, we stock a broad selection.

- ONE YEAR WARRANTY, Deluxe A: Metal Case
- Compact Design, Rotary Switch
- Full Shielding, Exceeds FCC Requirements

	AaBb=2 to 2	AB=2 to 1	ABCD=4 to 1	
5 Pin	AB	\$29.95	ABCD	\$39.95
6 Pin	AB	\$29.95	ABCD	\$39.95
8 Pin M	AaBb	\$39.95	AB	\$24.95
	AB	\$24.95	ABCD	\$34.95
DB9	AaBb	\$39.95	AB	\$24.95
	AB	\$24.95	ABCD	\$34.95
DB25	AaBb	\$39.95	AB	\$24.95
	AB	\$24.95	ABCD	\$34.95
Parallel	AaBb	\$39.95	AB	\$24.95
	AB	\$24.95	ABCD	\$34.95

We now stock a full line of gender changers, null modems, adaptors, testers and connectors.

Apple Talk, Mac, SE II, ilgs 8 P + Min	#ATALK	\$39.95
Apple Ile Numerical Key Pad	#NKPIIE	\$29.95
Apple II Ile Cooling Fan	#COFAA	\$29.95
Joystick III, Apple II, Ile IIc IBM	#JOY1	\$24.95
Auto Switch AB, Parallel or Serial, Inline	#ASW	\$69.95
64K Buffer, Parallel, Self Test, Copy & Reset	#64K	\$79.95
Power Command Center 5 Switch & Master	#PC	\$49.95
Power Strip, 6 Outlet, Surge & Spike Protect	#PSTR	\$14.95
Disk Notcher	#DNP	\$4.49
Mouse Mat, Smooth PVC, Grd Marked	#MAT91	\$5.95
Break Out, Box, DB25	#BREAK	\$39.95
Mini Tester, DB25, M.F.	#TESTMF	\$9.95

VSI 3641 S.W. Evelyn, Portland, OR 97219, Shipping \$3.00, VISA, MC, money orders accepted. Price & stock, subject to change.

Nothing beats a Quickie™

- Scans images at up to 400 DPI in seconds
- No cartridge to swap
- Bound materials scan as fast as single pages

Your work comes alive! Now you can integrate crisp, clean line art, text, and vivid halftones into your newsletters, reports, flyers and other projects – all scanned in just seconds with Quickie. It's the scanner you'll want for every application.

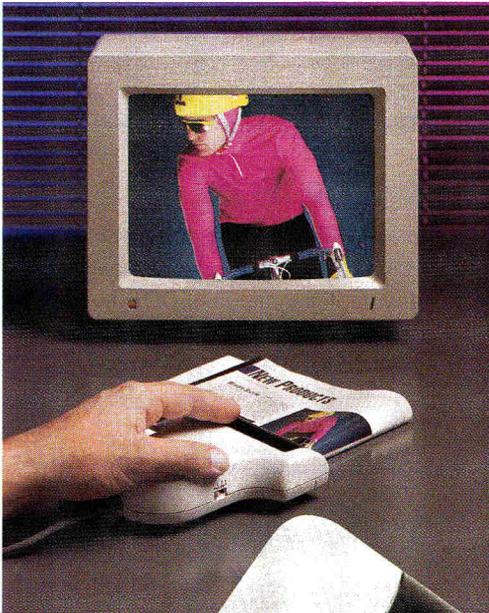
No more waiting around. Quickie goes right to work on anything – even bound books – and transmits image-to-CRT as fast as you scan it in.

Quickie's unique yellow-green image recognition system overcomes the red-blindness that's so common with ordinary hand scanners.

You get unequalled sharpness and control with four resolutions (400 / 300 / 200 / 100 DPI), three dithered modes plus black & white, and simulated greys.

Just import your images into any leading Apple IIs painting, drawing, or graphics program, and presto! – You can create vivid color images that illustrate, captivate, and entertain.

So contact your dealer or call today. At only \$299, Quickie is unbeatable. VISA, MasterCard accepted.



Simulated image.



Fast, Smooth, Uncomplicated

Vitesse, Inc.
13909 Amar Road
Suite 2
La Puente, CA
91746-1669

(800) 777-7344
(818) 813-1270
(818) 813-1273 FAX

Dealer inquiries invited.
Circle 254 on Reader Service Card.

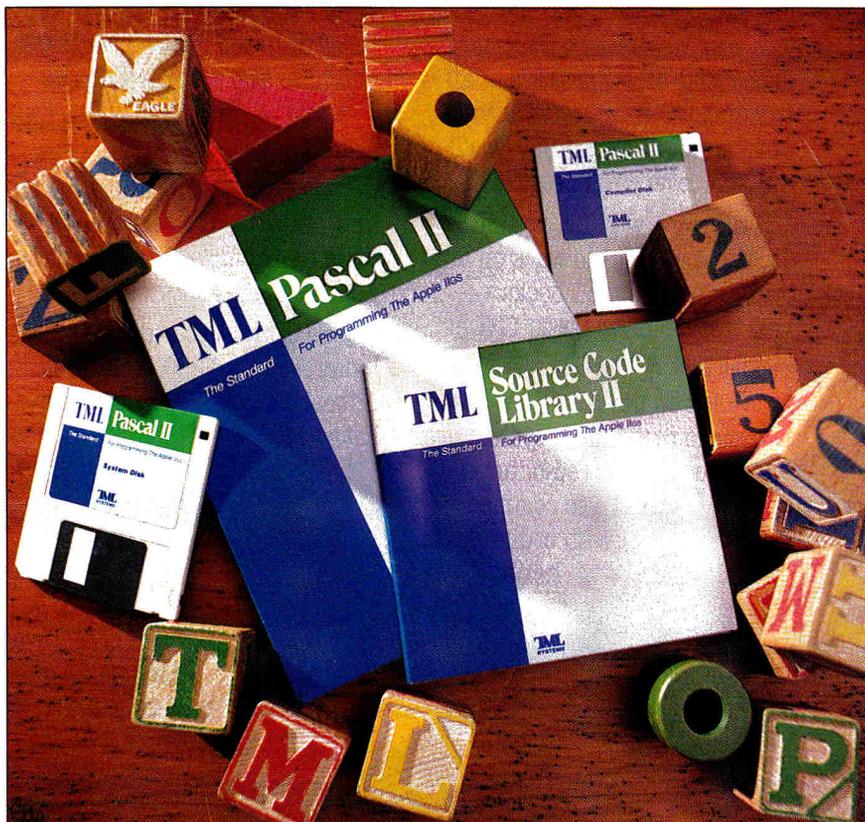
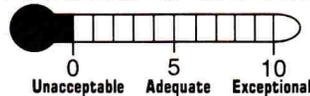
Quickie™

Scanner shown actual size

Scan width 4.13 inches
400/300/200/100 switchable DPI
Three dithered modes plus black & white
Simulated greys
Real-time display shows image as you scan
Built-in scanner view window
Double rollers for accurate alignment
Specifications subject to change without notice.

REVIEWS

INCIDER'S RATINGS



TML PASCAL II

TML SYSTEMS INC.,
8837-B Goodby's Executive Drive,
Jacksonville, FL 32217, (904) 636-8592

Pascal-language compiler;
 1-megabyte Apple IIGS; two 3½-inch disk drives
 or hard drive; GS/OS 5.0 or later; \$125



Here is further evidence that object-oriented programming is on the way for the Apple IIGS—TML Pascal II. TML Systems' hurry to set the pace, however, may have hurt the product. This language compiler has a history of reliability problems and weak support. If TML makes the necessary cor-

TML SOURCE CODE LIBRARY II

13 sample TML Pascal II programs;
 \$49.95



rections, though, TML Pascal II could play an important role in steering the IIGS toward the future of object-oriented programming.

Object-oriented programming (OOP) is a building-block approach that brings programming within reach of more people. You can concentrate on the creative

process rather than the mechanics of programming. TML Pascal II isn't necessarily a full implementation of OOP, but it contains small subsets that could help lay a foundation.

ROUND TWO

TML Pascal II is actually an update anticipated some two years ago. Is TML Pascal II a ground-breaking product, or a quick raid aimed at capitalizing on a lag in the marketplace? Time will tell, but we can get an idea now by looking at its strengths and weaknesses.

The major improvement is the resource editor, which lets you design the screen elements of your program's desktop interface with a mouse. This should be a big time saver and make programming easier, but the implementation brings these benefits into question.

Elements of the language itself have been improved and compare favorably against the competing Orca/Pascal. TML Pascal II has also adopted Apple's new standard Pascal Toolbox interface files.

The development environment was rewritten from scratch and remains fast and convenient. Any number of windows can now be open, but the program crashes frequently, and there are oversights such as a missing bottom scroll bar on the text editor. You have to break up long lines to edit them.

File-management utilities are next to nonexistent, and there is still no debugger. The six (yes, six) source-code examples included on disk are inadequate. Only by buying Source Code Library II can you begin to grasp the compiler's capabilities.

ROLL YOUR OWN INTERFACE

Resources are the latest and greatest thing for IIGS programmers, having been introduced by Apple in the new system ►

AMERICA'S MOST WANTED

EDUCATIONAL RESOURCES
124 Page Color Catalog



NEW!
Comprehensive Product Listing by Subject Pages 6-19
Alphabetical Product Listing Pages 99-120
Software Selection Guide Pages 4-7
Macintosh Section Pages 93-97

EDUCATIONAL RESOURCES™

SPRING 1990

YOUR SINGLE SOURCE SUPPLIER FOR COMPUTER SOFTWARE • DISKETTES • ACCESSORIES

USA/CANADA TOLLFREE
1-800-624-2926

IN ILLINOIS CALL
708-884-7040

GREAT SERVICE

LOWEST PRICES!

WIDEST SELECTION OF EDUCATIONAL/HOME COMPUTER SOFTWARE
AND SUPPLIES FOR YOUR APPLE, IIGS, MAC, IBM & COMMODORE

REWARD!

- The industry's best and most complete collection of **DISCOUNTED** computer software and supplies!
- **LOWEST PRICES EVERYDAY** on over 2,000 items!

Don't be limited to a handful of specially priced items in other mail-order ads when you can **HAVE IT ALL WITH EDUCATIONAL RESOURCES!**

- Widest product selection!
- Best full-service dealer in America! Join over 65,000 parents and educators who already know why we're #1!

DON'T LET THIS ONE GET AWAY!
CALL NOW TOLLFREE! 1-800-624-2926

AT A GLANCE

Revolution '76 (April 1990, p. 30, by Jim Trunzo), Britannica Software, 345 Fourth Street, San Francisco, CA 94107, (800) 572-2272, (415) 546-1866; Apple IIcs with 1.2 megabytes; two 3½-inch drives recommended; \$49.95

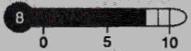


The Second Continental Congress is in session as Revolution '76 begins, and you must immediately appoint the head of the treasury, the foreign-affairs department, the army, and the navy.

You must also make decisions and establish policies to shape your emerging government: when to declare independence from England, how to deal with the slave population, what economic reforms to implement, and how to establish an executive branch to facilitate the governing process.

Revolution '76 succeeds on all counts. It challenges your military, economic, and diplomatic savvy, and it's aesthetically pleasing as it takes full advantage of the GS's graphics and sound capabilities.

StoryWorks (April 1990, p. 32, by Carol Holzberg), Teachers' Idea and Information Exchange, P.O. Box 6229, Lincoln, NE 68506, (402) 483-6987; 128K Apple II, AppleWorks; \$49.95



StoryWorks is a hypertext-style construction kit consisting of eight AppleWorks word-processor files. It lets you create branching worksheets, tests, quizzes, seating charts, or stories complete with sound effects. When students read a StoryWorks file, they can select an embedded button for immediate access to related topics, glossaries, bibliographies, and so on.

The beauty of StoryWorks is twofold: First, it's a program that operates on an Apple II with as little as 64K; second, it builds on what is probably the most popular Apple II program ever developed—AppleWorks Classic.

software. The idea is to relieve you of the burden of designing the complex templates necessary to use the desktop interface. Actually, resources are the first step toward object-oriented programming, although no one has yet referred to them that way.

Ultimately, you should be able to click on a screen element, associate it with a standard action—such as printing or saving—and so disregard many of the programming details. The new TML resource editor is half the picture. It lets you design objects that will appear on screen, but the compiler generates the underlying source code.

If the resource editor was a full implementation of OOP, it would also let you associate your finished resources with standard operations to automate designing applications. This capability is missing, but that isn't a condemnation of TML Pascal II. Because OOP is radically different from the programming to which Apple II users are accustomed, it will require a commitment from Apple to be fully realized.

TML managed to get through the entire user manual without once giving a coherent description of what resources are or how to use them. Beginners will probably be lost, and knowledgeable programmers will have to crack open some other books (such as the *GS/OS Reference* and the *Toolbox Reference*, available from the Apple Programmers and Developers Association).

PASCAL PERFORMANCE

TML has always offered a fast, convenient development environment, and TML Pascal II is no exception. One unique capability of TML Pascal II is support of Tool Startup resources. Overall, however, it doesn't really inspire confidence, and it doesn't compare with the power of APW or Orca.

The new environment has a much-improved editor, although the missing horizontal scroll bar is a real pain. It doesn't take much time to compile a program, test it, and return to the environment, although it frequently crashes when doing so. A crash upon exiting TML II is virtually guaranteed.

A new graphics command turns on the

full hi-res screen in 320 or 640 mode. You can use standard text input/output commands in conjunction with the graphics screen and compile programs as new desk accessories or classic desk accessories.

Previously, both TML and The Byte Works used proprietary toolbox interface files; it was quite difficult to exchange TML and Orca source-code files. TML now uses standard header files developed by Apple. This means you'll have to bring your old TML programs up to date, but the compatibility will be worth it.

The only file-management utilities are Rename and Delete. The competing Orca environment has dozens of utilities and lets you add your own, but the price you pay is a steeper learning curve. While comparing the two, you might also note that Orca also supports mixing languages within a program, and a debugger is built into its desktop.

I found problems with three elements of the Pascal implementation itself. Members of sets aren't properly recognized; string-to-character type conversion fails; and the case statement doesn't recognize some valid values. It took three tries to come up with an old-fashioned menu loop that could recognize its input.

SOURCE CODE, TOO

Computer programming is something you learn by following examples and by doing. To supplement the six sparse examples included with TML Pascal II, you can purchase 13 extra demo programs in Source Code Library II for \$50. These, however, are not without problems.

Nearly everyone sells sets of source-code disks, but first they include enough examples with the compiler to demonstrate its features thoroughly. In the case of TML, you'll need this "extra" disk, so count it as part of the cost of the compiler.

Other available sets of source-code disks are usually full sets. Thirteen examples on one lonely disk with no documentation is not really a value at \$50. Also, while all the examples compiled without error, there are problems: a Pong game with a disappearing paddle; missing buttons; operating-system example calls that fail; and a telecommunications program that demonstrates only that the language isn't fast enough to handle telecommunications. ▶

On the other hand, there's a fully working desktop text editor; digitized sound and note-synthesizer demos; the new PopUp scrolling menus; graphics; and a text file and picture printer. All the programs include both a source-code file and a resource file.

Even though there are only 13 titles in the library, it's a well-planned collection. You could even defend the bugs, considering that few collections of programming examples are thoroughly debugged.

ALMOST THERE

TML Systems has returned to the Apple II language marketplace with a stylish product. TML Pascal II is a good idea, and parts of the implementation are well done. Is TML really trying to make a contribution, though? The signs indicate otherwise. This version is unreliable. TML has hired an Apple II product manager, but it has withdrawn on-line support and doesn't respond to technical calls and letters.

Games require marginal support. A reliable word processor or utility can chug along for years. A publisher's commitment to language software, however, is all-important. Compilers are the most complex packages on the market, and without proper maintenance they quickly become a costly mistake for the programmer.

Programmers who want to stay ahead of the game will be interested in TML Pascal II so that they can become more familiar with resources. It isn't yet reliable enough, however, for serious program development.

Current owners of TML Pascal can upgrade for \$49.95. The upgrade for the Source Code Library is \$29.95. The TML Speech Toolkit is \$69, or \$15 for the upgrade, which was unavailable at press time. At one point, TML also sold a version of its Pascal that ran under the APW shell. It remains unclear whether this product will be renewed.

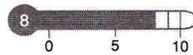
TML Pascal II received a rating of 5 despite its unreliable nature; it gives the IIGS a tangible tie to the leading edge of programming. The Source Code Library II received only a 4, because it is in fact a hidden cost associated with the compiler.

Joe Abernathy
Houston, TX

THE SMALL BUSINESS ACCOUNTING SERIES: THE INVOICER WITH ACCOUNTS RECEIVABLE AND SALES TRACKING/INVENTORY

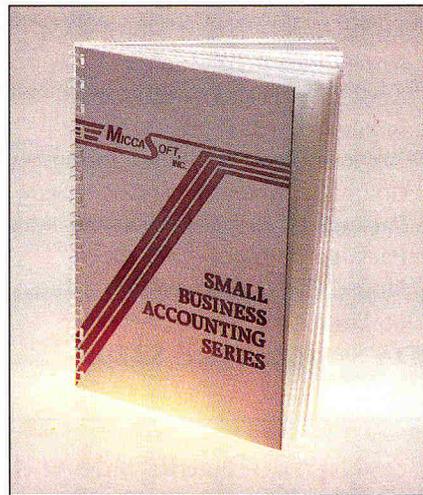
MICCA SOFT,
406 Windsor Lane, New Braunfels, TX 78130,
(512) 629-4341, (800) 950-7943

Business accounting software;
128K Apple IIe, IIc, IIc Plus, IIgs; two disk drives,
RAM disk, or hard disk; 80-column card;
\$223.50 complete system;
\$149
without Sales Tracking/Inventory



Running a small business with your Apple II calls for a number of tasks—generating invoices, sending out bills, and keeping track of your inventory. MiccaSoft's Small Business Accounting Series is an integrated package for doing just that; it produces invoices, charges customers in accounts receivable, and deducts anything sold from the inventory-tracking module.

Getting started with the Small Business Accounting Series (SBAS) is a matter of working through a series of menus where you indicate the standard "defaults" you'd like for your business, such as the terms of



All the basics in an integrated package.

sale your company offers, who pays the freight on what you're selling, whether you generally charge sales tax, whether you want to work with an open-item or balance-forward system, and so on. What all these options mean is explained in detail, both in the manual and on screen.

You can indicate that you normally

charge sales tax, but when you invoice, you can then choose whether or not to add sales tax to each individual line item as you create your customer's bill. This is necessary if your business sells both taxable (such as material) and nontaxable (such as labor) items.

The system also lets you implement what it calls a *price factor*, which means if something you sell retails for \$100 per thousand, and you're invoicing 500 of these items, the program will automatically do all the calculations to show this sale at \$50. However, the price factor is applied to all your prices, so if you sell a mixture of products, this feature won't be too useful.

You're allowed up to 1024 customer accounts and as many as 1024 inventory items and billing rates. A *billing rate* is the labor rate per hour you charge for the services your company provides. By letting you use both products and billing rates as part of your "inventory," SBAS lets you enter either the item number or billing rate code, and both the description and price will be printed automatically on your invoice. This billing-rate feature is especially nice if you sell both products and services, as it gives you the flexibility to invoice everything you sell using the same type of entry.

The program provides two user-defined *smart keys* (which operate like macros for things like city, state, and zip code information) to speed up data entry. You can also specify preprinted or blank forms, and SBAS will adjust its printouts to what you're using.

One of the nice things about the Small Business Accounting Series overall is that in each section, you can display a listing of your accounts, billing rates, and inventory item numbers at any time, just by entering a ? in the item field. SBAS sorts your customer accounts (by account number or by name), and your inventory and billing rates (either numerically or by description), so it's easy to find what you need.

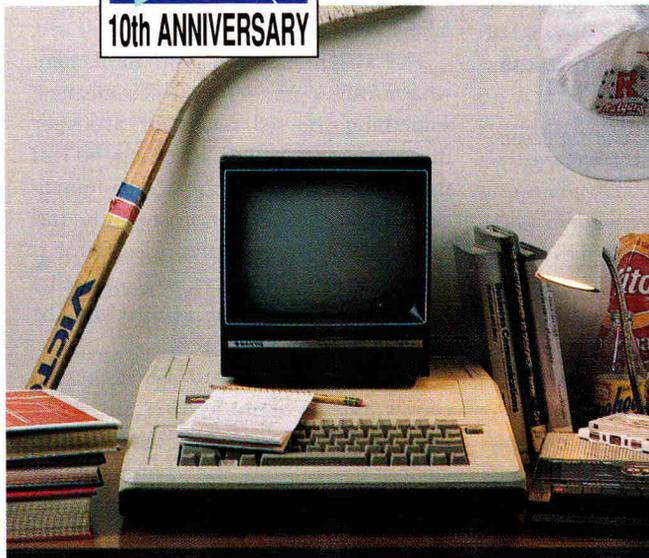
If you have an earlier version (2.1 or 2.2) of the Invoicer or the Invoicer with Accounts Receivable, this latest version will work with your existing data files, provided they're updated with a program such as Copy II Plus. The DOS 3.3-to-ProDOS conversion program won't be

Continued on p. 78



CDA Computer Sales

"The world's oldest and largest Apple II computer mail order company"



1980



1990

Delivering Complete Ready-to-Run Systems for Over a Decade

Apple IIc Plus System

Complete System Includes:

- Apple IIc Plus Computer
- Magnavox 12" Amber Monitor
- Laser 5.25 External Disk Drive
- Olympia NP-30 Printer
- All necessary cables
- Package of paper - 500 sheets
- Package of 10 - 3.5" Diskettes
- Package of 10 - 5.25" Diskettes

Sugg. List \$1551 Package #9090

CDA System Price \$1049

Apple IIGS Entry System

Complete System Includes:

- Apple IIGS CPU w/1 Mb of RAM
- AppleColor RGB Monitor
- Apple 3.5" Disk Drive
- ImageWriter II Printer w/cable
- Black & Color Rainbow Ribbon
- Complete System Dust Cover Set
- Package of 10 - 3.5" Diskettes
- Package of Paper - 500 sheets
- Mouse Pad & all necessary cables

Sugg. List \$2989 Package #9080

CDA System Price \$2299

Apple IIGS Power System

- Apple IIGS CPU w/1 Mb of RAM
- AppleColor RGB Monitor
- Apple 3.5" Disk Drive
- 20Mb Vulcan Internal Hard Drive
- ImageWriter II Printer w/cable
- Black & Color Rainbow Ribbon
- Complete System Dust Cover Set
- Package of 10 - 3.5" Diskettes
- Package of Paper - 500 sheets
- Mouse Pad & all necessary cables

Sugg. List \$4154 Package #9081

CDA System Price \$2849

CDA's 10th Anniversary Sweepstakes

1st Prize - Free Trip to Vail Colorado

Win an all-expense paid vacation for "2" to Vail, Colorado. Enjoy 1 week of golfing, skiing, — the choice is yours.

2nd Prize - a **Mac Plus** Computer (2 awarded)

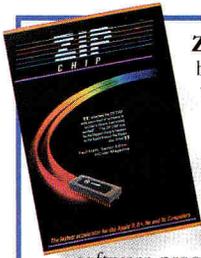
3rd Prize - a **\$500** CDA Gift Certificate (3 awarded)

No Purchase necessary. Entry Coupons must be post marked on/before 10/31/90. Winners selected at random by attorneys of CDA. Odds of winning depends on the number of entries. Winners responsible for taxes. Winner will be notified by mail. If unable to contact, an alternate will be selected by random drawing. Employees of CDA & suppliers not eligible. Dates subject to change at discretion of CDA. Contest is open to US residents except where prohibited by law.

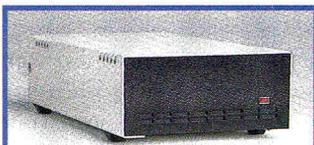
Purchase from CDA, or send in the entry coupon and your name will be entered into CDA's Anniversary Sweepstakes!

	Official Entry Coupon Ad #16-5	
	Name _____	Address _____
	State _____	Zip _____
CDA Computer Sales, 1 CDA Plaza, P.O. Box 533, Califon, NJ 07830		

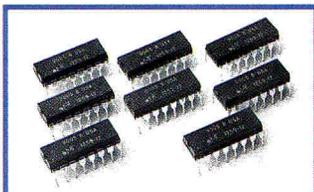
New! One Year Warranty



Zip Chip
by Zip
Technology
Run your
Apple II
Computer
eight times
faster!
Now your
software programs will zip
along, games will be more
exciting, and graphics come
alive! For Apple II, IIE & IIC.
Zip Chip 8Mhz **\$159**
Zip Chip 4Mhz **\$125**



Ingenuity OverDrive
The InnerDrive dramatically
improves the speed and ease
of accessing your data. With
20 or 40 Megabytes of storage
capacity you can keep all your
applications on one hard disk.
No more flipping your floppies!
OverDrive 20 Mb **\$469**
OverDrive 40 Mb **\$549**



**Upgrade your Apple or
Applied Engineering Iie,
IIC or IIGS memory card.**
256K Chip Set 120ns **\$29**
256K chip Set for RamPak &
GS-RAM Ultra **\$29**
1 Mb Chip Set
for GS-RAM Plus **\$79**

Apple Computers

Apple IIGS w/1 Meg \$895
Apple IIC Plus \$549

Monitors

Apple Color Analog (IIGS) \$465
Color Composite Iie \$339
Color Composite IIC/IIGS \$312
Apple Monochrome \$135
Magnavox Color Analog \$299
Magnavox Amber \$99

Floppy & Hard Drives

Apple 3.5 Disk Drive \$349
Apple 3.5 UniDisk Iie/IIC \$319
UniDisk 3.5 Controller \$59
Apple 5.25 Disk Drive \$259
Laser 5.25 Floppy Drive (IIC) .. \$89
AMR 3.5 Disk Drive \$187
Apple 5.25 Controller \$59
AE 5.25 Disk Drive \$118
AE Vulcan HD/20 \$559
AE Vulcan HD/40 \$719
AE Vulcan HD/100 \$1299
Ingenuity InnerDrive
20 Megabyte Internal \$519
40 Megabyte Internal \$659
CMS 20 Meg w/SCSI \$495
CMS 30 Meg w/SCSI \$549
CMS 60 Meg w/SCSI \$709
Ohio Cache Card 1 Mb \$359

Modems

AE DataLink 1200 \$135
AE DataLink 2400 \$175
AE DataLink Express \$189
Supra 2400 w/cable \$129

Printers

ImageWriter II w/cable \$475
Olympia NP-30 w/cable \$289

Printer Interface Cards

Apple Super Serial Card \$109
Orange Grappler 9 Pin \$79
Grappler Plus \$69
Fingerprint GSI Plus \$95

Digitizers & Scanners

ComputerEyes IIGS \$199
ComputerEyes Iie \$99
ThunderScan \$159

Sound & Music

Apple MIDI Interface \$79
Opcode 1x3 Interface \$99
AE Sonic Blaster \$94
AE Audio Animator \$174
AE Phasor \$124
Street Electronics Echo IIB \$105
Street Electronics Echo IIC \$129
AIWA Speakers \$109

Memory Upgrades

Pure Applied Engineering memory
cards — with 5 year warranty!
GS-RAM 256K \$119
GS-RAM 512K \$149
GS-RAM 1 Meg \$199
GS-RAM 1.5 Meg \$259
GS-RAM Ultra 256K \$169
GS-RAM Ultra 512K \$189
GS-RAM Ultra 1 Meg \$249
GS-RAM Ultra 2 Meg \$349
GS-RAM Plus 1 Meg \$249
GS-RAM Plus 2 Meg \$349
RamKeeper \$139
RamKeeper Slot Mover \$32
RamWorks III 256K \$139
RamFactor 256K \$179
RamFactor 512K \$209
RamFactor 1 Meg \$259
RamExpress 256K \$189
Ingenuity 64K (Iie)

Extended 80 Column Card ... \$49
SMT No Slot Clock \$30

Time & Accelerators

TransWarp GS \$289
TransWarp III \$149

Input Devices/Joysticks

Apple IIC Mouse \$79
Apple Iie Mouse w/card \$119
CH Mach II Joystick \$29
CH Mach III Joystick \$35
CH Flight Stick \$47

Power/Surge Protection

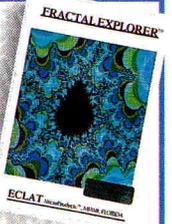
6 Outlet Surge Protector \$29
AE Heavy Duty Power Supply \$59
Kensington System Saver GS ... \$69
APC 200w UPS Battery B/U... \$295
AE Conserver \$82

Software Specials

AppleWorks GS V1.1 \$192
AppleWorks 3.0 (5.25 & 3.5) ... \$172
Crystal Quest (GS 3.5) \$26
Designasaurus (GS 3.5) \$26
Design Your Own Home GS ... \$59
GeoGraphic Jigsaw (3.5 or 5.25) \$30
HyperStudio V2.0 (GS 3.5) \$85
Joshua's Reading Machine
(GS 3.5 or 5.25) \$34
Point to Point (3.5 & 5.25) \$69
PrintShop GS w/Library \$36
Publish It III (5.25 & 3.5) \$76
Timeout Superfonts (3.5 or 5.25) \$36
Where in Time is Carmen
San Diego (3.5 or 5.25) \$26
Will Maker (5.25) \$35
Xenocide (GS 3.5) \$29

Fractal Explorer

by ECLAT
Create your
own fractal
pictures with
dazzling
color
effects.
Fractal Explorer,
is an easy to use, entertaining
fractal creation program. It
includes a flexible slide show,
as well as a slide show of
Demo pictures. **\$29**



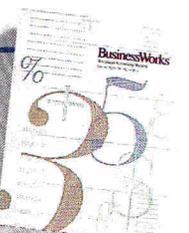
AppleWorks Companion

by Beagle
Brothers
Customize
AppleWorks
3.0 to your
own liking!
Change the order in which
files are listed, add MouseText
to screens and menus, restore
cursor position when reload-
ing Word Processor and Data
Base files, speed up your
spreadsheets, and more! ... **\$29**



BusinessWorks Bundle

by Manzanita
Now you can
have a com-
bination of
BusinessWorks
programs in one package —
General Ledger, Accounts
Payable, Accounts Receivable,
and Inventory Control. All
BusinessWorks systems look
and act just like AppleWorks,
so they're easy to incorporate.
3.5" & 5.25" disks **\$268**



CDA's 30 Day Money Back Satisfaction Guarantee

If for any reason you're not 100% satisfied with your purchase, simply return the item within 30 days for a prompt, courteous refund.

CDA's One Year Performance Warranty

All products are guaranteed for one full year to be free of defects or CDA will repair the item *free of charge*.

US/Canada 800-526-5313

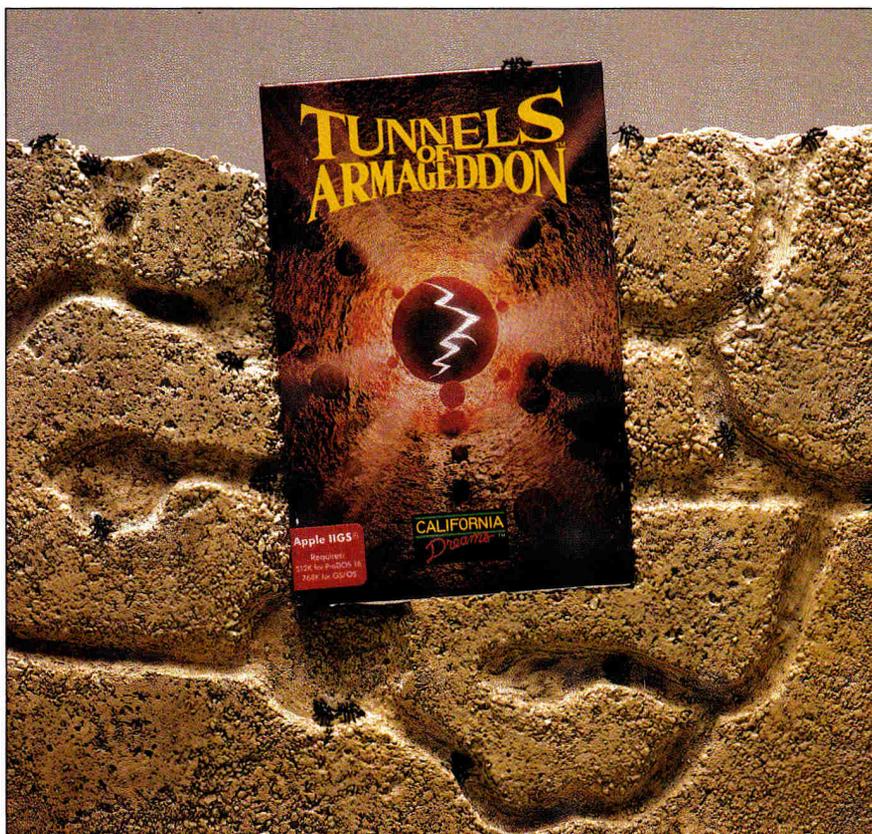
CDA Computer Sales

GO CDA! Order 24 Hrs a day via CompuServe's Electronic Mall

Shipping — UPS add 3% (\$3.50 min.); UPS 2-day add 5% (\$5.50 min.); Alaska, Hawaii, PR, APO/FPO add 6% (\$6.50 min) Foreign orders call or fax for rates: Fax (201) 832-9740 in NJ (201) 832-9004
Hours: Mon-Fri: 9-10, Sat: 9-5 EST
CDA Computer Sales, 1 CDA Plaza, P.O. Box 533, Califon, NJ 07830

All prices subject to change. CDA is not an authorized Apple dealer. Product names are trademarks or registered trademarks of their respective companies. Apple & the Apple logo are registered trademarks of Apple Computer, Inc.

GAME ROOM



TUNNELS OF ARMAGEDDON

CALIFORNIA DREAMS,
780 Montague Expressway #403, San Jose,
CA 95131, (408) 435-1445

Arcade strategy;
Apple IIgs (512K for ProDOS 16, 768K
for GS/OS); \$39.95



Tunnels of Armageddon is an ominous title, but you're faced with an ominous task. Scientists have discovered that some ancient alien race has constructed a labyrinth of tunnels beneath the continent of Antarctica and will provide humans with the secrets of hyper-space travel if a chosen pilot can negotiate

the tunnels within a given period of time. If the pilot doesn't finish in time, the aliens have judged that we're not mature enough as a society to possess those secrets, and they'll destroy Earth. So guess who gets elected?

Once you start down the first tunnel, the alarm signal that will trigger the det-

onation sequence is released. It's traveling almost as fast as your craft; you know what happens if it gets there first.

You can slow the signal down by taking out the generators along the way, and you can acquire some extra goodies (better ammunition, invisibility shields, energy boosters, and so on) if you're a good shot. Banging into the tunnel walls when you miss a turn will eventually destroy your craft, but, worse yet, it loses you precious time.

The graphics screens are incredible. I liked the music and sound effects as well, but what always stands out about California Dreams games are the fantastic images. From the pilot's seat of your HERMES (Hypervelocity Extraterrestrial Reconnaissance and Magnetically Elevated Scoutcraft) Mark I, there's a lavishly detailed view of your cockpit, including gauges showing your ship's vital signs. You'll also see the tunnels unfolding before your eyes at a dizzying rate.

Never before has a game caused me to make as many unnecessary physical gestures in some futile attempt to facilitate



A race to the finish at warp speed.

what I was doing on screen. Tunnels of Armageddon gives you an unbelievable feeling of warp-speed motion. I wouldn't recommend playing it with a hangover.

Life Low
inCider staff



Homework isn't just kids' stuff anymore.

PC Transporter gives the term homework a whole new meaning. Bring your MS-DOS work home from the office and use your Apple to get caught up... or get ahead. Now for a fraction of the cost of an IBM clone, your Apple II has the power to run virtually all MS-DOS programs.

And your Apple IIGS, IIe or II+ will run those programs at more than *three times the speed* of an IBM XT. Run Lotus 123, dBASE III PLUS, Symphony, Microsoft Works, Flight Simulator and thousands of other titles you can't get for your Apple II!

Works with your Apple's peripherals

PC Transporter was designed to take full advantage of the Apple-compatible peripherals you already own. So you won't need an extra printer, monitor, mouse, modem or hard disk. They can all be used for *either* MS-DOS or ProDOS. And you can switch back and forth instantly, even transfer files from ProDOS to MS-DOS and back again.

Your Apple-compatible peripherals and PC Transporter not only work together, you get *faster operation* and *better quality graphics*, since your Apple analog monitor is sharper than IBM-standard digital monitors.

Universal disk drive controller

PC Transporter works as a universal disk drive controller, enabling your Apple or AE 3.5 Drive to run MS-DOS or ProDOS and to shift instantly between the two. If you need 5.25 MS-DOS capability, our optional 5.25 IBM-format drives enable you to access 5.25 MS-DOS disks and will also store ProDOS.

Shop ALL the software aisles

Discover thousands of new titles you couldn't run at home before. Exchange ProDOS and MS-DOS files with your friends and co-workers. Store IBM programs on any ProDOS storage device including the Apple or AE 3.5 drive, Apple UniDisk 3.5, Apple or AE 5.25 Drive, Vulcan, SCSI or ProDOS compatible hard drives.

Easy to install and use

PC Transporter was designed by the experts so you don't have to be one to use it. We include clear, understandable installation instructions, pre-boot software and even an installation video to help.

The do-everything computer

Turn your Apple into a fast, powerful tool that'll change the way you think about homework. And know that Applied Engineering

stands behind PC Transporter with a full one-year warranty and American-made pride.

PC Transporter with 768K. \$399

IIGS Installation Kit. \$49

IIe/II+ Installation Kit. \$39

Optional 5.25 IBM Format 360K

Drive Systems

Single-Drive System. \$259

Dual-Drive System. \$399

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.

AE
Applied Engineering®
The Apple enhancement experts.

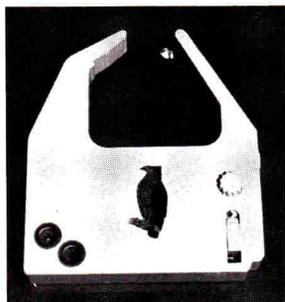
A Division of AE Research Corporation

(214) 241-6060

P. O. Box 5100
 Carrollton, TX 75011

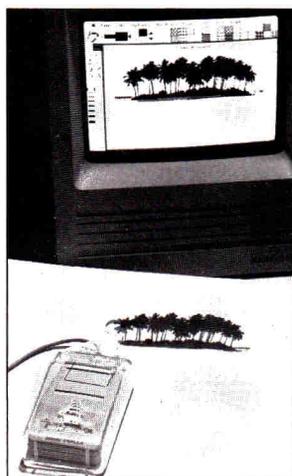
Made
 IN THE
USA

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



1. Guaranteed for 1,200 pages or free replacement! 15 times longer than regular cartridges.
2. Fits Imagewriters I & II, Apple DMP, DEC LA-50, NEC 8023A, most C.Itohs & many more . . .
3. Now re-ink in 3 min. without removing cartridge from printer. No mess, like those external re-inkers, which take up to 30 min!
4. Just add 4 to 6 drops periodically. Available in: Black, Blue, or Brown. Ample bottle of ink is included.
5. Much cheaper per page than regular cartridges, which seldom last more than 80 pages!
6. No more gradual fade-outs while printing that late-night report, etc.!
7. New version: 2. 5.

\$16.95 + \$3 Shipping



1. Custom made to fit the Apple II and Mac Plus Mouse! Shown on Mac SE/II Mouse, and comes with spacers to fit those two.
2. Forward extending arm has a 2-X Lens with a bulls eye.
3. Trace drawings, diagrams, logos, artwork & schematics.
4. Use with "T" square or free hand.
5. Use with CAD & Desk Top programs, or with Paint/Draw, etc.
6. Fits all Apple mouse models!!
7. Injection molded from Optical Grade Acrylic to a thickness up to 1.4" inch!

Only **\$14.95 + \$3 Shipping**
Order any two items—
shipping is free!

Orders (800) 451-3589
Questions: (614) 221-0502
Or write: Dynatron
406 Thurber Drive W. Ste. #9
Columbus, Ohio 43215

Circle 150 on Reader Service Card.

GRAND PRIX CIRCUIT

ACCOLADE,
550 South Winchester Boulevard, Suite 200,
San Jose, CA 95128, (408) 985-1700

Driving simulation;
512K Apple IIGs; \$49.95



Now that you've warmed up with a few test drives in a variety of street-legal sports cars, strap yourself into the cockpit of a Formula One race car. You thought 120 or 140 miles per hour was fast? How about 200 mph?



Spin out in a superpowered speed sled.

You can race with the Ferrari, Williams, or McLaren teams—that's in order of increasing top speed, but decreasing handling ability, so the Ferrari would be best for your first races. Then you can run a few courses with the Williams Renault, and once you've really got the hang of it, run some laps in the McLaren Honda. Your racing career will span the globe—Brazil, Monaco, Canada, Detroit, Britain, Germany, Italy, and Japan. They're all faithful reproductions of actual Grand Prix circuit tracks—all the turns and straightaways you see on *Wide World of Sports*.

It's not easy handling one of these super-horsepowered monsters. Even at the lower levels, you have to finesse your turns. If you wait until the last minute to crank the wheel, you'll see the world spinning by as you veer wildly off course.

Remember, as tough as it can be to handle one of these simulated cars, when you're in a race nine other cars will be out there, all trying to get ahead of you. Every time I entered a race, however, my competitors were too far ahead for me to study their tactics.

Lafe Low
inCider staff

ORBIZONE

PANGEA SOFTWARE,
10918 Kirwick, Houston, TX 77024

Arcade action;
512K Apple IIGs; \$5 shareware fee



If you've been playing arcade games and computer games since the dawn of time (or at least since the dawn of arcade and computer games), you recognize the classics—Pong, Space Invaders, and a handful of other timeless titles. Orbizone is basically the same thing as Asteroids: You control a ship in the center of the screen, which you rotate in all directions to clear the screen of "asteroids."

You'll need a joystick to play Orbizone. One fire button shoots at whichever critter you're pointing at, and the other thrusts you forward. Whenever you see a bubble on screen after you've hit something, run it over by thrusting forward and you'll be protected by a force field for a short while.

What you're shooting at is a fleet of multicolored animated blobs that float all over the screen and break down into smaller and smaller pieces each time you hit one of them. When you collide with an asteroid, you vanish in a dazzling explosion. For such a simple game, its fluid animation and crisp graphics are captivating.



Dazzling Asteroids-style action.

The guys who developed Orbizone should be well known to game fanatics: After seeing Orbizone, Senseless Violence, and Xenocide, I can safely say that the graphics screens in Brian Greenstone and Dave Triplett's games are second to none. Sure, Orbizone resembles Asteroids' game play closely, but that old monochrome standby never looked like this.

Lafe Low
inCider staff

INCLUDES A MONEY BACK GUARANTEE

NEW! VERSION 3!

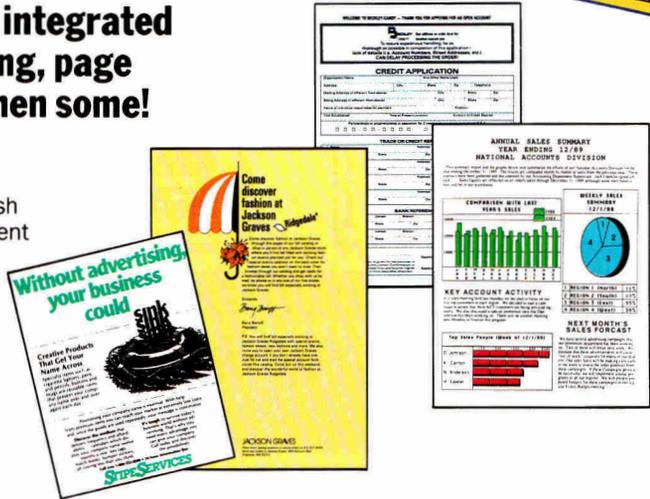
"★★★★★"
InCider
"The Star Performer!"
Nibble

Publish-It! 3

"Excellent!"
Home Office Computing
"A Real Winner!"
Personal Publishing

PUBLISH IT! 3—A full-featured, fully integrated desktop publisher with word processing, page layout, typesetting, graphics—and then some!

