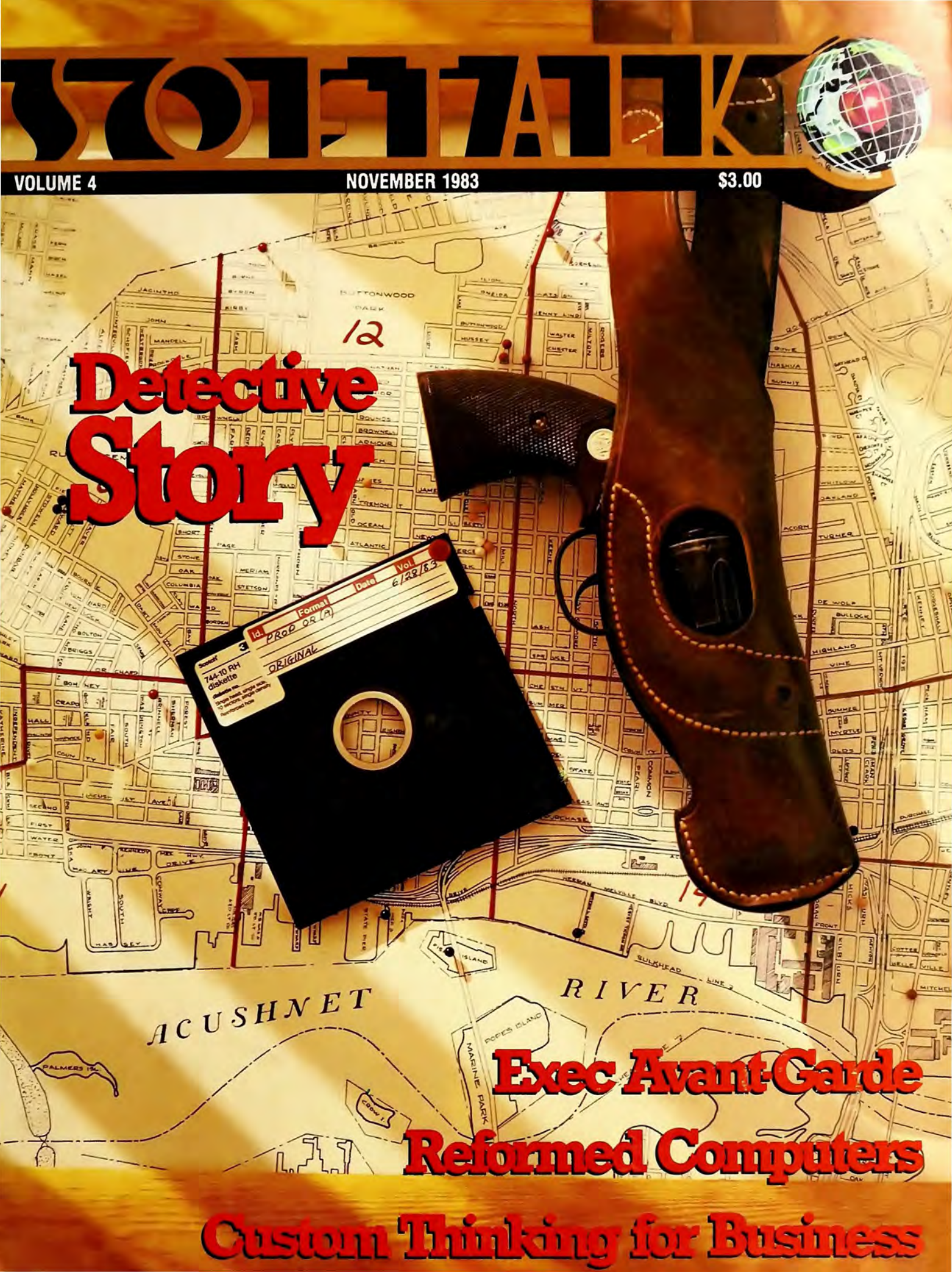
80 MICRO

VOLUME 4 NOVEMBER 1983 $3.00





Many happy returns. Seriously.

Preparing your clients' returns is serious business, but it doesn't have to be taxing. Using the HowardSoft Tax Preparer plus your IBM-PC or Apple Computer, more and more returns will add up in less time than you would figure.

With HowardSoft you get calculations quickly and accurately, changes automatically, and error-free print-outs in IRS-accepted formats. When you use HowardSoft, answers to "what if" questions take minutes, not hours.

And, you get a break managing your business with disk client files and automatic billing letters.



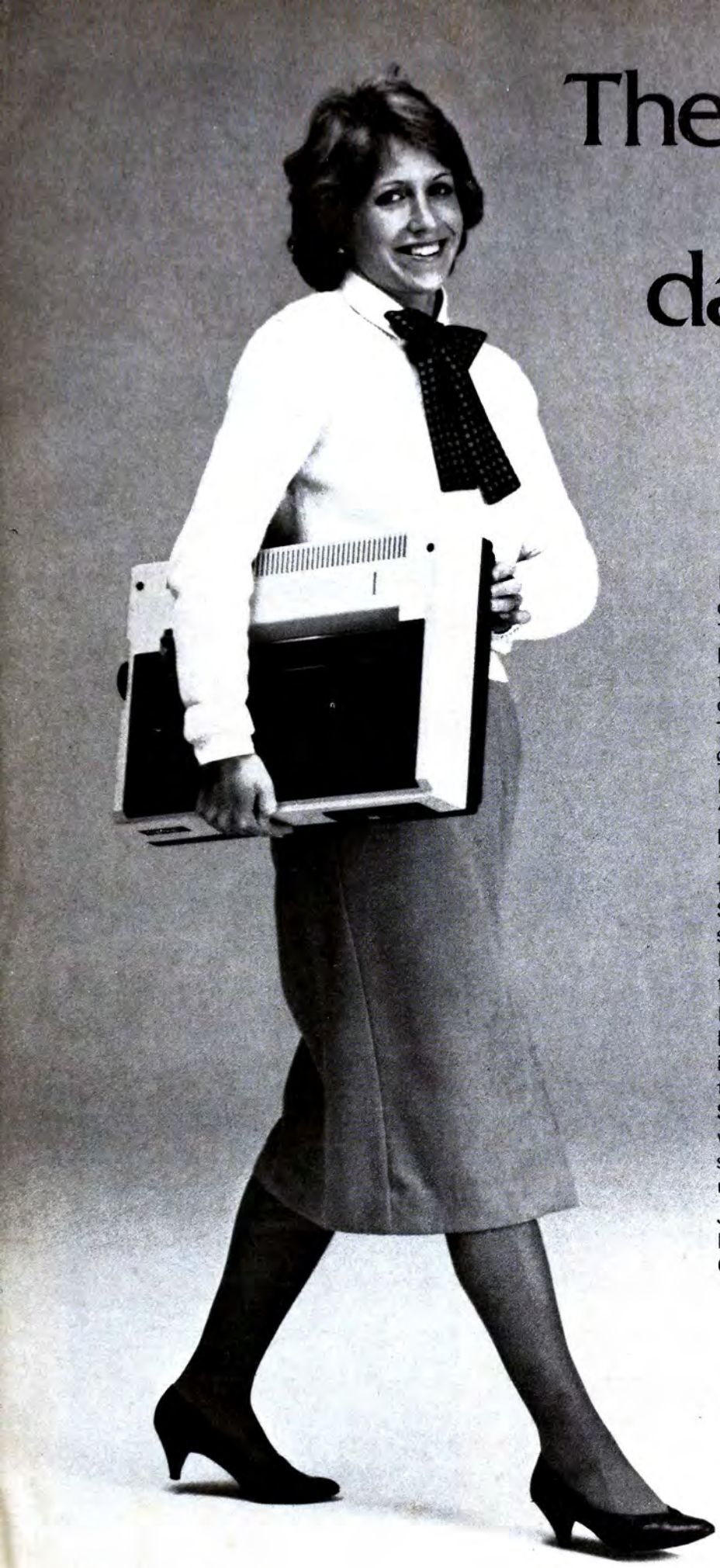
As the top-selling tax software on the market, HowardSoft gives you all the features of high-priced packages at a fraction of the cost. Clear instructions, the most-used forms and schedules, and inexpensive annual updates to keep you current year after year.