For all its state-of-the-art ability, *PUBLISH IT! 3* is incredibly easy to learn. *PUBLISH IT! 3* combines the familiar Macintosh User Interface, our Quick-Start Mini-Manual, a full complement of Help Screens, and the practical **WYSIWYG (What-You-See-Is-What-You-Get)** display—all designed to get you up and running in less than one hour!



New Version 3.0 Features:

- **Creates & Prints Color Documents:** Add a color ribbon to your ImageWriter—or any other printer with color capability—and your documents now print out in color!
- **Improved Operation:** Faster keyboard response time; a GOTO page command; improved graphics importing capability; enhanced layout tools.
- **Expanded PostScript Support:** Allows you to work with PostScript commands and print PostScript files to disk.
- **AppleWorks 3.0 Compatibility**
- **Imports Super Hi-Resolution Graphics** from popular drawing programs.
- **PrintShop IIGS Graphics Support**
- **Cut, Copy & Paste Groups:** Automatically moves or copies groups of objects within your document.
- **Custom Guides** make it even easier to position text & graphics.

- **Built-in Fonts:** Choose from over 1280 possible type-style combinations! Opt for bold, white, italic, underlined, outlined, shadow, & superscript or subscript characters. Type sizes range from 9 to 72 point.
- **Premium Quality Printouts:** *PUBLISH IT! 3* uses a special high density (72 x 120) printout format that gives you superior quality printouts on your dot matrix printer.
- **Built-in Word Processor:** All the features necessary for everyday word processing, plus most of the sophisticated ones found in more expensive programs.
- **Text Importing:** Load documents from APPLEWORKS, BANK STREET WRITER* or any other program with an ASCII format.
- **Includes over 200 Professionally Drawn Graphics & Illustrations**

- **Built-in Graphic Toolbox:** Draw lines, boxes, circles, rules and more. Plus, choose from a wide variety of built-in line and fill patterns, or create your own.
- **Graphics Importing:** Directly import and resize graphics and illustrations from any standard Apple double-high-resolution drawing and graphics programs—including PRINTSHOP and DAZZLE DRAW.* Then crop and size them to fit.
- **Kerning and Leading**
- **Automatic Text Flow and Word Wrap:** Flows text from column to column, or page to page.

For Apple IIe (enhanced), IIc Plus, IIGS, and Laser Computers.

Suggested Retail Price . . . **\$129.95**

Update from *PUBLISH IT! 2* . . . **\$29.95**

(For current *PUBLISH IT!* owners *only!*)

Additional Features:

- **Macintosh User Interface:** Pull-down menus, icons, scroll bars and dialogue boxes help you learn and use the program quickly. Your display screen shows you exactly what your final product will look like when you print—**What-You-See-Is-What-You-Get.**
- **Flexible Page Layout:** With your mouse or joystick, and keyboard, you can overlap, reposition, resize, and reshape the text, columns & graphics. Change your layout or experiment—almost effortlessly!

For Apple IIe (enhanced), IIc Plus, IIGS, and Laser Computers.

At your dealer, or order from Timeworks. Send in this coupon, or call Customer Service:

1-708-948-9202 FAX: 1-708-948-7626

- YES! Send me PUBLISH IT! 3.** I've enclosed \$129.95 + \$4.70 (postage & handling). Total: \$134.65
- Update me from *PUBLISH IT! 2* to *PUBLISH IT! 3*. I've enclosed the **TITLE PAGE FROM MY MANUAL**, and \$29.95 + \$4.70 (postage & handling). Total: \$34.65
- Update me from *PUBLISH IT! 1* to *PUBLISH IT! 3*. I've enclosed the **TITLE PAGE FROM MY MANUAL**, and \$44.95 + \$4.70 (postage & handling). Total: \$49.65
- Illinois residents, please add 6.5% sales tax.

- Disk Size: 5¼" 3½"
- Payment: Check Visa MC Amex

Card Number _____

Signature _____ Exp. Date _____

Name _____

Address _____

City/State/Zip _____

Mail to:

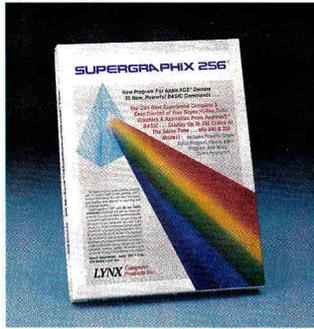
TIMETWORKS

Customer Service Dept.
444 Lake Cook Rd., Deerfield, IL 60015-4919
1-708-948-9200

*Reg. Trademarks of their respective companies. ©1988 Timeworks, Inc. All Rights Reserved.



Learn to play Cribbage like a king and Gin like a Master. Two powerful menu driven programs. It includes a deck of cards and a cribbage board.
Cribbage/Gin King (GS) by The Software Toolworks..... \$29.00



A powerful, unique, Super Hi-Res graphics, music and animation program for IIGs users. With ApplesoftBASIC you can access all 4096 colors. Draw and animate shapes. Play and digitize sound.
Supergaphix 256 with music by LYNX Computer..... \$69.00



Clean up five major U.S. cities of a dangerous terrorist movement. These guys want you dead!! For ages 13 to adult. The most action-packed IIGs game ever.
Task Force (GS) by Britannica Software..... \$24.00

PROGRAMS PLUS

FAX: 203/381-9043
 Inquiries: 203/378-3662
 75 RESEARCH DRIVE
 STRATFORD, CT 06497

1/800/832-3201 (USA)
 1/800/344-7753 (Canada)

AppleCompatibleComputers

Laser Computer, Inc.

Laser 128 Cables (Parallel, Serial, RGB or Modem).....	16.
Laser 128 Mouse.....	45.
Laser 128 Disk Drive or Laser Amber Monitor.....	99.
Laser 128 800K 3.5" Drive w/ Controller.....	215.
Laser 190A Printer w/ Serial Interface.....	239.
Laser RGB Monitor.....	315.
Laser 128 Computer.....	385.
Laser 128EX Computer.....	439.
Laser 128EX II Computer (5 1/4).....	459.
Laser 128EX II Computer (3 1/2).....	509.

Backup Utilities

Apple	
GS/ OS v5 (GS).....	45.
Central Point	
Copy II Plus v9.0.....	25.
Glen Bredon	
Dos.Master or Pro.Cmd.....	25.
ProSel 8 (5 1/4).....	39.
ProSel 16 (3 1/2).....	59.
Vitesse, Inc.	
Salvation(GS).....	35.

Entertainment Software

Accolade	
European Roadways(GS), Muscle Cars (GS).....	15.
California Challenge Disk(GS) or Supercars(GS).....	15.
International Course Disk(GS).....	15.
Bubble Ghost(GS).....	24.
Serve & Volley(GS) or Test Drive.....	27.
Mean 18(GS) or Hardball(GS).....	29.
4th & Inches(GS).....	29.
Heatwave(GS) or FastBreak(GS).....	29.
Jack Nicklaus Golf(GS) or Blue Angels(GS).....	34.
Third Courier(GS) or Test Drive III(GS).....	34.
Activision	
Rampage.....	24.
Blackjack Academy(GS).....	27.
Sky Travel(III & GS).....	34.
Artworx	
KaleidoKubes(GS).....	14.
Bridge v6.0(AP or GS) or Strip Poker II(GS).....	27.
BlueLion	
Ticket to Washington D.C.....	32.
Britannica	
Laser Force(GS) or Gnarly Golf(GS).....	18.

**Now on Comuserve-
GO PP Genie-GOPP**

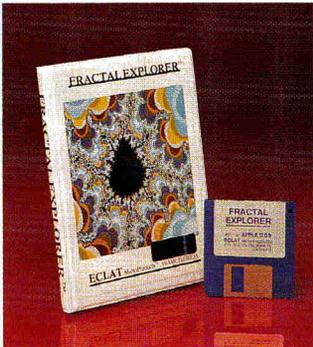
Great Western Shoot-Out(GS).....	18.
JigSaw(GS) or Task Force(GS).....	SPECIAL 24.
Broderbund	
Down Hill Challenge(GS).....	22.
Wings of Fury(AP & GS) or Prince of Persia.....	24.
Ancient Art of War or Ancient Land of Ys(GS).....	31.
The Dark Heart of Uukrul or VCR Companion.....	34.
California Dreams	
Vegas Gambler(GS), Vegas Craps(GS) or Triango(GS).....	27.
Tunnels of Armageddon(GS).....	27.
Casady & Greene, Inc.	
Crystal Quest(GS).....	31.
Cinemaware	
King of Chicago(GS).....	17.
Defender of the Crown(GS) or Sinbad(GS).....	34.
Three Stooges(GS) or Rocket Ranger(GS).....	35.
Data East	
Batman, Heavy Barrel, or Robo Cop.....	23.
Datasoft	
Tomahawk(GS).....	27.
Hunt for Red October(AP or GS).....	22.
ECLAT	
Geographic Jigsaw(AP or GS).....	30.
Electronic Arts	
Marble Madness(GS), World Tour Golf(GS) or Strike Fleet.....	15.
Music Construction Set(GS) or Skate or Die(GS).....	15.
Bards Tale II.....	18.
Cartooners(GS) or Bards Tale II(GS).....	22.
Zany Golf(GS), King's Bounty or Earl Weaver Baseball.....	26.
Bards Tale III, or Madden Football.....	33.
Instant Synthesizer(GS).....	35.
FTL	
Dungeon Master(GS).....	27.
Infocom	
Zork Trilogy or Leather Goddesses of Phobos.....	14.
Beyond Zork(AP or GS) or Battle Tech.....	34.
Zork Zero, Journey(AP or GS) or ShoGun.....	34.
Interplay	
Neuromancer(GS), Battle Chess(GS) or DragonWars(AP & GS).....	32.
Leisure Genius	
Clue, Risk, or Scrabble.....	27.
Melbourne House	
Barbarian(GS).....	25.
War in Middle Earth(GS).....	30.
Micro League Sports	
Micro League Baseball w/ General Manager & Stat.....	24.
Microprose	
F-15 Strike Eagle or Silent Service(AP or GS).....	14.
Micro Revelations	
Xenocidal(GS).....	30.
Miles Computing	
Magic Candle.....	36.

Mindscape	
Gauntlet or Paperboy(AP or GS).....	25.
Super Star Soccer(GS) or Hostage(GS).....	27.
Gauntlet(GS) or Super Star Ice Hockey(GS).....	29.
Captain Blood(GS).....	29.
Shadow Gate(GS), Uninvited(GS), Deja Vu II(GS).....	32.
Balance of Power 1990(GS) or Deja Vu(GS).....	32.
Origin Systems	
Tangled Tales.....	20.
Times of Lore(AP & GS) or WindWalker.....	27.
Space Rogue, Knights of Legend or Omega(AP or GS).....	34.
Ultima Trilogy(I, II & III), Ultima IV or Ultima V.....	39.
PBI Software	
Sea Strike(GS).....	29.
Strategic Conquest(GS).....	35.
The Tower of Myrarglen(GS) or Alien Mind(GS).....	39.
Sierra On-Line	
Mother Goose(AP or GS).....	19.
TheXder(AP or GS) or Silpheed(GS).....	24.
Leisure Suit Larry(AP or IIGS).....	26.
Gold Rush(AP or GS) or Black Cauldron(GS).....	26.
Kings Quest IV(AP or GS).....	32.
Kings Quest I, II or III (AP or IIGS).....	32.
ManHunter New York(AP or GS) or Police Quest(AP or GS).....	32.
Software Toolworks	
Cribbage/ Gin King(GS).....	SPECIAL 29.
Chessmaster 2100 or Life & Death(GS).....	33.
Chessmaster 2100(GS) or Keef the Thief(GS).....	33.
So What Software	
Sonix(GS).....	35.
Spectrum Holobyte	
Soko-Ban.....	23.
Tetris(AP & GS).....	25.
Strategic Simulations	
AD&D Pool of Radiance.....	30.
Battle of Napoleon or The Azure Bonds(GS).....	33.
Sublogic	
Jet.....	27.
Flight Simulator II.....	32.
Taito	
Arkanoid.....	10.
Renegade(AP & GS), Arkanoid II(GS) or Rastan(GS).....	24.
Bubble Bobble(AP & GS) or Oix(AP & GS).....	24.
Three Sixty	
Warlock(GS) or Dark Castle(GS).....	35.
Victory Software	
2088 The Cryllan Mission(GS).....	45.
Virginia Real Software	
Anchorman.....	29.

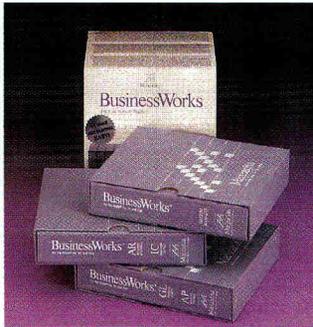
Utilities and Languages

Absoft	
AC/ BASIC (16-bit BASIC Compiler for GS).....	79.

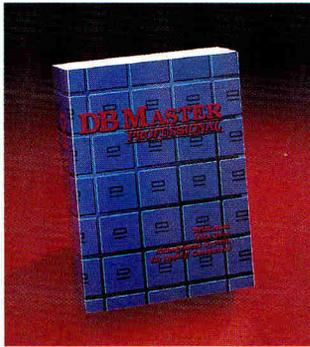
Stock, Speed, Support, Price



An entertaining fractal program with dazzling color effects. Informative and educational. Includes on-line help and 16 color display. Uses Mandelbrot and Julia fractal sets.
Fractal Explorer (GS) by Eclat \$28.00



The complete accounting package for the Apple II family. Includes: G/L, A/R, A/P, Inventory and System Manager. Payroll module available separately. Powerful and easy to use.
BusinessWorks Bundle by Manzanita Software \$269.00



This is a powerful relational database manager. It's easy to use and can convert Appleworks files, so getting started is a snap.
DB MASTER PROFESSIONAL (GS) by Stone Edge \$189.00-Apple IIGS

PROGRAMS PLUS FAX: 203/381-9043 **1/800/832-3201 (USA)**
 Inquiries: 203/378-3662 **75 RESEARCH DRIVE** **1/800/344-7753 (Canada)**
STRATFORD, CT 06497

Big Red Computer
 PS Lovers' Utility Set(AP or GS) 27.

Micol Systems
 Micol Advanced Basic(GS) v3.0 89.

Roger Wagner
 SoftSwitch(GS) 39.
 Merlin 8/16 (Ile, Ilc, IIGS) 75.

So What Software
 Hyper Launch(GS) 29.
 Call-Box(GS) 69.

The Byte Works
 ORCA/Disassembler(GS) 32.
 ORCA/DeskTop(GS) 34.
 ORCA/M Assembler(GS) 59.
 ORCA/Design Master(GS) 59.
 ORCA/Pascal Desktop Debugger(GS) 80.
 ORCA/C Desktop Debugger 80.

TML Systems
 TML Source Code Library III(GS) 35.
 TML Speech Toolkit(GS) 45.
 TML Basic(GS) or TML Pascal III(GS) 82.

Zedcor
 ZBasic v4.0 39.

ECLAT
 Fractal Explorer(AP or GS) SPECIAL 28.

Electronic Arts
 DeluxePaint III(GS) 35.
 DeluxeWrite w/ Deluxe Paint III(GS) 59.

Lynx Computer
 Supergraphix 256 w/music(GS) SPECIAL 69.

Roger Wagner
 Graphic Exchange(GS) 35.

So What Software
 Iconix(GS) 29.

Spinnaker
 Newsroom Clip Art Collection vol. 1, 2 or 3 14.
 Certificate Maker Library #1 19.
 Fonts For Springboard Publisher(GS) 19.
 Certificate Maker or Newsroom 26.
 Springboard Publisher v2.0(AP or GS) 79.

Thunderware
 Thundercan (AP or GS) 165.

Vitesse, Inc.
 Quickie(GS) 215.

GS Font Editor or Program Writer 29.
 Timeout UltraMacros or SpreadTools 37.
 Beagle Bros. Desk Accessories(GS) 37.
 Timeout SuperFonts or QuickSpell 45.
 Timeout ReportWriter or Beagle Write 48.
 Timeout Graph 52.
 Beagle Write(GS) 59.

Broderbund
 On Balance 39.
 Bank Street Writer Plus(AP or C+) 50.

Claris
 Apple Works v3.0 175.
 Apple Works(GS) 209.

Dac Software
 Dac-Easy Accounting 65.

Intuit
 Quicken v1.5 39.

Manzanita
 BusinessWorks Payroll (AP & GS) 109.
 BusinessWorks Bundle AP & GS (Sys. Manager, G/L, A/P, A/R, Inventory) 269.

Graphics Packages

Abracadata
 Architecture Library 1, 2, 3 or 4(AP or GS) 21.
 Interiors Library 1, 2(AP or GS) 21.
 or Landscape Library 1 35.
 Design Your Own Train 47.
 Design Your Own Home: Architecture, Interiors 47.
 or Landscape 59.
 Design Your Own Home: Architecture(GS) 59.
 or Interiors(GS) 59.
 Design Your Own Home: Landscapel(GS) 59.

Activision
 Draw Plus 20.
 Paintworks Gold(GS) 45.
 Paint/Write/Draw 80.

Baudville
 Award Maker Plus(AP & GS) 35.
 816/ Paint 45.

Beagle Bros.
 Beagle Draw(GS) 52.

Berkeley Softworks
 GEOS, GEOCalc or GEOFile 45.

Broderbund
 Print Shop Graphics Library I, II, III or Holiday Ed 16.
 Print Shop Graphics Library Sampler Edition(GS) 24.
 Print Shop Graphics Library Party Edition(GS) 24.
 Print Shop Companion 25.
 Print Shop/AP or C+ 29.
 Dazzle Draw or Print Shop(GS) 39.

Communication Software

Applied Engineering
 ReadyLink 69.

Beagle Bros.
 TimeOut TeleComm 45.
 Point-to-Point 59.

Checkmate Technology
 ProTERM (AP or GS) 85.

Compuserve
 Compuserve Starter Kit 24.

L & L
 GBBS 79.

Business Software

Abracadata
 Electronic Drawing 32.
 Everybody's Planner 69.

ACTAsoft
 Alpha Check v3.0 32.

Addison-Wesley
 Wordbench (AP & GS) 99.

Beagle Bros.
 Timeout MacroTools or MacroTools II 19.
 Beagle Write Desk Accessories or Font Pack 1 or 2 23.
 Beagle Write Picture Manager 25.
 Beagle Bros. Clip Art vol 1 & 2(GS) 29.
 Timeout SideSpread, FileMaster, or DeskTools 29.
 Timeout Thesaurus, DeskTools II 29.
 or PowerPack SPECIAL 29.

MECA
 Managing Your Money v4.0 (AP & GS) 95.

Mecc
 Calendar Crafter School(GS) 59.

Micca Soft
 Invoicer w/ A/P & Sales Tracking/ Inventory 139.

Milliken
 Medley(GS) 79.

Monogram
 Dollars and Sense 79.

Nolo Press
 Will Maker 39.

Sensible Software
 Sensible Grammar ProDos (AP & GS) 06.SPECIAL 55.

Seven Hills Software
 Font Factory(GS) 25.
 Disk Access 32.
 Graphicwriter III(GS) 85.

Softspoken
 Cross-Works v2.0 69.

Stone Edge
 DB Master Professional SPECIAL 199.

Timeworks
 People, Places and Things, Design Ideas, Symbols and Slogans, Education Graphics, Font Pack 1 or 2 (AP & GS) 27.
 Graph It! or SwiftTax 45.
 Art Portfolio 4 in 1 69.
 Publish-It v3.0(AP & GS) 74.

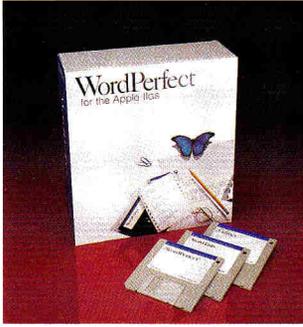
Word Perfect Corporation
 WordPerfect(GS) SPECIAL 109.

Your Apple Plus is PROGRAMS PLUS

Circle 128 on Reader Service Card.



A flexible printer interface for the Apple GS, C+, and C. Emulates the Imagewriter I and II on popular 9-wire printers and the Imagewriter LQ on 24-wire printers. Cables included.
Superwriter 924 by Xetec, Inc. \$79.00



A powerful word processor designed to use the full power of the Apple //gs. Pull down menus and a keyboard interface let you access all features with mouse or keyboard. Apple //e version also available.
WordPerfect by Word Perfect Corp. \$109.00



Get a genuine Apple mouse for your Apple //e or //c. Mouse for the //e comes with an interface card, none is needed for the //c. Take full advantage of your Apple.
Apple Mouse by Apple Computer
//c \$85.00 //e \$125.00

PROGRAMS PLUS

FAX: 203/381-9043
 Inquiries: 203/378-3662
 75 RESEARCH DRIVE
 STRATFORD, CT 06497

1/800/832-3201 (USA)
1/800/344-7753 (Canada)

Educational Software

Activision
 Music Studio v2.0(GS).....45.

A.E.C.
 Spanish Vocabulary.....SPECIAL 18.
 Spanish Grammar.....SPECIAL 18.

Barron's
 Computer SAT Revised Version.....34.

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

Broderbund
 Where in the World is Carmen San Diego?.....25.
 Science Tool Kit Module I, II or III.....26.
 Where in the USA is Carmen San Diego?.....29.
 Where in Europe is Carmen San Diego?(AP or C+).....29.
 Where in the World is Carmen San Diego?(GS).....29.
 Where in Time is Carmen San Diego?(AP or C+).....29.
 Playroom.....31.
 Science Tool Kit Master Module.....55.
 Geometry(GS).....55.
 The Family Software Library.....69.

ByteWorks
 Ugly Duckling(GS).....32.

Compu-Teach
 Joshua's Reading Machine(AP or GS & C+).....27.
 See the U.S.A. or Once Upon A Time II.....30.
 Once Upon A Time(GS Talking).....35.

Davidson & Associates
 Math Blaster Plus(GS) or Word Attack Plus(AP or GS).....29.
 Alge-BlasterPlus(AP or GS) or Math Blaster Plus.....29.
 Grammar Gremlins or Read 'N' Roll.....29.
 Spell-It Plus(AP or GS).....29.
 or Math Blaster Mystery(AP or C+).....29.
 Talking Math & Me(GS) or Talking Reading & Me(GS).....29.
 Talking Math Blaster Plus(GS).....29.
 Word Attack Plus Spanish or French.....29.

First Byte/Electronic Arts
 The Rhyming Notebook.....29.

Grade Busters Corporation
 Grade Busters 4,5,6.....42.
 Grade Busters 1,2,3.....75.

Great Wave
 Kidstime II (GS).....24.

Learning Company
 Magic Spells(GS), Math Rabbit or Gertrudes Secrets(GS).....24.
 Reader Rabbit, Magic Spells or Math Rabbit(GS).....24.
 Think Quick or Writer Rabbit.....30.

Writer Rabbit(GS) or Think Quick(GS).....30.
 Reader Rabbit(GS).....36.
 Writing and Publishing Center(AP or GS).....47.

Lawrence Productions, Inc.
 McGe...29.

Mindscape
 Crossword Magic.....34.

Orange Cherry
GS Talking Series:
 Animals, Dinosaurs, Numbers, First Write, First Reader, School Bus, Alpha Chimp, Colors & Shapes, Reading Railroad, Addition & Subtraction, ABC's, Speller, Clock or Money.....42.

Pelican Software
 Monsters & Make Believe Plus or POW! ZAP! KER-PLUNK!.....29.

Roger Wagner
 HyperStudio(GS).....95.

Sensible Software
 Report Card III(AP & GS).....SPECIAL 37.

Simon & Schuster
 Speed Reading Tutor IV or Typing Tutor IV Plus.....27.
 Typing Tutor IV Plus(GS).....29.

Software Toolworks
 Mavis Beacon Typing.....28.
 Mavis Beacon Typing(GS).....33.

Spinnaker
 Facemaker: Golden Edition or Kidwriter.....27.
 Atlas Explorer.....32.
 Kidwriter Gold(GS).....35.

Terrapin
 Terrapin Logo Plus.....79.

Tom Snyder Productions
 Reading Magic Library: Jack and the Beanstalk or Flood, the Bad Guy.....19.

Weekly Reader
 New Talking Alphabet (3½) or New Talking Opposites (3½).....30.
 New Talking Shapes (3½).....30.

Accelerators/Ramcards/ Z-80/80 Column Cards

Apple Computer
 Apple //e Enhancement Kit.....65.
 Apple //e Extended 80 Col. Card.....89.

Applied Engineering
 PCtransporter Installation Kit(//e).....35.
 PCtransporter Installation Kit GS.....45.
 ViewMaster 80 (//+).....129.
 GS-Ram 256K.....135.
 RamWorks Basic 256K.....135.
 RamWorks III 256K.....149.
 Ramkeeper.....155.
 TransWarp III Accelerator.....159.
 GS-Ram 512K.....155.
 RamWorks III 512K.....179.
 Z-Ram Ultra 1 512K.....185.
 Z-Ram Ultra 2 256K.....195.
 GS-Ram Ultra 512K.....189.
 RamFactor 512K.....205.
 GS-Ram 1MG.....209.
 Ram Express 512K, or Z-Ram Ultra 2 512K.....219.
 RamWorks III 1MG.....235.
 GS-Ram Ultra 1MG.....245.
 GS-Ram Plus 1MG, RamFactor 1MG or GS-Ram 1.5MG.....259.
 Z-Ram Ultra 2 1MG.....275.
 TransWarp Accelerator(GS).....305.
 Z-Ram Ultra 3 1MG.....345.
 GS-Ram Ultra 2MG or GS-Ram Plus 2MG.....349.
 PC Transporter (768K).....379.
 GS-Ram Plus 3MG.....459.

Chinook
 C-Ram w/256K(C & C+).....159.
 C-Ram w/512K(C & C+).....195.
 C-Ram w/1MB(C & C+).....269.

Harris Laboratories, Inc.
 GS Load Card.....55.
 GS Sauce Card.....85.

Zip Technology
 Zip Chip 4 MHZ.....129.
 Zip Chip 8 MHZ.....159.

Modems

Anchor Automation
 2400E.....155.

Applied Engineering
 DataLink Modem 2400B (Int. //+, //e or GS).....175.
 DataLink Express Modem.....189.

Practical Peripherals
 Practical Modem 2400 SA.....179.

Prometheus
 Pro Modem 2400A (Single Card).....129.

Supra Corporation
 SupraModem 2400 (Hayes Compatible).....115.

Printer Interface Cards

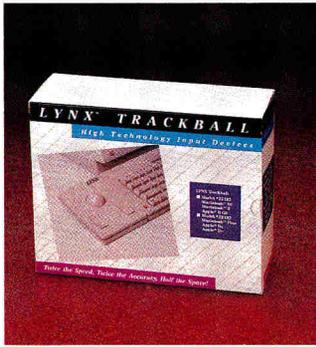
Apple
 SCSI Card.....115.
 Apple Super Serial Card.....119.

Applied Engineering
 Parallel Pro (//+, //e, //GS).....85.
 Serial Pro (//+, //e, //GS).....119.

Orange Micro
 Grappler Plus (AP or GS).....75.
 Grappler 9 pin.....79.

**Now on CompuServe-
 GO PP Genie-GOPP**

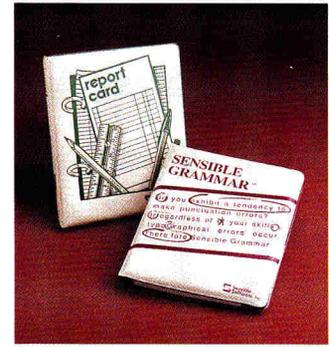
Stock, Speed, Support, Price



A professional mouse replacement for the apples. Works with all software that supports the mouse. Has three buttons for easy use. Saves desk top space. Comes in Apple platinum.
TurboTrackball by LYNX Computer \$59.00



Learn Spanish with two programs for the Apple II series. Teaches both Vocabulary and Grammar for Grades 5 to adult. Use existing lessons or add your own.
Spanish Vocabulary or Spanish Grammar by American Educational Computer, Inc. \$18.00ea.



Sensible Grammar is a powerful stand alone document proofreader that works with most word processors including Appleworks v3.0. **Report Card II** is a complete teachers grading system.
By Sensible Software..... \$55.00

PROGRAMS PLUS

FAX: 203/381-9043
 Inquiries: 203/378-3662
 75 RESEARCH DRIVE
 STRATFORD, CT 06497

1/800/832-3201 (USA)
 1/800/344-7753 (Canada)

SMT	
No Slot Clock.....	30.
Print Tech II (Parallel Interface).....	33.
Thirdware	
Upgrade Kit (FingerPrint I & II).....	30.
Finger Print GSi V.III	
(Includes Desktop Accessories-IIGS).....	89.
Finger Print Plus (Specify Cables: Parallel, Serial, or ImageWriter(II, II+ & IIe).....	89.
Xetec Inc.	
Superwriter 924(GS,C + C).....	SPECIAL 79.

Accessories

Advanced Gravis	
Advanced Gravis' JoyStick(AP & GS).....	39.
MouseStick ADB(GS).....	85.
Apple Computer	
Apple Mouse IIc.....	SPECIAL 85.
Apple Mouse IIe.....	SPECIAL 129.
Applied Engineering	
TimeMaster II H.O.....	85.
Conserver(GS).....	85.
Sonic Blaster(GS).....	109.
IBM Style Keyboard.....	119.
Audio Animator(GS).....	179.
Big Red Computer	
Labels, Labels, Labels.....	27.
CH Products	
Hayes Mach III Joystick.....	33.
Hayes Flight Stick.....	49.
Roller Mouse ADB(GS).....	119.
Digital Vision	
Computer Eyes(GS).....	195.
Kalmar	
Kalmar roll top 3 1/2 (holds 45).....	14.
Kalmar roll top 3 1/2 (holds 90).....	21.
Kalmar roll top 3 1/2 (hold 135).....	31.
Kensington	
Mouse Pocket (Reg. or ADB) or Mouseway (Mousepad).....	8.
Apple IIe, IIc or GS Dust Cover or Imagewriter II Cover.....	9.
Apple Security System.....	34.
AntiGlare Filter GS.....	39.
Printer Muffler 80.....	43.
System Saver (Platinum or Beige).....	59.
System Saver IIGS.....	69.
New Turbo Mouse (Reg. or ADB).....	109.
Kraft	
Kraft Universal 3 Button Joystick (IIe, IIc).....	34.
Koala Technologies	
Koala Pad Plus w/ Graphics Exhibitor.....	84.
Kurta	
IS ADB Tablet w/ stylus(GS).....	289.
Lynx Computer	
Turbo Trackball (IIe or GS).....	SPECIAL 59.

Mouse Systems	
A + Mouse (IIc).....	63.
A + ADB Mouse (IIGS).....	83.
MousTrak	
MousePad 7"x 9" Size.....	7.
MousePad 9"x 11" Size.....	8.
MousePad L/F (Low Friction).....	9.
Practical Solutions	
Cordless Mouse.....	109.
RC Systems	
Double Talk.....	187.
Ribbons	
Available colors: black, blue, brown, green, orange, purple, red, yellow, silver or gold	
ImageWriter Ribbon-color.....	4.
Laser 190A Ribbon.....	5.
Seikosha Ribbon.....	6.
ImageWriter II-4 Color Ribbon.....	9.
ImageWriter Ribbon-Black six pack.....	20.
ImageWriter Rainbow Pack (6 Colors).....	20.
Street Electronics	
Echo IIB (AP & GS).....	105.
Echo IIC (IIC & IIC +).....	129.
Triad Venture	
GDL Graphic Disk Labeler-GS v2.0.....	25.

Printers

Apple	
ImageWriter II.....	459.
Brother	
M-1109AP (ImageWriter Compatible).....	225.
Laser Computer, Inc.	
Laser 190A w/ Serial Interface.....	239.
Seikosha	
Seikosha SP 1000 (ImageWriter Compatible).....	229.

Disk Drives & Hard Disk SubSystems

American Micro Research (Micro Sci)	
Micro Sci C3 Controller.....	52.
A.5 Half Height (II+ & IIe) or A.5C Half Height (IIc).....	135.
A5D Half Height 5 1/4" Drive (IIGS Daisychain).....	155.
AS800K 3.5 Ext. Drive.....	195.
AMR 800K Drive Bundle.....	235.
AMR D20/APS 20MB HD w/ SCSI(IIe & GS).....	569.
AMR D60/APS 60MB HD w/ SCSI(IIe & GS).....	799.
AMR 45MB Removable(AP & GS).....	1079.
Applied Engineering	
Transdrive Half Height 360K.....	119.
Transdrive 360K Single.....	219.
Transdrive Dual 360K.....	329.

Vulcan 20(AP or GS).....	569.
Vulcan 40(AP or GS).....	729.
Vulcan 100(AP or GS).....	1369.
Chinook	
CT-20 Hard Drive(AP & GS).....	505.
CT-20c Hard Drive IIc.....	619.
CT-40 + Hard Drive(AP & GS).....	619.
CT-40c Hard Drive IIc.....	775.
CT-80 Hard Drive(AP & GS).....	965.
CMS	
SCSI Rom Upgrade.....	25.
"SDUSeries - Stack" Platinum IIe, IIGS	
20 MB w/ SCSI II card.....	529.
30 MB w/ SCSI II card.....	549.
60 MB w/ SCSI II card.....	709.
First Class	
D2 20MB HD(IIe & GS).....	489.
DF2 Compact 20MB HD(IIe & GS).....	535.
D4/T 40MB HD(IIe & GS).....	869.
DF4 40 Compact MB HD(IIe & GS).....	895.
D7/T 70 MB HD(IIe & GS).....	965.
DF7 Compact 70 MB HD(IIe & GS).....	989.
Laser Computer, Inc.	
Universal Disk Controller.....	45.
Laser DiskDrive(GS).....	95.
Laser 800KB Drive.....	189.
Laser 800KB Drive Bundle.....	215.
OHIO Kache	
Multi-Kache SCSI Option.....	69.
Multi-Kache w/ 256K.....	259.
Multi-Kache w/ 1 meg.....	379.

OUR POLICY

- VISA and MASTERCARD accepted. No surcharge. Your credit card is not charged until we ship.
- If we must ship a partial order, shipment that completes is sent free.
- All shipments insured; no additional charge.
- Upon receipt and approval, personal and company checks clear the same day for immediate shipment.
- No sales tax except orders shipped within CT, add 8% tax.
- COD maximum \$1000, cash or certified check. COD orders ship via UPS Blue Label unless UPS Ground delivers next day.
- 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.
- For Purchase Orders or Corporate Purchases please call our business office, 203-378-1926, 9am-5:30pm EST. Purchase Orders accepted at our discretion.

SHIPPING

- **Continental U.S.:** Add \$7.00 minimum per order to cover Federal Express Standard Overnight Service, unless UPS ground delivers next day. Some areas require an additional day. UPS ground service available at reduced rate per customer request.
- All (in-stock items) ordered by 5:30pm Eastern Time Monday thru Friday will ship that evening for overnight delivery, barring computer failures or other catastrophes.
- **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.

Your Apple Plus is PROGRAMS PLUS

Circle 128 on Reader Service Card.



DEVIS GREBU

RED HOT APPLES

... or How We Learned to Stop Worrying and Love the Pravetz

JUST OUTSIDE THE ANCIENT CARAVAN city of Tashkent stands a late-20th-century symbol of the changing face of East-West relations. Where trade routes once crisscrossed the desert, technological equipment and know-how are now bartered: Half a world away from Silicon Valley, a Soviet computer plant is assembling a machine called the *Pravetz*—an Apple IIe clone.

The company, known as Variant, is a joint venture between Bulgaria and the U.S.S.R. At the factory in Tashkent, some four hours by Aeroflot jet south of Moscow in the Soviet republic of Uzbekistan, computer parts shipped in from Bulgaria are assembled, tested, packed, and sent out in groups of ten to schools across the Soviet Union. The computers are purchased by the Ministries of Education in the various Soviet republics.

Variant offers schools an entire array of services—instruction (there's a classroom where students and teachers can learn to use their machines), support, software

development and distribution, repairs, and a seven-year warranty.

Variant rents the top floor of a three-story building that was planned as offices, and workers must make do with the limited space available. The interior is shabby and drab; the only bright spots are the omnipresent posters of Lenin exhorting his people to greater efforts and Soviet glory. There's no assembly line; workers move computers from room to room by hand, resulting in much congestion and frustration. The desks of Variant's software developers are littered with glasses of tea and mineral water; almost everyone smokes cigarettes, and they smoke everywhere.

ACROSS THE BLACK SEA

For Bulgaria and the Soviet Union, former enemies now joined in the uneasy alliance of the Eastern bloc, the bureaucratic problems involved in sharing technology were indeed formidable. Today's Pravetz computer has been eight years in the making. ►

By ALAN R. MARTIN



Left to right: Vladimir Fedorov of Lidar; author Al Martin; Jacob Tastkin, software-products director; and Inna Grebneva, Martin's interpreter in Uzbekistan.



Variant's screen logo—Cyrillic version, of course. The Pravetz also supports the Roman alphabet.

In 1982 the only decent personal computer available anywhere behind the Iron Curtain was an Apple II Plus clone. The Bulgarian Academy of Science Institute for Robotics and Cybernetics then developed a IIe clone that supported the Cyrillic alphabet and named it the *Pravetz*, after a small village where one of Bulgaria's presidents was born. Some 10,000 units of the Pravetz 82 were built (with-out benefit of a license from Apple).

In 1984 the leaders of the Bulgarian military decided to computerize the management of the armed forces. Using the utility programs Copy II and BugByter—and no

documentation—a 17-year-old soldier from the nuclear-physics department of Sofia University figured out in just six months how to adapt AppleWorks 1.0 for the Bulgarian language and the Cyrillic alphabet. United States copyright law was ignored—the usual practice in the Eastern bloc.

With the help of five friends in Moscow, Vladimir Fedorov, a physicist at the U.S.S.R. Academy of Sciences, learned how to use the Pravetz to run his laser-based pollution-tracking system. The success of his project led to the formation of Lidar, a for-profit research and equipment vendor set up by the Academy of Sciences.

Camping Out in the U.S.S.R.

Holly Jobe, coordinator of technology services for Montgomery County, Pennsylvania, and five American students returned recently from six weeks at a Soviet computer camp located 2½ hours by jet north of Moscow. She reported at the Florida Educational Technology Conference in February that "there are very few computers in the U.S.S.R.," but that we Americans "are not necessarily 'ahead.' We do have better hardware and software—but we also have a lot to learn from the way [the Soviets] do things."

Perhaps because of a lack of equipment, students at the International Computer Camp's "Robotland" spent "a tremendous amount of time off the computer," despite the name of the camp, Jobe says. "The focus was not

on the technology, but on problem solving" using computers, she adds. The young American and Soviet campers worked on algorithms for the Knight's Move, the Towers of Hanoi, the Ferryman's Dilemma, and Black Boxes—all classic problems in logic and mathematics.

The "game" of Black Boxes, for instance—creating a mathematical function that converts one number (the input) to another (the output)—revealed to Jobe an interesting difference in the styles of the Soviet and American students. Shown a sample black box that changes 2 to 4, 3 to 6, and 12 to 24, "the Soviet children mimicked what they had seen," creating black boxes that also multiplied the input by a constant. The Americans,

Jobe says, "were more creative."

But Jobe's Soviet experience made her think that "sometimes we [Americans] have too much—we become enamored of our gadgets. We could take a page from [the Soviets'] book and focus back on the curriculum, and identify where technology fits well."

Jobe encourages everyone to visit the Soviet Union. "This is an especially vital time there," she notes, "and the Soviets also have a great deal to teach us about using computers in schools." For information about the Robotland project, Jobe suggests writing Director A. Alimazon, Academy of Sciences Institute of Software Development, International Computer Camp, Peresalvli-Valesky, U.S.S.R. □

—Paul Statt



A look inside the Pravetz, the only II clone that features built-in slots like the Apple II.



In the "Variant Classroom of Tomorrow" in Tashkent, the ratio of students to computers is 2 to 1—a far cry from the ratio in the rest of the Soviet Union (or the U.S., for that matter).

Abram Magarshak, Lidar's director general, estimated that the company could make a profit by selling just ten computers a year at a total price of 800,000 rubles (approximately \$128,000 U.S., although there's no official exchange rate). The Pravetz, however, was available only in Bulgaria; that country's currency, the *lev*, isn't convertible. The Bulgarians refused to fill such a small order. Because the Pravetz was necessary to fulfill the contracts, Magarshak offered to purchase the ten computers at greatly inflated prices, with the payment to be made from the profits of the contracts. The Bulgarians turned down that offer, too.

To pay for the computers, Lidar's director then proposed to form Variant, an organization that would assemble the Bulgarian parts in Tashkent in Central Asia, for sale to schools throughout the U.S.S.R. The Bulgarians would invest the parts, and Lidar would pay the salaries of the workers, locate the space, and take care of all assembly, distribution, and education through Variant. Fedorov jokingly calls it "a screwdriver plant—we screw the product together. We sew the label on the product."

Proposing such an organization was easy. Making it work wasn't. A whole array of logistical, political, and bureaucratic hurdles blocked Variant's path. For example, various Soviet ministries, including trade and education, blocked the incoming supply of computers; they didn't want to jeopardize their relationships with computer suppliers in Czechoslovakia and Poland, even though those computers were of inferior quality.

Another problem was that Variant needed permission to do business from the same ministers who had blocked the importation of the computers in the first place and had even tried to prevent the establishment of the company. Variant was closely associated with Lidar, however, and Lidar's roots are deep in the U.S.S.R. Academy of Sciences, an institution with a great deal of power and authority. As in the United States, knowing the right people can open many doors. Despite its problems getting off the ground,

Variant showed a profit after one year and established a model-education project in Tashkent—a "Variant Classroom of Tomorrow," so to speak.

The Pravetz is now facing some stiff competition, however. Fedorov says 15,000 Pravetz computers are used in Soviet schools, although "that's a small drop" among the 2 to 3 million machines needed. Although Tashkent, a city of two million people, is the capital of the republic of Uzbekistan and the industrial center of Soviet Central Asia, Variant was able to get permission to put its computers into Uzbek schools because the area is considered provincial, according to Fedorov. In Moscow, Leningrad, and Kiev, he says, IBM clones are in demand for schools and businesses. In addition, says Dmitrii A. Koryagin, head of the Department of Physical and Mathematical Sciences at the U.S.S.R. Academy of Sciences and a member of the International Computer Club (ICC), developers in the U.S.S.R. have also produced Soviet computers that use their own operating systems and hardware.

OPEN WINDOW ON THE WEST

Trade with the Soviet Union can be extremely profitable if U.S. companies keep in mind the problems of nonconvertible currency, the restrictions imposed by that nation's immense bureaucracy, and language and cultural differences. One difficulty the Soviets are addressing currently is the issue of copyright. Variant and other new joint ventures in the Soviet Union now adhere strictly to U.S. copyright laws; for that reason, the Russian version of AppleWorks isn't distributed. Throughout the Soviet Union, however, a thriving black market deals in many products, including pirated software from the West, although such programs are often plagued with viruses.

As Mihail V. Mishustin, an official with the International Computer Club, explains, "We want to show our people, especially professional people, the power of modern Western technology. The problem is it's difficult for us to deal ►

Better Red Than Dead?

What's the first North American Apple II software developer to sell products in the Soviet Union?

Claris? Wrong—although pirated copies of AppleWorks abound. Beagle Bros? Good guess, but wrong again. It's not Broderbund, Scholastic, Davidson & Associates, or Timeworks, either. In fact, this company isn't even based in the United States.

Give up?

It's Micol Systems, the Toronto-based publisher of programming languages for the Apple II line. Micol may not be a household word to the average Apple II user, but the small company—even by Apple II market standards—is no newcomer to the II world. Formed more than seven years ago by Steven Brunier, president, and Ron Lewin, marketing director, Micol Systems has emerged as the BASIC-language leader for both 8-bit and 16-bit Apples.

According to Lewin, a Russian edition of Micol Advanced BASIC (the Apple IIe/IIc version) should be available in the Soviet Union by early September.

Lewin and Brunier are working with Vladimir Fedorov of Lidar, the company that will produce the Russian version of Micol Advanced BASIC. Acting as a "middleman" of sorts is the International Computer Club (ICC), which Fedorov describes as "a big consulting firm" for both Soviet and foreign companies. Fedorov is a founding member of the ICC and president of Lidar, a company that makes environmental monitoring systems that use the Pravetz computer, an Apple II clone

manufactured in Bulgaria and Uzbekistan by Variant. (See the accompanying story.)

Lewin says he expects the price of Micol Advanced BASIC to be 125 rubles (approximately \$20 U.S.); the final decision is Lidar's, however. One difference in the way software is sold in the Soviet Union is that the 125-ruble price tag is final for everyone—no discounting. "What's called 'business' in the United States is called 'speculation' in Russia and is illegal," Lewin notes.

Selling software in the Soviet Union is no simple proposition, so what problems do Lewin and Micol Systems expect? "I don't know," says Lewin. "I honestly don't know. The conversion to the Cyrillic alphabet isn't hard. Translating the manual isn't hard. I imagine the biggest problem is the bureaucracy. It's tough to get paper and disks, and it can take months to get anything printed."

Even if Micol Advanced BASIC leaves them dancing in Red Square, there's still a problem: What does a Canadian company do with all those rubles? Unlike other currencies, such as the dollar, the franc, the yen, and so on, the ruble is worthless outside the Soviet Union.

"You can convert rubles to dollars," Lewin says. "However, the Soviet government sets the exchange rate, which isn't realistic or favorable." The government inflates the ruble to make the Soviet economy seem more stable to the rest of the world, he explains.

Micol doesn't necessarily want to take the rubles out of Russia, however.

"We're thinking of hiring Russian programmers to produce software for future projects," says Lewin. The pool of programming talent in the Soviet Union is reportedly deep. As Fedorov explains, the problem with information technology in the Soviet Union isn't "how to"—it's "what to do with it."

That's why one of the priorities for Fedorov and the ICC's Mihail V. Mishustin, who recently visited Toronto along with Dmitrii A. Koryagin, a professor of physical and mathematical sciences at the U.S.S.R. Academy of Sciences, is to help companies such as Micol reach Soviet consumers, as well as educate Soviet citizens on the possibilities of information technology. For example, Mishustin and the ICC run a twice-monthly television show designed to teach children about computers.

Fedorov and Mishustin are laying the groundwork for U.S. and other foreign companies to reach the Soviet market through activities such as the International Computer Forum scheduled for June 14-17. (See "Moscow Nights," *What's New*, April 1990, p. 19.) So far, Atari, Commodore, Digital Equipment Corporation, and the Software Publishers Association are among the companies signed up for the conference. You can even expect to see an *inCider* editor or two wandering around Moscow.

A Bulgarian Apple II clone—a Russian version of Micol Advanced BASIC—a thirst for Apple II software. Maybe it's time for Apple II enthusiasts to head East. □ —Dan Muse

with software, because we don't have the laws about copyright. To prepare the Soviet people for computer technology, the ICC has to teach them about copyright." Fedorov says the ICC has asked the Soviet government to adopt piracy laws. (For more on the ICC, see the accompanying sidebar "Better Red Than Dead?" plus "Red Apples," *What's New*, November 1989, p. 16, and "Moscow Nights," *What's New*, April 1990, p. 19.)

What happens next? Will the Soviet Union's talented programmers and technical experts become a valuable source of new Apple II software and hardware design? The

answer to that question may become increasingly important to the 5 million II owners in the U.S. who are fed up with Apple's indifference and the shrinking number of Apple II software developers in this country. The U.S.S.R. has opened a window, and East and West are taking a fresh look at the technological opportunities that lie ahead. □

AL MARTIN IS PUBLISHER AND EDITOR OF *THE ROAD APPLE*. WRITE TO HIM AT 1121 NORTHEAST 177TH, SUITE B, PORTLAND, OR 97230. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

Preferred Computing

Orders only, Call Toll-Free

800/327-7234

AE APPLIED ENGINEERING

IIGS Memory Expansion

GS-Ram 256k	\$113
GS-Ram 1 Meg	\$189
GS-Ram Plus 1 Meg	\$233
GS-Ram Plus 2 Meg	\$335
GS-Ram Ultra 1 Meg	\$233
GS-Ram Ultra 2 Meg	\$335
GS-Ram Plus/Ultra 3+ Meg	\$Call

Co-Processors/Accelerators

TransWarp GS (7 mhz)	\$291
TransWarp III (8 mhz)	\$149
FastMath	\$131
Z-80 Plus	\$109
Z-80c	\$116

Ile Memory Expansion

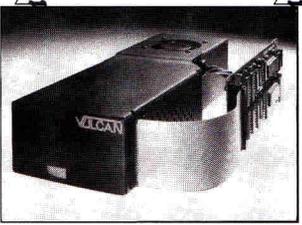
RamWorks III 256k	\$135
RamWorks III 512k	\$160
RamWorks III 1 Meg	\$211
RamFactor 256k	\$171
RamFactor 512k	\$197
RamFactor 1 Meg	\$248

PC Transporter

PCT 768k	\$364
MS-DOS v4.01 (5.25")	\$85
Ile install kit	\$29
IIGS install kit	\$36
IBM Keyboard w/cable	\$101
TransDrives:	
Single (specify 5.25" or 3.5")	\$189
Dual (specify 5.25" or 3.5")	\$284
Combo (1-5.25" & 1-3.5")	\$284
3.5" - 720k Add-on drive	\$95

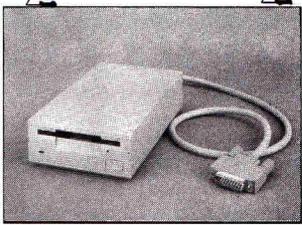
Ile/Ile+ Memory Expansion

Ram Express	\$Call
Z-Ram Ultra Series	\$Call



Vulcans have a 70 watt power supply to power the most fully equipped Apple. Use ProDOS, GS/OS, DOS 3.3, CP/AM or Apple Pascal operating systems. Vulcan runs in any slot except 3. Special low price on the top rated Vulcan internal hard drives. (specify computer)

- AS800 3.5" drive \$189
- Vulcan 40 Meg \$689



AMR 3.5" 800k drive. Why spend \$429 on an Apple drive when you can buy the first fully Apple compatible 3.5" drive for only \$189? Works on the IIGS, Ile+, Mac & Ile (Ile requires UDC card). 100% Compatible with GS/OS and the FINDER.

- AS800 3.5" drive \$189
- UDC card \$59

APPLE II SOFTWARE

Beagle Bros

AS BeagleWrite GS	\$59
BeagleDraw (IIGS)	\$54
BeagleWrite Ile	\$49
Program Writer or GS-Font Editor	\$35
AS AW Companion	\$29

TimeOut Series

ReportWriter or TeleComm	\$49
QuickSpell or SuperFonts	\$49
UltraMacros or SpreadTools	\$40
Graph	\$69
Other TimeOut Accessories	\$Call

Broderbund

Dazzle Draw	\$45
Bank Street Writer Plus	\$59
Print Shop	\$35
Print Shop GS	\$45
Carmen Sandiego Series (specify Apple II or IIGS)	\$Call

Central Point Software Copy II +

Claris AppleWorks GS	\$229
AppleWorks v3.0	\$199

Intuit Quicken

Intuit Quicken	\$46
----------------------	------

Manzanita BusinessWorks Bundle

Manzanita BusinessWorks Bundle	\$289
--------------------------------------	-------

MECA Managing your Money 4.0

MECA Managing your Money 4.0	\$98
------------------------------------	------

Monogram Dollars & Sense (128k)

Monogram Dollars & Sense (128k)	\$89
---------------------------------------	------

Passport Designs Master Tracks Jr. (IIGS)

Passport Designs Master Tracks Jr. (IIGS)	\$119
---	-------

Other Passport Products

Other Passport Products	\$Call
-------------------------------	--------

Roger Wagner Publishing HyperStudio (IIGS)

Roger Wagner Publishing HyperStudio (IIGS)	\$89
--	------

StoneEdge DB Master Professional (128k)

StoneEdge DB Master Professional (128k)	\$192
---	-------

TimeWorks

AS Publish It!3 (128k)	\$Call
------------------------------	--------

Graph It! (128k)

Graph It! (128k)	\$53
------------------------	------

Word Perfect WordPerfect (specify machine)

Word Perfect WordPerfect (specify machine)	\$119
--	-------

VIP VIP Professional (specify 256K Apple II or IIGS)

VIP VIP Professional (specify 256K Apple II or IIGS)	\$59
--	------

Questions & Customer Service Call:

214/484-5464

If you don't see it here - Call us.

COMMUNICATIONS

Applied Engineering

DataLink 2400 bps (internal)	\$175
DataLink Express 2400 bps (external)	\$189
AS MNP 5 option	\$Call
AS FAX option	\$Call
AS ReadyLink (128k, VT100 emulation)	\$65

Beagle Bros

Point-to-Point (128k, VT100 emulation)	\$79
--	------

Morgan Davis Group

ModemWorks (BBS construction set)	\$49
AS ProLine BBS (best Apple II BBS)	\$175

HARD DRIVES & FLOPPY DRIVES

Apple Computer SCSI card (rev C)	\$109
--	-------

Applied Engineering

Vulcan 20 Meg (specify computer)	\$549
Vulcan 40 Meg (specify computer)	\$689
Vulcan 100 Meg (specify computer)	\$1299
5.25" Disk Drive	\$119

American Micro Research

AS800 3.5"800k drive (Ile, GS, Ile+)	\$189
A5.D 5.25" drive (w/daisychain connector)	\$159
UDC controller card (use with AS800 & Ile)	\$59

Chinook Hard Drives

Chinook Hard Drives	\$Call
---------------------------	--------

ACCESSORIES

Applied Engineering

TimeMaster H.O.	\$72
Serial Pro (SSC & ProDOS clock)	\$101
Parallel Pro (incl. cable)	\$72
Buffer Pro 32k-256k	\$Call
Sonic Blaster (IIGS)	\$94
Audio Animator (IIGS)	\$175
ViewMaster 80 (II+)	\$116
Conservor (IIGS)	\$79
Heavy Duty Power Supply	\$69

CH Products

MACH IV Plus	\$69
MACH III	\$39

Digital Vision

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

Kensington System Saver (specify computer)

Kensington System Saver (specify computer)	\$69
--	------

Passport Designs

Home Studio GS (incl MIDI interface)	\$209
--	-------

Other Passport MIDI products

Other Passport MIDI products	\$Call
------------------------------------	--------

ThunderWare ThunderScan

ThunderWare ThunderScan	\$175
-------------------------------	-------

Sony

KV1311CR (RGB Monitor/TV)	\$569
---------------------------------	-------

Monitor cable (\$22 w/monitor purchase)

Monitor cable (\$22 w/monitor purchase)	\$29
---	------

- AS Toll free 800 number for orders. 1-800/327-7234
- AS Memory cards have all factory installed and tested RAM chips.
- AS We're nice guys that want to help. We want our business to grow because of repeat customers and word of mouth.
- AS We handle only the industry's best. We've tested & used all the products we sell.
- AS 15 day money back satisfaction guarantee on all hardware. If the hardware doesn't meet your needs, we'll refund the purchase price. No hassles.
- AS Ninety day limited warranty on all hardware. Defective hardware repaired or replaced at our option. We offer technical support on everything we sell.
- AS No surcharge for charge cards and we won't charge your card until we ship.
- AS No sales tax collected on orders shipped outside Texas (TX residents add 7% tax).

P.O. Box 815828
Dallas, Texas 75381

Prices & Specifications subject to change without notice. Ad 5/90

Salvation™ is now 5 times more heavenly.

Good News!

We've expanded Salvation to include a whole family of Apple IIGs utility software. You get new features, broader applications, and more peace of mind, in a group of programs that feature the same user-friendliness and ease of use our products are known for. Salvation now gives you complete assurance that "everything's gonna be OK."

Thanks to your overwhelming interest, we've given the name **Guardian™** to Salvation's backup & restore operation. Think of it as your hard drive's Guardian angel, and experience its amazing intuitive interface from the moment you boot up.

Guardian lets *you* choose the disk, folder, or specific files you want to archive—from any GS/OS block device—then backs them up quickly. Guardian's incremental backups, custom macros, and stop/restart capabilities give you true flexibility and control—even on touchy Sparse or Forked Resource files.

In an imperfect world, Guardian will spare you much weeping and gnashing of teeth.

Renaissance™ is the Salvation module that gives your disk a rebirth of performance. It optimizes drive utilization by allowing you to pack your files—eliminating the normal data re-write fragments that occur every time you modify a file. The result is faster boot-up and data access

Salvation The Total Disk Utility for Your Apple IIGs			
Name	Application	Available	Price
Guardian	BackUp & Restore	Now	\$49.95*
Renaissance	Disk Optimizer	Now	\$49.95*
Exorciser	Virus Detector & Cure	4/20/90	\$39.95*
Wings	Program Launcher	5/15/90	\$79.95*
Deliverance	Directory Repair & File Recovery	6/15/90	\$ Call

Contact your dealer or call Vitesse. *Plus shipping and handling. Visa, Mastercard accepted.

for all your applications, with less wear and tear on your drive.

Renaissance maximizes storage and access speed for *all* drive types. It gives you an on-screen picture of the degree of fragmentation, by blocks and by files. It "keeps you in the loop" as it functions, displaying the disk graphically, along with file names, time-to-go, and a progress thermometer—all in real time.

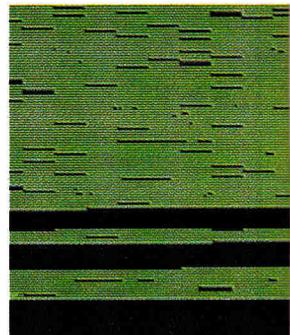
The Exorciser™ is a must if you *ever* use files from *any* outside source. It *automatically* cures floppy disks and hard drive of viruses by casting out demons like CYBERAIDS, FESTERING HATE, LODE RUNNER, and many more yet-to-be-identified evils lurking who knows where.

You can set up The Exorciser to analyze all new files and to spot potential viruses before they can infect your system. In addition, sophisticated analysis routines check your disks for any indication that something's amiss. And as new viruses are identified, you can update your system quickly and easily.

Best of all, the Exorciser is virus-proof itself.

Salvation is a miracle! Watch our ads for details on **Wings™** and **Deliverance™**, two modules coming soon to your dealer.

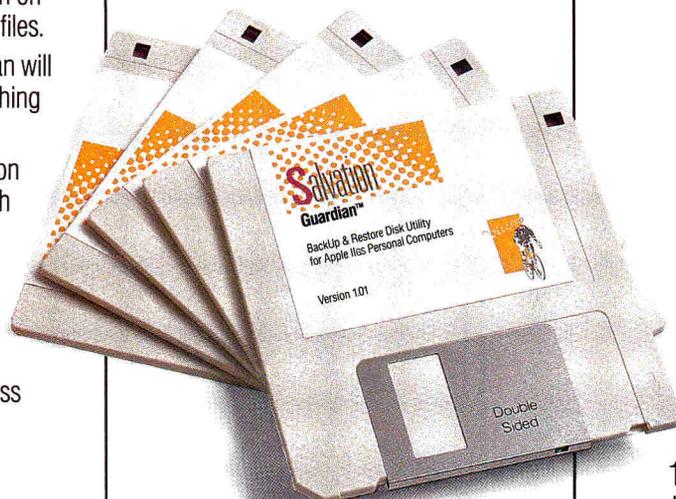
And when you think about disk utilities, look for Vitesse. We wrote The Book.



Renaissance maximizes storage & access speed.



Guardian backs up & restores your data.



Fast, Smooth, Uncomplicated

To order, call:

(800) 777-7344

(818) 813-1270

FAX (818) 813-1273

Technical Support:

(818) 813-1274

Vitesse, Inc.

13909 Amar Road, Suite 2
La Puente, CA 91746-1669

Circle 62 on Reader Service Card.

© Copyright 1990, Vitesse, Inc.

Vitesse, the Vitesse logo, Salvation, the Salvation logo, Guardian, Renaissance, Exorciser, Wings and Deliverance are trademarks of Vitesse, Inc.

Apple IIGs and GS/OS are trademarks of Apple Computer, Inc.

Prices subject to change without notice.

MAKING MOVIES WITH YOUR APPLE II

And the envelope, please . . . Follow these simple guidelines to create professional-looking video productions. In this second installment of a two-part series, we'll show you how to use the equipment described last month to its fullest. Lights, camera . . .

By WILLIAM P. KENNEDY, Ph.D. * GUY WRIGHT

YOU'VE PROBABLY HEARD THE term *desktop video* bandied about in the media, at work, or maybe even at parties. Those fancy graphics, titles, and credits that spin around on your television screen during your favorite program, particularly sports broadcasts, were probably made using an elaborate computer-based video system. So it's not surprising that any mention of desktop video evokes visions of expensive computers and highly trained media professionals.

Don't be misled. You can perform rather elaborate desktop-video productions right in your own den or classroom using equipment you probably already own or can easily borrow: a camcorder, a videocassette recorder, and an Apple II. With today's equipment, you don't need a degree to produce desktop videos. However, it takes more than stringing together a lot of not-necessarily-related scenes and then throwing in some titles to create a masterpiece. Those 8-mm family films transferred to videotape are famous for being so visually disorganized and uninteresting that viewing them even once is challenging.

Last month, you discovered what equipment you need to get your videos rolling. This month, you'll learn how to go about creating an Apple II-based desktop video. Whether you choose to adapt our family-history video for your own project or not, our production experiences, from preparing a script through the final edit, should help you tackle your first video.

The easiest part of a video project

usually is deciding on a topic. You may, for example, have hours of family or classroom activities on videotape. A simple project to start with is editing those down to one tape or arranging them according to general topics such as "Johnny's Birthdays" or "Spelling Bees." While you're at it, why not add titles to document the tapes? That's desktop video in its simplest form—one quite easily performed using your Apple II.

We've chosen to be a bit more adventurous with our desktop-video project: *Family Interviews*. Producing a family interview ►



Desktop Video Part 2

entails considerably more than simple titling; the project is designed to demonstrate the variety of desktop-video enhancements you can perform with your Apple II. But it can be more than just a demonstration project. It can be a great asset for your family, or, with a minor change in the title, your business or school.

Most families trace their past by saving photographs and remembering stories told to them by their elders. With time, though, artifacts and verbal histories tend to be lost or forgotten: Shoeboxes full of old photographs get tossed out from the attic; stories are forgotten; people pass away.

Video lets you assemble and record artifacts and verbal information onto an organized, compact, and relatively secure medium. But, more importantly, a video interview offers what other forms of recorded history can't: both the sight and sound of your ancestors.

So much of what a person relates to others is nonverbal; video best captures the complete moment. That's why you should use Apple II-based desktop-video enhancements to preserve videotaped interviews with family members or important members of your organization.

THE SCRIPT

The most important rule for any video project is: Get

Organized. Even the relatively simple task of editing videotapes together can be a nightmare if you haven't first decided which scene goes before or after another, where to start and stop a scene, and whether you have enough room on the new tape to accommodate all the scenes you want in your video. And that's just for starters. Desktop-video enhancements generated by your Apple II are usually recorded first, then inserted or merged with other recordings. Don't try to keep track of all those scenes and edits in your head.

The first step in getting organized is using an Apple II word processor to write a script. We've put together a sample script that generally describes a video interview with a family member. A portion of that script is shown in **Figure 1**.

A fair degree of detail in the video script is important; it forces you to think through and "visualize" beforehand how a scene or sequence of scenes might look. This will help you keep better track of all the scenes you'll need before you start to edit them. You don't want to forget a scene or discover that you forgot to ask a particular question in the interview, because you might not be able to ask the question later.

A detailed script helps you explore where your Apple II might enhance the production. For example, the sample script describes a scene in which personal statistics are displayed as text merged with a still photo of the interviewee.

DON'T GET OBSESSED

However helpful a detailed script might be, don't get too involved with scripting. There's a point of diminishing returns, particularly when you haven't yet recorded the live scenes.

Except for tightly controlled shots (interviews certainly aren't), portions of live-recorded sequences will often beg for some desktop-video enhancement. Pencil in those details "on the fly" while you're recording live scenes as we've done in our sample script. For example, our interviewee mentioned his parents' origins and how they had to travel by ship from the "old country" to the United States. Viewers would certainly enjoy an animation showing that emigration on a realistic map (see **Figure 2**). Don't be afraid to add such a feature.

TAKE 1

Script in hand, you're now ready to produce your video. Production is usually divided into four basic steps: live recording, desktop enhancements, video editing, and audio editing.

Live videotape recordings are made using a camcorder or camera and microphone attached to a videocassette

Master Script: Family Interviews		
Conversation with _____		Date/Time: _____
Place: _____		
	Video	Audio
1	FADE IN to title overlay on family photo	THEME UP interviewee's favorite song
2	WIPE RIGHT to interviewee's name with video focus on person in family photo	THEME FULL
3	CUT to interview date/time	THEME FADE
4	DISSOLVE to interviewee photo with statistics overlay (name, birth date, birthplace, parents' names)	NARRATOR introduces interviewee
5		THEME OUT
6	FADE OUT to black	
7	MEDIUM LIVE camera over shoulder of interviewer toward interviewee	
8		INTERVIEWER asks about where and when born
9		INTERVIEWEE answers
10	CUT to LS map	
11	ZOOM to region/city	
12	CUT to local newspaper headline (birth date)	
13	MEDIUM LIVE	INTERVIEWER asks about parents and siblings; names and relationships

Figure 1. Portion of interview script.

Desktop Video Part 2

recorder. Live recordings are usually done first because you can't predict what will happen and, therefore, it's difficult to know which desktop-video enhancements will be appropriate. For example, you might not know beforehand where an interviewee was born, making it impossible to prepare the personal-statistics scene or maps.

There are a number of rules and tricks to live audio/video recordings. However, two techniques in particular should be observed without fail, because both are important later when you edit the tapes: Make sure there's plenty of light, even with low LUX-rated cameras, and keep a log detailing the scenes and their locations on tape.

Plenty of light means a better video, electronically. With each generation or electronic transfer of tape segment to another tape, the video quality is reduced by up to 20 or 30 percent. If you begin with a poor recording, most often because of poor lighting, you might not notice a problem at first, but you can end up with a lot of color bleeding after the requisite editing.

The need for a log is obvious. You can write vital information onto the script, or you may want to record the tape number and location in a small notebook, which you can carry conveniently your back pocket. Later, when you go to edit the tapes, you don't have to turn your studio upside-down and waste hours fast-forwarding through tapes looking for the right scene.

And, finally, let the camera "linger" on your live scenes so that you have plenty of extra recording for editing.

BACK AT THE STUDIO

Now that you've collected most of the live video footage, it's time for the fun part—preparing desktop-video enhancements.

Part 1 of this article (see April 1990, p. 44), described the various audio/video equipment and Apple II hardware and software you can use for desktop enhancements. Our system (see Figure 1 in last month's article) includes a camcorder ("slave" deck) connected to the video input of an Apple II Video Overlay Card (VOC) installed in a IIGS (you can also use a IIE), and a VCR ("master") connected to the VOC's video output. The VCR uses a VHS format and contains "flying" erase heads, an essential feature for "clean" editing. The VOC is necessary not only for special effects—overlaying the Apple's video, text, and graphics output with taped background (see below)—but also to obtain a better video signal than that available from the monitor jack on the back of your Apple II. A National Television Standards Committee color monitor is also attached to the video output of the VCR while recording or to the video-out connector of the VOC when creating desktop-video scenes. This is helpful because the RGB monitor connected to the IIGS, while useful for editing and reviewing desktop-video scenes, doesn't give a true picture of the actual recorded results.

You can insert your desktop videos directly into your final or master production. However, except for the simplest desktop enhancements, you'll find it's easier to prerecord the

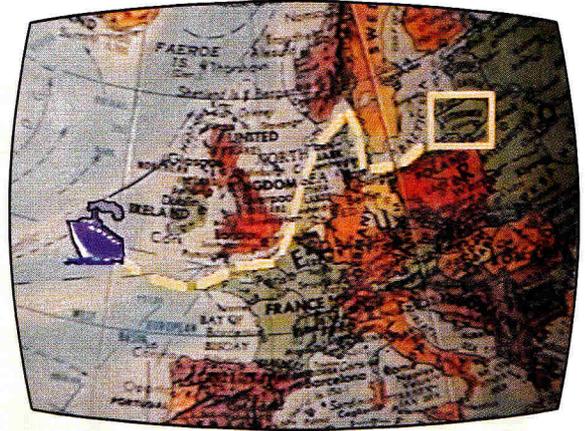


Figure 2. Animated map showing emigration route.

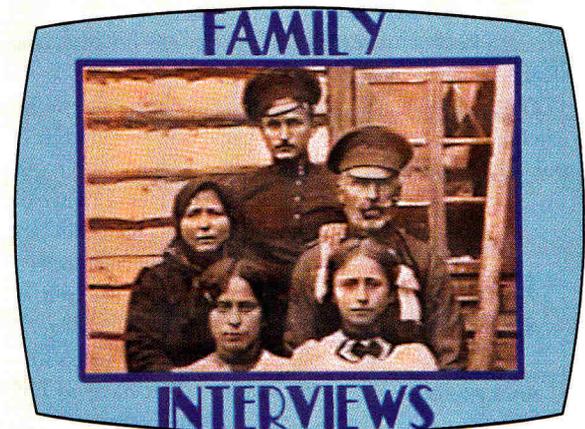


Figure 3. First frame of introductory sequence, created with paint and titling software.

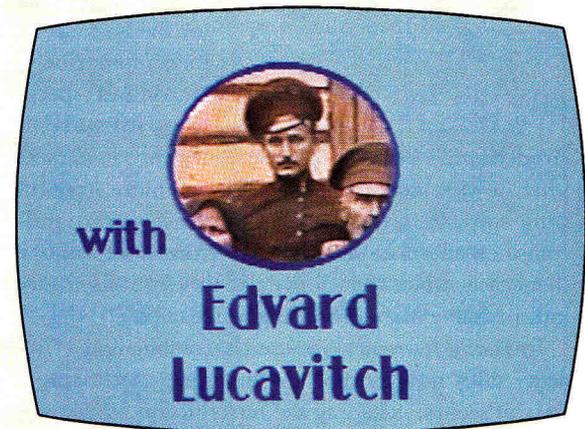


Figure 4. Second frame of introductory sequence.

Desktop Video Part 2

scenes, perhaps more than once, and then edit them along with the other recordings onto your master video. You should make those “slave” recordings longer in duration than you think you’ll need. It’s always better to start with too much material and then edit down.

The first desktop-video enhancement we tackled for our project was titling—the graphics and text frames that document the proceedings. There are several ways to insert titles into your videos: *static* versus *active* and *graphics-only* versus *overlay* frames.

Static frames are simple, nonmoving graphics or text screens created on your Apple II. They’re usually the easiest and most readable of the video enhancements.

Active titles are visually more appealing than static ones, particularly when using a series of title frames. That’s because you can incorporate a variety of special effects while displaying a title. You can also use interesting frame-to-frame transitions when transposing to the next title frame. Active titles are more difficult to prepare and record than static ones—timing the special effects and transitions is critical—but the results are clearly more appealing.

The use of *graphics-only* versus *overlay titles* depends on whether or not you have the VOC. As mentioned in Part 1 of this article, you can superimpose (overlay) Apple-generated displays onto live or videotaped scenes in both static and active modes using a VOC. Without it, you simply can’t merge the two different video sources.

You have to be careful when creating graphics for videotaping, whether static or active, particularly those containing title text. Generally, paint programs for the Apple II, especially for the IIGS, are designed for computer-only display. In contrast, specialized titling software, such as

Broderbund’s **VCR Companion**, is designed to minimize computer-to-videotape problems. Perhaps more importantly, titling software’s variety of interesting special and frame-transition effects as well as the structure to let you implement them easily when recording make this type of software almost indispensable when producing active titles.

In *Family Interviews*, we used a combination of static and active titles and incorporated the overlay technique for a variety of scenes, including the introduction sequence, parts of which are shown in **Figures 3** and **4**. All were composed using paint and titling software.

For example, the introduction to our video is actually made up of three basic frames: The first, shown in **Figure 3**, is the project title superimposed on a family portrait. A second frame

(**Figure 4**) contains the interviewee’s name superimposed on that same family portrait but with the person’s picture emphasized; it’s followed by the date and time when the interview was conducted (not shown).

To create the individual frames, we started by drawing the colored boxes that surround the respective photographs using Broderbund’s **Dazzle Draw**.

Those boxes were correctly sized and positioned by simultaneously displaying the appropriate photograph on screen using the camcorder and VOC. We then imported the boxes into VCR Companion and used it to compose the introduction sequence, including the text, special effects, transition between frames, and length of time the frames were displayed. Finally, we videotaped the sequence two or three times for later editing into our master video.

Our introduction sequence starts with the family portrait on screen. The project title is then superimposed over that portrait in a left-to-right wipe transition, and a “highlight up” special effect is activated while the frame remains on screen for about five seconds.

An “iris-in” transition then overlays the last frame with the colored box that focuses on the interviewee in the portrait, and a “stars” special effect highlights the person’s name. Finally, a static title showing the time and date of the interview is “spiraled” onto the screen.

You can use a variety of software to create other desktop enhancements for your video. We used Epyx’s **Art & Film Director** and a “live” video of a world map, for instance, to create the emigration video shown in **Figure 2**: an animated sequence showing a boat traveling from Lithuania to New York.

LET THE EDITING BEGIN

The next step toward creating your video masterpiece is video editing. Start by reviewing each recorded scene. Pay close attention to the audio track when deciding the length of those scenes, particularly when inserting a desktop-video enhancement. For instance, we want to match the boat animation with the audio description of its travels by our interviewee.

Now’s also a good time to update your script, incorporating all the changes you may have made while collecting the live scenes and preparing the desktop-video enhancements. Remember to annotate that revised script with your log entries as well as scene durations while you review those sequences.

Again, you must be well organized. Inserting a missed scene or altering the length of one already recorded on the master is nearly impossible without rerecording portions of the master itself. Each generation costs dearly in video quality, so you must minimize your errors or you’ll end up with a lot of snow, “exploding” reds, fuzzy images, and nonexistent greens.

When performing the actual video editing, our equipment fortunately included a video editor/controller device. It’s programmed to automatically cue up, start, and stop videotape segments on the slave (source) deck for transfer to the master tape. Editing is much easier with such a device, but it’s not

PRODUCT INFORMATION

Art & Film Director

Epyx
limited quantities available
through mail-order dealers

Dazzle Draw, \$59.95

VCR Companion, \$49.95

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

Desktop Video Part 2

impossible without one. Without a controller, you simply have to press the record pause/continue button on the master deck and manually cue up and play the transfer segments from the slave.

IT'S A WRAP

The final stage of editing involves the audio portion of your production. The focus of this two-part article has been on desktop video, so we haven't said much about sound or sound effects. Not that audio isn't important. Technically, however, audio is the least worrisome. And, unlike video, you probably already have a number of audio sources, such as a microphone, cassette recorder, record player, or compact-disc player. If you're interested in desktop audio, you should use a commercially available audio-expansion board rather than the II's generic sound system or even the IIGS's.

Audio editing is much easier if you have access to an audio mixer and an audio "dubbing" option on your master video deck. The mixer lets you connect several audio sources simultaneously and adjust their individual volumes for control and special effects. The "voice over" narration introducing the interviewee, for example (see script lines 1-5), is mixed with the interviewee's favorite song. Audio dubbing eliminates the need for another video generation; you record a new sound track without changing the video.

The only really tricky part of audio editing, particularly when dubbing, is adding sound effects or music to an original sound track. For example, we might want to add background music to some portion of our interview. Dubbing that background music requires that we rerecord the sound track from the original onto the master. If we don't cue up that original tape on the slave exactly, the interviewee's words won't match the picture; out-of-sync lips will get a laugh where it probably isn't intended. It's best in such cases to mix the extra audio while editing the video.

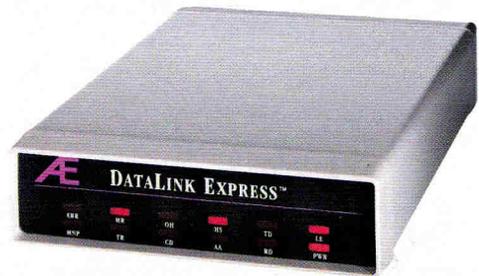
HITTING IT BIG

There you have it, Apple II owners. Your computer is a more-than-competent video partner. Now after this two-part article you can join the ranks of the great directors: Fellini, Scorsese, DePalma, Kennedy, Wright—especially the last two.

You don't need a lot of expensive equipment: just a IIe or IIGS, a video source, and some software. Of course, if you have a camcorder, a Video Overlay Card, a titling program, and a few other electronic niceties, your productions will be that much better. In fact, if your plans are at all ambitious, you're going to want a system comparable to the one described here. Take a bow, and say hello to Hollywood. □

WILLIAM P. KENNEDY IS *INCIDER*'S SENIOR TECHNICAL EDITOR AND THE AUTHOR OF OUR MONTHLY COLUMN APPLE CLINIC. GUY WRIGHT IS A CONTRIBUTING EDITOR FOR *AMIGA PLUS* MAGAZINE AND HAS BEEN A PRODUCER/DIRECTOR FOR CABLE-TELEVISION STATIONS. WRITE TO THEM C/O *INCIDER*, 80 ELM STREET, PETERBOROUGH, NH 03458.

DataLink Express™



The Upgradeable External

W^aited long enough for an upgradeable, full-featured modem? Introducing the new DataLink Express™ from Applied Engineering. With the *first* comprehensive status light array. The *first* Line Engage indicator. The *first* upgradeable design allowing for the addition of send-Fax capability and MNP error correction. And the *first* to offer these features affordably.

DataLink Express' exclusive Line Engage light indicates whether the phone line is free or in use, before you log on, to help line-sharing users save transmissions from time-wasting interruptions.

DataLink Express incorporates a perfectly matched Apple-platinum case, along with both Apple-type serial port input (Mini-8) and a DB-25 connector for use with PCs. It's fully Hayes compatible and operates at 300, 1200 or 2400 baud. DataLink Express even has non-volatile configuration memory with synchronous and asynchronous communication and separate line and phone connectors for line sharing.

Upgradeability

With our optional send-only Fax (available soon), text and graphics can be composed on your Apple II and directly faxed at 4800 baud. And for the ultimate in data reliability, an MNP option assures 100% accuracy, even if phone lines or other equipment are at fault.

Software, too.

Unlike other modems, you don't have to shop for separate software. Comprehensive communications software for Apple II, Macintosh and MS-DOS computers is included.

Made by the Apple enhancement experts

Best of all, DataLink Express was designed and built by Applied Engineering, long the leader in Apple enhancement products. AE brings ten years' experience to producing feature-laden peripherals that set the standard for quality and reliability.

DataLink Express modem \$249
MNP option \$89

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®

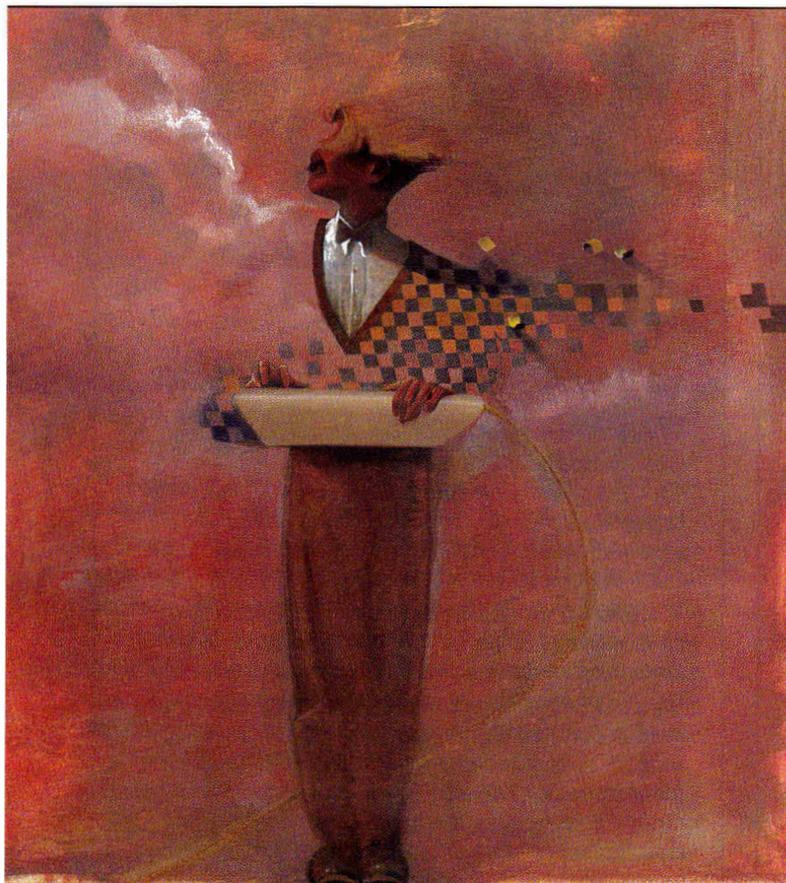
The Apple enhancement experts.

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.



LINK UP

WITH TELECOMMUNICATIONS SOFTWARE

By **SETH ITZKAHN**

From commercial database services to user-group bulletin boards to electronic mail sent across town or around the globe, the world of shared information depends on fast, efficient communications programs.

BOOT UP your Apple II and at the press of a key a universe of information and entertainment opens—a whole new generation of high-performance telecommunications software is ready to speed you on your electronic voyage. Shop around—you'll see options such as multiple-transmission protocols, built-in full-screen editors, powerful macro languages, scrollable review buffers, and complete AppleWorks compatibility. Let's review the current packages (see the accompanying boxes), and look more closely at some of the features you'll be watching for.

MODEM TO MODEM

Transmission protocols are the methods by which files are sent between computers—

various agreed-upon rates of transmission (number of bits per second), frequency of error checking between computers, and so on. Standard protocols form the keystone of telecommunications: For a file transfer to be successful, each computer must be using the same protocol; if so, communication should be successful regardless of different hardware and operating systems.

The two main protocol standards are *ASCII* and *Xmodem*, accounting for the vast majority of data communications between computers. Certain faster, more accurate, and more specialized transmission protocols have recently become available, as well. See the accompanying sidebar ("What's in a Protocol?") for details.

APPLEWORKS COMPATIBILITY

AppleWorks is the dominant word pro-

cessor in the Apple II world; most text files sent via Apple II are in this format. Some communications programs now offer AppleWorks-to-ASCII and ASCII-to-AppleWorks conversion capabilities that let you edit and send AppleWorks text files while still in AppleWorks format; if you're a regular AppleWorks user, you'll find this feature indispensable.

STREAMLINE IT

Many people think of cumbersome programming procedures when they think of macros. For others, macros are the lifeblood of their work, facilitating on-line correspondence, research, and so on.

Macro programs are command procedures that give you "cruise control," letting you, for example, call an on-line service, check a stock's price, download files, and send electronic mail to your

broker telling him or her to buy or sell—all while you're sleeping.

There are two kinds of macros: *Auto-learn* macros are created by recording your keystrokes during a procedure. Once you do that, the macro retypes that sequence whenever you want—useful for automating log-on procedures and dialing phone numbers. While simple to create, they're limited in function.

Macro programming languages let you write more powerful macros with advanced capabilities. Similar to BASIC and Pascal, these languages support decision making, comparisons, branching, even

string manipulation. Some languages contain hundreds of commands, while less complex ones contain only a dozen. You can create them with a macro editor or a standard word processor. High-end macro languages offer a *link* feature, as well, enabling one macro to execute another. A simple language is sufficient for most applications such as checking electronic mail and downloading text. (See "The Making of a Macro," June 1988, p. 66, for details.)

REVIEWING THE RESULTS

Almost every telecommunications pack-

age today offers some kind of simple word processor to save you from the expense of on-line editing and the hassle of switching back and forth between applications. Although no one expects these editors to compete with full-scale word processors, they're adequate for most on-line correspondence, like sending electronic mail and posting to bulletin boards.

The ability to copy and paste selected text into an on-line session is an essential editing feature. Many programs also let you copy text to a printer or a disk.

Almost all of today's communications products provide a scrollable *review buffer*, ▶

What's in a Protocol?

Whether you're a newcomer to telecommunications or an old hand, you've probably noticed the growing selection of file-transmission protocols. To further complicate matters, a single protocol may have several different names, and some names mean different things to different people. The following glossary should help clear up the confusion.

ASCII. Also called *text*, ASCII transfers let you send text files quickly, without error checking. Because text files are relatively unaffected by line noise, ASCII's lack of error checking isn't a major problem. ASCII is unacceptable, however, for other programs or files that rely on error checking and may be rendered useless if any bytes are corrupted.

Xmodem. Standard for binary files. Ensures integrity by sending files in packets, each of which is checked and resent if needed.

Christensen. Another name for *Xmodem*. Named after Ward Christensen, inventor of *Xmodem*.

Xmodem Checksum. Error-checking algorithm used by *Xmodem*.

Xmodem 128. Another name for *Xmodem*. Data are grouped in 128-byte packets.

Xmodem 1K. Quicker version of *Xmodem*, using 1K packets.

Xmodem 2K. Even faster version of *Xmodem*, using 2K packets.

4Modem. Quickest version of *Xmodem*, using 4K packets.

Xmodem CRC. Cyclic redundancy checking. This improvement over *checksum* lets you send larger packets virtually error-free.

Xmodem DOS. Also known as *ASCII Express*, this method transmits DOS 3.3 file information (size, type, date, and so on).

Xmodem ProDOS. Transmits ProDOS information.

Turbo Xmodem. A super-quick download method. Used only when lines are free of noise. It doesn't check for errors until after transfer is complete. If there are errors, the whole file may have to be retransmitted.

Ymodem. Technical definition calls for the following specifications: data packets of 1K, CRC, *batch* files, machine-specific file information (size, type, and so on). Not always implemented, however. May be used synonymously with *Xmodem 1K*; may not support *batch* transfers. Some documentation uses the term *Ymodem 1K* or *Ymodem CRC*.

Ymodem batch. *Ymodem* with multiple-file capability. Sends many files in a single transfer. Preserves filename and other machine-

specific information.

Zmodem. A modern protocol used to help facilitate transfers over packet-switched networks and to mainframe computers. Called a "full streaming protocol," *Zmodem* speeds up operations by sending off blocks of data without first waiting for acknowledgment from the host computer. Previous blocks of data can be retransmitted at the host's request.

Kermit. Communications protocol common to mini- and mainframe computers with 7-bit communications environments.

Batch mode. Sending many files at the same time. Usually applies to *Ymodem*.

Binary II. File composed of other files packed together by the program *Binary Library Utility* (BLU). Like an envelope containing ProDOS files and machine-specific information. For text files, these data aren't so important, but for executable programs they're crucial. You can pack and unpack Binary II files with BLU, and transmit them with any error-checking protocol. Binary II is a file type, not a transmission protocol.