So, if handling more and more clients and providing faster service would make you happy, go to your nearest computer store and check out the HowardSoft Tax Preparer. Seriously.

Tax Preparer by HowardSoft.™

The #1 selling tax software.

8008 Girard Avenue, Suite 310, La Jolla, CA 92037 • (619) 454-0121



The personal, portable daisywheel printer.

Only $599.

For the first time, your letter-quality printer can be used almost anywhere! Bring the new Transtar 120 with you to work, to school, and home again! Conveniently weighing in at less than 19 pounds, it generates unrivaled print quality and is the size of a standard briefcase. The new 120 is so light, so small, that you can take it with you!

Remarkably, the new $599 Transtar 120 is "plug and go" compatible with the best-selling word processing programs. Just plug the 120 into your personal computer and watch this precision printer purr along at 14 cps Shannon text speed producing superscript, subscript, underlining and a true boldface. Even using letterhead is now a breeze with the 120's automatic single sheet loading!

Don't worry about durability: it's a tough little machine. It joins the highly reliable family of Transtar printers with a failure rate that's the envy of the industry: less than 1%. Should your 120 ever need repair, a nationwide network of authorized service centers stands ready for speedy repair on your six-month end-user warranty.

Just think of it: everything you want in a letter-quality printer...anywhere you want it. Only $599.

Transtar

P.O. Box C-96975, Bellevue, Washington 98009



SOFTALK

NOVEMBER 1983



Exec Avant-Garde Creations: The Dynamic Zone
Company profile. These folks up Oregon way began by publishing their ideas. Now they're successful software publishers and enjoying the turn of events.
HARTLEY LESSER 66

The Public Domain of CP/M Software
If you're itching to race your Z-80 (card), there are many roads (CP/M-80 programs) to explore.
C.J. THOMPSON 104

Adventures with WPL
Kids like to have fun while they're learning. With Apple Writer *and its Word Processing Language, it's easy to make interactive adventure stories.*
THOMAS R. MIMLITCH . . . 130



The Crime-Fighting Apple
The New Bedford Police Department was having trouble solving a rash of burglaries. Then it brought an Apple onto the force and the situation improved.
GREG STONE 168

The $64K Question—Are You Hip to Computerese?
A short quiz for all of you who still think you're computer-illiterates.
W.R. BOONE 196

Backtalk
Updates on Interactive Structures and the HEFLEX Spacelab experiment scheduled for the latest shuttle flight.
TOMMY GEAR 200



DOS Files, Part Two: Filing Made Easy
The second half of everything you wanted to know about random access and sequential text files.
CHRISTOPHER U. LIGHT . . 216



Taking It to the Streets
The gang's all here. Ida Mae Sydnor and friends, Apples, and a lot of love are transforming the mean streets of Sacramento, California.
MELISSA MILICH 232

DEPARTMENTS

Advertisers' Index . . . . . Opposite Page
Basic Solution, by Wm. V.R. Smith
Pie chart routine 198
Beginners' Corner, by Matt Yuen
Formatting disks and using CopyA 111
Bestsellers 329
Buttonwood Apples, by Ken Landis
Dow Jones averages, Market Technician 147
Contest: Guess Who's Coming to Dinner
Chase the turkey around the board 4
Contest Winners
Results of August's Help Wanted contest 6
DOStalk, by Tom Weishaar
New DOS manuals, ProDOS, and the file manager . . . 259
Everyone's Guide to Assembly Language, by Jock Root
Ampersand string selector 119
Fastalk
A quick guide to new and classic releases 15
Follow the Floating Point, by David Durkee
Enhancing the random number guessing game 297
The Graphics Page, by Bill Budge
De-Wozzing the Apple II 97
If Then Maybe, by the Softalk Sages
Experts answer readers' questions, maybe 56
Keys to the World, by Matt Yuen
Apple bulletin board systems 225
Marketalk News
Announcing new products and services 161
Marketalk Reviews 178
Mind Your Business, by Peter Olivieri
The Apple III, databases, and business news 241
Open Discussion
Readers talking to readers talking to readers 43
The Pascal Path, by Jim Merritt
INTRINSIC UNITs, CharTools, the Library 205
Schoolhouse Apple, by Jock Root
All about tutorial software, education news, and a Logo tutorial by Donna Bearden 75
IInd Grade Chats, by Ray Balbes
Stringing variables along 86
SoftCard Symposium, by Greg Tibbetts
The last word on BIOS disk I/O routines 273
Tradetalk
Industry news 127

Ventures with VisiCalc, by Joe Shelton, will return next month.

Hardtalk: An Evening with Remarkable Characters
Getting the most out of your Epson printer—how to print from program control and emphasize text.
BILL PARKER 248

Making Software Fit the Company—The Custom Connection
Is off-the-shelf software not meeting all your business needs? There are ways to get exactly what you want.
JERRY KAPP 266



Getting To Know Your Stocks
Wall Street hounds, take note. Here's a way to construct a stock record using common spreadsheet programs.
WILLIAM H. MALONE 280

Newspeak
Bits and bytes from the computer world at large—learning by modem, all about AT&T's micro, digital music forum, and more.
Edited by DAVID HUNTER . . 309

Storytalk: In the Forest of the Night
David and his two cats play a computer game and find themselves in a different world—one that has full-sized dragons.
LISA MICHAELS JONES . . 318

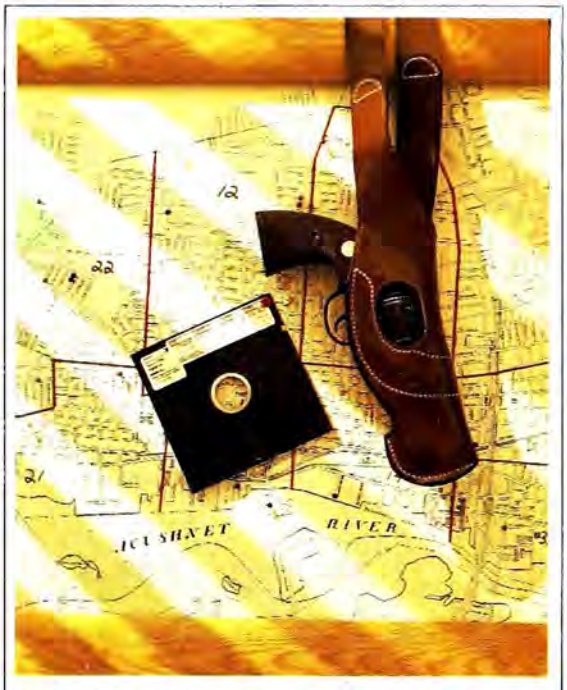
PREVIEWS

December . . . Bigger-than-ever Stocking Stuffers Holiday Gift Guide . . . Exec Hayden Software . . . Art Linkletter talks about kids and computers . . . a visit with Elfquest . . . a M.A.C. Gate Christmas story . . . and more. . . .