Auto Binary II. Ability to pack and unpack a *Binary II* file during transfer. Eliminates running BLU as a separate procedure. Sometimes confused with *Ymodem batch*; both appear to send multiple files while preserving machine-specific characteristics. Auto Binary II, however, doesn't actually send files; it packs them into one Binary II file, which your software then transmits.

Binary Library Utility. Program that can pack and unpack ProDOS files into or from a *Binary II* file. BLU maintains packed files' auxiliary machine-specific information, essential for proper execution.

Cyclic redundancy check. Advanced error-checking method using 2-byte-packet comparison value. Common with *Ymodem*; you can also use it with *Xmodem*. More reliable than *checksum*, which uses a 1-byte error-checking value.

—S.J.

as well, which lets you retrace your steps and look back on what has crossed your screen during the on-line session. Review buffers are a safety net, letting you review what has passed by at your convenience. By default, it's always on. A capture buffer, however, is activated only when you want to save specific text for future use.

STRIPPING RETURNS

We're *not* talking about a risqué nightclub act here. Stripping is an essential feature if you download text files to your word processor. Many downloaded documents are plagued with carriage returns; without an automatic procedure to remove them, reformatting is a nightmare.

You can also remove line feeds from your document. Some programs offer an auxiliary feature that automatically strips line feeds and carriage returns from an entire text document.

IN CONFERENCE

If you've ever taken part in a real-time conference, you know how annoying it can be to have your comments interrupted by someone else's typed message. Split-screen conferencing mode sets aside a portion of the display, letting you prepare two or three lines of text while the rest of the screen shows the main message. You can send this text when the other person has finished typing his or her message.

DIRECTORY ASSISTANCE

Dialing directories have long been a standard feature of telecommunications programs; they let you set up a listing of on-line services with telephone numbers—just select a name and press Return to call. Some directories alphabetize the list; others let you assign log-on macros.

REMOTE SITES

Most on-line services support straight ASCII or TTY (teletype) modes for *terminal emulation*—the ability to make your computer mimic another kind of system when communicating with a remote machine. If you've ever accessed a private IBM or DEC computer, however, you ▶

Program by Program

PROTERM. Checkmate Technology, 509 South Rockford Drive, Tempe, AZ 85281, (602) 966-5802

Overall grade: A

Notable features: Can autosave captured text into blocks of predetermined size, from 2K to 32K. Has state-of-the-art Zmodem and rotating dial list that skips busy numbers. Powerful macro language. Full AppleWorks compatibility.

Missing links: Doesn't recognize Apple IIe/IIc memory-expansion cards or Applied Engineering's RamFactor (except as a RAM disk). Other cards recognized.

Comments: Extremely easy to use, powerful, and flexible. Has every desirable feature. The all-around favorite.

Transmission protocols: ASCII, Zmodem, Xmodem (ProDOS, DOS, CRC), Ymodem, Kermit, Transit, batch modes.

Editor: Powerful; more than 30 commands, many similar to AppleWorks. AppleWorks files load as easily as text files; saves files in either format and strips them of control characters. Changes text to upper-, lower-, and mixed cases.

Macros: Extensive; you can call all ProTerm commands with

macros, which are easy to use and edit; you can use them to call other macros.

Auto-learn macros: Yes.

Review buffer: Scroll and edit, including cut and paste into on-line sessions.

Capture buffer: Toggled without disk access.

AppleWorks compatibility: Extensive. You can print, display, edit, transmit AppleWorks files as ASCII.

Binary II: Yes; automatic packing and unpacking.

File compression: No.

LF and CR stripping: Yes.

Conference mode: Yes; three lines.

Operating-system commands: Extensive: copy, delete, rename, create directory, format, catalog, print file, view file.

Host mode: Yes.

Disk access: Minimal; none for capture or editor modes.

Machines: IIgs, IIe, IIc, IIc Plus, Laser 128.

Memory: 64K

Price: \$129

POINT-TO-POINT. Beagle Bros, 6215 Ferris Square, Suite 100, San Diego, CA 92121, (619) 452-5500, (800) 345-1750

Overall grade: B+

Notable features: Full AppleWorks compatibility. Converts text files to AppleWorks format and strips out line feeds and carriage returns.

Missing links: 16-line limit on macro routines. Poor macro editor.

Comments: Good program, easy to navigate.

Transmission protocols: ASCII, Xmodem, Xmodem ProDOS.

Editor: Loads AppleWorks files as text files. Cut and paste to modem. Doesn't require disk access.

Macro language: Simple; 20 commands. Macro procedures limited to 16 lines. Can't execute other macros.

Auto-learn macros: No.

Review buffer: Scrollable, easy access.

Capture buffer: Toggled without disk access.

AppleWorks compatibility: Yes; edit, print, transmit AppleWorks files as text.

Binary II: Yes; automatic packing and unpacking.

File compression: No.

LF and CR stripping: Yes, once file is saved to disk.

Conference mode: No.

Terminal emulation: TTY, VT52.

Operating-system commands: Catalog, load, save, rename, delete, create directory.

Host mode: No.

Disk access: Minimal.

Machines: IIgs, IIe, IIc, IIc Plus.

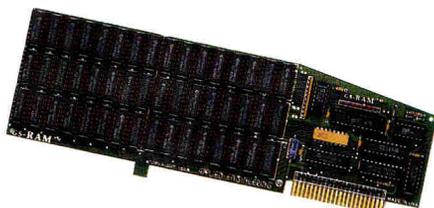
Memory: 128K

Price: \$99.95

Three ways to grow a IIGS.

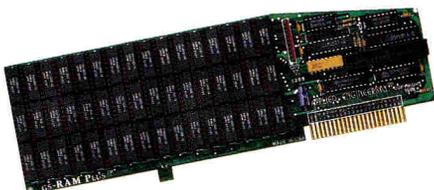
Applied Engineering makes three different memory cards for the IIGS because every IIGS owner is different. Each card was designed to suit specific needs:

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.



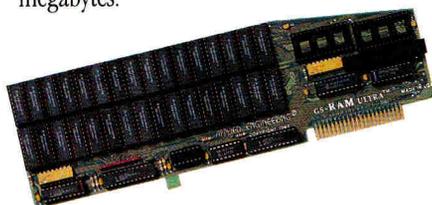
GS-RAM w/256K	\$154
1 MEG	\$259
1.5 MEG	\$329

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.



GS-RAM Plus w/1 MEG	\$319
2 MEG	\$459
3-6 MEG	CALL

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.



GS-RAM Ultra 256K	\$214
512K	\$249
768K-4 MEG	CALL

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.

know that TTY is often inadequate. To access your company computer from home, for example, make sure your telecommunications software provides the proper terminal emulation.

THE GOOD HOST

You might find it helpful to be able to

call your home computer from work and download a file remotely. You can do that if your communications program offers *host mode*. Depending on your package, host mode may support a variety of protocols and a range of security measures. It's not the same as answer mode, which merely lets the modem answer automatically.

OPERATING ROOM

Your telecommunications program will be particularly useful if it lets you access operating-system commands—instructions such as *catalog*, *delete*, *format*, and *create subdirectory*.

Speaking of access, there's one kind you should try to *avoid*: excessive disk access. ▶

TIMEOUT TELECOMM, Beagle Bros, 6215 Ferris Square, Suite 100, San Diego, CA 92121, (619) 452-5500, (800) 345-1750

Overall grade: B +

Notable features: Works within AppleWorks (version 2.0 and above). Includes Auto Binary II. Extensive terminal emulation. Can be executed by TimeOut UltraMacros.

Missing links: Scant macro language.

Comments: Excellent for use within AppleWorks.

Transmission protocols: Xmodem, Xmodem CRC, Xmodem 1K CRC, Xmodem 4K CRC, ProDOS.

Editor: Uses AppleWorks.

Macros: Limited; roughly 12 commands. Associated only with auto-dial routines.

Auto-learn macro: No.

Review buffer: Can copy to modem, printer, and AppleWorks

desktop.

Capture buffer: Toggled without disk access.

AppleWorks compatibility: Complete.

Binary II: Automatic.

File compression: No.

LF and CR stripping: Yes, within the review buffer.

Conference mode: Yes; one line.

Terminal emulation: Adam 31, Adam 3a, Apple 80-column, C, VT52, Heath 19, IBM 3101, TTY, Televideo 912.

Operating-system commands: Minimal; save.

Host mode: No.

Disk access: None.

Machines: IIGs, IIE, IIC, IIC Plus.

Memory: 128K

Price: \$69.95

TALK IS CHEAP (TIC), Carolina Systems Software, 3207 Berkeley Forest Drive, Columbia, SC 29209-4111

Overall grade: B +

Notable features: Ymodem transfer and Turbo Xmodem download capability. Includes Binary II auto-unpacking and Squeeze file-compression utility. Extensive macro language and terminal-emulation options. AppleWorks files can be transmitted as text files.

Missing links: No built-in dialing directory, although you can download one as a macro from TIC BBS. No line-feed or carriage-return stripping. Editor requires much disk access. Can't cut and paste into on-line session or edit AppleWorks files.

Comments: Powerful no-frills program for the experienced user. At \$40, a best buy.

Transmission protocols: ASCII, Xmodem, Xmodem 1K, Xmodem, Xmodem 4K, Turbo Xmodem downloading, ProDOS, CRC.

Editor: Strong, yet slow in loading and returning to TIC.

Macros: Comprehensive macro language; more than 70 commands.

Auto-learn macro: No.

Review buffer: Scrollable; accessed by single keystroke.

Capture buffer: Toggled without disk access.

AppleWorks compatibility: Some; can send AppleWorks files as text files; can't edit or display them.

Binary II: Yes; auto-unpacking, Binary Library Utility included with disk.

File compression: Yes, with Squeeze utility included with disk.

LF and CR stripping: No.

Conference mode: No.

Terminal emulation: Extensive; includes Adam, Apple, Datamedia, Dow Jones, Heath, IBM 3101, Tandy, VT52, Wyse. Also create your own.

Operating-system commands: Delete, catalog, save, display (view a text file), print (using display while printer is on).

Host mode: Yes.

Disk access: Minimal except for editor.

Machines: IIGs, IIE, IIC, IIC Plus.

Memory: 128K

Price: \$40

READYLINK, Applied Engineering, P.O. Box 5100, Carrollton, TX 75011, (214) 241-0055

Overall grade: B

Notable features: Windows capability for IIE and IIC computers, works with or without mouse. Extremely comprehensive macro language. Three-line conferencing mode. Comes with ShrinkIt file-compression program.

Missing links: No AppleWorks compatibility. No LF or CR

stripping. No review buffer. Slow in moving in and out of capture mode. Awkward access to ProDOS commands.

Comments: A powerful program that seems to have forgotten its users. Ease of use is enhanced with mouse, and hindered without it. Extensive windowing and macro features can create customized sessions. Should be attractive to programmers and telecommunications consultants.

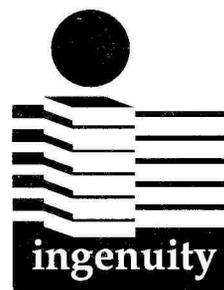
Transmission protocols: ASCII, Xmodem, Xmodem/ProDOS,

BACK UP!



If you have a hard drive then backing up should be a ritual for you. But like most of us, you probably seldom think about it until it is too late. Why? Because it tends to be a real pain in the neck. If there were just a convenient way to backup without costing too much you could save yourself a lot of grief.

Now we have solved this problem. With VCR Backup you can Back up with any VCR (NTSC). File by file or image backup and restore. It is as simple as selecting record then pressing the return key. Then go and enjoy yourself. At 50 megabytes an hour you can store hundreds of megabytes on a single low cost video tape. **Only \$199**



Ingenuity, Inc
Formerly Applied Ingenuity

CALL: 800-346-0811
In CA 818-960-1485
14922M Ramona Blvd
Baldwin Park, CA 91706
*"It takes ingenuity to make
quality affordable."*

Circle 122 on Reader Service Card.

Some programs zip in and out of the editor or toggle the capture buffer without first going to disk. Others must access the disk every time you activate the capture buffer or enter the editor. Disk spinning is time-consuming and annoying; steer clear of a product that can't function with-

out excessive disk access.

CAST OFF

As you navigate your way through today's telecommunications applications, keep these features in mind. They do more than reduce the time and effort it takes to

call another computer: They increase your power to take full advantage of your system's communications capabilities. □

WRITE TO SETH ITZKAHN AT 308 COMMONWEALTH AVENUE, BOSTON, MA 02115.

Xmodem 1K, Xmodem CRC, Ymodem.

Editor: Moderate; can cut and paste to printer and modem.

Requires disk access.

Macros: Extensive; nearly 100 commands; you must compile some of them first.

Auto-learn macros: Yes.

Review buffer: No.

Capture buffer: Can be scrolled and edited. Requires disk access when toggled.

AppleWorks compatibility: No.

Binary II: Yes, with ShrinkIt utility. No Auto Binary II.

File compression: Yes, comes with ShrinkIt

compression program.

LF and CR stripping: No.

Conference mode: Yes; three lines.

Terminal emulation: TTY, VT52, VT100.

Operating-system commands: Rename, delete, print file, create directory, catalog, append.

Host mode: Yes.

Disk access: Often.

Machines: IIGs, IIE, IIC, IIC Plus.

Memory: 128K

Price: \$99

APPLEWORKS GS TELECOMMUNICATIONS, Claris Corporation, 440 Clyde Avenue, Mountain View, CA 94043, (415) 960-1500, (800) 544-8554

Overall grade: B-

Notable features: Part of AppleWorks GS. Text can be pulled from one window to another. Communications window doubles as scrollable review buffer. Easy-to-use batch sending and receiving feature.

Missing links: No macro capability. No LF or CR stripping, no terminal emulation.

Comments: Decent tool for use within AppleWorks GS. Serious telecommunications users will want more.

Transmission protocols: ASCII, Xmodem, Ymodem, batch mode.

Editor: Limited; use AppleWorks GS word processor.

Macros: None.

Auto-learn macros: No.

Review buffer: Doubles as communications window.

Capture buffer: Requires disk access.

AppleWorks compatibility: Yes.

Binary II: Yes, with auto-packing and unpacking.

File compression: No.

LF and CR stripping: No.

Conference mode: Yes, one line.

Terminal emulation: No.

Operating-system commands: Delete, open, save, import file.

Host mode: No.

Disk access: Often.

Machines: IIGs.

Memory: 1.2M

Price: \$299 (entire 6-module AppleWorks GS package)

TELEWORKS +, Activision Presentation Tools, 3885 Bohannon Drive, Menlo Park, CA 94025, (415) 329-0500

Overall grade: B

Notable features: Auto-learn macros allow for branching, simplify macro-writing process. Communications window doubles as review buffer. Supports Apple LaserWriter.

Missing links: No AppleWorks compatibility. No line-feed or carriage-return stripping. No terminal emulation. Documents must be in the editor before they can be viewed or printed.

Comments: Sufficient in some areas, lacking in others. An easy program with a friendly interface and moderate macro language.

Transmission protocols: ASCII, Xmodem, Xmodem TeleWorks (proprietary), Ymodem (batch).

Editor: Simple; 8 commands, can paste into on-line session.

Macros: Moderate; 40 commands, can link macros together.

Auto-learn macros: Yes.

Review buffer: Yes, doubles as communications window.

Capture buffer: Toggled on and off without disk access.

AppleWorks compatibility: No.

Binary II: Yes, as an auxiliary function; no Auto Binary II.

File compression: No.

LF and CR stripping: No.

Conference mode: No.

Terminal emulation: No.

Operating-system commands: Save, save as, open, disk (catalog).

Host mode: No.

Disk access: Minimal.

Machines: IIGs.

Memory: 768K

Price: \$99.95

Funny, They look and perform alike..., but InnerDrive costs a lot less.

InnerDrive20 \$475
InnerDrive40 \$575
OverDrive20 \$399
OverDrive40 \$499

Ask about SCSI drives: 40 to 320 meg
Prices subject to change without notice

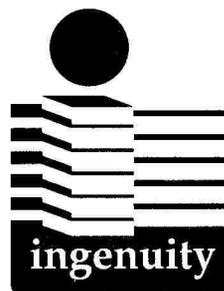


You can't get around it-there are always a few people who are willing to pay for a name. Although the InnerDrive is the original internal hard drive for the IIgs, an imitator now has a look alike (only black) at a much higher price. As the reviews show you won't get more-you'll just pay more. After all, our track record,

(thousands of units shipped and close to 2 years of service) is proof of InnerDrive's quality and performance.

We also offer OverDrive, our external hard drive, that is an exceptional value. It performs as well as InnerDrive only it is external.

Don't pay more - but get more.



Ingenuity, Inc
Formerly Applied Ingenuity

CALL: 800-346-0811
In CA 818-960-1485
14922M Ramona Blvd
Baldwin Park, CA 91706

"It takes ingenuity to make quality affordable."

Circle 63 on Reader Service Card.

GOLEM COMPUTERS

PRESENTS

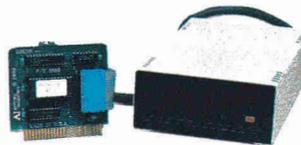
Hot Disks!

Keep your Soda Cool
in a Koozie- **FREE**
with Orders Over
\$50.00

OVERDRIVE INGENUITY

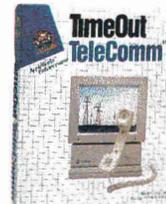
An external Hard drive which is fast and powerful. The fastest hard drive in its class, with speeds of 40K/Bytes/sec non-native mode & native mode driver speeds up to 120K/Bytes/sec. Supports multiple operating systems, such as ProDos, Dos 3.3, MS-Dos, IIGS, Ile, II+ & Laser 128.

20MB \$440.
40MB \$525.



TELECOMM

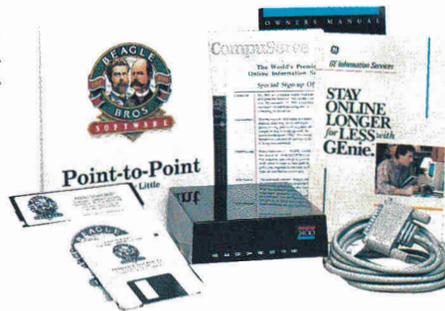
BEAGLE
BROS.
\$43.



TeleComm is a Beagle Bros. TimeOut application that links AppleWorks to your modem. You never have to leave AppleWorks to log-on to your favorite bulletin board or information service. Interface AppleWorks with the world! TimeOut TeleComm's wide selection of file transfer protocols insures you are supported by all information services.

TELINK GOLEM

\$149.



If you're looking for a reliable, easy-to-use, low-cost 2400 baud Hayes-compatible modem you can stop looking. Compare the TeLink to any other modem on the market. You won't find a better value at any price. Because we've taken the best technology, and rolled it all into a neat package. We started with the best modem chip set you can buy, the Rockwell RC224AT. What that means for you is simple. You'll have better connections, more of the time, with exceptional data accuracy for fast, reliable communications. We understand what it means to have your modem work with any software, the first time, just like Hayes. That's why we made sure that TeLink is more than just "Hayes compatible." The result? The TeLink is compatible with every Hayes AT Command, every Hayes Dial Command, and every Hayes S-Register. TeLink has an on-board non-volatile memory to store your modem setup and frequently called numbers. We also have superior call progress tone detection, phoneline impedance matching a quality speaker and high-power amplifier.



FREE \$67.

HUNT FOR RED OCTOBER

with Purchase of
Deluxe Write/DeluxePaint II
DeluxePaint II - "The best super-hi-res paint program, with every possible feature."
Deluxe Write - Word processor which generates papers with impact & style.

UTILITY/LANGUAGE

APPLIED ENGINEERING

- Ready Link 71
- BEAGLE BROS. Timeout Graph 52
- Designworks Accessories (IIGS) 35
- Timeout-Superfont. Quickspell, Telecom ea. 45
- Timeout-Filemaster, Sidespread.
- Power Pack. DeskTools II, Thesaurus Desktools ea. 31
- Timeout-Reportwriter 48
- Timeout-Ultramacros. Spreadtools ea. 35
- Timeout-Macrotools, Macrotools II ea. 18
- Point In Point 68
- GS Font Editor. Program Writer ea. 31
- Performance Pack 73
- Style Pack 86
- Decision Pack 99
- BIG RED COMPUTER**
- PS Lovers (IIGS, IIe/IIc) ea. 27
- Labels, Labels, Labels 27
- BYTE WORKS ORCA/C, Pascal (IIGS) ea. 88
- ORCA/Desktop (IIGS) 38
- ORCA/M 1.1 42
- CENTRAL POINT Copy Two Plus 25
- CHECKMATE TECHNOLOGY Proterm 79
- MICOL Advanced BASIC (IIGS) 95
- Q LABS Easy Drive 54
- RAMUP 30
- Repair Works. SuperPatch ea. 30

ROGER WAGNER Merlin 8/16(PRO DOS)

- Softswitch (IIGS) 79
- Graphix Exchange (IIGS) 40
- Hyper Studio (IIGS) 32
- Macromate (IIGS) 89
- SEVEN HILLS Font Factory GS 33
- Disk Access 27
- TERRAPIN Logo Plus 32
- TML PASCAL II (IIGS) 90
- Basic (IIGS) 83
- Source Code Library (IIGS) 32
- Speech Toolkit (IIGS) 82
- VERSACAD CAD Apple 46
- CAD Apple Professional 66
- VITESSE Salvation 260

BUSINESS

- BEAGLE BROS. BeagleWrite GS 62
- BeagleWrite Picture Manager 25
- BeagleWrite Font Library GS (IIGS) 31
- APPLEWORKS 3.0 COMPANION 27
- BRODERBUND Bank Street Writer Plus On Balance 39
- CLARIS Appleworks GS V1.1 195
- Appleworks V3.0 170
- DAC SOFTWARE DAC-Easy Accounting 60
- MANZANITA Payroll 109
- BUSINESS WORKS (PRODOS) 267
- SENSIBLE SOFTWARE

- Sensible Speller IV 79
- Sensible Grammar Checker 40
- SEVEN HILLS Graphics Writer III GS 32
- STONE EDGE DB Master Professional 89
- TIMEWORKS Swift Tax 47
- Publish It 2 27
- Font Pack I, II, Symbols & Slogans. 32
- People, Places & Things 90
- 4 in 1 Portfolio 83
- Design Ideas. Education 82
- Graph It 47

WORDPERFECT

- WORDPERFECT (IIGS), (IIe/IIc) ea. 110.

HOME/PERSONAL

- ABRACADATA Design Your Own Home Architecture (IIGS), Interior (IIGS) ea. 59
- Landscape (IIGS) 59
- Libraries 21
- ACTASOFT Alpha Check 27
- BEAGLE BROS. Beagle Draw GS 47
- Beagle Draw GS Clip Art (IIGS) 29
- BRODERBUND The Print Shop 40
- The Print Shop (IIGS) 40
- The Print Shop Library (IIGS): 40
- Sampler, Party ea. 23
- The Print Shop Library 1, 2, 3 ea. 15
- Dazzle Draw 40
- ELECTRONIC ARTS Deluxe Paint II (IIGS) 65

Instant Synthesizer (IIGS)

- INTUIT QUICKEN 40
- MECA Managing Your Money 89
- MECC Calendar Crafter 33
- MEDIAGENIC/ACTIVISION
- Paintworks Plus (IIGS) 46
- Paintworks Gold (1.25MB Req.) 66
- Draw Plus (IIGS), Music Studio (IIGS) ea. 59
- Paint, Write, Draw Bundle (IIGS) 80
- MINDSCAPE Certificate and More 32
- NOLO PRESS Willmaker 39

EDUCATION

- BARRON'S Study Program For SAT V2.0 32
- BRITANNICA Jigsaw (IIGS) 25
- Algebra 1, First Semester 32
- Algebra 1, Second Semester 32
- BRODERBUND Science Tool Kit 49
- Science Tool Kit Module 1, 2, 3 ea. 27
- VCR Companion 33
- Where in Europe, Where in USA ea. 27
- Where in Time 29
- Where in the World (IIGS) 30
- Where in the World (IIGS) 30
- Geometry (IIGS) 53
- The Play Room (IIGS) 27
- Where in USA (IIGS) 30
- BYTE WORKS UGLY DUCKLING (IIGS) 32
- COMPUTEACH Study Mate 32

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!
GS JUICE PLUS 1MB
INGENUITY \$240.

EDUCATION

- DAVIDSON & ASSOCIATES**
Read & Roll, Word Attack Plus
Word Attack Plus - Spanish, French
Math & Me, Reading & Me
Math & Me (IIGS), Reading & Me (IIGS)
Spell It Plus, Grammar Gremlins
Math Blaster Mystery
Math Blaster Plus, Alge Blaster Plus
Student Organizer
DESIGNWARE Spellcopter, Math Maze
Designasaurus (Ile/Ilc)
Designasaurus (IIGS), Revolution 76 (IIGS)
Grammar Examiner, States & Traits
The Body Transparent, European Nations
ELECTRONIC ARTS
Mavis Beacon Teaches Typing (IIGS)
Mavis Beacon Teaches Typing (Ile/Ilc)
FIRST BYTE (for IIGS) (788K Req.)
Mathtalk, First Shapes, Kidtalk
Speller Bee, Smoothtalker
Mathtalk Fractions, First Letter & Words
HARCOURT, BRACE, JOVANOVIH
Computer Prep for the SAT
ILS SOFTWARE
Computer Preparation SAT, GRE, ACT
Principles of Biology
PRINCIPLES OF CALCULUS
Principles of Chemistry
Principles of Economics
Principles of Physics
Principles of Statistics
LAWRENCE PRODUCTIONS:
McGee (IIGS)
MECC World Geograph (IIGS)
U.S. Geograph (IIGS)
Oregon Trail (Ile/Ilc)
Oregon Trail (3 1/2")
MINDSCAPE Crossword Magic
PASSPORT DESIGN Master Track Pro
Master Track Pro (IIGS)
Master Track Jr. (IIGS)
PYWARE
Music Writer Level 1 (IIGS)
Music Writer Level 2 (IIGS)
Music Writer Level 3 (IIGS)
THE LEARNING COMPANY
Reader Rabbit (IIGS)
Writer Rabbit, Think Quick,
Rocky's Boots (Ile/Ilc/IIGS)
Math Rabbit, Reader Rabbit, Gertrudes
Secrets, Magic Spells (Ile/Ilc/IIGS)
Children's Writing Publishing
Center (Ile/Ilc, IIGS)
UNICORN SOFTWARE (IIGS Only)
All About America, Read A Rama
Math Wizard, Animal Kingdom
WEEKLY READER Sticky Bears - ABC's,
Basketboard, Bop, Math, Math II,
Numbers, Shapes, Opposites, Reading
Sticky Bears - Basics, Drawing, Music,
Music Library, Parts of Speech,
Printer, Reading Comprehension,
Spellgrabber, Town Builder, Typing,
Word Problems
Car Builder, Codes & Hyphens,
Exploring Tables & Graphs-Level I, II,
Map Skills, Math Word Problems,
Punctuation Rules, Reading
Comprehension, Vocabulary Devel.
Shapes (Talking, IIGS)

ENTERTAINMENT

- Opposites (Talking, IIGS) 30
ABC's (Talking, IIGS) 30
ACCOLADE Mean 18 (IIGS) 30
Blue Angels (IIGS), Fast Break (IIGS) 30
Grand Prix Circuit (IIGS) Heat Wave (IIGS) 30
THE THIRD COURIER (IIGS) 32
Jack Nicklaus Golf (IIGS) 32
Test Drive II (IIGS), Haroball (IIGS) 30
Test Drive (Ile/Ilc), Bubble Ghost (IIGS) 30
California Challenge (IIGS) 16
The Super Cars (IIGS), Muscle Cars (IIGS) 16
European Challenge (IIGS) 16
4th & Inches, Serve & Volley (IIGS) 27
ARTWORX Strip Poker (IIGS) 27
Bridge 5.0 20
BRITANNICA Gnarley Golf (IIGS) 20
Laser Force (IIGS) 25
Task Force (IIGS) 27
Great Western Shoot-Out (IIGS) 27
BRODERBUND Wings of Fury 23
Prince of Persia 24
Dark Hart of Uukrul 32
Ancient Land of YS (IIGS) 30
Ancient Art of War at Sea 27
Downhill Challenge (IIGS) 23
CAPSTONE Triumph Castle 33
CASADY & GREENE Crystal Quest (IIGS) 33
CINEMAWARE King of Chicago (IIGS) 33
Defender of the Crown (IIGS) 33
Rocket Ranger (IIGS), Three Stooges (IIGS) 32
ELECTRONIC ARTS Bard's Tale (IIGS) 17
Cribbage King/Gin King (IIGS) 40
Reach for the Stars (IIGS) 27
Bard's Tale II (IIGS) 32
Bard's Tale II, III 32
HUNT FOR RED OCTOBER (IIGS) 32
Hunt for Red October (Ile/Ilc) 27
John Madden Football (Ile/Ilc) 33
Keep the Thief (IIGS) 33
Tomahawk (IIGS), Zany Golf (IIGS) 27
Halls of Montezuma (IIGS) 30
Marble Madness (IIGS), Skate or Die (IIGS) 17
Chessmaster 2100 (Ile/Ilc, IIGS) 32
Life & Death (IIGS) 32
F.T.L. Dungeon Master (IIGS) 27
MASTERTRONICS Risk 27
War in Middle Earth (IIGS) 36
CLUE 32
MEDIAGENIC/ACTIVISION
Battletech 32
The Quest for Excalibur 27
Neuromancer (IIGS) 27
Battlechess (IIGS) 30
MICROPROSE Pirates (Ile/Ilc, IIGS) 26
Red Storm Rising 27
MICRO REVELATIONS
Xenocide (IIGS) 30
MINDCRAFT Magic Candle 32
Keys of Maramon (IIGS) 32
MINDSCAPE Balance of Power (IIGS) 32
Paper Boy, Paper Boy (IIGS) 25
Captain Blood (IIGS) 30
Hostage (IIGS) 27
ORIGIN Omega (IIGS) 30
Ultima Trilogy, Ultima IV, V 32
Windwalker, Times of Lore 27
Tangled Tales 30
Space Rogue 32
PELICAN Pow! Zap! Kerplunk! 29
POLARWARE
All Dogs Go To Heaven 26
SIERRA ON-LINE King's Quest I, II, III 31
Gold Rush (IIGS), Black Cauldrun (IIGS) 27
Thexder (Ile/Ilc, IIGS) 27
King Quest I, II, III, IV (IIGS) 27
Space Quest I,II (IIGS) 27
Leisure Suit Larry (Ile/Ilc, IIGS) 30
Police Quest (IIGS), Manhunter NY (IIGS) 30
Silphed (IIGS) 30
Dragon's Keep 32
Manhunter San Francisco (IIGS) 32
SIR-TECH Wizardry 5, Return of Werda 32
WIZARDRY TRILOGY 40
SPECTRUM Tetris (Ile, IIGS) 25
SSI
Adv. D & D - Pool of Radiance (IIGS) 32
Adv. D & D - Pool of Radiance (Ile/Ilc) 30
Adv. D & D - Curse of Azure Bonds (Ile/Ilc) 30
Adv. D & D - War of the Lance (Ile/Ilc) 30
Adv. D & D - Dungeon Master Asst. I, II 30
SUBLOGIC Flight Simulator II 32
Scenery Disks 1 thru 6 18
TAITO Arkanoid II (IIGS) 24
Bubble Bobble (Ile) 24
OIX (IIGS) 24
Rastan (IIGS) 24
THREE-SIXTY SOFTWARE
Dark Castle (IIGS) 30
Warlock (IIGS) 28
VICTORY SOFTWARE
2088: The Cryllan Mission (IIGS) 34
HARD/FLOPPY DISK DRIVES
AMERICAN MICRO
3 1/2 Drive (Daisychain IIGS, Ilc+) 187
5 1/4 Drive (Daisychain IIGS, Ilc+) 145
CHINOOK Apple SCSI, Software 592
CT-20 (Ile, IIGS) 410
CT-40 (Ile, IIGS) 715
CT-80 (Ile, IIGS) 1075
CT-20C (Ile/Ilc+) 592
CT-40C (Ile/Ilc+) 785
APPLIED ENGINEERING
Vulcan Hard Drive 20MB 513
Vulcan Hard Drive 40MB 661
5 1/4 Drive (Ile/Ilc, IIGS) 111
Trans Drive Dual 286
Trans Drive Single 195
INGENUITY
INNERDRIVE 20MB (Ile, IIGS)
InnerDrive 40MB (Ile, IIGS) 27
InnerDrive 100MB (Ile, IIGS) 32
Overdrive 20MB (Ile, IIGS, Laser) 32
Overdrive 40MB (Ile, IIGS, Laser) 32
C Drive 20MB (Ile Inter) 27
C Drive 40MB (Ile Inter) 30
VCR Hard Disk Backup 30
Falcon 10MB (Laser, Ile) 265
LASER COMPUTER
External Disk Drive (5 1/4" Laser) 90
External Drive (5 1/4" Ilc/Ile) 95
External Disk Drive (3 1/2" Laser) 185
Universal Disk Controller 45
External Disk Drive (5 1/4" Daisychain, IIGS) 125
MEMORY & INTERFACE
APPLIED ENGINEERING
Audio Animator 178
Ram Works III 512K (Ile) 163
Ram Works III 1MB (Ile) 214
GS-Ram PLUS 1MB 235
GS-Ram PLUS 2MB 338
GS-Ram PLUS 3MB 440
GS-Ram Ultra 1MB 235
GS-Ram Ultra 512K 238
ea. 27 **TRANSWARP III (II+, Ile)** 147
ea. 24 Ram Express 512K (Ile+) 209
ea. 32 Ram express 1MB (Ile+) 260
ea. 32 Serial Pro (II+, Ile, IIGS) 106
ea. 26 Parallel Pro, Timemaster HO 73
ea. 32 PC Transporter 768K 967
ea. 33 Installation Kit (IIGS) 39
22 Installation Kit (Ile) 31
32 RamKeeper 139
ea. 32 Sonic Blaster 95
ea. 32 **TRANSWARP GS** 289
ea. 25 **DIGITAL VISION** Computer Eyes (IIGS) 199
Computer Eyes (Ile) 116
32 **INGENUITY** GS Juice Plus 1MB 165
30 GS Juice Plus 2MB 265
30 C Keeper 256K (Ile) 155
30 C Keeper 1MB (Ile) 312
ea. 30 **MEMORY DRAM** Call
32 **ORANGE MICRO**
ea. 18 Grapler 9 pin. (IIGS, Ilc, Ilc+) 80
24 Grapler + (Ile, II+) 76
24 **THIRDWARE** Fingerprint GSI (IIGS) 79
24 **THURDWARE** Thunderscan 149
MODEMS
APPLIED ENGINEERING DataLink 2400 178
DATALINE EXPRESS EXT. W/SOFT 183
MNP Option 66
SUPRA 2400 External 120
2400 External w/MNP 5 170
COMPUTERS
LASER COMPUTER Laser 128E 370
Laser 128EX 410
Laser 128EX/2 (5 1/4" Drive) 445
Laser 128EX/2 (3 1/2 Drive) 490
MONITORS
LASER COMPUTER
Amber, Green Monitor 99
MAGNAVOX
RGB/Composit (CM8762) 260
ACCESSORIES
ea. 486 **APPLIED ENGINEERING** Conserver 73
ea. 612 **BLANK MEDIA** (Bulk) Call
ea. 1218 **CD PRODUCTS** Flight Stick 50
ea. 440 Mach III w/fire Button (Ile/Ilc, IIGS) 54
525 **INGENUITY** GS Keyboard 150
486 **KENSINGTON** System Saver (IIGS) 69
612 Turbo Mouse ADB (IIGS) 115
150 Anti-Glare Filter (IIGS) 34
285 **KURTA** IS/GS Tablet w/Stylus 258
LASER COMPUTER Mouse 45
90 Expansion Box 55
95 Cables - Parallel, Serial, RGB, Modem 16
185 Joystick 27
20 Monitor Stand 20
45 **PASSPORT DESIGN** MIDI Interface IIGS 92
8 **RIBBONS** Imagewriter II, (4 Colors) 8
ea. 4 Imagewriter (Black, Red, Brown, etc.) 4
203 Vitesse Quickie (IIGS)



FOR CUSTOMER SERVICE 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, if 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).

INTERNATIONAL ORDERS WELCOME

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

1111 Rancho Conejo Blvd. #407

IN CALIFORNIA CALL 1-805-499-0197

Newbury Park, CA 91320

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

ORDERS ONLY 1-800-248-0363 • FAX (805) 498-7689

SPREADSHEET SHENANIGANS

Streamline your accounts: AppleWorks calculates discount eligibility automatically, with some handy tricks you can adapt for your own invoices.

By RUTH K. WITKIN

SHENANIGAN COMES FROM *SION-nach*, the Irish word for *fox*, considered to be a clever and cunning animal. There's no better word to describe the tricks and techniques you'll find in this month's column.

Figure 1 shows a small spreadsheet that pretends to be a page from an accounts-receivable ledger. Its mild demeanor belies the activity behind the scenes. Each column contains something of interest, something you may never have tried before. Let's get started.

A SPREADSHEET FROM SCRATCH

Load the AppleWorks program and create a new spreadsheet file named **RECEIVABLES**. Referring to Figure 1, follow these instructions to set up the spreadsheet:

•**Lines.** Use an equal sign or minus sign to enter the long lines in rows 2, 4, and 12. With the cursor in column A, type quotation marks first, hold down the sign key until the cursor reaches the right edge of column G, and hit Return. Use the same technique to extend the line into column H.

•**Column width.** Each column is now nine characters wide. Use Open apple-L (OA-L), *Columns*, and *Column width* to

change these column widths: Column A to 7 characters, B to 6 characters, C to 3 characters, D to 2 characters, E to 20 characters, F to 11 characters, G to 13 characters, and H to 12 characters.

•**Labels.** Enter the spreadsheet title in E1, the labels in row 3 only, and the word *Totals* in E13. You'll be entering everything else shortly as this piece progresses.

•**Formats.** Use OA-V to set a standard *Value format* of *Commas* with two decimal places, then use OA-L and *Value format* to show entries in C5 through C11 as *Commas* with no decimal places. Use OA-L and *Label format* to center the labels in F3 through H3. When you finish, press OA-S to store the spreadsheet on disk.

COLUMN A: INVOICE NUMBERS

Numbers, such as the invoice numbers in column A or model numbers, are often used as labels for noncalculation purposes. Each time you type a number-as-label, you need to alert AppleWorks by typing quotation marks first. That's a drag. It's a good idea to structure your numbering system to begin with a letter. Referring to Figure 1, enter the invoice numbers in A5 through A11.

COLUMN B: DATES YOU CAN SORT

Looking at the invoice dates in Figure 1, you'd never guess there was anything

unusual about them—they're just your typical month/day/year dates. So what's the big deal? The column letters at the top reveal that the invoice dates are actually two sets of entries, one in column B and the other in column C.

This separation, plus the fact that months and days always contain two digits (03, not 3 alone), lets you sort entries into perfect chronological sequence every time—even when years differ, which is where AppleWorks draws the line when you use single-entry dates.

Referring to Figure 1, enter the invoice month and day in B5 through B11. For example, in B5, type quotation marks to tell AppleWorks the entry is a label, type 12/03/, and move the cursor to the next cell down. Remember, type quotation marks first and end with a slash. After typing the last entry in B11, press Return.

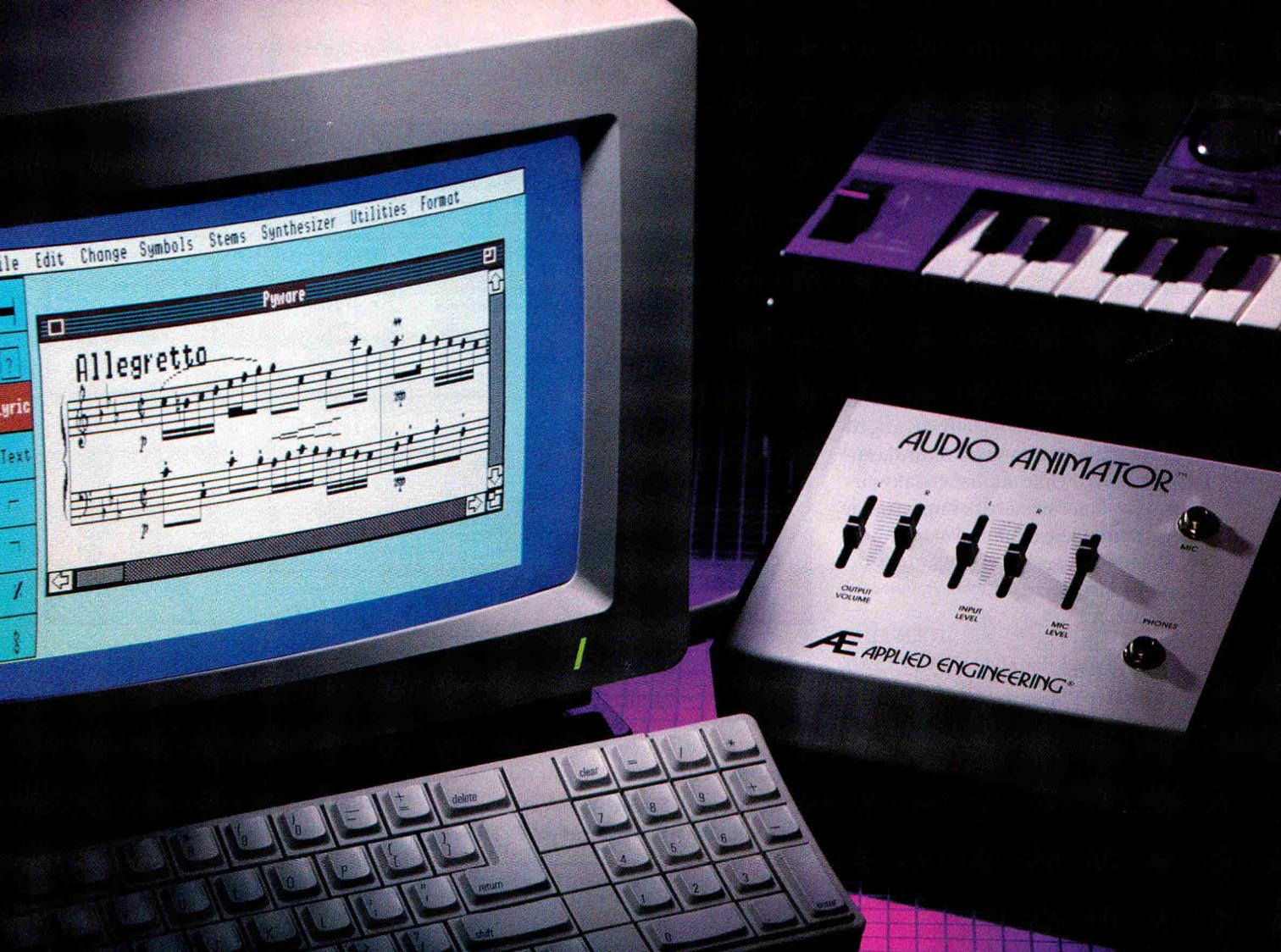
COLUMN C: DATES YOU CAN SORT (CONTINUED)

Referring to Figure 1, enter the invoice years in C5 through C11. For example, in C5, type 89 and move the cursor to the next cell down. After the last entry in C11, press Return.

ENTIRE SPREADSHEET: SORTING DATES

Here's how to get the perfect sort: Place the cursor on B5 and press OA-A to start the *Arrange* command. Press OA-8 to highlight rows 5 through 11, and hit Return. Remember, these entries are labels, so hit Return to confirm *Labels from A to Z*.

Now for the year sort: Place the cursor on C5 and press OA-A. Again, press OA-8 and hit Return. This time, type 3 to select *Values from 0 to 9* and hit Return again. AppleWorks arranges the dates and the spreadsheet returns. Need I say it? Perfect. ►



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 1 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.

COLUMN D: THE BUFFER ZONE

Column D, only two characters wide, is a clever ploy to keep right-justified numbers (column C) and left-justified labels (column E) from bumping into each other.

COLUMN E: MEANINGFUL RELATIONSHIPS

Spreadsheets are always easier to understand when entries are arranged in a meaningful order, not randomly as you enter them. Chronologically arranged dates are important in some recordkeeping activities, while alphabetically arranged customer names are important in others. Enter these customer names:

- E5: Shamrock Togs
- E6: Alpha Menswear
- E7: Le Baron
- E8: Smart Shirt Ltd
- E9: Shirt-O-Rama
- E10: The Men's Shoppe
- E11: Benny's Boutique

It's just as easy to arrange these names as it was the invoice dates: Leave the cursor on E11 and press OA-A. Press OA-4 to highlight rows 11 through 5, and hit

Figure 1. Page from accounts-receivable ledger.

File: RECEIVABLES		EDITING MODE		Escape: Review/Add/Change		
A	B	C=D	E	F	G	
11	ACCOUNTS RECEIVABLE LEDGER					
21	-----					
31	Inv#	Inv Date	Customer	Purchase	Discount	Due
41	-----					
51	A183	12/03/89	Alpha Menswear	250.00	NO DISCOUNT	250.00
61	B806	02/31/90	Benny's Boutique	8,910.00	445.50	8,464.50
71	A155	01/02/90	Le Baron	567.00	11.34	555.66
81	C512	11/27/89	Shamrock Togs	786.42	15.73	770.69
91	A232	02/01/90	Shirt-O-Rama	2,001.00	100.05	1,900.95
101	A176	01/17/90	Smart Shirt Ltd	434.78	NO DISCOUNT	434.78
111	A204	02/16/90	The Men's Shoppe	1,234.00	24.68	1,209.32
121	-----					
131	Totals			14,183.20	597.30	13,585.90
141	-----					
151	-----					
161	-----					
171	-----					
181	-----					
G5: (Value, Protect-N) @IF(F5<500," NO DISCOUNT",@IF(@AND(F5)=500,F5<2000),.02* @IF(F5<500," NO DISCOUNT",@IF(@AND(F5)=500,F5<2000),.02*F5,.05*F5))						
Type entry or use @ commands						
1027K Avail.						

Return. Hit Return to confirm *Labels from A to Z*. Your spreadsheet should look more and more like the one in **Figure 1**.

COLUMN F: PURCHASES

Referring to **Figure 1**, enter the purchase amounts in F5 through F11. Be-

cause of the formatting, there's no need to type commas in large numbers or zeros in decimal places.

COLUMN G: NESTED IF FORMULA WITH TEXT STRING

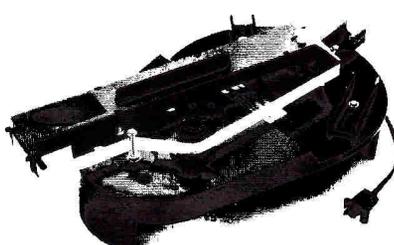
The formulas in column G are nested IF formulas—one IF formula contained in another. (You can see the entire formula on the edit line in **Figure 1**.) Nesting allows IF formulas to produce one of three possible answers, compared with traditional IF formulas, which can produce only two possible answers.

The syntax of a traditional IF formula is *@IF(Test,Then,Else)*. The Test statement uses a comparison operator to establish a condition that can be true or false. If the test proves true (is met), the Then statement produces the answer. If the test proves false (fails), the Else statement produces the answer. Comparison operators used in the Test statement can be < (less than), > (greater than), <= (less than or equal to), >= (greater than or equal to), = (equal to), and <> (not equal to).

The syntax of the nested IF formula in column G is *@IF(Test, Then,@IF(Test,Then,Else))*. But that's only half the story. These formulas also use the AND function in the nested IF and a text string in the first Then statement, letting the formula communicate with you in plain English.

The formulas calculate discounts based on a single purchase of men's shirts. Based

Never buy another ribbon!



MacInker Over 125,000 sold since 1982

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

MacInker™, the automatic ribbon re-inker. The Imagewriter MacInker (mod 234IM) re-inks Imagewriter I/II black & single color cartridges. The Universal MacInker also re-inks hundreds of different cartridge types (including the Imagewriter LQ) with suitable adaptors. Extra dark, dot matrix, lubricated ink yields a better than new print quality and helps extend printhead life. Average number of re-inkings/cartridge is 60-100. With the **Multicolor Adaptor (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, and gold. Ask for free catalog.

\$42.00

Imagewriter I/II MacInker (mod 234IM).....	42.00
Multicolor Adaptor (mod M422).....	40.00
Epson MacInker (mod 271EP).....	42.00
Universal MacInker.....	68.50
Heat Transfer Adaptor.....	30.00
Imagewriter cartridges ...3.15/ea	4-color10.00/ea
Extra ink bottle.....3.00/ea	pint.....18.50

Apple Autoswitch (new!!) - Data Switches

	4 port 8 pin50.00	Apple Autoswitch (4 to 1).....149.00
	4 port 9 pin.....50.00	BothWay Autoswitch*.....89.00
	cable.....16.00	* Can be configured 2 comp/1 printers or 1 comp/2 printers

Order Toll Free (800)547-3303

Computer Friends, Inc., 14250 NW Science Park Dr. Portland OR 97229

telephone (503)626-2291 - fax (503)643-5379

Major credit card accepted, cod, immediate shipment, 30 days money back guarantee

Figure 2. Ledger with two more entry rows added.

File: RECEIVABLES		REVIEW/ADD/CHANGE		Escape: Main Menu		
A	B	C	D	E	F	
11	ACCOUNTS RECEIVABLE LEDGER					
21	-----					
31	Inv#	Inv Date	Customer	Purchase	Discount	Due
41	-----					
	51A183	12/03/89	Alpha Menswear	250.00	NO DISCOUNT	250.00
	61B806	02/31/90	Benny's Boutique	8,910.00	445.50	8,464.50
	71A155	01/02/90	Le Baron	567.00	11.34	555.66
	81C512	11/27/89	Shamrock Togs	786.42	15.73	770.69
	91A232	02/01/90	Shirt-O-Rama	2,001.00	100.05	1,900.95
	101A176	01/17/90	Smart Shirt Ltd	434.78	NO DISCOUNT	434.78
	111A204	02/16/90	The Men's Shoppe	1,234.00	24.68	1,209.32
121					0.00	
131					0.00	
141	-----					
151		Totals		14,183.20	597.30	13,585.90
161	-----					
171						
181						
H12: (Value, Protect-N) @IF(F12>G12)0,F12-G12,"")						
Type entry or use ? commands				?-? for Help		

on the dollar amount, each formula produces one of three answers: the words *NO DISCOUNT*, a 2 percent discount for purchases between \$500 and \$2000, or a 5 percent discount for purchases over \$2000. Here's how it works.

In G5, for example, the Test statement checks the amount in F5 to see if it's less than 500. If this is true (that is, the cell contains any number or zero), the Then statement enters *NO DISCOUNT* in G5. If the amount in F5 is 500 or greater, the formula evaluates its Else statement—the nested IF formula.

The Test statement in the nested IF formula and the AND function let you establish more than one test condition, here setting the lower and upper limits for the 2 percent discount. Both tests must be met for the Then statement to produce the answer. If either fails, the Else statement produces the answer. Therefore, if F5 contains an amount greater than or equal to 500, yet less than 2000, the Then statement multiplies the amount in F5 by .02. If F5 contains 2000 or more, the Else statement multiplies the amount in F5 by .05. If F5 is empty, the formula produces zeros in G5.

Cell location: G5

Formula: @IF(F5<500,"NO DISCOUNT",@IF(@AND(F5>=500,F5<2000),.02*F5,.05*F5))

The AppleWorks entry line lacks room for all these characters, so entering this

formula the traditional way is impossible. You can squeeze in more characters, however, by using editing mode instead.

First give AppleWorks something to edit: With the cursor on G5, type 1 and hit Return. Now press OA-U to enter edit mode, and hit OA-Y to erase the 1 on the

edit line. (You can still see 1 in G5.) Type the entire formula, leaving a space after the quotation marks before *NO DISCOUNT*. That space shifts the text one character to the right, producing a smooth right alignment with the numbers generated by the formula in the cells below.

When the formula's complete, compare each character on your screen with the way it appears here. If everything agrees, press Return (and *NO DISCOUNT* pops in). If something's amiss, press the escape key and start again.

Now protect the formula from any change: With the cursor on G5, press OA-L to start the *Layout* command. Hit Return to confirm *Entry*, then type PN (for *Protection Nothing*).

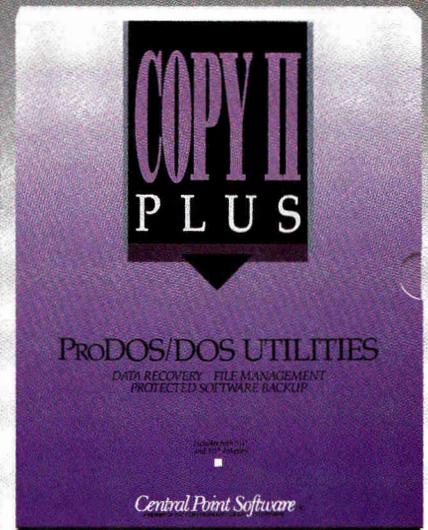
COLUMN H:

MAKING A CELL LOOK EMPTY

The formulas in column H are traditional either/or IF formulas, but hardly run-of-the-mill. One of the answers is a calculation, and the other makes its own cell look as if it were empty. Here's how it works.

Announcing:

Version 9. The most complete utility product for the Apple II series just got better. Its new interface makes accessing all its capabilities easier than ever. Select and run applications right from within Copy II Plus. Activate functions with a "key" letter or simply by clicking on them with a mouse. Make archival copies of hundreds of copy-protected programs nearly as easily as copying a data disk. As always, nothing makes recovering accidentally deleted files easier. If you own an Apple II and you're without Copy II Plus, we now have your number: **Version 9.**



Central Point Software INC.
A MEMBER OF THE VIDBO TECHNOLOGY GROUP (503) 690-8090

Requires 128K and an 80 column card. 3.5" Bit copier does not support Unidisk drives. Copy II is a trademark of Central Point Software. All other product names are trademarks of their manufacturers. Users of versions prior to 9.0, call (503) 690-8090 for upgrade details.

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 \$3.50, 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.

In H5, the Test statement subtracts the discount from the purchase amount. If the result is greater than zero—meaning that F5 contains a number and the formula in G5 has done its calculations—the Then statement subtracts the discount amount from the purchase amount and enters the result in H5.

If, on the other hand, that subtraction results in a zero or less, the Else statement—double quotes with no text between—makes the formula disappear! This new AppleWorks 3.0 capability lets you create spreadsheets without extraneous zeros cluttering up the columns.

Cell location: H5

Formula: @IF(F5-G5>0,F5-G5,"")

Now protect this formula from change: With the cursor on H5, press OA-L, hit Return, and type **PN**.

COLUMNS G AND H: COPYING BOTH FORMULAS

Copy both IF formulas to the cells below, a procedure that also copies their protection: Place the cursor on G5 and press OA-C to start the *Copy* command. Hit Return, press the right-arrow key to reach H5, and hit Return again. Press Down Arrow, type a period, move the cursor to G11, and hit Return again. To tell AppleWorks that all cell references are *Relative*, press OA-R once. Your formula results should match those in **Figure 1**.

ROW 13: FORMULA WITH A WIDE RANGE

If you're a regular reader of this column, this one's old hat. If you're not, this trick can save you from redoing formulas unnecessarily.

Each SUM formula in row 13 (F13, G13, and H13) adds the numbers in the column above it. Each formula also includes one cell before and after the list. In this case, both cells contain a line. No matter.

This technique creates a cohesive range of cells from one line to the other. You can insert new rows anywhere in that range and AppleWorks will adjust the SUM formulas to account for the new entries.

Cell location: F13

Formula: @SUM(F12.F4)

Protect this formula: With the cursor on F13, press OA-L, hit Return, and type **PN**.

Now copy it to the other cells: Leave the

cursor on F13, press OA-C, and hit Return twice. Press Right Arrow, type a period, press Right Arrow again, and hit Return. Press OA-R once. Now press OA-S to store the spreadsheet on disk.

ENTIRE SPREADSHEET: INSERTING ROWS

When you want to insert rows for more entries, the easy approach is to copy an existing row to the clipboard, then copy it into the spreadsheet as many times as you want, along with all formats and formulas.

Let's suppose you want to insert two more rows, as shown in **Figure 2**. Place the cursor on F11 (it could easily be any other cell in row 11), press OA-C, and type **T** to select *To clipboard*. Hit Return to confirm *Rows*, then hit Return again.

The entire row is now on the clipboard. Leave the cursor on F11, press OA-C and type **F** (for *From clipboard*). Hit Return to confirm *Formulas and values*. Do the same thing again: The cursor is still on F11, so press OA-C, type **F**, and hit Return. And here's another row.

Now blank out the unnecessary entries in the new rows: Place the cursor on F12 and press OA-B to start the *Blank* command. Type **B** (for *Block*), press Down Arrow, then OA-Left Arrow to highlight the entries to column A, and hit Return. Your spreadsheet should look like the one in **Figure 2**.

Now move the cursor to H12. Sure enough, without a purchase amount to work with, the formula in the cell made itself invisible. Remarkable. Press OA-S to store the spreadsheet on disk.

COMING ATTRACTIONS

"Spreadsheet Shenanigans" is the second in a tutorial trilogy that started with "Database Doings" (July 1989, p. 62, and August 1989, p. 68). Stay tuned for "Word-Processing Wonders," coming to your small screen in the not-too-distant future.

And with summer vacations coming up, many of you will be motoring to new and exciting places. Next month's column presents a spreadsheet that shows how much your car costs to run. □

WRITE TO RUTH K. WITKIN AT 5 PATRICIA ST., PLAINVIEW, NY 11803. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A REPLY.

Save by Registering Today! Call 1-800-262-FEST*

* 617-290-0400 in Mass.

*It's the biggest.
It's the best.*



AppleFest!®

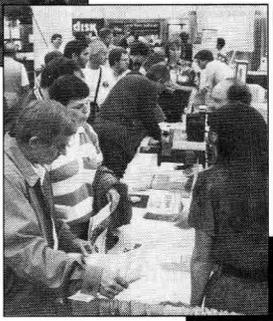
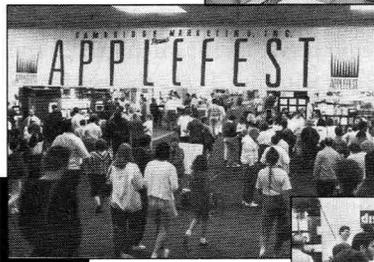
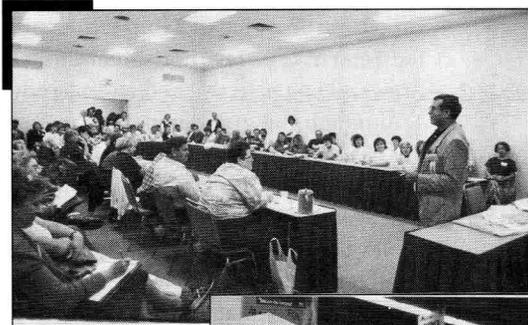
and Announcing

ComputerFest!™
for PC & Commodore Users

*Coming for the First Time to the
Greater New York Metro Area!*

May 4-6, 1990
The Garden State
Convention Center
Somerset, New Jersey

- ✓ World's largest home & K-12 computing event
- ✓ Thousands of products
- ✓ 70+ sessions and intensive seminars
- ✓ Apple II, Mac, PC & Commodore
- ✓ Terrific bargains & prizes
- ✓ Easy-access location
- ✓ The perfect event for teachers, parents, kids, and home office users!



AppleFest is an independent tradeshow, not affiliated with Apple Computer, Inc.
Apple and Macintosh are registered trademarks of Apple Computer, Inc.



SQUARING OFF

Whether you're plotting data or designing a needlepoint pattern, Publish It! graph paper helps you keep it all straight.

By CYNTHIA E. FIELD, Ph.D.

NEARLY EVERYONE, IT SEEMS, USES printed grids of one kind or another. To the scientist they're graphs. To the business owner or accountant they're ledgers. To a teacher they're gradebooks. To the needleworker they're patterns. No matter how you employ these organized arrays of vertical and horizontal lines, it's a cinch to set them up with a page-layout program such as **Publish It! 2**.

This month, let's create two types of grids: a graph-paper template (**Figure 1**) and a gradebook form (**Figure 2**). Complete this practice session and you'll be ready to design a variety of custom grids for business, school, and home.

THE LINEUP

Start up Publish It! 2 and work in *Size to Fit* mode (Special menu or Open apple-4). This month's projects are also compatible with both the original version of Publish It! and its newest incarnation, **Publish It! 3**.

Select the line tool by clicking on the sixth icon from the top of the Publish It! toolbox at the left-hand side of the screen. Pull down the Objects menu. Select the *Set line weight* option and choose the narrowest thickness. Pull down the Objects menu again and choose *Set pen pattern* and the

solid black color.

Move the line tool onto the drawing page and "rubber-band" a horizontal line roughly seven inches long. Use screen rulers to guide you. Rubber-banding an object is a snap. (Excuse the pun.) Just press the mouse button, drag the mouse, and release the button. If you've participated in previous Press Room projects, you know that when we say "roughly" what we mean is this: Don't get eyestrain trying to be precise—use the specifications listed in **Table 1** (more on that below).

Make sure the line you just drew is selected. (It should have "handles" at either end.) If it isn't, swap the line tool for the pointer. Drag the pointer onto the work area, point to the line you just drew, and click on it; handles should appear.

In *Size to Fit* mode, clicking on small objects such as thin lines can test the patience of a saint. Switch to a larger viewing mode, such as *Show double size* (Special menu or Open apple-2), and try clicking on the magnified line. Switch back to *Size to Fit* (Open Apple-4) when you're done.

With the line selected, pull down the Objects menu and select *Show specifications*, or press Open apple-M, one of Publish It!'s handiest Quick Key commands and one that's well worth memorizing.

When the object's specifications window opens, you'll see the precise dimensions of

the line you drew. Edit these specs to make them comply with the ones we used. First, place the cursor at the end of each value (by clicking at this location). Use the delete key to erase the inaccurate value. Now type the correct value listed in **Table 1**.

Continue with this procedure until the *Left start*, *Top start*, and *Width* values agree with those provided in **Table 1**, then press the return key. The horizontal line you drew will be perfectly sized and placed.

Although the graph paper we're creating has some 27 horizontal and 31 vertical lines, you can finish this template without ever again touching the line tool: Just make copies of the original line and tell Publish It! where to place them. Here's how.

Select the line if it isn't already selected. (Check for handles.) Pull down the Objects menu and choose *Copy*, or press Open apple-C. Pull down the Objects menu again and select *Paste*, or press Open apple-V. A facsimile of the original line appears in a different location.

Press Open apple-M (the *Show specifications* Quick Key command, remember?) and edit the values shown in line 2's specifications window. Press the return key. Line 2 snaps into place, perfectly parallel to line 1 and exactly a quarter inch below it.

Continue with this procedure (Open apple-V followed by Open apple-M) to paste additional replicas of the original horizontal line on the page. Don't forget to save your template-in-progress on a formatted data disk. Use Publish It! 2's *Save as* command (File menu or Open apple-A). Name the template whatever you like; we call ours *GRID.25*.

This graph paper is the size that's typically used by students, scientists, and businesspeople—four squares to the inch. Mathematically, one inch divided by four ►



Juice Plus 1 meg \$125
Juice Plus 2 meg \$199
Juice Plus 4 meg \$399

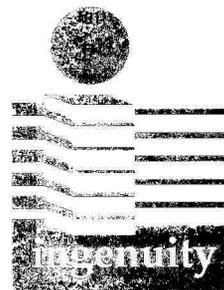
Due to a volatile chip market,
prices are subject to change
without notice.

Don't buy a memory today from a company that takes all your money away.

For three years Ingenuity has been selling IIgs memory boards at an exceptional value. You can be assured of continued software and hardware compatibility because we strictly follow Apple's design standards. When the new gs arrived our Juice Plus board was one of the few memory boards that remained compatible without

having to make any hardware changes.

Don't be fooled by the over used adage "you get what you pay for". We use the same high quality parts that others use, but our philosophy is good value not just good profit. After comparing our price, service, and performance, then you'll stick with us without getting stuck.



Ingenuity, Inc
Formerly Applied Ingenuity

CALL: 800-346-0811

In CA 818-960-1485
14922M Ramona Blvd
Baldwin Park, CA 91706

*"It takes ingenuity to make
quality affordable."*

Circle 206 on Reader Service Card.

squares equals a quarter inch per square, the offset from one line to the next in our template. Glance down **Table 1** and you'll see that all lines are the same width and begin a half inch to the right of the left-hand margin, but the lines are positioned from the top of the page in increments of a quarter inch (0.25 if you prefer).

Our graph paper's 31 vertical lines are designed in similar fashion, with each succeeding line a quarter inch to the right of the previous one.

Select the line tool and rubber-band a single vertical line that's 6½ inches long, give or take a bit. Use the *Show specifications* window to position and dimension the line.

Select the line, copy it, and paste it. Check its specifications and edit them according to the values listed in **Table 1** for vertical lines. Paste additional copies (Open apple-V) and check their specs (Open apple-M).

Notice that we didn't make our grid large enough to take up a whole page. And for good reason: We couldn't! Publish It! 2 limits you to some five dozen objects on a given page; with the 58 lines required for this template we approached that limit. (Pull down the Apple menu and check *Status* whenever you want to find out the number of objects you can fit on a page.)

We originally hoped to have an 8-inch-wide by 10-inch-high template, but calculated that such a design would require 74 objects: 8 inches across divided by a quarter inch per square equals 32 vertical lines; 10 inches down divided by a quarter inch per square equals 40 horizontal lines. We'd also need "starter" vertical and horizontal lines; those would increase the total to 74 objects—a Publish It! no-no. We had two options: Scale up the size of each square or scale down the size of our grid. We chose the latter because the four-squares-per-inch graph size was important. If you prefer graphs with larger half-inch squares, you can create a full-page graph-paper template easily.

One unanticipated benefit of this design is plenty of room on the page for adding a piece of clip art or some text. Standard graph paper from stationery or office-supply stores often leaves little room for x- and y-axis labels, let alone figure titles or legends. With the design presented

Table 1. Graph-paper specs (inches).

Object	Left Start	Top Start	Width	Height	
Horizontal Lines	0.500	1.000	7.500	n/a	
	0.500	1.250	7.500	n/a	
	0.500	1.500	7.500	n/a	
	0.500	1.750	7.500	n/a	
	0.500	2.000	7.500	n/a	
	0.500	2.250	7.500	n/a	
	0.500	2.500	7.500	n/a	
	0.500	2.750	7.500	n/a	
	0.500	3.000	7.500	n/a	
	0.500	3.250	7.500	n/a	
	0.500	3.500	7.500	n/a	
	0.500	3.750	7.500	n/a	
	0.500	4.000	7.500	n/a	
	0.500	4.250	7.500	n/a	
	0.500	4.500	7.500	n/a	
	0.500	4.750	7.500	n/a	
	0.500	5.000	7.500	n/a	
	0.500	5.250	7.500	n/a	
	0.500	5.500	7.500	n/a	
	0.500	5.750	7.500	n/a	
	0.500	6.000	7.500	n/a	
	0.500	6.250	7.500	n/a	
	0.500	6.500	7.500	n/a	
	0.500	6.750	7.500	n/a	
	0.500	7.000	7.500	n/a	
	0.500	7.250	7.500	n/a	
	0.500	7.500	7.500	n/a	
	Vertical Lines	0.500	1.000	n/a	6.500
		0.750	1.000	n/a	6.500
		1.000	1.000	n/a	6.500
		1.250	1.000	n/a	6.500
1.500		1.000	n/a	6.500	
1.750		1.000	n/a	6.500	
2.000		1.000	n/a	6.500	
2.250		1.000	n/a	6.500	
2.500		1.000	n/a	6.500	
2.750		1.000	n/a	6.500	
3.000		1.000	n/a	6.500	
3.250		1.000	n/a	6.500	
3.500		1.000	n/a	6.500	
3.750		1.000	n/a	6.500	
4.000		1.000	n/a	6.500	
4.250		1.000	n/a	6.500	
4.500		1.000	n/a	6.500	
4.750		1.000	n/a	6.500	
5.000		1.000	n/a	6.500	
5.250		1.000	n/a	6.500	
5.500		1.000	n/a	6.500	
5.750		1.000	n/a	6.500	
6.000		1.000	n/a	6.500	
6.250		1.000	n/a	6.500	
6.500		1.000	n/a	6.500	
6.750		1.000	n/a	6.500	
7.000		1.000	n/a	6.500	
7.250		1.000	n/a	6.500	
7.500	1.000	n/a	6.500		
7.750	1.000	n/a	6.500		
7.988	1.000	n/a	6.500		

Table 2. Gradebook specs (inches).

Object	Left Start	Top Start	Width	Height
Text Area	0.230	0.129	2.047	0.555
Horizontal Lines	0.250	0.750	8.000	n/a
	0.250	1.000	8.000	n/a
	0.250	1.250	8.000	n/a
	0.250	1.500	8.000	n/a
	0.250	1.750	8.000	n/a
	0.250	2.000	8.000	n/a
	0.250	2.250	8.000	n/a
	0.250	2.500	8.000	n/a
	0.250	2.750	8.000	n/a
	0.250	3.000	8.000	n/a
	0.250	3.250	8.000	n/a
	0.250	3.500	8.000	n/a
	0.250	3.750	8.000	n/a
	0.250	4.000	8.000	n/a
	0.250	4.250	8.000	n/a
	0.250	4.500	8.000	n/a
	0.250	4.750	8.000	n/a
	0.250	5.000	8.000	n/a
	0.250	5.250	8.000	n/a
	0.250	5.500	8.000	n/a
	0.250	5.750	8.000	n/a
	0.250	6.000	8.000	n/a
	0.250	6.250	8.000	n/a
	0.250	6.500	8.000	n/a
	0.250	6.750	8.000	n/a
	0.250	7.000	8.000	n/a
0.250	7.250	8.000	n/a	
0.250	7.500	8.000	n/a	
0.250	7.750	8.000	n/a	
0.250	8.000	8.000	n/a	
0.250	8.250	8.000	n/a	
0.250	8.500	8.000	n/a	
0.250	8.750	8.000	n/a	
0.250	9.000	8.000	n/a	
0.250	9.250	8.000	n/a	
0.250	9.500	8.000	n/a	
0.250	9.750	8.000	n/a	
0.250	10.000	8.000	n/a	
0.250	10.250	8.000	n/a	
0.250	10.500	8.000	n/a	
Vertical Lines	2.500	0.500	n/a	10.000
	3.000	0.500	n/a	10.000
	3.500	0.500	n/a	10.000
	4.000	0.500	n/a	10.000
	4.500	0.500	n/a	10.000
	5.000	0.500	n/a	10.000
	5.500	0.500	n/a	10.000
	6.000	0.500	n/a	10.000
	6.500	0.500	n/a	10.000
	7.000	0.500	n/a	10.000
7.500	0.500	n/a	10.000	
7.975	0.500	n/a	10.000	

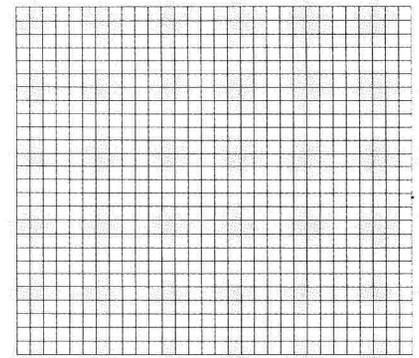


Figure 1. Graph-paper template.

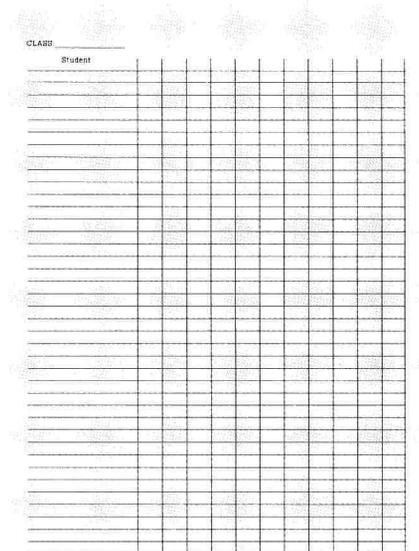


Figure 2. Gradebook template.

here you can create more stylish graph paper than is otherwise available.

Teachers can use the template, for example, to create an assortment of instructional handouts. Print the blank grid at the top of the page and a table of data below; ask students to label the graph, plot the data, and give the figure a title. Even better, ask students to collect actual data by performing simple science experiments or taking surveys in class. Use inexpensive pH paper to test the acidity of household liquids, or cook up some experiments with Broderbund's **Science Toolkit** or Sunburst Communications' **Playing with Science: Temperature**.

A business owner could import a completed graph of last quarter's sales results, say, from **Graph It!** in the form of a Publish ►

inCider presents....

Success with AppleWorks V

by Ruth Witkin

Get 10 all-new templates designed to capture the power of AppleWorks and put it to work for you!

Volume V of the popular Success with AppleWorks series delivers ready-to-use templates on a disk—all set up and ready for your data! Fast, efficient and error free! Plus, each disk is accompanied by a detailed Documentation Booklet. Power up your life...manage your affairs more efficiently with practical templates for:

- ▼ Taxes 89
- ▼ Invitation
- ▼ Expense Itemizer
- ▼ Stock Portfolio
- ▼ Newsletter
- ▼ Club Membership
- ▼ Retirement Budget
- ▼ Mortgage
- ▼ Personal Documents
- ▼ Memo Merge

Volumes I, II, III and IV are still available. Build an instant library of exclusive AppleWorks applications by ordering all five volumes and save up to \$50!

Volume I---Mail List, Checkbook, Price Quote, Loan, Quote Letter, Newsletter, Price/Volume, Budget, Sales Report, Expenses

Volume II--Cash Flow, Breakeven, Net Worth, Menu, 3-Across Labels, Income, Car Loan, Rent or Buy, Cover Letter, Important Numbers

Volume III--- Car Costs, Retirement, Living Expenses, Credit Cards, Return -Address Labels, Handbook, Wine List, Taxes, Loan II, Travel Expenses

Volume IV--- Business Statements, Résumé Layouts, Annual Interest Calculations, Shopping Lists, Résumé Cover Letters, Retirement Budget, Business Startup Expenses, Stock Portfolio, Job- Search Employer Database, Investment Payouts

Only \$29.97
each
or SAVE \$50
and order all
five for just
\$ 99.97

ORDER
NOW
CALL TOLL
FREE
1-800-343-0728
inCider Magazine,
80 Elm Street,
Peterborough,
NH 03458

AppleWorks is a registered trademark of Claris Corporation. Volumes I-IV require AppleWorks version 2.0 or higher. Volume V requires AppleWorks version 2.1 or higher.

S5071

PRESS
ROOM

PRODUCT INFORMATION

Graph It!, \$69.95
Publish It! 2, \$129.95
Publish It! 3, \$129.95
Timeworks Inc.
444 Lake Cook Road
Deerfield, IL 60015
(800) 535-9497
(312) 948-9200

Personal VeloBinder
Velo-Bind Corp.
650 Almanor Ave.
Sunnyvale, CA 94086
(415) 571-0200
\$50

**Playing with Science:
Temperature**
Sunburst Communications
39 Washington Ave.
Pleasantville, NY 10570
(800) 431-1934
(800) 247-6756 (Canada)
(914) 769-5030
\$129

**Science Toolkit:
Master Module**
Broderbund Software
17 Paul Drive
San Rafael, CA 94903-2101
(800) 521-6263
(415) 492-3200
\$79.95 home, \$89.95 school

It! 2 picture and then manually chart weekly sales results for the current quarter on the blank grid just created. At-a-glance comparisons like these can help you respond more quickly to emerging trends.

Creative folks who enjoy needle or wood crafts can play "what if" to their heart's content with designs sketched on custom-drawn grids.

GRADE CROSSING

Once you're familiar with rubber-banding, copying, pasting, and "specing" lines, there's no limit to the kinds of forms you can create. In an upcoming Press Room we'll design business forms, but for now let's put together a simple gradebook.

This form was "requisitioned" by an English professor at the Community College of Rhode Island. If it hasn't happened to you yet, it will: That 40th birthday mysteriously diminishes your visual acuity to the extent that those small "squares" in off-the-shelf gradebooks seem even smaller. The teacher was looking for a gradebook that's 8½ by 11 inches with room on each page for about 35 registered students

and the two or three more who add courses after the first week of classes. Her handwriting is small, but she needed at least 2¼ inches for each student's name. Most important, data-entry areas had to be at least a half inch wide to accommodate the numeric grading system the teacher uses.

The gradebook form presented here (Figure 2) has one text area with the word *CLASS* at the top and *Student* placed above the column where names will be listed. The main template consists of 40 horizontal lines spaced a quarter inch apart, and 12 vertical lines spaced a half inch apart. All specifications for the gradebook form are shown in Table 2.

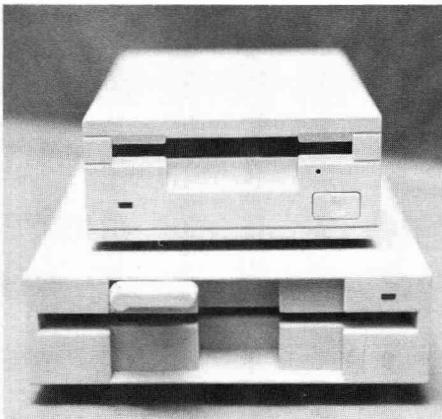
We printed the master and photocopied it onto pastel-colored paper—blue for Composition 1 class, green for Introduction to Literature, and yellow for Oral Communications. (You can also use labeled transparent plastic tabs.) We colated the gradebook forms, added sturdy front and back covers, and bound the package with a **Personal VeloBinder**.

After a semester's field testing, the gradebook has held up well. The teacher uses an electronic gradebook program to store grades and to generate midterm and final reports, but she carries her desktop-published gradebook to class each day and enters grades manually after she corrects each assignment.

She already plans one time-saving "revision" for next semester, though. In most classes she gives more than 11 assignments (the maximum number we could fit on this gradebook page). Instead of binding the gradebook prior to the first day of class, we'll hold off a week or so until all names have been recorded. Then we'll photocopy the forms and bind them. That way there will be no need to transfer names manually onto additional pages as the semester progresses.

Next time you think about desktop publishing, don't limit yourself to text and graphics frames. Consider instead the nearly limitless kinds of forms you can create with just one simple object: the straight line. □

CYNTHIA E. FIELD IS A CONTRIBUTING EDITOR. WRITE TO HER AT 60 BORDER DRIVE, WAKEFIELD, RI 02879. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.



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

3 1/2" Disk Drive
For Apple IIc+ & IIGS

\$199.00

<p>ZIP CHIP 4 Mhz \$125.00 8 Mhz \$158.00</p>		<p>Extended 80 Column Card With 64K For Apple IIe 100% Appleworks Compatible \$38.95 5 Year Warranty</p>		<p>UNIVERSAL Disk Controller Run 800K Disc Drives on your II+ and IIe \$64.95</p>	
<p>CHECKMATE PRODUCTS</p>					
<p>PRO TERM \$78.50</p>		<p>MultiRam RGB IIe 0K to 1 Meg. from \$121.00</p>		<p>800K DISK DRIVE 3 1/2" for II+, IIe, MAC, LASER 128 \$179.00</p>	
<p>MultiRam IIe 0K to 768K from \$88.50</p>		<p>MultiRam IIc 0K to 1 Meg. from \$105.00</p>		<p>Disk Controller Card For Apple II, II+ & IIe \$34.95 5 Year Warranty</p>	
<p>Memory Saver GS \$109.00</p>		<p>MultiRam GS 0K to 2 Meg. from \$95.00</p>		<p>CPM Card for Apple II+ & IIe 5 Year Warranty \$34.95</p>	
<p>AI Juice Plus GS 1 Meg to 4 Meg from \$168.00</p>		<p>LASER 128 Computer Three Times the Speed of a IIe Built in Memory Expansion Board 128EX \$399.00 128EX2/5.25 \$445.00 128EX2/3.50 \$495.00</p>		<p>Cooling Fan For Apple II+ & IIe With Surge Suppressor \$26.95</p>	
<p>Super Expander IIe 1 Year Warranty W/Appleworks Expansion S-ware 0K to 1 Meg from \$52.50</p>		<p>DISKETTE STORAGE W/Lock 5 1/4 Holds 70 Disks \$6.95 5 1/4 Holds 100 Disks \$8.95 5 1/4 Holds 120 Disks \$10.95 3 1/2 Holds 50 Disks \$6.95 3 1/2 Holds 100 Disks \$8.95</p>		<p>Cooling Fan For Apple IIGS \$19.95 No Noise Interference</p>	
<p>Memory Chips - Set of 8 256K - 120ns \$35.00 1 Meg - 100ns \$99.00</p>		<p>II+ Owners 16K Card \$34.95 128K Card \$64.95 80 Column Card \$48.95 Plus Works \$49.00 5 Year Warranty</p>		<p>ACCESSORIES 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 \$59.00 Printers Call</p>	
<p>Green or Amber Monitor... \$99.00</p>		<p>Replacement Keyboard For IIe \$55.00</p>		<p>5 Amp Power Supply \$49.00 Apple II, II+ & IIe</p>	
<p>SWITCH BOXES</p>		<p>Cables From \$9.95 IIe to Modem IIc to Modem IIe to IMG I IIc to IMG II IIe to IMG II Others Talk & Data Kits SCSI Cables</p>		<p>Numeric Keypad For Apple IIe \$34.95</p>	
<p>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</p>		<p>Prices subject to change without notice</p>		<p>RF Modulator II+ & IIe \$15.95</p>	
<p>Joystick for Apple IIe, IIc, IIc+, & IIGS With Fire Button Same as Mach III \$24.95</p>					

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

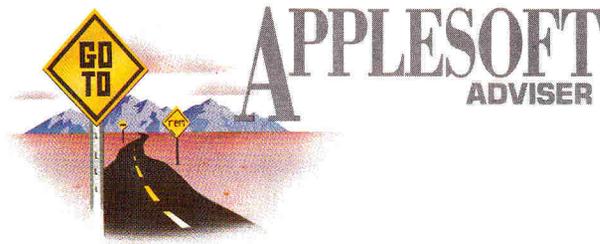
(602) 830-6457

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



DRAW IT IN BASIC

The first in a series on graphics programming focuses on the highlights of lo-res Apple screens.

By **DAN BISHOP**

GRAPHICS! A CRUCIAL ELEMENT IN every type of modern computer software. No longer restricted to paint and draw programs, graphics has found its way into word-processing, spreadsheet, database, and even accounting programs. The user interface has gone graphics forever. There are icon-oriented menu screens; "elevator" sidebars to show where you are in your document; and pictographs of file folders, calendars, calculators, and system components, to name a few. Understanding the basics of graphics programming is now an essential part of the programming experience.

Commercial applications usually use machine language to achieve the greatest possible speed. However, many of the concepts and principles of graphics programming are the same regardless of the language used. If you're studying BASIC as your first programming language, Applesoft's built-in graphics commands and your Apple's capabilities can give you valuable experience in dealing with graphics programming.

Over the next few months, this column will help you through graphics programming on your Apple. This month we'll start with low-resolution graphics. My next column will deal with animated

graphics displays. Later, I'll cover the basic elements of high-resolution graphics, including screen switching, a high-resolution character set, and Applesoft's shape tables. If you follow these articles, you should be well on your way to programming any graphics effects your Apple can produce.

Special note: If you're testing a graphics program and it ends, leaving you in graphics mode, enter the TEXT command to get your screen back to normal text mode. Enter the HOME command to clear the screen.

LOW-RESOLUTION PAGES

The most common method of handling the computer's monitor, or cathode-ray tube (CRT), is to store the information to be displayed in a special block of RAM—the same random-access memory your program and data use. These blocks of RAM are called graphics "pages." The computer automatically scans the information stored in these pages many times per second and transmits it to the CRT. In this process, the computer converts the codes stored in RAM to dots on screen.

Applesoft BASIC reserves four sections of memory for graphics display, enabling storage of four separate graphics screens. Two are used for high-resolution graphics. The remaining two are known as *low-*

resolution graphics pages 1 and 2.

The low-resolution graphics screen is a 40-by-48 matrix, like graph paper with 40 columns and 48 rows (1920 squares in all). Each square is a graphics point or *pixel*. Applesoft stores low-resolution information as two pixels per byte of RAM. This is possible because a byte can represent values from 0 to 255; the only graphics-information value needed is color.

Because each pixel can be one of 16 colors—including black and white—the range of combined values for two such points is 0 to 255 ($16 * 16 = 256$ values). Thus, 960 bytes minimum ($40 * 48$ divided by 2) are required for each low-resolution graphics page. Apple uses two 1024-byte blocks of RAM, since 1024 is a power of 2.

Every byte in RAM has a unique address. Page 1 of low-resolution graphics begins at address 1024 and extends through 2047. Page 2 begins at 2048 and extends through 3071. This is important because Applesoft uses these same two blocks for storing text. When you're in text mode, the information for your screen display is stored between addresses 1024 and 2047. Low-resolution graphics page 1 and text page 1 use the same storage area. The commands GR ("Switch to low-resolution graphics mode") and TEXT ("Switch to text mode") merely tell your Apple how it should interpret the information it finds in this area of RAM. If byte 1024 contains the value 129, the letter A appears in the top left corner of the text screen. In GR mode, two blocks appear, stacked vertically in the same place. The top block is displayed in color 1, the bottom in color 4.

Each RAM location corresponds to an exact location on the CRT. For page 1 low-resolution graphics, RAM location 1024 maps to the upper left corner. Address ►

SAVE ON COMPUTERS AND SOFTWARE

Look here first
for Best Prices,
Best Selection
and
Best Delivery.