INDEX OF ADVERTISERS

A B Computers 154
ABC Software 112
Accent Software 98
Action-Research Northwest 126,333
Advanced Logic Systems 279
Aguila Corporation 88
Alf Copy Service 78
American Training International 110
Apogee Designs Ltd 336
Apple Computer 158-159
Applied Engineering 174
Atlantis Corporation 33
Avant-Garde Creations 257
BASF 122
Baudville 103
Beagle Bros 177,287
Beaman Porter 10
Bible Research 310
BitCards 18
Blue Chip Software 146
Blythe Valley Software 315
The Book Company 5
The Boston Company 152
Robert J. Brady Co. 296
Broderbund Software 330
BudgeCo 191
Business Solutions 29-31
Calsoft 300
CBS Software 137
Cdex 114
Circadian Software 183
Classified Ads 60-65
Computer Challenges 80
The Computer Software Store 322
Computer Tax Service 118
The Computer Tutor Publishing Co. 20
Concorde Peripheral Systems . . . 27
Control Data 13
Counterpoint Software 332
Covers by Babette 109
Creative Computer Peripherals 277
Creative Computer Products 93
Cypher 276
Data Knight 144
Datamost 116-117
Datasoft 255
Data Transforms 96
David Data 213
Davka Corporation 204
Decision Support Software 32
Design Trends Ltd 57
DesignWare 134
Diskus Products 156
Diversified Software Research . 261
Doss Industries 50
Double-Gold 211
Dow Jones Software 157
D/Punch 92
DTI Data Trek 167
Dynacomp 75
Electronic Arts 72-73
Excalibur Technologies Corp 155
Falcon Safety Products 317
Financial Software 201
FlipTrack Learning Systems . . . 215
FMJ 298
FoggWare 180
Formaster 292
Foxware Products 228
Foxxivision 226
Garden of Eden Computers . . . 304
Gourmet Software 181
Hayden Book Company 285
Hayden Software 79,151,258
Hayes Microcomputer Products 229
Hayes Products 34
Highlands Computers 220
Howard Software Services . . . . . Cover 2
Howard W. Sams Company 23
Human Systems Dynamics 313
Interactive Microware 254
Interactive Structures 91
Kangaroo 77
Kensington Microware 69,305
Key Enterprises 53
KM International Services 274
Knoware 14
Koala Technologies 40-41
Kraft 21
Last Electronics 124
The Learning Company 74
Logic General 129
Mad West Software 316
Magnum Software 141,321
MEA Software 125
Megahaus Corporation 171
MicroManagement Systems . . . 188
Micromax Systems 138
Micro Program Designs 148
Microsoft 106
MicroSPARC 145
Micro Ware 222
Mimco 268
Mind Systems 324
Monogram 246-247
Moxie Software 102
M&R Enterprises 244
Multi-Tech Systems 12
Muse Software 47,290
My Supplier 52
Navic Software 182
Nibble Notch 111
Okidata 17
Orange Micro 230-231
Orbital Systems 291
Origin Systems 223
Peachtree Software 84-85
Penguin Software 7,19
Personal Computer Accessories 278
Personal Computer Products 275
Phoenix Software 99
Piggybank Programs 187
Pirate Software 212
Practical Peripherals 37,58
The Professor 314
Program Design 331
Prometheus Products 71,245
Protecto Enterprizes 293-295
Pryority Software 26
Quality Software 335
Quark 270-271
Quinsept 15
Rainbow Computing 251
Rana Systems 306-307
Reston Publishing 83
Rhiannon Computer Games for Girls 210
Rhino Robots 95
Rocky Mountain Software 219
Sansoft Plus 327
Satori Software 128
Scarborough Systems 24-25
Scott, Foresman and Company . . 11
Sensible Software 59
Shelter Software 43
Sierra On-Line . . 42,240,Cover 4
Sirius Software 54-55
Sir-tech . . . . . Cover 3
SJB Distributors 51
Sleeping Bear Software 329
The Small Computer Company 101
Smith Micro Software 149
Softalk 160,186,263,303,325
Softdisk 323
Sof-tech 48
Softlore Corporation 36
Softquest . . . . . [illegible]
Softronics . . . . . [illegible]
Softsmith 288-289
SoftStyle . . . . . [illegible]
Software Development . . . . . [illegible]
Software Entertainment Company 76,142
Software Publishing Corp 172-173
Sophisticated Software 108
Southeastern Software 45
Southern California Research Group 195
SouthWest EdPsych Services . . . 22
Southwestern Data Systems . . . 334
Spectrum Software 272
Spies Laboratories 198
Spinnaker 8-9
SRA 189,301
Starfire Games 49,153
Strategic Simulations 209
Strategic Software Systems . . . 16
Street Electronics 308
Strictly Soft Ware 311
SubLogic Corp 81,193
Sundex Software Corp 282
SuperSoft 199
Sweet Micro Systems 264-265
Synetix 39,256
Syntauri Corp 203
Tayco Business Forms 46
Technical Horizons 184
Teleware 150
Tencal 120
Texprint 299
3M Company 94
Three Sigma 38
Thunderware 89
Tid Bit Software 100
Titan Technologies 115
Townsend Microware 113
Track House 123
Transend 224
Transtar 1,328
Trutec Software 44
Turning Point Software 243
Videx 253
Virtual Combinatics 35
Visual Horizons 127
Voice Machine Communications 133
Vufax 207
Wadsworth Electronic Publishing 269
Williams & Foltz 28
Window 302
Winner's Circle 208,242
Xerox Education Publications 185
XPS Inc 260
Zoom Telephonics 221



On Our Cover: The tools of the trade at the New Bedford, Massachussetts, Police Department. Photo by Kurt Wahlner.