ACT	34.95	Early Games	18.95
Algeblaster +	29.95	Easy As ABC	18.95
Aliens	9.95	Easy Drive	55.95
Alphabet Zoo	8.95	816 Paint	49.95
Anc't Art of War	29.95	Essential Data-Dup 4	19.95
Appleworks	179.95	F-15 Strike Eagle	14.95
Appleworks IIGS	199.95	Facemaker	26.95
Arcade Mega Hits	30.95	Family Feud	9.95
Arkanoid II	24.95	Family Roots	169.95
ASC II Express Pro	79.95	Fantavision GS	39.95
Auto Duel	24.95	Fast Break	31.95
Award Maker Plus	31.95	Firepower	24.95
Back to Basics	154.95	First Letters & Words	34.95
Bad Dudes	27.95	Flight Sim II	31.95
Bag of Tricks #2	29.95	4th & Inches	31.95
Bank St. Writer Plus	49.95	Fraction Factory	9.95
Bard's Tale II or III	31.95	Fraction Fever	7.95
Batman	20.95	Fraction Fuel-Up	23.95
Battle Chess	34.95	Game Show	27.95
Battle Tech	34.95	Gato	10.95
Battles of Napoleon	34.95	Gauntlet	31.95
Beagle Compiler	45.49	Geometry	67.95
Beagle Desk Access	38.95	Geo Calc	48.95
Beagle Draw	58.95	Geo File	48.95
Beagle Graphics	35.95	Geo Publish	64.95
Beagle Picture Man	25.95	GEOS	48.95
Beagle Write Fonts	25.95	Gertrude's Secrets	29.95
Beagle Write	49.95	Gettysburg	41.95
Beagle Write GS	59.95	Gnarly Golf	20.95
Bnfh. Apple Pro DOS	13.95	Gold Rush	27.95
Beyond Zork	10.95	Grade Book Deluxe	44.95
Black Cauldron	27.95	Grade Buster	74.95
Blazing Paddles	24.95	Grammar Gremlins	29.95
Blue Angels	34.95	Grammar Examiner	23.95
Body Transparent	27.95	Graph-It	45.95
Bubble Bobble	24.95	Graphic Exchange	34.95
Bubble Ghost	21.95	Graphics Expander	23.95
Bus. works Bundle	279.95	Great Western Shoot	20.95
Bus. works Payroll	138.95	GS Font Editor	32.95
Cad Apple	69.95	Guitar Wizard	19.95
Calendar Crafter	34.95	Hardball	27.95
Car Builder	29.95	Heat Wave	31.95
		Heavy Barrel	24.95
		Hitchhiker's Guide	9.95
		Hobbit	24.95
		Homeworker	34.95
		Hunt For Red Oct.	27.95
		Hyper Studio	94.95
		Ikari Warrior	10.95
		Jeopardy I, II or JR	9.95
		Jet	27.95
		Jigsaw	27.95
		John Elway	10.95
		Karateka	8.95
		Kid Writer	25.95
		Kids on Keys	17.95
		Kinder Comp	26.95
		Kings Quest (Each)	30.95
		Labels Labels Labels	28.95
		Last Ninja	10.95
		Leather Goddess	9.95
		Legacy of Ancients	10.95
		Leisure Larry I	24.95
		Life & Death	34.95
		Locksmith	38.95
		Lode Runner	8.95
		Madden Football	34.95
		Magic Spells	27.95
		Man. Your Money	94.95
		Maniac Mansion	24.95
		Map Skills	32.95
		Marble Madness	14.95
		Master Type	26.95
		Math & Me	20.95
		Math Blaster +	29.95
		Math Blaster Mystery	29.95
		Mathmaze	27.95
		Math Rabbit	23.95
		Math Word Problems	34.95
		Mavis Beacon	28.95
		Mean 18	29.95
		Megaworks	49.95
		Merlin	44.95
		Merlin 8/16	88.95
		Merlin Pro	69.95
		Micro Lg. Baseball	23.95
		Micro Type	35.95
		Might & Magic I or II	34.95
		Millionaire II	37.95
		Minipix 1, 2 or 3	19.95
		Monsters & Make Believe	27.95
		Mixed-up Mother Goose	21.95
		Mouse Talk	75.95
		MouseWrite	99.95
		Music Construction	10.95
		Music Studio	45.95
		Newsroom	24.95
		Number Farm	23.95
		Number Munchers	27.95
		On Balance	37.95
		Once Upon A Time	33.95
		ORCA Desktop	39.95
		ORCA M Assembler	46.95
		ORCA Pascal	99.95
		ORCA C	99.95
		Oregon Trail	27.95
		Omega	34.95

SALE:
3 1/2
GENERIC
DISK
100 // 69.95

Carmen Sandiego Europe	29.95
Carmen Sandiego USA	29.95
Carmen Sandiego Time	29.95
Carmen Sandiego World	25.95
Cartooners	21.95
Certificate Maker	23.95
Library Vol. 1	19.95
Champions of Krynn	34.95
Charley Brown ABC	20.95
Charley Brown 123	20.95
Chessmaster 2100	31.95
Children's Publishing	35.95
Choplifter	8.95
Classmates	33.95
Clip Art Vol. 1, 2 or 3	13.95
Color Me	29.95
Commando	9.95
Compuserve Starter	21.95
Concentration	9.95
Copy II +	23.95
Create w/ Garfield	20.95
Create w/ Gar. Del.	27.95
Cross Country USA	29.95
Crossword Magic	31.49
Crystal Quest	34.95
Curse of Azure Bonds	34.95
DAC Easy Accounting	66.95
Dark Heart of UUKRUL	34.95
Dazzle Draw	34.95
DB Master	159.95
Defender of the Crown	33.95
Deluxe Paint IIGS	34.95
Designasaurus	23.95
Design Your Home	52.95
Design Your Interior	52.95
Design Your Landscape	52.95
Design Your Train	39.95
Dinosaurs	27.95
Dinosaur Days	27.95
Dollars & Sense	69.95
Downhill Challenge	20.95
Dragon Wars	34.95
Draw Plus IIGS	20.95
Dungeon Master	26.95

Pac Man	9.95	Quicken	41.95
Paintworks + /Clip	32.95	Rampage	24.95
Paint Write Draw	89.95	Ram-Up	32.95
Paintworks Gold	45.95	Rastan	23.95
Paperboy	29.95	Read and Roll	29.95
PFS: File & Report	69.95	Reader Rabbit	23.95
PFS: Graph	69.95	Reading I or II	27.95
PFS: Workmates	134.95	Reading & Me	29.95
PFS: Write	69.95	Reading & Me Talking	29.95
Piece of Cake Math	9.95	Reading & Writing	27.95
Pirates	29.95	Report Card II	42.95
Platoon	24.95	Report Works	49.95
Playroom	27.95	Robo Cop	24.95
Point to Point	65.95	Rocky's Boots	32.95
Police Quest	31.95	Roger Rabbit	27.95
Pool Of Radiance	31.95	Run Your Own Train	27.95
Pow! Zap! Kerplunk	29.95	Sargon III	13.95
Prince of Persia	24.95	Sc (Harcourt Brace)	27.95
Principal's Assistant	44.95	Science Tool Kit	49.95
Printmaster Plus	27.95	Sc. Tool Kit Module	27.95
Print Shop	29.95	Scrabble	27.95
II GS	37.95	Sensible Grammar	54.95
Companion	23.95	Sensible Speller	87.95
1, 2, or 3	15.95	Serve & Volley	27.95
Lovers	28.95	Show Off	38.95
Sampler	22.95	Sideways	48.95
Holiday	15.95	Silent Service	14.95
Organizer	14.95	Ski Crazy	20.95
Party	22.95	Smart Money	54.95
Program Writer	34.95	Soft Switch	34.95
Proterm	89.95	Space Quest I, II	32.95
Publish-It 3	84.95	Speed Reader	29.95
Publish It Fonts 1 or 2	27.95	Spellcopter	24.95
Publish-It 4 in 1	79.95	Spell It +	29.95

6 YEARS OF SERVICE

SILICON EXPRESS

1-800-999-6868
OR 1-614-927-9555
FAX NUMBER 614-927-0052

Add \$4.95 min. U.S. shipping, C.O.D. \$5 extra. Hawaii and Alaska \$7.00 min. Orders outside U.S. are not insured. Canada & Mexico 10% min. \$10.00. All other countries 30% min. \$30.00 MasterCard, Visa and school purchase orders accepted. Personal checks allow 3 weeks. 6% sales tax for Ohio residents. Defective replaced within 20 days. Compatibility not guaranteed. Prices subject to change without notice.

SILICON EXPRESS
50 E. Mill, Pataskala, OH 43062

Star Fleet I	33.95	COMPUTERS	
Star Trek	21.95	Laser 128	378.95
States & Traits	23.95	Laser 128 EX	418.95
Sticky Bear ABC	23.95	Laser 128 EX/2	469.95
Basic	29.95	PC Transporter	409.95
Basket Bounce	34.95	DISK DRIVES/CONTROLLERS	
BOP	27.95	American 5 1/4 II + IIE	124.95
Drawing	34.95	American 5 1/4 IIC IIGS	139.95
Math 1 or 2	23.95	American 5 1/4 UNI	149.95
Music	32.95	American 3 1/2 800K	199.95
Numbers	23.95	Applied Eng 5 1/4	124.95
Opposites	23.95	Laser 5 1/4	88.95
Parts of Speech	32.95	Laser 5 1/4 UNI	99.95
Printer	34.95	Laser 3 1/2 800K	184.95
Reading	23.95	Disk Drive Controller	46.95
Rd. Comprehension	29.95	Laser Controller	48.95
Shapes	23.95	FANS	
Spellgrabber	31.95	Conservor IIGS	79.95
Talking Alphabet	29.95	Juice Box IIGS	37.95
Talking Opposite	29.95	System Saver	64.95
Talking Shapes	29.95	System Saver IIGS	73.95
Town Builder	32.95	HARD DRIVES	
Typing	29.95	Apid Ingenuity 20 Meg	509.95
Word Problems	34.95	Apid Ingenuity 40 Meg	625.95
Strike Fleet	10.95	Vulcan 20 Meg	619.95
Take 1 Deluxe	36.95	Vulcan 40 Meg	774.95
Teddy Barrel of Fun	27.95	JOY STICKS	
Terrain Logo +	79.95	Flight Stick	49.95
Test Drive	22.95	Kraft 2 Button	22.95
Test Drive II	29.95	Kraft 3 Button	29.95
Test Writer	29.95	Mach II 2 Button	26.95
Tetris	24.95	Mach III 3 Button	34.95
Texder	22.95	Mach IV	62.95
Think Quick	29.95	Koala Pad +	79.95
Thinkworks	49.95	Mirage	37.95
Tic Tac Show	27.95	MEMORY CARDS	
Timeout Desktools I	32.95	80/64K IIE	39.95
Timeout Desktools II	32.95	GS-RAM 256K	134.95
Timeout Filemaster	28.45	GS-RAM 512K	154.95
Timeout Graph	49.95	GS-RAM 1 Meg	194.95
Timeout Macrotools I	16.95	GS-RAM 1 1/2 Meg	234.95
Timeout Macrotools II	16.95	GS-RAM + 1 Meg	275.95
Timeout Powerpack	34.95	GS-RAM + 2 Meg	382.95
Timeout Quick Spell	37.95	GS-Ultra 256K	184.95
Timeout Report Writer	49.95	GS-Ultra 512K	214.95
Timeout Sidespread	28.45	GS-Ultra 1 Meg	279.95
Timeout Spreadtools	38.95	GS-Ultra 2 Meg	399.95
Timeout Superfont	37.95	GS-Ultra 4 Meg	639.95
Timeout Telecomm	37.95	RamFactor 256K	204.95
Timeout Theasurus	28.45	RamFactor 512K	224.95
Timeout Ultramacros	34.45	RamFactor 1 Meg	264.95
Times of Lore	27.95	Ram Keeper	139.95
TML Basic	84.95	Ram Works 64K	124.95
TML Pascal II	84.95	Ram Works 256K	159.95
Tomahawk	24.95	Ram Works 512K	179.95
Tournament Bridge	34.95	Ramworks 1 Meg	219.95
Triple-Dump	24.49	MODEMS	
Type!	18.95	Datalink 2400	184.85
Typing Tutor IV	25.95	Datalink 1200	149.95
		Datalink Express	194.95
		Laser 2400	179.95
		Promodem 2400AA	129.95
		MOUSE	
		A+	62.95
		Apple Mouse IIE	128.95
		Laser Mouse IIC	49.95
		Roller Mouse	129.95
		Turbo Mouse	119.95
		PRINTER CARDS	
		Fingerprint GSI	99.95
		Fingerprint Plus	99.95
		Grappler Plus	69.95
		Grappler Serial	63.95
		Grappler C	85.95
		Print-It	122.95
		Printer Pro	41.95
		Serial Pro	114.95
		Super Serial	69.95
		HARDWARE	
		Audio Animator	195.95
		Battery IIGS	14.95
		Computer Eyes	99.95
		Computer Eyes Color	189.95
		Echo II C	129.95
		Echo II B	99.95
		Enhancement Kit	64.95
		Essential Data Dup 4	64.95
		No Slot Clock	34.95
		Power Supply IIE	64.95
		Sonic Blaster	105.95
		Surge Protector	9.95
		ThunderScan	158.95
		Timemaster H.O.	78.95
		Transwrap III	164.95
		Transwrap GS	289.95
		PRINTERS	
		Citizen 120-D	159.95
		Star NX-1000	188.95
		Star NX-1000 R	247.95
		PRINTER RIBBONS (call)	
		Imagewriter Black	2.95
		Imagewriter Color	3.49
		Imagewriter II Color	8.99
		Color Paper Pack	12.95

SALE:
5 1/4
GENERIC
DISK
100 // 29.95

Ultima IV or V	35.95
Ultima Trilogy	35.95
VCR Companion	33.95
Victory Road	24.95
War Middle Earth	34.95
Wasteland	10.95
Webster Spell Chkr.	37.95
Welcome	63.95
Wheel of Fortune I or II	9.95
Will Maker	35.95
Win Lose or Draw	9.95
Windwalker	27.95
Wings of Fury	21.95
Wizard of Words	27.95
Wizardry 5	30.95
Wizardry Trilogy	34.95
Word Attack +	29.95
Word Attack French	34.95
Word Attack Spanish	34.95
Word Bench	98.95
Word Master	32.95
Word Munchers	27.95
Word Perfect	109.95
Word Perfect GS	109.95
Writer Rabbit	29.95
Zany Golf	27.95
Zork Zero	34.95

Program listing. Boxes, boxes, boxes.

```

5 HOME [151]
10 INVERSE : PRINT "BOXES, BOXES, BOXES": NORMAL [2368]
11 FOR I = 1 TO 500: NEXT I [1667]
12 GR [144]
13 GOTO 25 [488]
15 ER$ = "": INPUT "ERASE PREVIOUS DRAWING? (Y/N): "
;ER$ [3695]
20 IF ER$ < > "Y" AND ER$ < > "N" THEN 15 [2707]
21 IF ER$ = "Y" THEN GR [1294]
25 INPUT "BORDER COLOR (1 TO 15; 0 TO END): ";CB [7898]
30 IF CB < 0 OR CB > 15 THEN 25 [2068]
35 IF CB = 0 THEN TEXT : HOME : END [1337]
40 INPUT "INTERIOR COLOR (0 TO 15): ";CI [6516]
45 INPUT "BOX WIDTH (3 TO 40): ";W [4725]
50 IF W < 3 OR W > 40 THEN 45 [1712]
55 INPUT "BOX HEIGHT (3 TO 40): ";H [5708]
60 IF H < 3 OR H > 40 THEN 55 [1716]
65 TX = 40 - W:TY = 40 - H [1753]
70 PRINT "LEFT CORNER'S X POSITION (0 TO "TX")": ";
INPUT X [8942]
75 IF X < 0 OR X > TX THEN 70 [1801]
80 PRINT "UPPER CORNER'S Y POSITION (0 TO "TY")": ";
: INPUT Y [8101]
85 IF Y < 0 OR Y > TY THEN 80 [1807]
90 GOSUB 500 [1009]
100 HOME : INPUT "PRESS <RETURN> TO CONTINUE...";X$
[2672]
105 GOTO 15 [740]
500 COLOR= CB [436]
505 HLINE X,X + W - 1 AT Y [1331]
510 HLINE X,X + W - 1 AT Y + H - 1 [1949]
515 VLINE Y + 1,Y + H - 2 AT X [1366]
520 VLINE Y + 1,Y + H - 2 AT X + W - 1 [1957]
525 COLOR= CI [591]
530 FOR I = Y + 1 TO Y + H - 2 [1612]
535 HLINE X + 1,X + W - 2 AT I [1350]
540 NEXT I [399]
550 RETURN [193]

```

Table. Lo-res color code values.

Color	Code	Color	Code
black	0	brown	8
magenta	1	orange	9
dark blue	2	grey	10
purple	3	pink	11
dark green	4	green	12
grey	5	yellow	13
medium blue	6	aqua	14
light blue	7	white	15

1025 maps to the two vertically stacked points to the right of this first pair. There are 40 points in each row, and addresses 1024 to 1063 map directly to the first two rows of graphics points (two stacked points per byte).

Now comes an odd twist. Addresses 1064 to 1103 also map to two rows of low-resolution points on the CRT, but not to rows 3 and 4. They map to rows 17 and 18. And the next 40 RAM addresses, 1104 to 1143, map to rows 33 and 34. If you fill the first 120 RAM addresses with graphics code, the computer displays those codes as graphics points in three distinct bands of two rows each, separated by one-third of the CRT screen.

The next three groups of RAM addresses, 1152 to 1191, 1192 to 1231, and 1232 to 1271, map to CRT rows 3 and 4, 19 and 20, and 35 and 36, respectively. In each case, your Apple plots the pairs of rows directly beneath the three bands displayed by the first three groups of RAM addresses. And what about addresses 1144 to 1151? These 8 bytes aren't used by graphics at all. Because Applesoft reserves a block of 1024 bytes for the low-resolution

graphics page but only needs 960 bytes, 64 bytes aren't used. We just found 8 of them. Some programs use these bytes for special control purposes. Applesoft handles mapping to the rest of the video page through the same systematic process. A RAM page is divided into eight 128-byte segments, with the last 8 bytes in each segment ignored. The other 120 bytes in each segment map to three pairs of graphics rows separated from each other by one-third of the CRT screen.

CREATING GRAPHICS

You can create graphics images with your BASIC programs in two distinct ways. You can use the Applesoft BASIC commands for low-resolution drawing to plot points and draw horizontal and vertical lines, or you can define graphics codes with DATA statements and POKE those codes into RAM addresses between 1024 and 2047. This procedure displays a stacked pair of points on screen. The first method is simple to use; the second is faster, but it requires more programming effort and you must be familiar with decimal/binary conversions. (We'll save it for next time.)

Applesoft BASIC gives you only seven commands for low-resolution graphics; however, this is enough. Suppose you're writing code to create a graphics image. The first command you must use—GR—clears the RAM block between 1024 and 2047 and switches the code interpreter to graphics mode. GR effectively erases any text information that appeared on screen. After GR the computer interprets all codes placed in this block of RAM as graphics code until it encounters the TEXT command.

TEXT should be the final command in your graphics sequence; it returns you to text mode. Unlike GR, TEXT doesn't clear the RAM block. Your computer will then interpret the graphics codes as text characters. The screen will show normal, blinking, and inverse characters wherever a graphics point has been placed. To erase the screen, follow the TEXT command immediately with the HOME command.

GR has one other nuance. It switches graphics mode for rows 0 to 39 only. Rows 40 to 47 remain in text mode, giving you four rows of text at the bottom of the screen. GR places the cursor in this area, so any PRINT command prints text there. Because you can't simply PRINT in the low-resolution graphics window, you may want to use this text window as part of your display.

If you want to devote the entire display to graphics, follow the GR command with the command POKE—16302, 0. This opens the entire screen to graphics—all 48 rows. POKE—16301, 0 accomplishes the reverse, going from a 48-row screen to a 40-row screen. Once you're in graphics mode, you must select the color of the points you want to plot. The command for this is COLOR=XX, where XX is a number from 0 to 15. The accompanying Table lists low-resolution colors and their values; some monochrome monitors give shading effects for colors. GR automatically sets color to 0 (black), so if you forget the COLOR command you'll plot black points on a black screen.

You can change colors anytime in graphics mode by issuing another COLOR command. Those points already plotted retain their original colors. Because you can use a variable in the COLOR=XX command, you can set color equal to a loop variable, changing color each time your program cycles through its ▶

APRIL SHOWER OF SAVINGS

Raining Discounts from SDA

We have what you're looking for!

ACCOLADE

Fly heart-stopping precision flight patterns with the daredevil blue angel team. 25 actual air show maneuvers & more.



BLUE ANGELS

List \$49.95

Call For SDA Price & Availability

ACCOLADE Blue Angels GS	Call	Kaleidokubes 48K or GS	\$14 Ea.
Fast Break GS	\$29	Strip Poker	\$19
Grand Prix GS	\$29	S.P. Data Disks	Call
Heat Wave GS	Call	Strip Poker 2 GS	\$25
4th & Inches Football GS	\$29	S.P.2 Data Females #1 GS	\$14
4th & Inches Team Const. GS	\$9.88	S.P.2 Data Female/Male #2 GS	\$14
Hardball	\$9.88	S.P.2 Data Females #3 GS	\$14
Hardball GS	\$25	AVALON HILL - ON SALE!	
Jack Nicklaus Golf GS	\$32	N.B.A. Basketball	\$19.88
JN Golf Chp. Courses GS	\$16	Police Blotter	\$14.88
JN Golf Int'l Courses GS	\$16	BERKELEY	
Mean 18 Golf GS	\$29	Geos 128K	\$44
Test Drive 128K	\$23	Geocalc	\$44
T.D. 2 The Duel GS	\$29	Geopublish	\$65
T.D. 2 Europe Scen. Call		BLUE LION - ON SALE	
T.D. 2 Muscle Cars GS	\$16	Ticket to Hollywood	\$19.88
T.D. 2 Calif. Scen. GS	\$16	Ticket to London	\$19.88
T.D. 2 Super Cars GS	\$16	Ticket to Paris	\$19.88
Third Courier GS	\$32	Ticket to Spain	\$19.88
		Ticket to Wash. D.C.	\$24.88

ACTIVISION		BRITANNICA FANFARE	
Battle Chess	\$29	Algebra 1 1st Semester	\$25
Battle Chess GS	\$32	Gnarly Golf GS	\$19
Black Jack Academy GS	\$25	Gr. Western Shootout GS	\$19
Dragon Wars	\$32	Laser Force GS	\$19
Last Ninja 128K	\$9.88	Task Force GS	\$25
Last Ninja GS	\$14	BRÖDERBUND	
Might & Magic 1 or 2	\$32	Ancient Art of War	\$29
Music Studio 2.0 GS	\$44	Ancient Art of War at Sea 128K	\$29
Neuromancer 128K	\$19	Land of Y's GS 768K	\$29
Neuromancer GS	\$32	Bank St. Writer + 128K	\$49
Paintworks Gold GS	\$44	Carmen S.D.-Europe 128K	\$29
Rampage 128K	\$23	Carmen S.D.-Time 128K	\$29
Shanghai	\$9.88	Carmen S.D.-U.S.A. 128K	\$29
Teleworks Plus GS	\$65	Carmen S.D.-World 128K	\$25
AEC FUN LEARNING		Carmen S.D.-World GS	\$32
Human Biology	\$6.88	Centauri Alliance	\$32
Life Science	\$6.88	Dark Heart of Ukurlul	\$32
U.S. Geography	\$6.88	Dazzle Draw 128K	\$39
U.S. History 1 or 2	\$6.88 Ea.	Geometry GS	\$49
ARTWORX		Jam Session GS	\$32
Bridge 64K or GS	\$25 Ea.		

Broderbund

Carmen & her new gang have launched a crime wave in Europe. Help out the master criminal as she tries to steal Nat'l treasures. 128K. WHERE IN EUROPE IS CARMEN SANDIEGO



List \$49.95

SDA Discount Price \$32

Karateka	\$6.88	Marble Madness 128K	\$9.88
Loderunner	\$6.88	Marble Madness GS	\$14
Playroom 128K	\$25	Music Const. Set GS	\$14
Prince of Persia	\$23	Skate or Die GS	\$14
Print Shop (Enhanced)	\$29	Strike Fleet	\$9.88
Print Shop Companion	\$23	Wasteland	\$9.88
Print Shop GS	\$39	World Tour Golf GS	\$14
P.S. Graphics #1, 2, 3	\$15 Ea.	Zany Golf GS	\$26
P.S. Graphics Library Party Edition GS	\$23	EPYX - ON SALE!	
Sampler Edition GS	\$23	Boulderdash Const.	\$9.88
VCR Companion 128K	\$32	Legend of Black Silver	\$19.88
		Sporting News Baseball	\$19.88
CENTRAL POINT		Sub Battle Simulator	\$9.88
Copy 2 128K or GS V.9	\$25	Summer Games 1 or 2	\$9.88 Ea.

CINEMAWARE		FIREBIRD - ON SALE!	
Defender of Crown GS	\$32	Corruption	\$18.88
King of Chicago GS	\$16	Starglider	\$9.88
Rocket Ranger GS	\$32	FTL	
The Three Stooges GS	\$32	Dungeon Master GS	\$25
DATA EAST		GAMETEK	
Bad Dudes	\$23	Double Dare	\$9.88
Batman	\$19	Hollywood Squares 128K	\$9.88
Heavy Barrel	\$23	Super Password 128K	\$9.88
Ikar Warriors 128K	\$9.88	HI-TECH EXPRESSIONS	
Platoon 128K	\$9.88	Big Bird's Spc. Delivery	\$6.88
Robocop	\$23	Ernie's Magic Shapes	\$6.88
DAVIDSON		Fun House	\$8.88
Algebra Plus 128K	\$32	Looney Tunes Print Kit	\$9.88
Grammar Gremlins 64K	\$32		

SDA Strategic Simulations, Inc.		Advanced Dungeons & Dragons	
Guide a party of characters thru a web of intrigue & combat in this 1st. epic of the Dragonlance series. Improved game system.		Champions of Krynn	\$39.95
CHAMPIONS OF KRYNN		SDA Discount Price, \$26	
Math Blaster Mystery 128K	\$32	Muppet Adventure	\$9.88
Math Blaster Plus 128K	\$32	Muppet Print Kit	\$9.88
Math Blaster GS	\$32	Print Power	\$9.88
Math & Me 128K	\$19	Remote Control	\$9.88
Read 'N' Roll 128K	\$32	Ses St. Print Kit	\$9.88
Reading & Me 128K	\$32	Ses St. First Writer	\$9.88
Spell It Plus 128K	\$32	Win, Lose or Draw 1 or 2	\$8.88
Talking Math & Me GS	\$32	Win, Lose or Draw Jr.	\$8.88
Talking Reading & Me GS	\$32	Word Attack or Draw Dix.	\$16
Word Attack Plus 128K	\$32	INFOCOM	

DESIGNWARE		BITFLECH	
Designasaurus 128K	\$25	Bitflecth	\$32
Designasaurus GS	\$32	Hitchhikers Guide	\$9.88
Jigsaw GS	\$25	Journey	\$32
ELECTRONIC ARTS		King Arthur	\$25
Bard's Tale 2 GS	\$19	Mines of Titan	\$29
Chessmaster 2100	\$32	Shogun	\$32
Cribbage/Gin King GS	\$32	Zork Zero	\$32
Deluxe Paint II GS	\$26	LDW	
Earl Weaver Baseball	\$26	Vegas Craps GS	\$32
Hunt For Red October	\$26	Vegas Gambler GS	\$25
Hunt For Red October GS	\$32	LEARNING COMPANY	
Keep The Thief GS	\$32	Children's Writing & Publishing	\$39 Ea.
Kings Bounty	\$26	Clr. 128K or GS	\$39 Ea.
Legacy of Ancients	\$9.88	Math Rabbit	\$24
Life & Death GS	\$32	Reader Rabbit GS	\$39
M. Beacon Typing GS	\$32	Reader Rabbit	\$24
Madden Football	\$32	Think Quick!	\$32
Maniac Mansion	\$23	Writer Rabbit	\$32
		LEISURE GENIUS	
		Clue	\$25

CLIP & SAVE • CLIP & SAVE

\$250 OFF

ON MAILED-IN ORDERS* OVER \$50

*Check / Money Order / MC/VISA sent to our P.O. Box Address.

EXPIRES 5-31-90

CLIP & SAVE • CLIP & SAVE

Risk	\$25	SIR TECH	
Scrabble	\$25	Heart of Maestrom	\$32
MECA		Return of Werdna	\$39
Andrew Tobias. Managing Your Money 128K or GS	\$95	Wizardry Trilogy	\$32
MELBORNE HOUSE		SOFT-BYTE	
Elway's Quarterback GS	\$9.88	Lotto Program	\$25
War in Middle Earth GS	\$32	SPECTRUM HOLOBYTE	
MICROILLUSIONS		Sprite Royale	\$23
Blackjack Academy GS	\$25	SPRINGBOARD	
Sky Travel	\$34	Certificate Maker	\$24
MICROLEAGUE		Newsroom	\$23
M.L. Baseball 88 or 89 Team Disk	\$14	N.R. Clip Art 1, 2, 3	\$14
MICROPROSE		Champions of Krynn	\$32
Pirate 128K or GS	\$29 Ea.	Curse of Azure Bonds	\$32
Silent Service 128K or GS	\$14	Overrun	\$32
MINDSCAPE		Pool of Radiance	\$29
Balance of Power 128K	\$25	Typhoon of Steel	\$32
Balance of Power 1990 GS	\$32	War of the Lance	\$26
Deja Vu 2 GS	\$32	SUBLOGIC	
Mystery Adventure GS 3 Pack	\$32	Flight Simulator 2	\$32
Includes: Shadowgate GS		Jet	\$26
Deja Vu GS. Uninvited GS		TAITO	

MY SOFTWARE		Arkanoid	\$9.88
My Label Maker	\$14	Arkanoid 2: Revenge GS	\$23
My Mail List (w/Labels)	\$14	Bubble Bobble	\$19
ORIGIN		Qix	\$19
Knights of Legend	\$32	Qix GS	Call
Omega	\$32	Renegade	\$19
Quest For Clues Book 2	\$19	Renegade GS	\$23
Space Rogue	\$32	THREE SIXTY	
Tangled Tales	\$19	Dark Castle GS	\$29
Times of Lore	\$25	Warlock GS	\$24
Ultima 4 or 5	\$39 Ea.	TIMWORKS	
Ultima Trilogy	\$39	Publish It! 2 128K/ GS	\$84
Windwalker	\$25	UNICORN	
ROGER WAGNER		Kinderama GS	\$32
Hyperstudio GS	\$95	Math Wizard GS	\$29

SHARE DATA		All New Family Feud	\$8.88
Concentration 1 or 2	\$9.88	Concentration 1 or 2	\$9.88
Wipe Out	\$9.88	SIERRA	
Gold Rush 128K or GS	\$25	King's Quest 1, 2, 3 or 4	\$32 Ea.
King's Quest 1, 2, 3 or 4	\$32 Ea.	Leisure Suit Larry 128K or GS	\$25
Leisure Suit Larry 128K or GS	\$25	Manhunter N.Y. 128K	\$32
Manhunter N.Y. GS	\$32	Manhunter N.Y. GS	\$32
Manhunter S.F. GS	Call	Mother Goose 128K or GS	\$19
Police Quest 128K or GS	\$32	Police Quest	\$32
Silphed GS	\$23	Smart Money GS	\$49
Space Quest 128K	\$32	Space Quest 2 128K	\$32
Space Quest 2 128K	\$32	Space Quest 1 or 2 GS	\$32

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
WORD PERFECT		Word Perf. 128K/ GS	\$97 Ea.
ACCESSORIES		Animation Station	\$65
Big Mouse Pad 8" x 11"	\$7	Disk Case 5" or 3 1/2"	\$6.88 Ea.
Drive Clnr. 5" or 3 1/2"	\$4.88 Ea.	Sony 3 1/2" Color	\$13.50 Bx.
Sony 3 1/2" DSD	\$13 Bx.	Sony 5 1/4" DSD	\$6.99 Bx.
Wico Ergostick	\$27	Suncom Analog-Joystick	\$25

Speedy Delivery
Deep Discounts
Astronomical Selections
If you can't find what you're looking for in our ad, call us.



Send check or money orders to:
P.O. Box 111327 - Dept. INC
Blawnox, PA 15238

Order Line Hours: Mon.-Thurs. 9:00 AM-9:00 PM, Fri. 9:00 AM-7:00 PM, Sat. 10:00 AM-4:00 PM Eastern Time

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately on in-stock items! Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! Shipping: Continental U.S.-Orders under \$100 add \$3; free shipping on orders over \$100. AK, HI, FPO, APO-add \$5 on all orders. Canada & Puerto Rico add \$7.50 on all orders. Sorry, no other international orders accepted! PA residents add 6% sales tax on the total amount of order including shipping charges. CUSTOMER SERVICE HOURS: Mon.-Fri. 9 AM-5:30 PM Eastern Time. REASONS FOR CALLING CUSTOMER SERVICE--412-361-5291 (1) Status of order or back order (2) if any merchandise purchased within 60 days from SD of A is defective, please call for a return authorization number. We will not process a return without a return auth. #! Defective merchandise will be replaced with the same merchandise only. Other returns subject to a 20% restocking charge! After 60 days from your purchase date, please refer to the warranty included with the product purchased & return directly to the manufacturer. Customer service will not accept collect calls or calls on SD of A's. 800 # order lines! Prices & availability are subject to change! New titles are arriving daily! Please call for more information.

MODEM OWNERS: You can order on-line from our APPLE Shop via the CompuServe and GEnie Electronic Malls.

Software Discounters
Of America



loop. Or you can set color equal to a randomization expression, such as `COLOR=INT(RND(1)*15+1)`. This lets the computer choose a random color between 1 and 15.

DRAWING OBJECTS

A computer image is a collection of colored points that resemble an object. To plot a single point on screen, use the command `PLOT X,Y`, where `X` is a number, variable, or expression with a value between 0 and 39 and `Y` has a value between 0 and 39 (for a 40-by-40 display) or 0 and 47 (for a 40-by-48 display). Counting begins with column 0, row 0 (square 0,0) in the upper left corner of the screen.

`HLIN` and `VLIN` are the Applesoft BASIC commands for plotting horizontal and vertical lines. The syntax for these commands follows:

```
HLIN X1,X2 AT Y
VLIN Y1,Y2 AT X
```

In the first case, the computer draws a horizontal line along the row specified by `Y`, starting at column `X1` and ending at column `X2`. In the second case, it draws a vertical line along the column specified by `X`, starting at row `Y1` and ending at row `Y2`. For example, the following program draws a giant letter *T* across the entire display:

```
10 GR
20 COLOR=13
30 HLIN 0,39 AT 0
40 VLIN 0,39 AT 20
50 INPUT "PRESS <RETURN> TO END"; X$
60 TEXT: HOME
70 END
```

If you want to draw diagonal lines, you must use the `PLOT` command and either plot each point individually or place `PLOT` in a `FOR/NEXT` loop. You must calculate new values for column and row each time through the loop. For example:

```
10 GR
20 FOR I=0 to 39
30   COLOR=INT(RND(1)*15+1)
40   PLOT I,I
50   COLOR=INT(RND(1)*15+1)
60   PLOT 39-I,I
70 NEXT I
80 INPUT "PRESS <RETURN> TO END"; X$
90 TEXT:HOME
100 END
```

This simple program plots 80 points, making two crossing diagonal lines with randomly selected colors. The first `PLOT` command paints points at (0,0), (1,1), (2,2), and so on. The second `PLOT` command paints points at (39,0), (38,1), (37,2), and so on.

THE SCRN COMMAND

The last low-resolution graphics command is the `SCRN` function, which is followed by a column/row address in parentheses. `SCRN` returns a value between 0 and 15 that corresponds to the color of the specified square. For example, `C=SCRN(8,12)` sets the variable `C` to the current color at column 8, row 12.

This function has a number of practical uses. In a game pro-

gram, you might have a moving projectile shooting toward a moving target. If the background is black and the target is green, you can use `SCRN` to test the next square the projectile will occupy before drawing it. If `SCRN` returns 4 (dark green) for that square, the program knows that the projectile has hit the target.

Another use is in animation. As a moving object crosses the screen, the program must change the color of the square behind it to the object's color. When the object moves on, the square must return to its original color. By testing the square with `SCRN` and saving the color value before drawing the object, the program knows what value to restore the square to.

OBJECT SUBROUTINES

Subroutines come in very handy with graphics programs. You should place the code for each item you want to draw in a subroutine that appears only once in your program. A simple `GOSUB` command lets you draw the item several times. Furthermore, you can easily retype or "merge" a subroutine into another program, so you don't have to redesign the same subroutine every time you write a new program.

If you design your subroutines carefully, you can extend one subroutine to handle a variety of different situations. For example, you might want to write a subroutine that will print large colored squares. However, if you program the subroutine to provide a colored border for the square, you have a routine that's more versatile than the original. By giving the border and interior colors the same value before calling the subroutine, you'll achieve your first objective. With the expanded routine, you can also draw box outlines (using 0 for the interior color) as well as bordered boxes. If you give the height and width of the box different dimensions, your subroutine can handle rectangles as well as squares.

First, decide what variables you need to define before calling the subroutine—the variables used within the subroutine for the drawing parameters. In the example above, you need to specify where the box is to be drawn. Giving the column and row values for the upper left corner of the box should be enough. Next, define the width and height of the box—*W* and *H*. (An alternative approach would define the box size by giving the column and row values of the box's lower right corner.) Finally, you must give the values for the border and interior colors—*CB* and *CI*.

The subroutine beginning at line 500 in the accompanying **Program listing** uses these variables to create and display bordered boxes. The main program (lines 5–105) gives you the opportunity to test this subroutine with interactive data input and simple error checking. If you choose not to erase the screen between box displays, you can draw as many boxes on screen as you like. Drawing boxes within boxes, overlapping boxes to create designs, and drawing box frames around other objects is a very simple matter with this subroutine.

And what about low-resolution graphics page 2? Well, I'll save that story for my next column. □

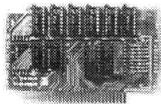
DAN BISHOP OWNS AND OPERATES A MICROCOMPUTER CONSULTING BUSINESS. WRITE TO HIM AT 4124 BEAVER CREEK DRIVE, FORT COLLINS, CO 80526. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

COMING Attractions

- There's plenty of software out there—and it's virtually free for the asking. *inCider* checks out the most popular sources of public-domain programs and picks the best of the bunch for your perusal.
- Apple II programming is serious business, but it can be fun and challenging, too. *inCider* explores the current range of languages and utilities for programmers of all ages and levels of experience.
- Colorization may be anathema to the die-hard film fanatic, but your print audience demands it. Add a splash of color to your newsletters, promotional pamphlets, ads, and posters, and wake up your readers with a spectrum of special effects.
- Keeping track of your car's expenses can drive you crazy! Cut those bills—AppleWorks in Action presents a simple spreadsheet that'll tell you how much you're paying for repairs, gas, and maintenance.
- Having a hard time remembering all those program commands? Put them at your fingertips with templates that fit right on your keyboard. Press Room shows you how.
- Reviews: ReadyLink, Spell It Plus, Stars & Planets, Clue, Robocop, Batman, and more.

IIe KEYBOARD \$44.95

Apple Compatible Cards and Products



SALE!
JE864
Pictured

16K RAM Card (Language Card) - Expand from 48K to 64K.
JE860 For Apple II and II+\$34.95

Extended 80-Column Card - Doubles display & memory capacity.
JE864 For Apple IIe.....\$39.95

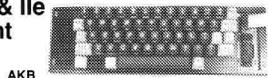
Disk Drive Controller Card - Capable of handling 2 drives.
JE875 For Apple II, II+, IIe and IIGS\$34.95

Parallel Printer Card - Compatible with most dot matrix printers.
JE880 For Apple II, II+, IIe and IIGS\$39.95

12" Monochrome Green Monitor - Cable Included.
AMON For Apple II, II+, IIe and IIc.....\$99.95

No-Slot Clock - Plugs into your motherboard - 10 year battery.
IB137 For Apple IIe and IIc.....\$39.95

Apple II, II+ & IIe Replacement Keyboards



• All the same keys as the original II/II+ and IIe • Includes Cursor Control (AKB2E only) • Software Compatible

AKB Apple II/II+ Replacement Keyboard \$44.95
AKB2E Apple IIe Replacement Keyboard ...\$44.95

APPLE DRIVES \$79.95

5.25" Half Height Disk Drives for Apple II, II+, IIe & IIc



• Direct drive • 160K storage • 40 tracks • Quiet • Works with Apple & compatible controllers (JE875, see left) • Complete with connector

JE1027 Disk II Compatible (for II, II+ and IIe)\$79.95

JE1028 Unidisk Compatible (for IIc).....\$79.95

AAM Adapts II/II+ Drives to Apple IIc (S20-pin to DB19-Pin) \$4.95

ZOOM 300 Baud Modem



• Apple II/II+/IIe compatible • Hayes command compatible • Auto-dial/auto-answer • Includes call progress monitor, speaker, Zoom communication software & manual

ZM300\$39.95

Apple Cooling Fan For Apple II, II+ and IIe



• Line surge suppression • Two AC outlets • Snaps on the side

APF.....\$24.95

Switching Power Supply For Apple II/ II+ /IIe



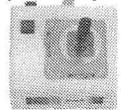
• 110V/220V • +5 @ 5A, +12 @ 2.5A, -5 @ .5A, -12 @ .5A

KHP4007.....\$44.95

JOYSTICK \$16.95

Apple II, II+, IIe and IIGS Compatible Joystick

• Auto-centered joystick with fine-tuning • Accurate and stable performance • Easy to operate • Long life variable resistor control • Durable construction • 5 foot cord



AJS.....\$16.95

ZIP CHIP — Increase the Speed of Your Apple —

• Apple II/II+/IIe/IIc compatible • Easy to install • Replaces the microprocessor • Lifetime Warranty

ZIP 4MHz .. \$139.95

ZIP8 8MHz .. \$179.95



Prometheus 2400 Baud Internal Modem

• Apple II/ II+/ IIe/IIGS • Hayes command compatible • Auto-dial/auto-answer • Includes II Talk communication & word processing software



2400A 2400/1200/300 Baud \$149.95

LocalTalk™ for AppleTalk™ Networking Applications

Part no.	Description	Price
AT8	8-pin DIN Connector (ImgWtr, II/LQ, LsrWtr, II NT/NTX, Apple II, II+, IIe or IIGS with AppleTalk Card) ...	\$19.95
AT7	6 foot AppleTalk Extension Cable	\$4.95
AT6	AppleTalk Coupler (Connects Two Cables).....	\$4.95

1355 SHOREWAY ROAD
BELMONT, CALIFORNIA 94002
24 HR. ORDER HOTLINE (415) 592-8097
Telex #176043 FAX (415) 592-2503
Technical Assistance FAX (415) 592-9075



\$50.00 Minimum Order - U.S. Funds Only
CA Residents Add 6.25%, 6.75% or 7.25% Sales Tax
Shipping - Add 5% plus \$1.50 Insurance
(May vary according to weight)
Send \$2.00 Postage for a FREE 48-page Flyer
Prices Subject to Change ©1990 Jameco Electronics
APPLE, APPLE II, II+, IIe, IIc, IIGS and Macintosh are registered trademarks of APPLE Computer, Inc. 5/90

Jameco Also Carries a Wide Selection of IBM and Macintosh Compatible Products!

able to convert earlier Invoicer files to ProDOS, however.

INVOICING

The heart of SBAS is its invoicing section, which can work with either pre-printed or blank forms. Once you've entered your customer names, inventory item descriptions, and billing-rate information, creating an invoice is easy. Type in the customer's account number and the account will appear on your screen with the invoice number generated automatically.

You can make any changes in the default fields such as freight, shipping address, and so on. You'll then see an invoice detail area where you enter the code number for an inventory item or billing rate. Enter the code and the program fills in the price and description.

When you enter any quantity, SBAS does the math for you. When you're done, the program will subtotal, calculate tax on those items you've indicated as taxable, total the invoice, and print it. It also posts the information to the customer's account and deducts any products you sold from the inventory-tracking module.

While you're creating invoices, SBAS can print a *posting report*, which is a line-by-line summary of each item on every invoice. This provides a hardcopy of everything you've entered, which will help if you need to track any mistakes.

The program can also create and send an invoice to someone who isn't on your customer-account list; this is a worthwhile capability, as it lets you invoice those people you don't want to add to your accounts-receivable list. Likewise, you can also record sales (perhaps cash transactions, where no invoice was required) without having to go through the process of creating and printing an invoice.

You can view a customer's account or print the details of sales for which you've created invoices at any time. The invoicing section of SBAS also allows a free-format entry, which lets you sell things that aren't in your normal inventory selection—again, a nice touch. You can also use this part of the system to print shipping and mailing labels or Rolodex cards.

When you're done invoicing, the program displays (and will print, if you like)

a summary report of everything you've just entered, including name, number of items, and average price.

ACCOUNTS RECEIVABLE

The accounts-receivable section of the Small Business Accounting Series has a couple of weaknesses, but they may not pertain to your business.

If you're working with an open-invoice format—where payments are assigned to specific invoices before they're cleared from the customer's account—you must enter the same invoice number for the payment that you used when you charged the item(s).

When the same number is used for both the sale and the payment, however, it can get confusing when you have to retrieve printed copies of your paperwork. In most businesses, payments and credits are on different forms with their own numbering sequences.

If you use the balance-forward format—where all charges and payments are combined at the end of each month into a balance-forward amount—the program can't calculate and add finance charges. If you want to add finance charges, you must figure and post them manually. The balance-forward approach also ages only current transactions, so once you close out a month, there's no way of knowing how old the balance-forward amount is.

For this reason, most businesses will probably select the open-item method for accounts receivable to get automatic finance charges and complete aging information. As the SBAS manual notes, the open-item approach takes a bit more work than balance-forward, but it also supplies more detailed information.

Other than these two weaknesses (which may not affect your business), the accounts-receivable module of SBAS is effective. It will print monthly statements and past-due notices, provide a current sales-activity report so you can see who's buying what, and provide an aging report that tells you how long it's been since someone charged something.

SALES TRACKING/INVENTORY

The third module of the Small Business Accounting Series keeps track of your inventory—what you buy and when it's

sold. As with general sales, you don't have to create an invoice to post an inventory transaction. And like the accounts-receivable module, you can request a posting report, which gives you a hardcopy of your purchases as they're entered.

This section of the program provides a number of reports, including what you have in stock and its value, a price list, monthly sales reports that let you know what your monthly and year-to-date sales are, as well as a printout that shows you which items have dropped below their reorder level. This module can also print working sheets that show what you've sold without the pricing.

Both the accounts-receivable and the sales-tracking/inventory sections have year-end routines that zero out all the monthly totals to make room for new purchases and sales.

QUIRKS AND QUESTIONS

The Small Business Accounting Series isn't perfect. There's a lot of disk access, so with a floppy-drive system you'll spend some time waiting as the program retrieves and saves your information. A flow-chart showing how all parts of the system link to one another would be useful.

There are several typos in the manual, but only one is cause for concern: The "\$" is left out of a print-control sequence. Also, not all the date fields check for proper entries.

For instance, when you enter an inventory item description, one field asks for the last order date, and it's happy to accept an entry such as 14/14/14. If you try to enter a month as 14 in the sales posting area, the program won't accept it. It will, however, accept an entry such as 1//1//1/.

The program comes on three disks, but it doesn't keep track of which programs are where. When the system can't find a module you're trying to access on the disk in drive 1, it beeps and lets you know the program it's looking for is somewhere else, but you've got to try the other disks to find the right one.

All this disk swapping is eliminated, of course, if you install SBAS on a system with a hard drive or RAM disk. The SBAS program disks are copyable, and because the system runs under ProDOS, it's really

REVIEWS

requires time and effort to create the contract, track the behavior, and monitor the results. Enter Thomas Software and its new program, Positively Rewarding.

Positively Rewarding is a non-copy-protected program that lets a teacher or parent implement a contract system with relative ease. The program is designed to take most of the time-consuming tasks inherent in a contract out of the hands of the teacher or parent and give them to the computer.

POSITIVELY SIMPLE

Positively Rewarding covers all the bases. It lets you construct contracts quickly and easily; it employs a simple interface so young children can use the program without constant adult monitoring; it keeps track of all the tasks; and it offers animated, personalized messages as motivational on-screen rewards. It also does all the necessary paperwork, such as progress reports, daily tracking charts, and various personalized certificates.

The process is straightforward. The

two-disk program contains a Teacher's/Parent's Disk and a Child's Disk. The Teacher's Disk contains the portion of the program that lets you create individual



Behavioral-contract management for young people.

contracts, set up passwords to ensure privacy, select desired behaviors and assign each behavior point totals, choose appropriate messages, and insert Surprise Screens. The Child's Disk lets the child log in his or her entries and earn appropriate rewards.

I created a file for my nine-year-old daughter, Jenna, by selecting *Add Children*

from the menu. Next, I looked through the *Standard Lists*. From *Behaviors*, I selected "I cleaned my room" and "I did my homework." From *Contracts*, I decided on "When () earns () points, then () will go to the zoo." From *Messages*, I chose "Surprise (), you get a stuffed animal on your desk!"

You can modify the selections from the *Standard Lists*, so I changed the contract to "will go to Pizza Hut" and changed the message to "Surprise (), you get to take a friend with you. You're halfway to your goal and I'm proud of you."

Now it was simply a matter of determining how many points Jenna needed to earn before the reward kicked in. I decided she should earn 24 points to reach her goal. I assigned "I did my homework" a one-point value and "I cleaned my room" a three-point value, because it's easier to get her to do her homework than to clean her room.

Finally, I added a *Surprise Screen*. I chose a picture of a frog, jumping toward the words "Jump to Your Goals!" I had ▶

Get 10 of the Best Apple Programs in the Public Domain All for just \$2 & Get Our Complete List of Programs FREE!

EDUCATION * BUSINESS * HOME * GAMES

Programs come ready to run on disks.

Here's my \$2.00. Please send me 10 of the Best Apple Programs in the Public Domain

Name: _____

Address: _____

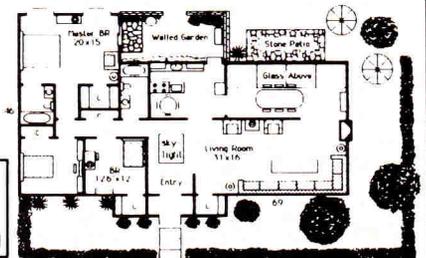
City: _____ State: _____ Zip: _____

Send To:

Advantage Computing
1803 Mission St. Suite #416
Santa Cruz, CA 95060

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 IMB . . . \$89.95
- *Macintosh with IMB . . . \$99.95
- IBM with 640K . . . \$99.95
- All libraries . . . \$29.95 ea.

Compatible with Laser 128
*Call for availability
1-800-451-4871

Abacadata
the source of plan-making software
DEPT D PO Box 2440
Eugene, OR 97402
(503) 342-3030

READER SERVICE

INDEX

Reader Service	Page	
40	Abracadata	80
245	Advantage Computing	80
103	Alltech Electronics Co. Inc.	82
*	AppleFest	65
*	Applied Engineering	9, 17, 21, 31, 49, 53, 61
65	Az-Tech Computer Services	91
179	Beagle Bros Inc.	10, 11
87	Bible Research Systems	91
66	Borg Industries	93
116	Canadian Computer Outlet	93
8	CDA Computer Sales	28, 29
*	Central Point Software	63
115	Chinook Technology	87
94	Choice Computer Products	91
*	Compucraft	90
205	Computer Direct, Inc.	89
252	Computer Enhancers	92
288	Computer Friends	62
134	Dayton Computer Supply	91
184	Digital Vision	81

Reader Service	Page	Reader Service	Page		
150	Dynatron Company	32	128	Programs Plus	34, 37
220	Educational Resources	25	269	Public Domain Exchange	16
85	Fas-Track Computer Products	79	136	Quality Computers	2, 3
38	Gemini Marketing Inc.	92	164	Quality Computers	6
*	Golem Computers	58, 59	7	Ramco Computer Supplies	93
27	Gosselin Computer Services	90	25	Robot Arm II	90
64	GS Central	90	90	Roger Coats	18, 19
*	inCider		29	Shreve Systems	92
	Success with AppleWorks	70	143	Silicon Express	73
47	Ingenuity Inc.	5	96	Softronics	92
63	Ingenuity Inc.	57	127	SoftSpoken, Inc.	93
122	Ingenuity Inc.	55	270	Software Disc. of America	75
206	Ingenuity Inc.	67	18	Sports Software Assoc.	91
23	International Software Lib	90	233	Standard Peripherals	92
199	Jameco Electronics	77	92	Street Electronics	CV3
*	Kensington Microware	CV4	60	Springbranch Co. Inc.	91
131	Kinson Products	83	68	Thunderware	85
175	Laser Computer Inc.	CV2	140	Timeworks	33
248	Memory Plus Distribution	71	231	Tulin Corp.	81
4	Merrit Computer Products	92	297	USA Micro	13
55	National AW User Group	91	214	Valuesoft	22
173	New Science Prospects	90	283	Virginia Real Software	92
89	North Forty Enterprises	93	254	Vitesse Inc.	23
59	Perfect Solutions Software	90	62	Vitesse Inc.	44
77	PIE	91	17	VMC Marketing Technologies	90
*	Preferred Computing	43	260	Zimco Int.	4
105	Price Busters	84			

This index is provided as an additional service. The publisher does not assume liability for errors or omissions.

CHECK OUT THE 'EYES



Give your Apple IIe/IIgs the 'Eyes... with low-cost ComputerEyes video digitizers!

Easily capture beautiful color or b/w images from any home video camera, VCR, etc. Great (and fun) for all home/school/business applications: desktop publishing, paint programs, computer T-shirts, slideshows, image databases, etc. Use images with Paintworks, Print Shop, HyperStudio, Dazzle Draw, use ComputerEyes images almost anywhere!

ComputerEyes b/w for Apple IIe or IIgs - only \$129.95
ComputerEyes color for Apple IIgs (Now GS/OS compatible!) - only 249.95

Versions are also available for Macintosh, IBM PC, Commodore and Atari.

For information, demo disk, call 617-329-5400
To order, call 800-346-0090

Digital Vision, Inc.
270 Bridge Street, Dedham, MA 02026

COMPUTEREYES

Build Your IIgs/IIe Hard Disk A-Hive •• a disk enclosure

- room for two 5.25" or 3.5" drives
- horizontal or vertical placement
- provision for cartridge drive • FCC certified
- quiet cooling fan • platinum grey color

30watts -- \$119 65watts -- \$169

Hard Disk Subsystem(plug & play)
Complete w/ Apple SCSI Card & A-Hive

32MB--\$539
48MB--\$589
65MB--\$635
85MB--\$689
100MB--\$859



Hermit Crab--portable drive 40MB-\$609
Tape Subsystem w/ backup software
155MB--\$672 60MB--\$592

Cartridge Drive Subsystem 44MB--\$659
Subsystems come with latest GS/OS 5.02 system software

TULIN CORPORATION

2156H O'Toole Avenue
San Jose, CA 95131

Tel: 408-432-9025
Fax: 408-943-0782

Apple is a registered trademark of Apple Computer, Inc.

Positively Rewarding present the screen after Jenna had earned 12 points.

For the most part, my work was done. I showed Jenna how to work the program and use the Child's Disk to enter her daily points. All she had to do was select her name, read the *Welcome* screen that showed her goal and the number of points she had earned thus far, and press the spacebar once to see her contract and again to bring up the behaviors.

As each behavior was displayed, Jenna simply pressed the spacebar once to an-

swer yes to the behavior or twice to answer no. Pressing the Return key logged her answers, calculated the number of points she earned, and started the positive-reinforcement segment.

POSITIVE ENCOURAGEMENT

Positively Rewarding offers encouragement in a number of ways. In the positive-reinforcement portion of the program, the goal screen appears first. This shows a mountain range with a stick figure on top of one of the levels, depicting how far the

child has progressed toward his or her goal and stating the number of points earned on a given day.

Next, you can have the program print a personalized certificate praising the child. Then, if he or she has earned enough points, the child will see a *Surprise Screen*; finally, when the child has reached his or her goal, a *Congratulations* screen will appear automatically.

Positively Rewarding works equally well with an individual child or an entire classroom. Printed reports on each child make it easy for a parent or teacher to monitor progress over a period of time and see which behaviors are being adhered to and which need more attention.

Another useful feature—especially for classroom use—is a daily behavior chart you can use in conjunction with stars or stickers to help motivate students further by providing a nonthreatening competitive element.

A final feature of Positively Rewarding that deserves mention involves toggling the active status of a child on or off. This lets a teacher designate a student as inactive in the event of illness, thus keeping his or her daily chart accurate and current.

POSITIVE CONCLUSIONS

Positively Rewarding has only a few minor drawbacks; some are faults of the program and some are the result of disk limitations.

While the graphics reinforcements provided by the *Surprise Screens* are valuable, there are only three pictures available. Anything repeated too frequently will lose its effectiveness, so there should be a greater variety of graphics made available. Also, it would be nice to be able to modify the text that accompanies each picture.

When you're using the date feature for any reason (daily input, predetermined time allotment to tasks, and so on), you must enter the date in three steps, hitting Return after the month, day, and year. This is somewhat annoying.

Disk limitations—obviously not the fault of Positively Rewarding—determine the number of children you can place on each disk as well as the number of charts you can keep for each child. The documentation suggests making a Child's Disk for every group of four to ten students. With

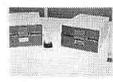




ALLTECH ELECTRONICS CO., INC.
 1300 E. Edinger Ave., Suite D., Santa Ana, CA 92705
 2018 Lomita Blvd., Suite 1, Lomita, CA 90717
 602 Garrison St., Oceanside, CA 92054

Minimum Shipping & Handling Charge \$5.00

PHONE ORDERS: (619) 721-7733

<p>Floppy Drives for Apple</p> <p>Ile External Full Height FD . . . \$ 65.00 Ilc, Laser 128 External FD . . . \$ 75.00 Ilc Internal FD . . . \$ 95.00 AMR 3.5 IIGs. Ilc+ . . . \$195.00</p> 	<p>Apple Mother Board</p> <p>Ilc Mother Board . . . \$200.00 Il+ Mother Board . . . \$100.00 Ile Mother Board . . . \$200.00 Mac 128/512 Mother Brd. \$100.00/\$150.00</p> 
<p>RAM Chips</p> <p>64KB-15 . . . each \$.75 64KB-20 . . . each \$.50 256KB-15 . . . each \$ 2.75 256 x 8 SIMM . . . each \$29.00 1024 x 8 SIMM. . . each \$99.00</p>	<p>RAM Disk/Expansion Cards</p> <p>Super Expander GS w/1 Meg RAM. . . \$139.00 Super Expander Ile (1 Meg) OK . . . \$ 69.00 Super Expander Il+ (1 Meg) OK . . . \$ 79.00 Ilc Mem. Expansion (1 Meg) OK . . . \$ 89.00</p>
<p>Diskettes</p> <p>5.25" DSDD Disks . . . 100 for \$24.00 3.5" DSDD Disks . . . 50 for \$ 2.00 Alignment Disk (for techs only) . . . \$29.00</p> 	<p>Keyboards & Power Supply</p> <p>Apple Il+, Ile, Ilc or Mac KYBD . . . \$65.00 Macintosh Numeric Keypad. . . \$29.00 Il, Il+, Ile Power Supply . . . \$39.00</p> 
<p>Monitor</p> <p>AMBI 9" Comp. Amber Monitor . . . \$49.00 Apple Monitor III.(used) . . . \$65.00 Monitor Stand . . . \$ 9.95</p>	<p>Accessories & Cables</p> <p>Apple Ilc carrying case . . . \$29.00 Comrex Joystick . . . \$ 9.95 AppleTalk Connector . . . \$29.95 Various Cables, Please CALL! . . . \$9.95 & up</p>
<p>Apple Manuals</p> <p>AppleWorks V1.2 w/Disks . . . \$35.00 AppleWriter II w/Disks. . . \$29.00</p>	<p>Hard Drives</p> <p>20MB SCSI HD System, Ile, IlcS . . . \$595.00 60MB SCSI HD System, Ile, IlcS . . . \$795.00 20MB SCSI HD System, Extrl. Mac. . . \$495.00 60MB SCSI HD System, Extrl. Mac. . . \$725.00</p>
<p>Other Expansion Cards</p> <p>80 Col. Card (Il+) . . . \$69.00 64K/80 Col. Card (Ile) . . . \$35.00 Z-80 CP/M Card . . . \$29.00 Language Card (16k/Il+) . . . \$39.00 128K Memory Card . . . \$69.00 Graphic Pr. Interface. . . \$35.00 UniDisk 5.25" Cont. . . \$45.00 UniDisk 3.5" Cont . . . \$75.00 Super Serial Card . . . \$69.00</p>	
<p><i>Above prices are subject to change without notice. Refunds subject to 20% restocking fee. Our liability is limited to purchase price. All prices are cash and carry. Credit cards add 3%. Shipping, COD, and insurance charges extra.</i></p>	
<p>NOTE: School purchase orders accepted!</p>	

four students on a disk, you can maintain at least six charts for each student; the average chart lasts approximately one week.

Thomas Software, recognizing the above limitations, offers step-by-step instructions for maintaining individual histories, creating continuously running daily records, and clearing unwanted data without having to re-enter names and other information. However, the inability to use the program with a mass-storage device calls for careful planning and maintenance of records.

Positively Rewarding—despite some caveats and the fact that it will appeal to a limited audience—fills a valuable educational/parenting need. The program is well thought out and thorough in its approach to the subject matter. Anyone who wants to improve behavior at home or in school while increasing a child's confidence and self-esteem will find Thomas Software's offering positively rewarding.

James Trunzo
Leechburg, PA

THE UGLY DUCKLING

THE BYTE WORKS, INC.,
4700 Irving Boulevard Northwest, Suite 207,
Albuquerque, NM 87114, (505) 898-8183

Early reading software;
768K Apple IIcs; \$49.95



Children love listening to stories. The Storyteller talking-software series from The Byte Works takes advantage of that to help teach children how to read. A computerized "storyteller" reads a story aloud, then children can select different options to take an increasingly active role as the story progresses.

The childproof menu appears automatically when you boot the disk. Rather than expecting children to choose a response, the computer says, "Press the keyboard now and I will..." for each option. If children have made no choice by the end of the list, the menu begins again with the first choice until they make a selection.

STORY TIME

Children just beginning to read should choose the first option, which has the

computer read the entire story. The story appears page-by-page with both text and pictures—just as if it were a book. As the computer reads, each word is highlighted, and the illustrations move back and forth in simple animation.

A menu at the bottom of each page lets children page forward or backward once they've heard the entire story, or stop and restart the story. At certain points, children will also be able to decide what should happen next in the story. For example, they must decide whether the Ugly

Duckling will flee to a pond or to the woods.

Once children begin to read for themselves, they can choose the *Read & Wait* option. This will have the computer read a word and then pause to let the child repeat it.

The *Wait & Read* option is appropriate once young readers have learned most of the words. The computer pauses to let children say a word. Then, when they press a key, the computer says the word. Thus, if their reading was less than perfect, ▶

LOWEST PRICE DIRECT FROM MANUFACTURER



5 1/4" APPLE® II DISK DRIVE

- Apple® II Series & Laser 128 series compatible
- Speed adjustable
- Brushless direct drive motor
- 48 hrs factory burnt-in

Apple IIc/IIgs cable installed
— \$7.00 extra
Unidisk Port option — \$23.00 extra



5 1/4" DRIVE FOR PC
TRANSPORTER®

You can use our drive with PC Transporter to run MS-DOS programs on your Apple II like they do on IBM compatibles.

Single-drive system \$169
Dual-drive system \$259
Half-height drive \$115

(Add to single-drive to make dual-drive system.)

NOW AVAILABLE-HARD DISKS FOR ALL APPLE II'S (YES, EVEN THE IIC')

20 MB SCSI Hard Drive for IIe/IIgs	\$619
30 MB SCSI Hard Drive for IIe/IIgs	\$719
20 MB SmartPort Hard Drive for IIc	\$719

ALSO AVAILABLE:

EXTERNAL 3.5" 800 K Drive for Apple IIgs

MEIJI®

6-MONTHS WARRANTY

SEND MONEY ORDER OR CHECK TO:
KINSON PRODUCTS CORP.

482-484 Sunrise Highway,
Rockville Centre, NY 11570.
For inquiry please call (516) 763-0906
Fax (516) 763-0938



No COD Order
Accept School's P/O

TOLL FREE PHONE NO.
FOR ORDER ONLY
1-800-433-6224 (OUTSIDE NY)
1-800-553-6224 (INSIDE NY)
Please call between Eastern time
8:00 A.M. — 6:00 P.M.

Shipping: UPS ground: \$6.00 per drive
except \$10.00 per drive for dual-drive.
Fed-Express (next day air): \$9.00 per drive
except \$18.00 per drive for dual-drive.
NY Resident: Please add 8% sales tax.

Circle 131 on Reader Service Card.

Apple is a trademark of Apple Computer. PC Transporter is the trademark of Applied Engineering.
IBM is the trademark of IBM Corp.
Terms: 15% restocking fee on non-defective goods. No return w/o RMA®. No refund on shipping.

NEW!

LOW FACTORY DIRECT PRICES!

UNIV & SCHOOL P.O.'S WELCOME!

DEALER INQUIRIES INVITED

GS RAM UPGRADES

- AI 4 MEG GS RAM BOARD.** DMA compatible. Expands Ilgs to 4.25 Meg. w/1MEG . . . \$159
- AE GS-RAM Plus 6 MEG RAM board.** DMA comp. Expands GS to 6.25 Meg. w/1MEG . . . \$259
- Above w/2 to 6 Megabytes **Call**
- 256K RAM Set (8pc) 120ns 5 Yr Wty.** \$39
- 1 MEG RAM Set (8pc) 120ns 5 Yr Wty.** \$89
- TRANSWARP GS** by Applied Engineering \$319

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
- 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 Imagewriter I cable 10'** \$11
- SSB to Imagewriter II cable 10'** \$11
- SSB to Modem (Standard RS232) 10'** \$11

SOUNDSYSTEM 2 For Ilgs

New 2-Way Stereo Amplified Speaker Pair! These thunder pods put the S in your GS operations, at one third the cost of Bose. **FREE Demo Program** \$129

AE RAM BOARDS

- RAMWORKS III w/256K** \$149
- RAMFACTOR w/256K** \$199
- 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/OK . . . \$59
- Above w/256K \$108
- Above w/512K or 1 Megabyte **Call**
- Super Expander C** Expands IIc to 1152K, Appleworks desktop to 10652K, & allows instant module switching. w/OK \$69
- Above w/256K \$118
- 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 Ilgs. No audio line interference. Internal Mount \$24

PRO-KEYPAD for IIe/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 2 will configure your A.W. startup & program diskette to run on your computer. Not a preboot, a one time configure package. (Requires 80 Col, 64K, & Shift Key Mod) \$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 CFROM. 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/gs. . . \$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/gs. Microsoft & Turbo Pascal Comp. . . \$34
- Joystick III** Similar to the Hayes Mach III, with large fire button on stick \$24
- 5 AMP Power Supply.** Drop in replacement for II+/IIe supply. Double the amp power! . . \$49
- TV Modulator** Connects your Apple II+/IIe to any color or black/white TV \$15
- Serial/Parallel Converter.** Connects your IIc to any parallel printer \$49

DISK DRIVES!

- Disk Drive H/H** for Apple II+/IIe \$119
- Disk Drive H/H** for Apple IIc/IIgs \$119
- Disk Drive H/H** Daisy Chainable for Ilgs . . \$149
- Disk Controller Board** II+/IIe/IIgs \$34
- DISK DRIVE 3.5"** Full GS compatible **Call**

VULCAN HARD DRIVE by A.E.

- 20 MEG VULCAN** Specify IIe or Ilgs \$595
- 40 MEG VULCAN** Specify IIe or Ilgs \$795
- 100 MEG VULCAN** Specify IIe or Ilgs **Call**

GAMEPORT SWITCHBOX

- Switch between mouse & joystick or any two gameport peripherals. Free master cable . . \$29

APPLETALK CONNECTION!

- Localtalk Replacement kit w/balanced RS422 transformer & 25 foot cable. \$29

COPY II PLUS

- The ultimate copy program. For 5.25"-3.5"-Hard drives.
- 8.4 w/5/4 diskette \$15
- 8.4 w/5/4 & 3/2 diskettes \$25

APPLEWORKS CLOSEOUTS!

- COMPLETE PACKAGE:** Startup/program diskette, tutorial diskette, sample templates, & A.W. manual. Not upgradable by Claris.
- Appleworks Version 1.2 Package** \$59
- Appleworks Version 1.3 Package** \$79

**5 YEAR WTY PC BOARDS/2 YEAR WTY ALL OTHERS
CALL or WRITE FOR OUR FREE COLOR CATALOG
ADD \$3 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. P.S.T.



REVIEWS

the computer uncritically supplies the correct word or pronunciation. If they did read the word correctly, they're reinforced immediately by the correct pronunciation.

Finally, children can choose the *No Sound* mode, which lets them read the entire story to you by themselves, showing you their new and impressive reading skills.

You can further your child's reading activities by printing a copy of the storybook. Most dot-matrix printers can print an outline-only, coloring-book version of the book. If you have an ImageWriter II, you can print the book in color.

Youngsters will enjoy seeing the familiar screens turn first into drawings and then into a book. The book will give them something to show off at grandma's house or other computerless locations.

STORIES FOR SOMEDAY

The Storyteller programs aren't necessarily ones that children will use every day. They'll probably listen to each story a few times when they receive it. Months later, when their reading skills have improved, they may pull the disk back out and work on it a little more at a different level. Once they're close to mastering the story, they may read it incessantly for a few days. When they succeed, you can print the book as a reward.

The Storyteller series is an excellent means of building reading interest and skills. I would particularly recommend it for a classroom or library setting, where the program can be used over and over by many different children.

I was disappointed, however, by this rendition of Hans Christian Andersen's fairy tale. Technically, it's well-executed—artistically, less so. The narrator's voice can make a story exciting. This narration is lackluster.

The animated illustrations contain some charming details, such as a duckling starting a caterpillar in the eye, and the title screens are striking with gold and gray on black. A beautiful silhouette of a rocking chair is the background to the options screen.

Once the story began, however, I found myself staring at a mud-brown duck on a washed-out blue sky and chartreuse grass.

This unappealing color combination continues throughout most of the story. Also, all the drawings are medium or long shots. A close-up or two might have helped develop the hero's character better.

THE PLOT THICKENS

What The Byte Works' version of *The Ugly Duckling* lacks most, though, is plot development. Because the original story is difficult for contemporary youngsters to understand and is much too long for a talking computer format, The Byte Works essentially had to rewrite it.

When you have fewer than two dozen screens to work with, you have to build drama quickly. In The Byte Works' version, the ugly duckling hasn't even hatched until the fourth frame. His mother takes three frames to teach him how to swim and then walk him back to the barnyard. Then, with 12 frames to go, the plot begins.

The barnyard inhabitants drive the duckling away because he's so ugly. We're told nothing of his wanderings or aching loneliness. Instead, fall arrives immediately and the duckling sees flocks of swans flying south. He yearns to be beautiful like the swans. Then it's winter. We learn that the duckling is cold, but feel nothing of the agony of the original.

Andersen's duckling swims desperately round and round as his hole in the ice becomes smaller and smaller, nearly freezing him into the pond. The finale of The Byte Works' version has the duckling learn his true identity and think, "I am so happy to learn that being different can be very special." Andersen's climax is much more dramatic. The lonely outcast is finally welcomed into a group—the flock of swans—and people on shore praise his loveliness and grace.

It's unfortunate that such a well-designed program should be flawed by a poor adaptation. Nevertheless, as The Byte Works points out in the instruction booklet, the more interest you show in the story, the more interest your children will show. If you sustain their interest in the story, *The Ugly Duckling* can help encourage children to grow from listeners into readers. □

Jeanne Dietsch
Peterborough, NH

ROLL OVER BEETHOVEN.

**LightningScan GS. Thunderware's
new hand-held scanner. With SnapGuide.**

Our latest scanner roll-out is worth a little arm waving. LightningScan GS scans images up to four inches wide instantly from books, artwork or anywhere else. And only LightningScan GS has SnapGuide™ for straight and steady scanning.

LightningScan GS works in concert with ThunderScan® software. So you can save images for paint and publishing programs in every display mode. And only LightningScan GS offers 16-level gray scale.

LightningScan GS can be yours for just \$295 complete.

So get rolling to your dealer and pick one up today.



Thunderware

LightningScan®

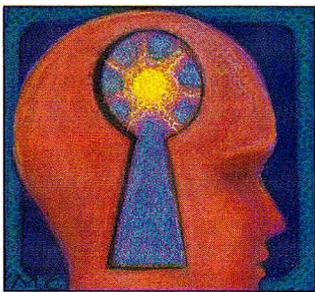
21 Orinda Way Orinda, CA 94563 415/254-6581 FAX: 415/254-3047

Celebrating 10 years as an Apple developer.



LightningScan GS requires an Apple IIes™ with at least one megabyte of RAM. LightningScan, SnapGuide, and ThunderScan are trademarks of Thunderware, Inc. Apple IIes is a trademark of Apple Computer, Inc. ©Copyright 1990 Thunderware, Inc. All rights reserved.

Circle 68 on Reader Service Card.



LEARNING CURVE

Are test scores what education is all about? Where does wonder fit in, or true understanding?

MOTIVATING FORCES

By **DAVID D. THORNBURG, Ph.D.**

THE WORD *EDUCATION*, TO MANY people, conjures up images of a place called school, and for many people that's a place of hard wooden seats and harsh fluorescent lighting. It's difficult to imagine education as an engaging activity in a place like that.

Now add the teacher, someone who's presented as the font of all wisdom—otherwise known as the curriculum, designed by administrators and legislators who may spend an entire career without setting foot in a classroom themselves. What a depressing image!

If we've learned anything from the 700,000 students who drop out each year, it's that our schools by their very structure fail to develop or reinforce that natural love of learning each child seems to express on the first day of kindergarten. Perhaps exploring an informal learning environment, one in which students appropriate their own knowledge, will give us some ideas we can apply in the traditional classroom.

VIDEO MATH

The best learning takes place when the student's attention and interest are engaged. One of the most stunning examples of this phenomenon is the continued success of video games. When this "fad" began years ago with arcade games such as Pong and Breakout, many observers predicted the rapid demise of the genre. When video games failed to die out, opponents decried the violent nature of some of them and even went so far as to suggest banning them or restricting them as though they were pornographic. In the meantime, video games continued to thrive, and some nonviolent selections have become classics.

By looking at some of these games we can gain a number of valuable insights we can apply to formal education. One of the unquestionably great products of the past decade is **Tetris**, a game of abstract geometry that grew out of the designer's interest in pentominos. Tetris was

created by Alexey Pajitnov, a mathematician and researcher in artificial intelligence and speech recognition at the U.S.S.R. Academy of Sciences. In addition to the arcade version of the game, Spectrum Holobyte has also published Apple II editions for the 64K, 128K, and GS platforms (Editors' Choice, October 1988, p. 120).

The principle of the game is simple. The player is presented with a falling game piece composed of four squares arranged in one of six randomly chosen patterns. You can rotate this piece and move it horizontally as it drops to the bottom of the screen. The object is to place the pieces so that they fill a horizontal row. As you fill each row, it disappears from screen, making room for more layers of pieces. The game is over when pieces pile up to the top of the screen. At each level of play the speed of descent increases, requiring faster decision making.



The Soviet puzzle game Tetris captivates and challenges as it reveals the beauty of geometry and makes an abstract subject real.

This game, which has been called "the Rubik's Cube of software," engages thousands of players who, according to their teachers, "can't concentrate on math." High-school students who struggle through math in school may go to the arcade and score consistently in the top ten as they play this math puzzle, based ►

on logic and perception of spatial relations, for hours on end.

It's interesting to note the depth of these students' problem-solving and logical-thinking abilities. They create complex strategies to deal with various game situations and must recall these strategies and act on them quickly. Development and testing of hypotheses are critical components of mathematical thinking, and they're common among Tetris players.

Another way to think about engagement is to think in terms of intrinsic motivation. It's central to lifelong learning—you'll need it to master any subject in a meaningful way. Choosing to pit yourself against a video game contrasts sharply with challenges imposed from the outside. In the first case, the student's mind is fully engaged; in the second, it's likely to shut down with fear or boredom.

You might argue that Tetris' "instructional content" isn't relevant. Nevertheless, the fact remains that many students who in the eyes of their teachers have no grasp of math are quite proficient when they can approach it on their own terms.

CLASSROOM REVISITED

One of the major applications of educational computing for "at risk" students is the *integrated learning system*—lab-based rows of computers at which students bask in the dim glow of monitor light while their brains are crammed full of piecemeal knowledge via techniques that would have George Orwell doing cartwheels in his grave.

Of course, the purveyors of integrated learning systems say that students using their material do increase their test scores. But is that what education is all about? Where does wonder fit

in, or true understanding? What is the benefit of being able to identify a verb if you can't see the beauty in a Dylan Thomas poem? Tetris may or may not improve a student's performance on a math test, but in its own way it reveals a bit of the beauty of geometry.

Every subject taught in school has at its base relevance and beauty. Teachers who can't give immediate examples of that to their students have no business in the profession. If

PRODUCT INFORMATION

Tetris

Spectrum Holobyte
2061 Challenger Drive
Alameda, CA 94501
(415) 522-1164
\$39.95 includes IIe/IIc
and GS versions

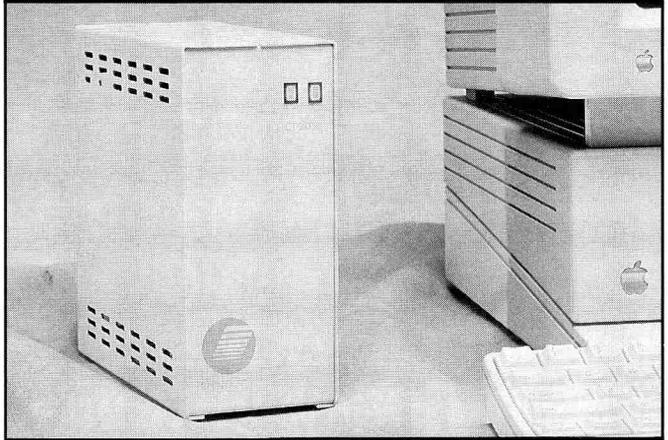
the teacher says only, "You need to know this because it will be on the test," or "This will help you later in life," he or she has failed the student by saying in effect, "I'm teaching this only because it's my job."

On the other hand, the teacher who can point to the relevance or beauty of the subject can engage students in their personal quest for knowledge. The desktop computer, with its almost limitless capacity to create models and portray microworlds, is the perfect tool.

We need more educational-software developers willing to bring the same level of fascination and engagement to curriculum-based programs that game designers bring to arcade products. After all, a computer is a terrible thing to waste. □

WRITE TO DAVID D. THORNBURG AT P.O. BOX 1317, LOS ALTOS, CA 94023.

YOU NEED SCSI AND CHINOOK IS IT!



With Apple's release of their new SCSI controller card, you can now take advantage of the inherent flexibility of SCSI, combined with the speed of Direct Memory Access (DMA). For example, DMA allows our CT-40 to verify over 725 blocks/sec. SCSI opens up your IIGs to a whole new universe of peripherals. There can no longer be any doubt that SCSI is the solution.

When you think of SCSI you think of Chinook. From day one, we have exclusively been a supplier of SCSI hard disk drives for the IIe and IIGs. And because of our experience, no one knows more about SCSI hard drives and the Apple II than Chinook.

We can assure you that owning your first hard disk drive will be a pleasurable experience. Chinook sells only Voice Coil Actuator (VCA) disk drives—the most reliable technology we know. Unlike other technologies, VCA keeps the data heads aligned with your data, assuring fast, error free data transfer every time. If you want a worry free hard disk drive—you want a Chinook SCSI VCA drive. After all, it's your data. In the rare event a problem should occur, our technical support personnel are waiting to help.

To celebrate the new DMA SCSI card, we are offering special pricing, spotlighting the CT-40. The CT-40 features 25ms access time and 8 KBytes of look ahead cache. You have 30 days to try out your new SCSI drive and return it if you are not satisfied. To place an order, or for additional information call us today at (800) 999-7034.

Drive	Standard Pricing	DMA Special Pricing
CT-20	\$469	429
CT-40	589	509
CT-80	789	729
CT-100	849	789



CHINOOK
Technology, Inc.
601 Main Street, #635
Longmont, CO 80501
303-678-5544

Apple SCSI Card (req'd) \$99

Call for pricing on our IIc hard drives, C-Ram (IIc, RAM card), RAM 4000-4MB memory card for the IIGS and Chinook SCSI Utilities.

Prices subject to change without notice. Apple IIe and IIGS are trademarks of Apple Computer, Inc.



APPLEWORKS POWER

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.

PRODOS CONVERSION

By Debra G. Warner

LOYAL FANS WILL AGREE THAT AppleWorks is the program of choice for II users everywhere—its simple interface brings success even to beginners. But as beginners try their wings, they sometimes fly smack into a wall: ProDOS pathnames.

In this case the wall is just another step in the AppleWorks learning curve. Such a sticking point is characteristic of programs that are easy to learn in the early stages. Some users stay at the lower level, but most try to get over the wall. Here are a few suggestions, with two examples: converting ASCII files downloaded from a communications package and spreadsheet files from VisiCalc.

ASCII Express Professional is a DOS 3.3-based program. Its command set includes automatic downloading of text captured from a host computer to a disk file. This feature is popular with librarians and other on-line professionals who want to capture portions of distant databases and edit them later before giving a printout to a requestor.

After you've downloaded the text to disk, you must convert the file to ProDOS before using AppleWorks. It's easy enough with ProDOS' utilities—but think-

ing about the steps involved will shed some light on the pathname problem.

ProDOS' conversion utility asks whether the name of the volume or disk is *Okay* and also asks permission to destroy its contents. You may figure that */blank27* is just as good a volume name as any other—but it makes more sense to pick an easy name such as *data*, because this volume name plays a part in the conversion process.

Once the new ProDOS disk is ready, it becomes the data disk for AppleWorks. Most beginners know the AppleWorks menus well enough to get through the following steps: *Add files to the Desktop; Make a new file for the word processor; From a text (ASCII) file.* AppleWorks then asks for the *Path*. Give the volume or disk name, then the name of the file under which the text is stored: */data/filename*. This procedure gives AppleWorks directions to the text file so that it can pick it up and convert it to an AppleWorks file. You can also change the filename if you like.

By the way, there's another method of helping AppleWorks identify the sought-after file. From the AppleWorks main menu's *Other Activities* selection, you can *List all files on the current disk drive*. Under this option you can identify disk names as well as filenames. If you know the correct pathname, however, it's quicker to avoid this longer process.

Converting a spreadsheet poses a similar problem. Moving VisiCalc files to AppleWorks seems simple enough: First convert from DOS 3.3 to ProDOS, and use the *VisiCalc* option from the AppleWorks spreadsheet. But that's where you can run into the same wall. The ProDOS pathname again must have the */volume/filename* to complete the conversion from VisiCalc to AppleWorks. Once you've accomplished that, the files perform perfectly, saving you from the tedium of rekeying your spreadsheets.

Even if you've been trained on an IBM hard drive, you may never realize that the disk itself needs a name. AppleWorks' overall friendliness leads you to believe that such an MS-DOS-style requirement wouldn't exist in Apple country. But once over the pathname wall, AppleWorks novices will soon be using all the features this integrated program has to offer. Remember—today's beginners are tomorrow's experts.

Write to Debra G. Warner at P.O. Box 1153, Auburn, ME 04210.

QUICKIES

Use the program **APA** on the Apple ProDOS System Disk to renumber, compress, xref variables, show control characters, convert from hexadecimal to decimal and back again, and display other Applesoft BASIC program parameters when using ProDOS.

—Norman Siler
Kenosha, WI

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.

SAVE UP TO 70%

CALL FOR YOUR FREE CATALOG TODAY!

1-800-BUY-WISE EXT. 24

WE CARRY 1000S OF
HARDWARE, SOFTWARE
& ACCESSORY ITEMS
IN STOCK!

LASER 128EX®

The Laser 128EX®\$389.95

- Is 3 times faster than an Apple IIe or IIc
- Has everything built-in, including a disk drive & interfaces to all your peripherals
- Is expandable
- Performs like a top-of-the-line Apple

The Laser 128EX/2™...\$469.95

- Surpasses even the Apple IIc Plus
- Includes a ProDOS®-compatible real-time clock & MIDI interface for musical instruments
- Comes with a 5 1/4" internal ability to daisy chain drives just like a IIgs



NO ONE CAN SELL THIS PRINTER FOR LESS! 180 CPS PRINTER

WITH NLQ

LIFETIME
WARRANTY ON
PRINTHEAD



- 2 Year Immediate Replacement
- Dot Addressable Graphics
- Italics, Elite, Pica, Condensed
- Centronics Parallel Port
- 8K Printer Buffer
- NLQ Selectable from Front Panel
- Low Cost Adapters Available
- Pressure Sensitive Controls
- Includes One FREE Ribbon

FANTASTIC BUY!

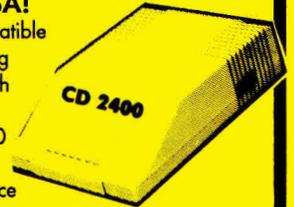
\$149.95

List \$299.00

2400 BAUD EXTERNAL MODEM

Made in the USA!

- 100% Hayes Compatible
- Tone & Pulse Dialing
- Built-in Speaker with Volume Control
- Buffer that Holds 40 Characters
- Uses RS232 Interface (Cable Required)
- For All Computers
- 2400 bps Bell 212A
- 5 Year Warranty

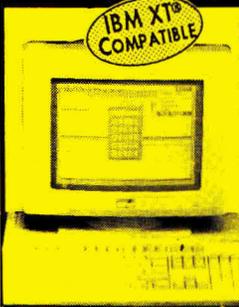


JUST REDUCED!

\$96.95

List \$349.95

THE PERFECT PC FOR YOU NEW! AMSTRAD® PC20



IBM XT®
COMPATIBLE

Package Includes:

- 512K RAM memory
- 31/2" 720K disk drive
- CGA color graphics built-in for optional monitor
- Parallel and serial ports for printer or modem
- PC joystick port
- Microsoft DOS™ V.3.3
- Digital Research's GEM™ Desktop ("point & click")
- Digital Research's GEM™ Paint
- Micro-compatible mouse

AT AN UNBELIEVABLE

\$299.95

List \$699.95 Monitor Optional

CALL NOW FOR
SYSTEM PRICING

SOFTWARE

Yogi Bear Visits the National Park

List \$14.95.....\$10.95

World History List \$19.95.....\$13.95

Word Munchers List \$39.95....\$28.95

StudyMate List \$49.95.....\$39.95

SEE OUR COMPLETE SELECTION OF
SOFTWARE IN OUR DISCOUNT CATALOG!

ACCESSORIES

The Ergostick List \$39.95.....\$26.95

Professional Mouse FOR APPLE IIc &

LASER 128 List \$99.95.....\$49.95

4 MHz Zip Chip - SPEED UP YOUR APPLE

List \$149.95.....\$129.95

8 MHz Zip Chip - EVEN FASTER!

List \$199.95.....\$169.95

APPLE IIe/IIc COMPATIBLE LASER 128 COMPUTER

Everything Is Built-in!

- 128K RAM
- 5.25" Disk Drive
- Serial Port
- Parallel Centronics Port
- RGB Port
- Serial Modem Port
- 40/80 Column Text
- Hi-Res Graphics
- Joystick/Mouse Interface
- Plus FREE Franklin Acewriter Word Processor

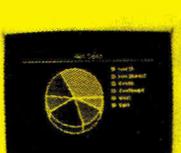


LOWEST PRICE
EVER!

\$329.95

List \$499.95

MAGNAVOX 12" COMPOSITE AMBER MONITOR WITH SOUND



Model No.
7622

GREAT BUY!