Chairman John Haller
Publisher Al Tommervik
Editor Margot Comstock Tommervik
Art Director Kurt A. Wahlner

Editorial
Managing Editor Patricia Ryall
Senior Editor David Hunter
Assistant Managing Editor Carol Ray
Associate Editor Jean Varven
Special Assignments Andrew Christie
Letters Tommy Gear
News, Telecom Matthew T. Yuen
Programs David Durkee
Education Jock Root
Reviews, Trade Catherine Petersen
Copy Cordell Cooper
Submissions Betsy Barnes
Proofreading Harry McNeil
Judith Pfeffer
Editorial Assistant Marlene Lunnon
Regional Editors
East Coast Roe Adams
Northern California Hartley Lesser
Contributing Editors
Assembly Language Roger Wagner
Pascal Jim Merritt
Business Peter Olivieri
Apple CP/M Greg Tibbetts
Apple III Taylor Pohlman
Hardware Jeffrey Mazur
Bill Parker
Applesoft Doug Carlston
Investing Kenneth Landis
DOS Tom Weishaar
Graphics Mark Pelczarski
Bill Budge
Financial Modeling Joe Shelton
Basic Solutions William V R. Smith

Art
Production Manager Donald J. Robertson
Ad Production Michael G. Pender
Assistants Nancy Baldwin
Timothy Durr
Weldon O. Lewin
Lucas McClure
Malcolm Rodgers
Ruth Seid
Glenn Thorne
Dan Winkler

Business
Associate Publisher Mary Sue Rennells
Director of Operations Three Tyler
Accounting Evelyn Burke
Accounting Assistants Mary Jo Milam
Carla Swanson
Lois Mencsik
Marketing Gail Ward

Advertising
Coordinator Linda McGuire Carter
Assistant Cathy Stewart
Advertising Services Julie Fletcher
West Coast Sales Mike Antich
Michael Biel
Softalk
11160 McCormick Street
Box 60
North Hollywood, CA 91603
(213) 980-5074
East Coast Sales Ian Ross
Paul McGinnis
Advertising Sales
690 Broadway
Massapequa, NY 11758
(212) 490-1021
Midwest and Rocky Mountain Sales Ted Rickard
John Bollweg
Kevin Sullivan
Market/Media Associates
435 Locust Road
Wilmette, IL 60091
(312) 251-2541

Circulation
Trial Subscriptions Hal Schick
Deirdre Booth
Laurie O'Connell
Marsha Stewart
Cliff Martinez
Pam Kelley
Donna Siebert
Paid Subscriptions Michelle Vigneault-Kirschenbaum
Holly Pierce
Leticia Garcia
David Kahn
Jan Aguiar
Back Issues Michael Jones
Dealer Sales Pattie Lesser
Dan Yoder
Systems Pat Adams

Credits: Composition by Photographics, Hollywood, California. Printing by Volkmuth Printers, Saint Cloud, Minnesota.

Apple and Applesoft are registered trademarks of Apple Computer Inc., Cupertino, California. UCSD Pascal is a trademark of the University of California at San Diego. *VisiCalc* is a trademark of VisiCorp, San Jose, California. SoftCard is a trademark of Microsoft, Bellevue, Washington. *Softalk* is a trademark of Softalk Publishing Inc., North Hollywood, California.

Softalk, Volume 4, Number 3. Copyright © 1983 by Softalk Publishing Inc. All rights reserved. ISSN 0274-9629. *Softalk* is published monthly by Softalk Publishing Inc., 11160 McCormick Street, North Hollywood, California; telephone (213) 980-5074. Second-class postage paid at North Hollywood, California, and additional mailing offices.

Postmaster: Send address changes to Softalk, Box 60, North Hollywood, CA 91603.

Free Subscriptions: Complimentary trial subscriptions to all owners of Apple computers in the USA. If you own an Apple but you've never received *Softalk*, send your name, address, and Apple serial number with a request for subscription to Softalk Circulation, Box 60, North Hollywood, CA 91603. Please allow six to eight weeks for processing. *Softalk* is totally independent of Apple Computer Inc.; sending your warranty card to Apple Computer will not inform Softalk of your existence.

Paid Subscriptions: $24 per year. At the end of trial period, each subscriber will be notified; response is required only if you wish to continue receiving *Softalk*. Lack of response will be taken as your choice to discontinue the magazine. Special rates for schools and libraries, $12; concurrent additional subscriptions for schools and libraries, $8 each. Please allow six to eight weeks for processing.

Back Issues: $2 through February 1981; $2.50 through July 1981; $3.50 through September 1982; $4.00 thereafter. November and December 1980, January, February, March, September, October, and November 1981, and December 1982 are sold out. December 1981, February and May 1982, and February 1983 are in short supply.

Problems? If you haven't received your *Softalk* by the fifteenth of the month, or if you have other problems with your subscription, Hal Schick can help out. Call (213) 980-5074.

Moving? Send new address and a label from a recent *Softalk* to Softalk Circulation, Box 60, North Hollywood, CA 91603; telephone (213) 980-5074. Please allow six to eight weeks for processing.

CONTEST: Guess Who's Coming To Dinner?

Yep, it's time for yet another contest with turkeys in it.

Last November, in what was one of the most popular (albeit silly) contests ever, readers were asked to count the number of turkeys that appeared in the magazine. The correct number was 349. A lot of people came up with that number but figured they had missed one along the way. After all, 350 is such a nice round number, why would we choose 349?

The truth is that we started out with 350 turkeys, but one of them strayed on the way to the contest page. Well, after a year of searching, we finally found the last turkey, and we'd like very much for her to come and join us for a Thanksgiving feast.

Unfortunately, she thinks we want to roast and serve her as dinner. The object of this month's contest is to chase Tammy the Turkey to the dinner table where all the feasting will take place.

The Chase Begins. Yep, this contest actually has some rules.

1. The object is to move through the board so that you and Tammy arrive at the dinner table on square forty *at the same time*. Not one square shy or one square too far, but exactly on square forty.

2. Notice that you begin on square one and Tammy begins on square three. She already has a lead, but as you chase her she might get farther ahead, or she might get behind you. Don't let that confuse you. The object is to get yourself and her to square forty. Somehow.

3. You make the first move. On each turn, you're allowed to move one, two, or three squares either forward or backward. Depending on how many squares you move on your turn, Tammy moves the same number in the same direction. If you move two forward, she moves two forward.

4. Tammy moves in two phases. First, she moves the number of squares you move. Next, she moves the number of squares that appears on the square she lands on. Thus, if you move two squares forward, she moves two squares forward. If the number on the square she lands on is +4, for example, Tammy then moves an additional four squares forward and stops. You, however, ignore the numbers printed on the squares. Only when Tammy finishes her second set of moves does it become your turn to move. In short, for each one of your moves, Tammy moves twice.

5. You're allowed to move in only one direction per turn. If you want to move three squares, you must go either forward or backward; no fair going two forward and one backward and having Tammy move three forward.

6. It is legal to move backward. If you do so, Tammy must move backward also.

7. You must move on a turn; no fair moving zero squares and having Tammy move according to the square she's already on. You gotta keep moving.

8. Tammy must land on square forty at the end of her two-phase move. That means if you move forward three squares to land on square forty, Tammy must move forward three squares and then make her second set of moves (depending on the number printed on that square) to land on square forty.

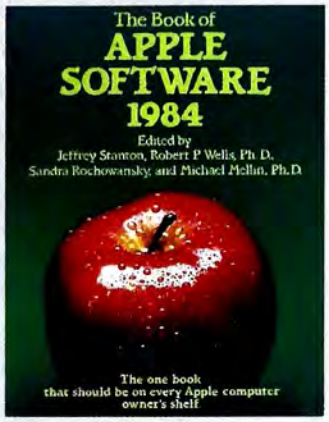
Send in your entry with your moves like this:

I move:	Tammy moves:
+3 to square 4	+3, +6 to square 12
+1 to square 5	+1, −4 to square 9
−2 to square 3	−2, −1 to square 6
..	..
..	..
..	..