ONE YEAR
LIMITED
WARRANTY

\$99.95

List \$199.95

5.25" DOUBLE SIDED/ DOUBLE DENSITY DISKS

As Low As COLOR - As Low As

19¢ ea 39¢ ea

MADE IN THE USA! Blue, Green, Yellow, Orange & Red

100% Certified • Lifetime Guarantee

5.25" DSHD DISKS

As Low As

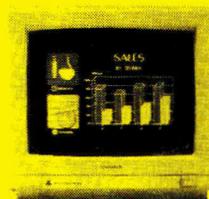
45¢ ea

3.5" DSDD DISKS

LOTS OF 10

44¢ ea

MAGNAVOX 13" COLOR RGB



Model No.
CM8762

OUR LOW PRICE

ONE YEAR
LIMITED
WARRANTY

\$229.95

List \$399.95

Prices do not include shipping charges. Call to get your lowest delivered cost. We insure all shipments at no extra cost to you! All packages are normally shipped UPS Ground. 2nd day and overnight delivery are available at extra cost. We ship to all points in the US, Canada, Puerto Rico, Alaska, Hawaii, Virgin Islands and APO-FPO. Monitors only shipped in Continental US. Illinois residents add 6.5% sales tax. Prices and availability subject to change without notice. Not responsible for typographical errors or omissions. *Computer Direct will match any current (within 30 days) nationally advertised price on exact same items. Shipping and sales tax not included. Verification required.

FAX Ordering 708-382-7545 Outside Service Area, Please Call 708-382-5058

COMPUTER DIRECT, INC.

22292 N. Pepper Road
Barrington, IL 60010

Exp 5-31-90

"We Love Our Customers"

ATTENTION ROLE PLAYERS

Use these products to make these games easier.

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), Autoduel, Wizardry (1-3), Wizardry 4, Wizardry 5, The Magic Candle, Pool of Radiance, Dragon Wars, Curse of the Azure Bonds, Knights of Legend, Space Rogue.

HINT BOOKS - \$9.95

Might and Magic, Wizardry (1, 2, 3, 4 or 5), Legacy of the Ancients, Curse of the Azure Bonds.

OTHER MIGHT AND MAGIC PRODUCTS

Monster Editor (Change the monsters) . . . \$12.95
Construction Set (Make new scenarios) . . . \$24.95
Halbaron Scenario (New scenario for M&M) \$19.95

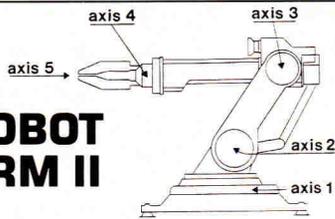
Commodore and IBM versions also available.
Add \$3.00 for shipping and handling.

GOSSELIN COMPUTER CONSULTANTS

P.O. Box 1083
Brighton, MI 48116
(313) 229-2453



Circle 27 on Reader Service Card.



ROBOT ARM II

A low cost robot arm with a built-in interface board, is easy to install. Just plug in & be running in minutes. User friendly software with manual & "programmed" operation. Robot program sequences may be saved to disk. Teach robotics and technology. Grades 3-12.

School orders welcome.

Apple II+, IIe, IIgs Model 90 . . . \$320
IBM and compatibles Model 92 . . . \$395

ROBOT ARM II

2756 Lake Road Hilton, NY 14468
(716) 964-8482

NY residents 7% sales tax

Circle 25 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	75
13" Magnavox RGB/COM	259	256K Memory (EX)	40
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	155
Star NX-1000	199	Modem Software	75
Star Rainbow	259	PC Viewer	629
Ribbons (Black)	4(6)	Apple II Serial Card	85
Laser 128E Memory Card	35	Apple II Parallel Card	59
Laser 3.5" Drive	185	AppleWorks 3.0	180

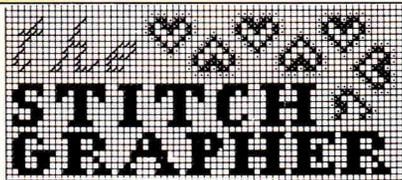
All Units 1 year warranty

NEW SCIENCE PROSPECTS

Your full Laser® Computer Service Center
1200 Blalock Ln., Ste. 380, Houston, TX 77055
713-464-8303

School orders welcome

Circle 173 on Reader Service Card.



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.

FREE - 15 DISKS - FREE FULL OF APPLE SOFTWARE

TRY US! Get 15 disks full of our best selling software - FREE!
Great Games, Education, Graphics, Programmers' Utilities,
Finance for home/business, more.
PAY ONLY \$5.00 FOR SHIPPING

SATISFACTION GUARANTEED!

INTERNATIONAL SOFTWARE LIBRARY
511-104 Encinitas Blvd • Encinitas CA. 92024

619 942-9998

since 1985



Circle 23 on Reader Service Card.

APPLE MEMORY CHIPS

WORKS IN ALL SYSTEMS & EXPANSION CARDS

It doesn't get any cheaper than this!

- ★ 256K Chip Set \$28.00
- ★ 256KX4 Chip Set \$24.00
- ★ 1MB Chip Set \$84.00
- ★ 5 year warranty
- ★ 1 MBX8 Simm \$98.00

So what are you waiting for?

CALL TOLL-FREE

1-800-456-2498



2106 W. Murray Road Phone: (417) 883-6261
Springfield, MO 65807 FAX: (417) 883-2584

COD



Circle 17 on Reader Service Card.

GS CENTRAL

1-800-628-6636

HARDWARE AND SOFTWARE FOR THE APPLE IIGS

AMR 3.5 DISK DRIVE

\$185

100% GS Compatible
1 Year Warranty

4 MEG RAM BOARD

with 1 MEG RAM **\$165**

2 MEG ~~\$265~~ 4 MEG ~~\$465~~

HARD DRIVES

AMR External Drives w/AMR's SCSI CARD

20 meg	\$525
30 meg	\$590
45 meg	\$645
60 meg	\$745
45 meg removable	\$990

2400 BAUD External MODEM

\$95

100% Hayes Compatible

1 MEG RAM BOARD

with 256K RAM **\$79**

APPLIED INGENUITY

10 meg	\$270
20 meg	\$385
40 meg	\$560
Innerdrive 20 (Internal Drive)	\$440
Innerdrive 40 (Internal Drive)	\$550
Innerdrive 100 (Internal drive)	\$1275

RAM CHIPS

256K - 120ns ~~\$34~~ \$28

1 MEG - 100ns ~~\$100~~ \$84

GS CENTRAL 7am-6pm M-F
250 Skyline Drive 9-4 Sat. PST
Grants Pass, OR 97527

1-800-628-6636
Shipping & Handling \$3.50

MODEM CABLE
GS — MODEM **\$9.95**

Circle 64 on Reader Service Card.

EX/2 3.5 \$459
EX/2 5.25 \$419
EX 5.25 \$369

LASER authorized repair center & educational dealer.

LASER 128.....339
Monochrome monitor.....99
SupraModem 2400 baud external.....119
Mouse for Laser & //c...49 for //e with card...99
3.5" Drive...179 5.25"...95 Daisy chain 5.25"...115
Universal Disk Controller: connect 3.5" Drive to //e.....59
Chinook 40 Hard Drive for //e, gs & Macintosh.....625
Chinook 20 Hard Drive for //e & gs...495 for //c & c+...595
RGB 14" Color Monitor + Green + Tilt & Swivel.....249
OK RAM Expansion Card //e...95 //c...125 Laser 128...30

Add 3% (\$5 min) for shipping.

1-800-780-7786 COD orders accepted.

RAM for LASER & APPLE...\$28
256K-120ns: set of 8 chips

LASER 190A Printer....195
ImageWriter II Compatible

TAXCALC-89 39.95 + 2s&h

Provides a lot of intuitive insight. Offers great technical support. Gets the job done! Craig Crossman, Miami Herald

Calculates 1040 + A, B, C, D, E, SE, 2106, 2119, 2441, 3903, 4562.

PERFECT SOLUTIONS SOFTWARE
3701 Savoy Lane, Suite 106-D West Palm Beach, FL 33417

Circle 59 on Reader Service Card.

GSNumerics

for the APPLE IIGS COMPUTER

**A COMPLETE MATHEMATICAL PROGRAM
for HIGH SCHOOL and UNIVERSITY
STUDENTS or WORKING PROFESSIONALS**

- 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.

**A POWERFUL TOOL FOR TEACHING AT
THE HIGH SCHOOL and UNIVERSITY LEVELS**

For complete information contact:
**Spring Branch Software, Inc. • P.O. Box 342
Manchester, IA 52057 • Phone: (319) 927-6537**

Circle 60 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	.362	SONIC BLASTER	.94
SINGLE TRANSDRIVE	.188	AUDIO ANIMATOR	.174
DUAL TRANSDRIVE	.282	PHASOR	.123
IIGS KIT	.37	DATALINK 1200	.130
IIE KIT	.29	DATALINK 2400	.173
RAMWORKS III 256K	.133	SERIAL PRO	.101
RAMFACTOR 256K	.170	PARALLEL PRO	.72
RAMCHARGER	.130	COLORLINK	.94
GS RAM 256K	.112	H.D. POWER SUPPLY	.58
GS-RAM ULTRA 256K	.155	AE DISK DRIVES	.112
GS RAM+ 1MEG	.231	CONSERVER	.72
RAMKEEPER	.137	TRANSWARP	.123
RAM EXPRESS 256K	.181	TRANSWARP GS	.289
RAM EXPRESS D-CLOCK	.43	VULCAN 20	.579
TIMEMASTER	.72	VULCAN 40	.724

OTHER FINE PRODUCTS

KENSINGTON SYSTEM SAVER IIGS	.76	SCSI INTERFACE	.119
KENSINGTON SYSTEM SAVER IIE	.69	CHINOOK 20MEG	.539
AMR 3 1/2" DISK DRIVE	.195	CHINOOK 40MEG	.687

For the Lowest Prices on all AE Products Call 319-396-2306 (9 am to 9 pm)
MasterCard, Visa, COD, P.O. & Checks Accepted (NO SURCHARGES)
Prices subject to change

Circle 94 on Reader Service Card.

AzTech Computer

(602) 938-1160

Memory Expansion		Software	
GS-RAM Plus 1 Meg	\$269	J.K. Lasser's Tax	\$26
MultiRam gs 1MB	\$199	SwiftTax 89	\$49
RamKeeper	\$149	On Balance	\$45
RamFactor 256K	\$199	Quicken	\$45
MultiRam RGB 256K	\$159	Beagle Write gs	\$75
Hard Drives & Floppies		Appleworks 3.0	\$189
Vulcan 20 Hard Drive	\$639	Appleworks gs	\$219
Vulcan 40 Hard Drive	\$749	Hyperstudio	\$99
Vulcan 100 Hard Drive	\$1229	Publish III 2	\$89
External 60MB w/SCSI	\$799	ProTERM	\$89
3.5" Drive Daisy-Chains	\$209	Point-to-Point	\$69
5.25" Drive Daisy-Chains	\$119	AE ReadyLink	\$69
Accelerators		TE To Telecom	\$59
Transwrap gs	\$289	TO Quickspell	\$49
Transwrap III	\$169	TO Report Writer	\$59
Other Hardware		TO Superfonts	\$59
Audio Animator	\$199	HyperLaunch gs	\$45
PC Transporter	\$399	Battle Chess gs	\$35
AE Conserver	\$85	Archonoid II gs	\$26
System Saver gs	\$69	2008: Cryllan Mission	\$45
Turbo Mouse 402	\$125	Prince of Persia	\$37
2400 bps Internal Modem	\$189	Wings of Fury	\$26
2400 bps External Modem	\$149	Carmen SD in Time	\$32
Printer Inqwrtr Compatible	\$239	AE Authorized Sales & Support Factory Installed RAM	

Circle 65 on Reader Service Card.



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
75 Recreation Park Drive, 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	2.95
EPSON MX-FX 80	2.50	3.50
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	5.75	6.50
STAR NX-1000	3.25	5.50

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.

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.

NEW LOWER PRICES

CARDS: LOWEST PRICES

Extended 80 Column w/64K (Ile)	29.95
Disk controller (II + e)	29.95
16K RAM	29.95
Graphic printer card w/cable	29.95
Ile/ + Cooling fan w/surge protect.	24.95
Music card w/2 speakers (II, +)	29.95
Ile Numeric keypad	29.95
Z-80 CP/M Card	29.95
ALS Z-80B w/64K/CP/M 3.0	99.95
Super serial card	45.00
Hi-speed eeprom burner	49.95
Ile Keyboard replacement	59.95
IIGS 1 Meg/Ram card	199.95
Disk Notcher	4.95
128K RAM(II, +)	59.95

1 year warranty. Add 5% shipping (minimum \$5); APO/Canada add \$2 extra. VISA/MC add 4% Minnesota residents add 6% sales tax.

P.I.E.

P.O. Box 13509, MINNEAPOLIS, MN 55414
612-545-1715 (11 am- 7 pm Mon-Fri)

SCHOOL P.O. & DEALERS WELCOME

Circle 77 on Reader Service Card.

The AppleWorks Handbook

Volume One of the AppleWorks Handbook should be in every AppleWorks user's professional library. More than 50 articles help you:

- Answer the most frequently asked AppleWorks questions and solve common problems.
- Configure AppleWorks for optimum use with your printer, RAM card, and other hardware.
- Select and use popular software enhancements.
- Satisfaction guaranteed or your money back.
- Only \$16.95 plus \$2 s/h.

National AppleWorks Users Group
Box 87453; Canton MI 48187; (313) 454-1115

Circle 55 on Reader Service Card.

ORANGE MICRO • BEAGLE BROS • APRICORN • THUNDERWARE • PANASONIC

Call or Send in this Coupon for our free Catalog containing hundreds of computer products for your Apple II, Laser, or Mac. We offer the largest number of computer products in the U.S. so please call for a price on products that you may be interested in.

Computer Products

Standard
eripherals

P.O. BOX 65187
West Des Moines, IA 50265
800-535-1707*(In IA) 515-225-7033

NAME _____

ADDRESS _____

CITY, STATE, ZIP CODE _____

in the U.S. so please call for a price on products that you may be interested in.

TDK: 3.5" SS/DD \$10.30, DS/DD \$12.95, color \$12.95, 5.25" SS/DD \$5.70, DS/DD \$6.40, color \$6.95 Guaranteed Sets of 120NS 256K chips \$23.95 120NS 256KX4 \$23.95 120NS 1024K chips \$79.95 w/Free Installation. We will match any price in this magazine on memory chips. Most computer Cables \$9.95, SystemGate: 5.25" Apple II, +, e disk drive \$75, Apple IIc drive \$85, AMR: 3.5" disk drive \$199, Avatex 1200 Baud Modem \$69.95, Supra 2400 Baud Modem \$125, w/Cable \$134.95, US Robotics HST 9600 \$639, Zoom Telephonics 2400 Baud Modem \$109, Laser EX/2 w/3.5" \$499, AI: Falcon 10MB HD \$280 S&H: \$133 & Under add \$4, over \$133 add 3% of order. M.C. & Visa Accepted (No Surcharge). COD's add \$4.

US ROBOTICS • CH • CHINNOK • CURTIS • KENSINGTON • GRAVIS • SUPRA • LASER

Circle 233 on Reader Service Card.

TEMPUS • DUCKPINS

ANCHORMAN

"... Best ever bowling simulation"

Neil Shapiro, Nibble

"... really is good fun"

Lafe Low, inCider



Virginia REAL

CALL (804) 587-4952
VISA/MasterCard/Check/Money Order
MAIL To: Virginia Real Software, Inc.
Box 8545, Norfolk, VA 23503

\$39.95

Circle 283 on Reader Service Card.

24 TERMINAL EMULATIONS

Softerm 2, an advanced communications package, includes 24 terminal emulations such as:

- DEC VT52, VT100, VT102
- IBM 3101-20 (block mode)
- HP 2622A • VIP7801, 7803
- DG D200 ... and many more.

Guaranteed Compatibility!!

Supports Script Files, Disk Capture, Softkeys, ProDos (floppy), DOS, CP/M, Pascal, & most vendor boards/modems.

Comes with Keyboard enhancer. For the Apple II, II+, IIe, IIc, IIgs.

\$195 MC-VISA-COD

SEIFTRONICS

1-800-225-8590

Call for information

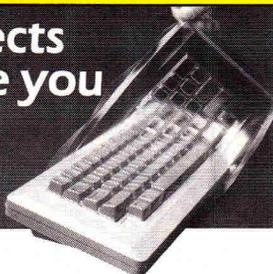
(719) 593-9540

(719) 548-1878 FAX

Telex 450236

Circle 96 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 75234(214) 339-0753 • FAX (214) 339-1313
In Canada call 1-800-663-1061

Circle 4 on Reader Service Card.

Apple® Parts! Apple® Systems

We Buy, Sell & Horsetrade Popular Computers!

New & Used Apple® Stuff!

This Month's Specials!

ADB & IIc MOUSE.....\$65.

IIc power supply.....29.

II+ extended keyboard.....12.

318-635-1121

Shreve
Systems

2421 Malcolm
Shreveport, La. 71108

Modem 318-636-4887
FAX 318-865-2006

Circle 29 on Reader Service Card.

GUARANTEED LOWEST PRICE ZIP CHIP — 4 MHz*

NEW LOW — \$99.00

Call on 8 MHz

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 toll-free: 800-728-1824. Add \$5.00 shipping, insurance & handling. MI residents add 4% sales tax.

Circle 252 on Reader Service Card.

APPLE!!!

II, II+, IIe, IIc, & IIgs



For Shareware

Shareware & Public Domain Software

- Business
- Utilities
- Games
- Education

Hundreds of Programs from \$1.50

Programmers: Gemini is seeking quality Apple software for our forthcoming commercial range. We would be pleased to review your submissions for inclusion on a royalty or outright purchase basis. Send submissions to the Duvall address below.

GeminiTM
Marketing, Incorporated

P.O. Box 640, Duvall, WA 98019-0640

Call Toll-free for Catalog
1-800-346-0139

Circle 38 on Reader Service Card.

CUT RIBBON COSTS



Re-ink your ribbons
for just pennies
with the

E-ZEE INKER II

For crisp, black professional
results that makes gray-faded
printing a thing of the past

Choose from 3 Models
Prices start at just \$39.50

800-553-2404

B Borg Industries, Ltd. In Iowa
Janesville, IA 50647 319-987-2976

Circle 66 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.

QUALITY AT A DISCOUNT

APPLE IIgs HARDWARE:

AE: Audio Animator \$174 Sonic Blaster \$91 Conservor.....\$76
RamKeeper \$135 Slot Mover \$32 Transwrap GS\$289
Vitesse: Quickie hand held scanner, B/W up to 400 dpi.....\$232
AI: GS Juice Plus 1Mb \$159 2Mb \$2493Mb..... 4Mb.....\$425
AE: GS Ram Plus: 1Mb \$229 2Mb \$3193Mb \$409 4Mb.....\$499
GS Ram 256K \$116 512K \$143 1Mb \$197 1.5Mb.....\$249
CM: MultiRam GS 256K \$109 512K \$133 1Mb \$1832Mb.....\$272
Computer Eyes GS: Color \$190 B/W \$97 Hi Res Software.....\$16
Finger Print: GSI #2 \$79 #3 \$94 G- \$59 SS.....\$55
Macintosh Styled ADB Keyboards:
Ingenuity: I129 Cutting Edge \$119 Same QK.....\$145
Kurta Graphic Tablet: 8.5x11" \$289 12x12 \$455 12x17.....\$740
Magnavox GS Compat. Analog RGB Monitor 2 yr. Warranty.....\$285

APPLE IIe-II+ HARDWARE:

CH: MultiRam RGB 256K \$131 512K \$155 1Mb \$205 2Mb\$443
AE: RamWorks III 256K \$132 512K \$156 1Mb \$205 2Mb\$423
AE: RamFactor 256K \$169 512K \$194 1Mb \$244 2Mb\$489
CM: MultiRam IIe 256K \$104 512K \$129 768K \$154
AE: ViewMaster 80 (II+) \$119 AE: Transwrap III 8MHz NEW \$149
Apple IIe Mouse & Card \$12 A+ Mouse \$63 Mouse Card.....\$40

Lyrnx Trackball \$65 Turbo Mouse \$126 Koala Pad.....\$105

AE: TimeMaster HO \$67 No Slot Clock \$29 Appl Enhmt Set.....\$59
Ile Numeric Key Pad \$29 RamCharger \$135 AE: Color Link.....\$39
FingerPrint Plus \$89 Computer Eyes B/W \$87 Enhancement.....\$23
Kurta Graphic Tablet: 8.5x11" \$359 12x12 \$499 12x17.....\$780
RC Systems: Slot Buster Card \$120 Clock \$35 Modem.....\$24
Speech Synth \$35 Parallel Printer \$16 Serial Printer.....\$12
Extd' 80 Column \$43 System Saver \$59 Hvy Duty Power Sup.....\$59

SOFTWARE & HARDWARE ALL STARS:

- * **GS NUMERICS** — The finest math program available. InCider.. 'should find a place in almost any high school or college math class.' A2 Central.. 'I wish this tool.. had been available when I was in school.' Excellent for chemistry, physics, & advanced Jr HS students. A 20 minute VCR, which fully explains the program is available. Send \$10 or your school's P.O. Refundable on its return. \$119
- * **Visionary GS** — Color & B/W video digitizer. Enhancement of AST's Vision Plus, producing 640 x 200 resol. Control contrast, brightness, zoom, horiz/vertical flip, full palette edit. Full screen or window. \$275

LASER COMPUTERS:

Laser 128 \$345 EX \$379 EX/2 with 5.25 \$419 with 3.5.....\$449
3.5" Drive \$175 Daisy Chainable UDC Card.....\$44
5.25" Dr (specify for Laser, IIc, IIe/II+) \$84 All Cables.....\$12
Expansion Slot Box \$54 Carrying Case \$49 Monitor Stand.....\$22
Dist Cover \$15 Techn Manual \$19 Mouse \$39 RF Modulator.....\$19
Laser 128 Ram Bd \$22 GoldStar Green or Amber Monitor.....\$89

GoldStar RGB Color Monitor \$229 Safeskin Keyboard Protect\$25

APPLE IIc - IIc + HARDWARE:

AI: C Drive/Internal Hard Drive NEW 20Mb \$545 40Mb.....\$655
C Keeper Ram Memory Battery Bkup NEW 256K \$129 1Mb \$299
Chinook External Hard Drives (UniDrive compatible):
CT 20c 20Mb 27ms \$588 CT 40c 40Mb 25ms.....\$799
C-Ram Memory Card: 256K \$163 512K \$189 1Mb \$239
AE: RamExpress (IIc+) 256K \$177 512K \$207 1Mb \$269
Z Ram Ultra 1 IIc 256K \$143 512K \$169 1Mb.....\$210
AE: Z Ram Ultra 2 IIc 256K \$189 512K \$217 1Mb \$267

EXTERNAL HARD DRIVES+SCSI (For all except Apple IIc, IIc+):

Ingenuity: Falcon 10Mb (Not SCSI) \$275 VCR Backup Syst. \$130
Over Drive (Not SCSI): 20Mb \$439 40Mb.....\$510
Chinook: Auto Parking, Multi Language Stacking incl SCSI card:
20Mb 27ms.....\$589 40Mb 25ms.....\$715
80Mb 19ms.....\$1073 105Mb.....\$1159
Relax: Auto Pkg, Surge Prot'n 30Mb \$649 46Mb \$679 60Mb \$665
80Mb \$895 100Mb 1169 132Mb 1639 200Mb-1200Mb.....Call

INTERNAL HARD DRIVES (Specify IIgs, or IIe/II+):

AI: Inner Drives 20Mb \$469 40Mb \$579 100Mb.....\$1199
AE: Vulcan Drives 20Mb \$549 40Mb \$675 100Mb.....\$1365

DRIVES, DRIVE ACCESSORIES & SOFTWARE:

AMR: 3.5" 800K Daisy Chainable (compatible with all except Apple IIc. Also works with PC Transporter).....\$188
5.25 Drive \$115 5.25 Daisy Chainable.....\$144
Apple IIgs 3.5" or UniDrive 3.5" \$319 Uni Controller.....\$62
Multi Kache Card for 5.25 & 3.5 Drives: 256K \$275 1Mb.....\$350
with Hard Drive/SCSI option: 256K \$340 1Mb.....\$420
Applied Ingenuity: VCR Hard Drive Backup System NEW.....\$130
ProSel 8 \$34 ProSel 8 + 16 (GS) \$51 Quark Cataly.....\$32
EasyDrive \$54 Salvation (GS) \$34 Ram Up.....\$27

MISCELLANEOUS PRODUCTS:

Ram Chips (sets of 8): 256K/80ns \$28 256K/150ns \$35 1Mb\$88
Image/Writer Buffer (for Image/Writer II): 64K \$69 128K.....\$99
Grappler Plus: Serial \$71 Parallel \$79 ProGrappler.....\$79
SMT: Printech II \$31 SMT: Envoy Super Serial Card.....\$49
Pantonic DM Printer: 1180 \$195 1191 \$255 Star Rainbow \$248
CH Mach Prods Joysticks: 1 \$22 II \$26 III \$32 IV.....\$55

PAYMENT: Except for Certified, Tellers & Cashiers checks, all other payments must clear first. We honor MasterCard, Visa, & Discover. Also accept Am Express, Diners, & Carte Blanche with a 4% surcharge. Foreign cards: \$8 1st time. CDD/US only, cash + \$10 & shipping. NY residents add Sales Tax. Prices subject to change without notice.

SHIPPING & HANDLING: In the 48 States, add 3% or \$4 min. In Canada, AK, HA, APO/FPO, add 6% or \$10 min. Foreign orders add \$15 plus shipping chg. We warrant mose 30 days, and accept returns within 30 days with authorization. A 15% restocking fee, min \$10, will be charged on returns of returns of non defective mose. No charge for house credits. Beyond 30 days, refunds are per the manufacturer's warranty.

SCHOOL, COLLEGE, GOVT AGENCY ORDERS: Federal, State and municipal agencies, school & college orders are accepted Net 30 days, FOB shipping point. Mail or fax your purchase order to us. Please add to your bid contract vendor list. We handle hardware, software, furniture & accessories. Federal ID #11-2711590.

NORTH FORTY ENTERPRISES LTD. P.O. Box 172B, E. Meadow, NY 11554 Tel. (516) 679-8790 Fax (516) 783-4873 7 Days 10 AM to 11 PM.

Circle 89 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		\$7.50	\$10.50
Epson MX-80	\$3.75	\$4.50	\$6.75
Okidata 182/192	\$6.50	\$7.50	\$6.00
Panasonic KXP 1090	\$6.75	\$7.75	

T-Shirt (Heat Transfer Ribbons)

Colors: Black, Red, Blue, Green, Brown, Purple, Yellow

Color Paper	200 shts assorted	
Bright Pack:	9½ x 11	\$11.95/pk
Pastel Pack:	9½ x 11	\$11.95/pk
Color Certificate Paper:	100 sheets	\$12.00/pk
Color Banner Paper:	45 ft./roll	\$ 9.95/roll

Min. orders: \$25.00. Minimum S&H: \$3.50. 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.



LASER

128 EX/2 \$599

AE APPLIED ENGINEERING®

CANADIAN COMPUTER OUTLET



CHINOOK

cordata

BRIDGE

APPLE & IBM
COMPATIBLE
\$1799

WE CARRY A COMPLETE LINE OF APPLIED ENGINEERING,
ORANGE MICRO AND OTHER BRAND NAME PRODUCTS.

WRITE FOR YOUR **FREE** CATALOGUE.

Educational Discounts Available Dealer Inquires Invited Canadian Inquiries Only

Showroom: 134 Randall St. Oakville, ONTARIO L6J-1P4

Mail Order Warehouse: Box 7081, Oakville, ONT.L6J 6J5

Collect Calls For Orders Only! (416) 849-0737 (416) 849-0918 FAX

Circle 116 on Reader Service Card.

Repairs

REPAIRS BY MAIL!!

Two business day turnaround, work guaranteed for up to one year.

Ile MLB Swap: \$110+\$12 s/h—1 year guarantee.

II, II+, IIE Power Supply Replacement: \$75—1 year guarantee.

IIC MLB Swap: \$90+\$12 s/h—1 year guarantee.

Disk Drive II Rehab: \$50+\$7.50 s/h—6 month guarantee.

NJ residents add 6% sales tax.

Hardware supplies also available. School District orders welcomed. Write or call us for details.

We also buy dead Apples, Franklins, Lasers.

ARMINIUS PUBLICATIONS & PRODUCTS

P.O. Box 1265/8519

Orchard Ave.

Merchantville, NJ 08109

(609) 662-3420

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

CLASSIFIED

Mail Order

AUTO-INKER

Re-ink printer ribbons for 5 cents. Ink included with units.

Imagewriter Inker (motorized) \$42
Universal AutoInker \$62
SPECIAL Imagewriter Inking Kit \$ 9
SPECIAL Star NX-1000 Inking Kit \$ 9

NEW RIBBONS

Imagewriter 2.45
Imagewriter 4-color 5.75
Imagewriter LQ 9.45
Star NX-1000 2.75
Star NX-1000 R 4-color 5.75
Panasonic 1124 w/seamless loop 3.95
Epson LQ-850/800/500 3.45
RELOADS, COLOR, HEAT TRANSFER also.

V-TECH, INC.

2223 Rebecca

Hatfield, PA 19440

(215) 822-2989; FAX 822-6394

Sports

THE BASEBALL DATABASE

For tracking your team's baseball and softball stats in a fraction of the time taken by hand. Easy to use. Fast data entry and retrieval. Keeps 23 batting/fielding stats and 22 pitching stats. Calculates all averages, cums and totals. Prints detailed reports of player/pitcher/team stats, game summaries, cumulative reports, player histories and a lot more. Ideal for any team from Little League to Collegiate. Brochure is available.

\$49.95+\$2.50 S&H—CK or MO.

VISA and MC accepted.

JACOBSEN SOFTWARE DESIGNS

(Ord A+)

1590 East 43rd Avenue

Eugene, OR 97405

(503) 343-8030

MEAN 18™ GOLF COURSES

Play the same great courses as the pro golfers you see on TV. On Sunday, play along and enjoy the thrill of competing instead of just watching. Also available are some of the world's greatest courses not seen on TV (including the #1 rated course in the world). Designed to give the same look and feel when choosing whether or not to lay up on that par 5 second shot. Undulating greens make every putt a challenge. Requires Mean 18™. For the IIGs. \$12 per 6 courses. Send \$1 for a description of 40+ courses.

LAWRENCE ENGINEERING

484 Cheshire Court

Newport News, VA 23602

Public Domain

BEST VALUE IN APPLE PUBLIC DOMAIN

Over 600 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 and provide NEXT DAY shipping. Our disks are only \$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

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. Rent for \$1 or buy as low as \$1.50 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.

CALOKE INDUSTRIES (Dept. SK)

P.O. Box 18477

Raytown, MO 64133

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

Music

SPRING FLING \$ MIDI DISCOUNTS \$

Apple II or GS MIDI Interface \$69.00. Complete Apple II Music Pack: Two 5' MIDI Cables, Interface, Passport MasterTracks, Polywriter, + Poly Utility \$339.00 + \$10.00 S/H, save \$250.00 Complete Music GS Pack: Two 5' Cables, Passport Interface, MT Jr., MusicWriter, MIDI Translator \$319.00 + \$10.00 S/H, save over \$250.00. MusicWriter GS \$92.00, SP.ED. IIE/GS \$218.00, Pro IIE/GS \$398.00. MasterTracks \$126.00, Pro \$154.00, GS \$264.00, Jr. \$99.00, Instrument Designer GS \$99.00. New Polyphonic, multi-timbral Kawai K1-II MIDI synth. Kybrd; you'll be amazed: 256 incredible sounds, 61 full weighted keys, built-in drums \$759.00. Coda Music Ed. Class Pack: 5 Theory Programs \$179.00. Books \$2.50 S/H each: A Guide to Computer Music \$16.95; 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 \$589.00, Omni Chord \$259.00. 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

+ foreign countries only

Insurance

INSURES YOUR COMPUTER

SAFEWARE provides full replacement of hardware, media, and purchased software. As little as \$49 a year provides comprehensive coverage. With blanket coverage, no lists of equipment are needed. One phone call does it all! Call 8am to 10pm ET (Sat 9 to 5).

SAFEWARE, THE INSURANCE AGENCY INC.

2929 N. High St.
P.O. Box 02211
Columbus, OH 43202
(800) 848-3469 Nat;
(614) 262-0559 (OH)

Entertainment

WIN THE LOTTERY!

Now On Sale! **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. Reg. \$39.95 Sale priced (with ad) \$32.50. 3.5" disk add \$5. NY res. must add tax. GE RIDGE SERVICES, INC.
170 Broadway, Suite 2011C
New York, N.Y. 10038.
ORDERS: 1-800-634-5463 x293.
Info 1-718-317-1961

Hardware

APPLE IIe MEMORY BOARDS

Apple IIe Expansion board, 100% AppleWorks compatible, AST Research sprint disk. Maximum configuration of 1 Megabyte.

256K for \$ 99.00

512K for \$149.00

768K for \$179.00

1024K for \$199.00

Limited quantity, prices subject to change.

1-800-383-7446

MICROTECH CONSULTING

P.O. Box 521

Cedar Falls, IA 50613

Software

FAMILY ROOTS, LINEAGES, TREE CHARTS

From our collection of software to keep track of your family, choose one to fit your needs and pocketbook! Our software handles gobs of data for each of millions of people. Print pedigree and descendants charts, group sheets, person sheets, indices of names, address labels, more. Do screen tracing and searches. Compatible with your word processor. Call for a FREE catalog. Satisfaction guaranteed! Prices start at \$49. All Apples, Macs, PCs, and more. MC/VISA/AMEX

QUINSEPT

PO Box 216
Lexington, MA 02173
617-641-2930 (Mass.)
800-637-7668 (USA & Canada)

LONG TIME FAVORITE CARD GAMES

Solitaire & Cribbage, completely revised for the IIGs. Loaded with options. Five versions of Solitaire; Klondike (1 & 3 at a time), Picture Frame, Pyramid, and Monte Carlo. Three versions of Cribbage. Pull down menus, file save, auto moves, fast pace, change colors, audio on/off, alarm clock and more. Not copy protected. Requires Apple IIGs-512K, mouse & 3.5 drive. \$34.95. Original Apple version \$19.95. Gin Rummy \$19.95 (both in B&W, fewer options, require 5 1/4" drive). Check or Money order only. Add \$3.00 S/H. CA res. add sales tax. NO DEALERS!

COMPUTREK

28278 Enderly Street
Canyon Country, CA 91351
(805) 252-4244

INEXPENSIVE CHURCH MANAGEMENT SOFTWARE

Special church management programs for Apple II compatible computers for \$50 and under. Programs include record keeping for membership, contributions, finances, visitation, Sunday school; planning, goal setting, evaluation, worship, and much more. Fantastic word processor and a database system of music information from hymnals of major denominations included. Also, a set of AppleWorks church management templates for \$30. Many other programs, some free for the asking. Send for details:

SOFTWARE SHARING MINISTRIES

2020 North Fremont St.
Tacoma, WA 98406
206-756-7980

SOUP UP CLASSIC! 250+ Macros for UltraMacros/AppleWorks

Work as fast as you think! Macros cover drive & pathname management; word processor, data base & spreadsheet operation; file handling, editing & clipboard use; correspondence & mail merge; spreadsheet functions, value & label formatting; macros management; printer option sets; cursor drawing, SuperFonts and more! Only \$29.95 for a tremendous speed, convenience & productivity boost. **SATISFACTION GUARANTEED.** Send check or m.o. plus \$3 S&H. TX res. add 8% sales tax. Teacher disc. 15%. Requires UltraMacros; AppleWorks 2.x or 3.0 (specify); 256K IIc, IIc+, IIe or IIGs; 3.5" drive. Not copy protected.

BEAUMONT SOFTWARE

5520 Hooks Ave.
Beaumont, TX 77706
(409) 892-4120

PROJECT MANAGEMENT PLUS, AND DESIGN

EVERYBODY'S PLANNER (Apple II+, IIe, IIc, IIc+, IIGs, 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, IIGs: \$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

AV>PD AV IS GREATER THAN PUBLIC DOMAIN

Over 300 disk systems including educational, entertainment, games, simulations, adventures, business, aerospace, biology, chemistry, physics, auto, BASIC programming, Print Shop™ Image Library. Most only \$9.95, with documentation on disk. Those with manuals up to 10 pages only \$19.95. Buy directly from us and save the 60% distributors and dealers take.

Our disks are 100% guaranteed for life. All are copyable, listable, modifiable and adaptable. Many have been reviewed in Booklist, Software Reports and many educational journals. 20,000 schools and public libraries have purchased our disks. Send your name and address on a 15 cent postcard for a FREE CATALOG and DEMO DISK.

Adrian Vance, Pres.
AV SYSTEMS, Inc.
1445 Estrella Drive
Santa Barbara, CA 93110
805-569-1618

Batteries

Your IIGs Out of Time?

Slide-On™ Battery Replacement Kit will save your Apple IIGs computer!

- Fantastic Savings
 - Easy Installation
 - No Solder Required
 - Complete Instructions
 - Heavy Duty Lithium Battery
 - 10 Year Shelf Life
 - Satisfaction Guaranteed
- \$14.95 each Kit or \$120 for 10 Kits. Send Cash, Check, MO, or School PO. Add \$2 S/H per order (Overseas \$5). KS residents 6% tax. VISA/MC. Patent Pending.

Nite Owl Productions

Slide-On Battery Dept.
5734 Lamar Street
Mission, KS 66202
(913) 362-9898
FAX: (913) 362-5798

Use inCider's Classified
Section to showcase your
Apple II products.
Contact Diane Maguire
at 1-800-441-4403
for further details.

EDITORS' CHOICE

Hyperware is the buzzword these days — packages that let you design multimedia applications without knowing any programming. You can link text screens with other text or graphics screens, add sound effects or music, or work with images from a videodisc player. Explore all the screens in your stack in order, or jump around, go backwards, move to another stack, or return to the equivalent of a main menu — the home screen. Those features make hyperware applications fun to explore, yet effective as teaching tools. Now from Scholastic comes a flexible, challenging new addition to the Apple II family of hyperware — **Hyperscreen** — and you can do it all in 128K.

Each individual screen can have up to 15 “buttons” that activate a pop-up text box, sound effects, or music. A button can also bring you back to the home screen, or to another screen or stack altogether. Buttons let you navigate through a “stack” of Hyperscreen “screens” — they're your compass and your transportation put together.

HOME

VIDEODISC

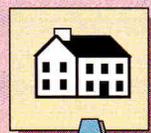
GRAPHIC

ON THE BUTTON

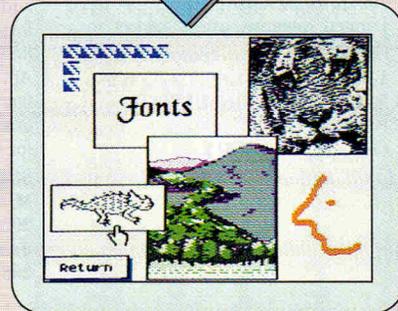
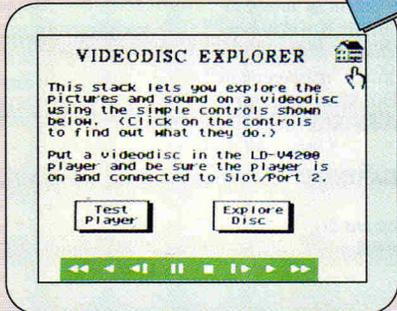
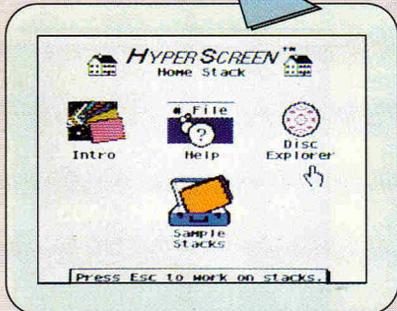
Using a Pioneer LD-V 4200 Laserdisc player, you can incorporate still images or segments from any videodisc into a screen or series of screens. Hyperscreen lets you choose any single frame to display as a graphics screen, or set beginning and ending frames for a sequence. Laserdisc control with Hyperscreen is that simple.



Hyperscreen comes with a collection of backgrounds and clip art you can use to create graphics screens. You can also import artwork from other paint and graphics programs, or design your own with Hyperscreen's drawing tools. The program also offers a whole slew of special effects to use as transitions between screens — dissolve, wipe, block-by-block disappearance, and fade to black, for starters.



You can use Hyperscreen with a 128K Apple IIe, IIc, IIc Plus, or GS. It's a whole lot easier if you have a second drive, but it works with just one. You should also have some stack disks formatted before taking off with Hyperscreen. The package sells for \$99.95. It includes three 5.25-inch disks or one 3.5-inch disk, a *User's Guide*, and a *Teacher's Guide*. AppleTalk and Corvus network versions are available for \$499.95, from Scholastic, Inc., 730 Broadway, New York, NY 10003, (212) 505-3000.



These Terrific Programs All Talk With An ECHO.®



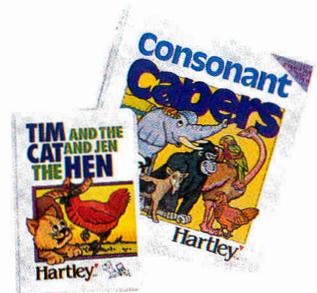
Houghton Mifflin

(617) 252-3000



Weekly Reader Software
from Optimum Resource

(800) 327-1473



Hartley

(800) 247-1380

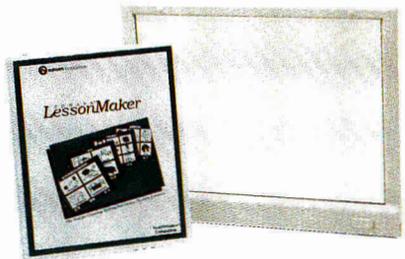


One DLM Park • Allen, Texas 75002

(800) 527-4747



(800) 541-5513



edmark corporation

(800) 426-0856

While there are a few programs that use the Apple IIGS® built-in voice capability, for most of the Apple II family "talking software" it is still necessary to use an Echo Speech Processor.

These six leading software companies have helped the Echo® become the voice standard for educational computing. Call the telephone numbers listed above to find out more about these great programs.



Circle 92 on Reader Service Card.



EYESORE VS. EYE PROTECTION

As today's monitors get bigger and brighter, anti-glare filters become less of an option and more of a necessity.

The right filter can combat eye fatigue, help eliminate headaches, even reduce overall body stress.

Yet, the irony is that something so good for your eyes can be such an eyesore.

In fact, most filters look like they belong to someone else's system.

The fit is sloppy. The colors don't match. The materials are different.

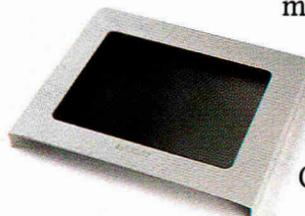
Kensington has a different idea.

Instead of making a filter that will fit on any monitor, we make filters

that will only fit a *specific* monitor.

An example is our Maccessories® SE Anti-Glare Filter.

It looks so much a part of the SE, you would think it was designed by the same people who designed the SE.



The styling is complimentary. The color identical. Even the same material is used.

And unlike generic filters, the fit is perfect. So light passes through the filter, never around it.

Kensington uses only optical quality glass with a ceramic anti-reflection and scratch-resistant coating.

The result is a 96% reduction in glare. And an improvement in contrast and clarity of up to 20 times.

In short, the most advanced eye-protection system you can find today—it even filters out VLF and ELF radiation and dissipates static.

Kensington has custom designed screens for the Mac, Mac Plus, Mac SE, Apple IIGS, as well as for the entire Mac II family of large screen monitors.

For a free brochure, and the dealer nearest you, call 800-535-4242. In New York call 212-475-5200.



KENSINGTON 