The second number in each of Tammy's moves refers to the number printed on the square she lands on at first. In the first move, for example, she moves ahead three (+3) and lands on square six, which tells her to go forward another six squares (+6) to square 12, where she rests and waits for you to take your turn. (Note: These are not necessarily the correct moves. But they might be. Who knows?)

The primary goal of this contest is to finish

IF YOU OWN AN APPLE, YOU'LL WANT THESE BOOKS.







THE BOOK OF APPLE SOFTWARE 1984

If you're buying software, this perennial bestseller will save you many hours of searching and lots of money, too.

The Book of Apple Software 1984 contains hundreds of incisive reviews—not just listings—in areas such as Accounting, Education, Word Processing and Games. Each evaluation gives you all the hard facts (such as price, hardware requirements, language, etc). Plus ratings in categories like Ease of Use, Reliability and Value for Money.

One of the smartest buys you'll ever make as an Apple owner.

APPLE GRAPHICS AND ARCADE GAME DESIGN

Computer games have become very big business. And good game authors are reaping large rewards.

If you want to begin to understand and create arcade games, this is the best place to start.

Jeffrey Stanton, a master of 3-D graphics, takes you from game concept through Lo-Res and Hi-Res color graphics at the machine language level. Stanton also covers bit-mapped design, scoring, laser fire and bomb drops in both single screen and scrolling games.

THE APPLE USER'S ENCYCLOPEDIA

If you're a computer owner, you're always going to have questions. The best place to get answers is from **The Apple User's Encyclopedia**—the ultimate source book.

It presents hard to find information and organizes it alphabetically in an easy-to-use, results-oriented way. You'll find out everything you need to know about DOS, BASIC, programming, user's groups, software and peripherals (including a complete listing of manufacturers).

This book is as indispensable to your Apple as the power cord.

Material covers: Apple II, II+, IIe and III.

TIPS ON BUYING SOFTWARE

Send for your free 64 page booklet **"Tips on Buying Software."** You'll learn how to evaluate your needs and find out what's available. Plus much more.

THE BOOK COMPANY
A Division of Arrays, Inc.

Available at computer stores everywhere or directly from The Book Company.

	Title	Qty.	Price	Total
	The Book of Apple Software 1984		$19.95	
	Apple Graphics and Arcade Game Design		$14.95	
	The Apple User's Encyclopedia		$19.95	
	Tips on Buying Software		N/C	

Mail to: THE BOOK COMPANY, Dept. STA, 11223 S. Hindry Avenue, Los Angeles, CA 90045. Or call toll free in California 800/441-2345, ext. 518. Outside California in the continental U.S. call 800/556-1234, ext. 518.

Name

Address

City State Zip

Visa, MasterCard, Check or Money Order accepted.

Card #

☐ Visa ☐ MasterCard Exp. Date Signature

Total Amount Enclosed $ California residents add 6% sales tax.

Postage will be paid by The Book Company.

Apple II, II+, IIe and III are registered trademarks of Apple Computer, Inc.

the chase successfully without going insane. In case of a tie, the one who gets Tammy to the table in the fewest number of moves will be the winner. This only makes sense because we're hungry, and we don't want to be kept waiting forever.

Just to be able to brag to your friends that you finished this contest should be enough reward. But in case it isn't (it never is), we'll award $200 worth of computer goodies made by our advertisers to the winner. A $200 spending spree on us.

That's it, troops. Entries must be postmarked by December 15, 1983. So get your tennis shoes on, chase Tammy, and send in your entry to Softalk Turkey Trot, Box 60, North Hollywood, CA 91603. Go for it! We wanna eat!

Please include a facsimile of this coupon with your entry:

Name: _____

Where I live: _____

My city, state, and zip: _____

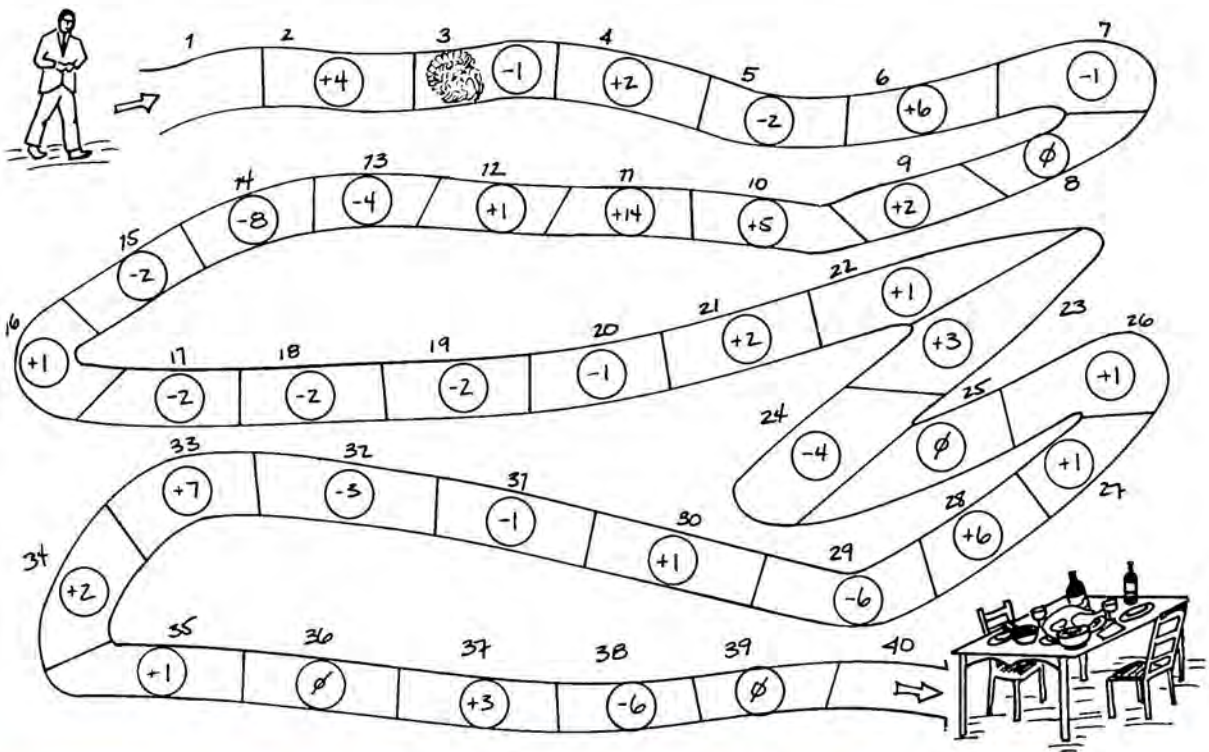
My telephone number: ( ) _____

This is my computer store's name: _____

Gee, I'd love to spend $200 on: _____

_____

My autograph: _____



Contest Winners: Job Hunt Ended

You see? It does pay to keep all those moldy old *Softalk*s around. When it came to solving the August Job Hunt contest, back issues were a must. No, we weren't trying to increase our back-issue sales; many people who didn't have them around borrowed them from people who did.

If that didn't work, some contestants phoned the people who appeared in the contest and asked what their former occupations were. Totally legal.

Out of the pile of entries in the "What They Were" category, only three emerged as perfect, and that of Derek LeLash (Armonk, NY) was drawn by the random number generator as the winner. Still sitting inside the RNG are Dianne Lee (Redondo Beach, CA) and Mark Selwyn (Boston, MA), who also had perfect entries.

LeLash was quite surprised that he won, this being "the first contest I ever entered." Infocom's *Starcross* and *The Witness* are what LeLash picked up as prizes from Software City in nearby Mount Kisko.

In the "What They Should Have Been" category, readers sent in entries listing what they thought might have been the previous occupation of each person pictured—based solely on appearance—and quite a few matched the choices we made. Our choices were sealed in three envelopes and locked in the contestmeister's secret vault (the bottom desk drawer).

Alexander Veder (Layton, UT) matched ten of the twenty occupations with our choices, the most by anyone in that category. On his contest entry, Veder wrote that he wouldn't decide what he wanted to win until he actually won. "That's because I hardly ever win anything," he says. "I stay away from most of your contests, but, if it looks easy enough, I'll give it a try."

When informed that he had won, Veder was so surprised that he still couldn't think of what he wanted. He finally buckled under the pressure (contestmeister: "Look, pal, if you don't want it, we'll give it to someone else") and decided to spend the $100 at the Computer Store in Ogden, Utah, on an eighty-column card with 64K for his Apple IIe.

The answers for both categories of the contest are given at the end of the contest winners' section.

penguin software

the graphics people

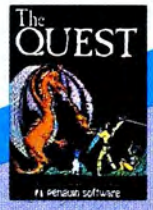
The Next Generation Is Here!

Strategy



Exciting Adventures

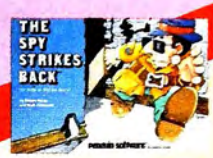




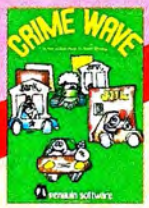


Arcade Fun

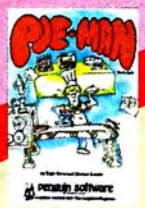














Fantasy Role Playing



Games for Apple, Atari, Commodore, and IBM computers

At Penguin, we don't rely on the same old game formulas, adding to the mish-mash of look-alike games already on the market. We look for creativity, originality, and innovation. Games like **Minit Man,** challenging you with two types of arcade action simultaneously; **Coveted Mirror,** an adventure with animation and arcade games throughout; **The Spy Strikes Back,** an arcade game with strategy and a touch of adventure; **Pensate** and **Tactic 9,** games that make you think; and **Expedition Amazon,** an intriguing and humorous fantasy game.

And Each Is Only $19.95! More Fun For Your Money From Penguin Software

Write for a free catalog

830 Fourth Avenue, Box 311 Dept. A Geneva, IL 60134 For information - Call (312) 232-1984 Dealer orders only - Call (800) 323-0116

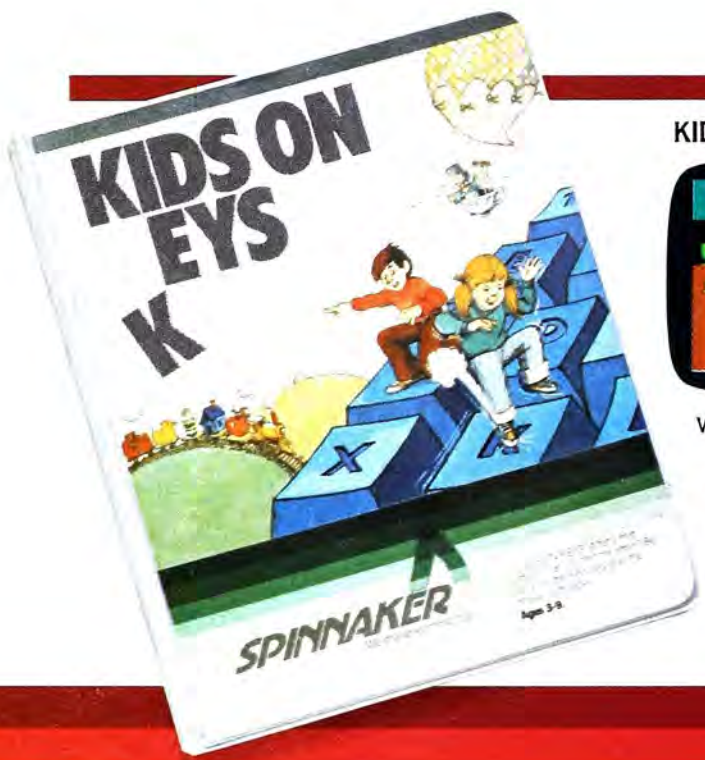
Apple is a trademark of Apple Computer, Inc. Atari is a trademark of Atari, Inc. Commodore is a trademark of Commodore Business Machines, Inc. IBM is a trademark of International Business Machines Corp. Penguins are hard on pool toys.

SPINNAKER'S LINE OF EARLY LEARNING GAMES IS GROWING AS FAST AS YOUR CHILD'S MIND.

Watching your kids grow up is a lot of fun. But making sure their minds grow as fast as their bodies is even more rewarding. That's where we can help. With a growing line of Early Learning Programs that are not only lots of fun to play, but also educational.

Some of the games you see on these two pages help exercise your child's creativity. Others help improve vocabulary and spelling skills. While others improve your child's writing and reading abilities. And all of them help your child understand how to use the computer.

So if you're looking for computer programs that do more than just "babysit" for your kids, read on. You'll find that our Early Learning Programs are not only compatible with **Apple,® Atari,® IBM®** and **Commodore 64™** computers, but also with kids who like to have fun.



KIDS ON KEYS™ helps kids catch on to letters, numbers – and computers. Ages 3-9.



KIDS ON KEYS is a great way to introduce kids to the computer keyboard. Because it offers children three terrific games that teach them the location of the letters and numbers while they have fun with the computer.

The games are fast and fun, with exciting sound effects and colorful graphics. It's a great way for kids to enjoy learning to identify numbers, letters, and words and associating them with images on the screen. And KIDS ON KEYS certainly do have fun!

Apple, IBM and Atari are registered trademarks of Apple Computer, Inc., International Business Machines Corp. and Atari, Inc. respectively. Commodore 64 is a trademark of Commodore Electronics Limited.
© 1983, Spinnaker Software Corp. All rights reserved.



DELTA DRAWING.™ Have fun creating pictures and computer programs. Ages 4-Adult.



Kids love to draw. And DELTA DRAWING Learning Program lets them enjoy creative drawing and coloring while they learn computer programming concepts. As they use simple commands to put lines and colors in their drawings, they're actually writing computer programs!

With DELTA DRAWING, even kids who have never used a computer before can learn to do simple programming and build an understanding of procedural thinking. It's easy, clear, and lots of fun!

A trip through ALPHABET ZOO.™ Ages 3-8



It's a race. It's a chase. It's Alphabet Zoo, the exciting game that will have your kids zipping through the maze, after letters that fit the picture on the screen.

And at the same time, your kids will be learning the relationship of letters and sounds, and sharpening their spelling skills. So they'll be laughing and learning at every turn.





The story of STORY MACHINE.™ Ages 5 to 9.



STORY MACHINE is like a storybook come to life. Using the keyboard, your children write their own fun little stories. The computer then takes what they've written and animates their story on the screen, complete with full color graphics and sound.

STORY MACHINE helps your children learn to write correctly, become familiar with the keyboard, and lets them have fun exercising their creativity at the same time.

SPINNAKER™
We make learning fun.

Disks for: Apple, Atari, IBM, Commodore 64.
Cartridges for: Atari, Commodore 64

POWERTEXT.
The Word Processing System For Professionals.



All across the nation, PowerText has become the prime word processing system for professionals.

Businesspeople. Writers. Attorneys. Educators. Men and women who demand a level of performance not available from the mass-market word processors.

If you require a true high-performance system, consider PowerText.

Formatting is fully automatic.

PowerText prints the most complex documents—from business letters to dramatic scripts to legal documents packed with footnotes—precisely consistent with the formats you define. You need never worry about printed style as you write. Yet you always get perfectly formatted documents.

It's almost like dictating to your computer.

When you prepare outlines, questionnaires, and reports, PowerText can automatically indent and assign numbers to your paragraphs (Roman or Arabic numerals, or alphanumerics, as you direct.)

There's a full complement of editing features. Including "nested" editing, equivalent to split-screen editing.

You get built-in form letter capability.

Remarkably versatile columnar capabilities.

User-definable function keys.

And far more.

Yet for all its power and sophistication, PowerText is remarkably easy to learn and operate. The system includes an excellent 10-lesson tutorial and a reference manual.

We'll send you complete details.

It is impossible to describe all of PowerText's many valuable features here. But we'll be pleased to send you detailed information, including many samples of actual PowerText output.

Just write us a note, or phone us.

(Or you may wish to send for the tutorial and manual. The cost is $25. Please indicate which computer you have.)

FOR IBM PC: $399
FOR APPLE II OR IIe: $299
FOR IBM PC, APPLE II OR III, WITH PASCAL: $199

BEAMAN PORTER, INC.
High Performance Computer Products

Pleasant Ridge Rd., Harrison, NY 10528
(914) 967-3504

Contest Notes. In the "What They Were" category, if you didn't know what occupation someone held, you guessed, based on which occupations were left over by the time you finished filling in the ones you knew. No way of faking it; either you knew or you didn't. The "What They Should Have Been" category was a different story. If you just couldn't place someone in a particular occupation, you also guessed. But in this category, contestants were given a bit more flexibility—they made up occupations.

Among the occupations for TG's Ted Gillam were a lawyer who does some tacky commercial, mortician, Watergate investigator, Mafia hit man, congressman, the original Maytag repairman, and city editor of the *Los Angeles Tribune*, where he oversees ranks of zealous reporters.

Guesses for Muse's Ed Zaron seemed to follow a pattern: nitrous oxide addict, a he-man detective-type like Magnum P.I., undercover FBI agent, professional assassin, Cuban diplomat, macho disco dance teacher in the middle seventies, loan shark, aluminum siding salesman, deposed Generalissimo Ed Zaron, CIA agent, and man convicted of seventeen counts of bribery, forgery, and conspiracy.

Two people whom almost everybody agreed on for former occupations were Sir-tech's Fred Sirotek (retired), Sirius's Jerry Jewell (former rock musician), Cathy Carlston of Broderbund (housewife), Syntauri's Ellen Lapham (Swedish women's basketball coach), and Terry Bradley of Sirius (construction manager).

Oddly enough, a large majority of contestants agreed with us that Infocom's Marc Blank looks like nothing other than what he really used to be—a medical student. Imagine it: *Zork Trilogy—The Adventures of Dr. Blank.* Sounds more like the title of a fifties B movie.

Attention, Cathy Carlston: Craig Earls (Lancaster, CA) has your number! "She's a looker, but she has me stumped."

Attention, Cathy Carlston, Part II: Is there something we don't know about? Rob Salkowitz (Philadelphia, PA) reports "A classified government secret for twenty-five years, Cathy Carlston is the first human ever to be hatched from a chicken's egg." Watch it, Rob. WAPCWTP (Women Against People Comparing Women to Poultry) is looking for you.

Assorted Contest Bits. For everyone's reading enjoyment, here's a list of other occupations the sports in the contest were thought to have held. Get out that August issue, turn to page 4 with the pictures on it, and see if you don't agree. In the case of more than one person suggesting an occupation, the numbers in parentheses indicate how many entries listed that occupation:

Jean Richardson, head of advertising at Apple Computer: publisher of a popular women's magazine, Adrienne Barbeau's stunt double, elementary school teacher, bank teller, Academy Award-winning actress for her portrayal of Patty Hearst, very efficient secretary, six o'clock news anchorwoman, camp counselor, actress again, real estate saleswoman (3), travel agent, hat-check girl at the Playboy Mansion West.

Marc Blank, Infocom's Zorkmeister: supermarket bag boy, running back in the Canadian Football League, talent scout for the New Orleans Saints football team, football player for the Green Bay Packers, stand-up comedian, the kid who runs the lunch counter at school, fraternity president, professional football player—lineman, Good Humor man, Howdy Doody, professional golfer (2), hair stylist, actor in Clearasil commercial, pet shop owner, busboy at Howard Johnson's, and dentist.

Terry Bradley, Sirius cofounder: president of the Teamsters, deli owner (2), grocery store owner, Kansas wheat farmer, bus driver, Archie Bunker's brother, godfather, bartender (2), trucker, gun holster manufacturer, and mortician.

Jerry Jewell, Sirius president: professional golfer, teenage computer outcast, mercenary soldier, Grapenuts salesman, Luke Skywalker, liquor store clerk, park ranger, professional bowler (2), and avant-garde architect.

Tom Snyder, free-lance programmer: professional hit man and suspected terrorist (2), hostage in Iran, dentist in search of cavities, model for police composite drawings, on the FBI's Ten Most Wanted list, missing person, French restaurateur, fugitive, ex-convict, quarterback for the Los Angeles Lambs football team, member of Beatlemania (bass player), and secret youth agent for CIA.

Nathan Schulhof, president at Silicon Valley Systems: wine taster, muscular dystrophy poster child, neuroscientist, gigolo, KGB agent, disc jockey, physical education teacher, Russian pianist in *Barney Miller*, and forest ranger.

Mike Markkula, former Apple president: hotel manager, men's clothier (2), ladies' fashion designer, stockbroker, movie director, pastor, night club master of ceremonies, funeral director, banker, publisher of skin magazine, hairdresser, and president of a sports car company who was later nailed for smuggling cocaine.

Mark Pelczarski, Penguin prez: controversial DNA scientist, high-level magician of the Middle Ages, hockey player, high-school basketball coach, used fruit dealer, Frisbee champ, formerly on an unsuccessful quest for a good barber, crew member of the Calypso, sculptor, county fair T-shirt vendor, ski instructor, and S.W.A.T. team member.

Roger Wagner, Southwestern Data Systems president: sword swallower, Barney on the *Andy Griffith Show*, fashion designer specializing in headwear, professional tourist (2), farmer, rock star, hog raiser, Rolling Stone, golf caddy, beach bum, Farmer John, and son of an Arizona yucca farmer.

Stan Goldberg, Micro Lab head: hockey goalie, lawyer, mercenary (all major wars since 1962), comedian, college professor (4), and airline ticket agent.

Fred Sirotek, top man at Sir-tech: senator (2), car salesman, actor in laundry detergent commercials ("Which shirt is whiter and brighter?"), Greek shipping tycoon, prophet and wizard to King Uthur Pendragon (taught Merlin everything), governor of California, Johnny Carson impersonator, Mafia don, president of United States, KGB superspy, extremely rich, and premier of India.

Dave Gordon, head dude at Datamost: but-

GET THE JUMP ON MATH

With Scott, Foresman Math Action Games



Frog Jump is a great way for your children to learn to work with numbers. Or they can take a Space Journey to learn how to work with percents. Pyramid Puzzler, Star Maze, Picture Parts, and Number Bowling help with multiplication... division... basic facts... decimals and fractions.

Math Action Games get youngsters deeply involved in the excitement of discovering and mastering fundamental mathematics. Children have fun and learn at the same time.

There's a **Math Action Game** for every age group. Exciting formats challenge participants, moving them through three levels of difficulty. Games can be competitive or non-competitive, so children play them again and again. Each game uses color, music, animation, and sound effects to trigger quick thinking and accurate response.

Math Action Games can give your youngster the incentives and the satisfaction he needs to master math. It's an ideal supplement to any school mathematics program. Games are available for most popular microcomputers.

SCOTT, FORESMAN...
Products with tomorrow in mind.





Buy Math Action Games wherever quality software is sold or write:

Scott, Foresman and Company
Electronic Publishing Division
1900 East Lake Avenue Glenview, Illinois 60025

ler, owner of Dave's Authentic Sicilian Food & Drink, car salesman, owner of Two Guys from Italy restaurant, stunt double for James Coco, chef, owner of enchilada emporium, Fuller Brush salesman, spaghetti taster for Denny's, shoe salesman (2), restaurateur (3), insurance salesman, and bartender.

Sherwin Steffin, numero uno at Edu-Ware: candy store owner, Radio Shack salesman, candidate for mayor (lost), admissions director at exclusive boarding school, prison warden, Italian godfather, congressman, senator, tax lawyer, newspaper editor, union official, head of the Teamsters, cartoon stunt man for *The Jetsons*, *Smurf Show*, and *Scooby Doo*.

Doug Carlston, Broderbund president: professional runner, dirt bike racer, male dancer, soap opera star, professional surfer, one of the sons in *My Three Sons*, Vietnam vet and soldier of fortune looking for the lost ark, Wally Cleaver in *Leave It to Beaver* (2), and Soviet spy.

Gary Carlston, product developer at Broderbund: political activist and founder of a West Coast commune, member of the Beach Boys, member of Pink Floyd, actor who played B.J. Hunnicutt on *M*A*S*H*, Kenny Rogers's little brother, disc jockey, balloonist, mountain climber, folk musician, antinuclear activist, looking for a job, staff writer for Dr. Seuss books, voice of Elroy on *The Jetsons*, and Soviet ambassador.

Cathy Carlston, marketing fist at Broderbund: Burger King waitress, Peace Corps volunteer in Upper Volta, jackhammer operator, grocery store clerk, anchorwoman for KTLA news in Los Angeles, doctor, manicurist, UCLA cheerleader, off-Broadway actress, *Playboy*'s playmate of the month, cashier, cover girl for *Softalk*, flight attendant, and Soviet defector.

John Scully, king of kings at Apple: presidential aide, actor in American Express commercials, model for Grecian Formula commercial, head of German secret service, high school principal, man of the cloth, Reagan's campaign manager, senator (2), CIA director and vice president of United States, Cathy Carlston's co-worker at KTLA news, news reporter, relief pitcher for Texas Rangers baseball team, and winner of the George Bush Look-Alike contest.

The Envelope, Please. At last, here are the correct answers to the Job Hunt contest. Two occupations are listed for each person. The first in each pair is the real former job; the second is what they look like they should have been.

Ted Gillam: *O*, University of Michigan disc jockey, jazz drummer; *B*, biology teacher.

Ed Zaron: *D*, operations researcher for savings and loan associations; *K*, junior high school English teacher.

Ellen Lapham: *Q*, amateur pilot and Regis McKenna public relations person who handled Apple's account; *E*, university Swedish instructor and Swedish women's basketball coach.

Jean Richardson: *R*, housewife; *L*, merchandise buyer for Lord and Taylor retailers.

Marc Blank: *A*, medical student; *A*, medical student.

Terry Bradley: *S*, United States Air Force lieutenant colonel; *G*, construction manager and manufacturer of souvenir spoons.

Jerry Jewell: *P*, marine insurance salesman; *J*, rock musician.

Tom Snyder: *J*, rock musician under Capitol Records label; *Q*, amateur pilot and Regis McKenna public relations executive for Apple.

Nathan Schulhof: *M*, behavioral scientist and tire manufacturer; *C*, math and computer science teacher.

Mike Markkula: *T*, retired; *H*, president at PepsiCo.

Mark Pelczarski: *C*, math and computer science teacher at junior high, high school, and university levels; *O*, university disc jockey and jazz drummer.

Roger Wagner: *B*, biology teacher; *N*, garment district mogul.

Stan Goldberg: *N*, garment district mogul; *F*, certified public accountant.

Fred Sirotek: *G*, construction manager and souvenir spoon maker; *T*, retired.

Dave Gordon: *F*, certified public accountant; *D*, operations researcher for savings and loan associations.

Doug Carlston: *I*, lawyer; *P*, marine insurance salesman.

Gary Carlston: *E*, university Swedish instructor and Swedish women's basketball coach; *M*, behavioral scientist.

Cathy Carlston: *L*, merchandise buyer for Lord and Taylor retailers; *R*, housewife.

John Scully: *H*, president at PepsiCo; *S*, United States Air Force lieutenant colonel. ■





GIVE YOUR CHILD THE PLATO EDGE IN ALGEBRA.

For use with the Apple II Plus and Apple IIe:

New PLATO® lessons in Elementary Algebra*
Help your child feel confident about learning algebra skills. This new PLATO series helps simplify Exponents, Polynomials, Roots and Radicals, Factoring and other Algebra components. Practice problems change at random and examples of solutions help keep kids motivated.

New PLATO lessons in Computer Concepts†
This series helps kids understand the computer and lets them practice what they learn. Lessons include: The Computer Keyboard, Storage and Memory, Files and Editing and Databases.

Widen your child's world
Other PLATO lessons include Elementary Math, Foreign Languages, Physics-Elementary Mechanics, Computer Literacy and ‡Keyboarding.
All PLATO micro courseware is available for the Apple II Plus and Apple IIe. Selected lessons are available for the T199/4A and Atari 800.



For a free catalog
See the growing line of PLATO micro courseware at selected retail outlets. For a free catalog, call toll-free: 800-233-3784. (In Calif., call 800-233-3785.) Or write: Control Data Publishing Co., P.O. Box 261127, San Diego, CA 92126.

*Developed with Courses by Computers, Inc.
†Developed with Continuous Learning Corporation.
‡Developed with Gregg/McGraw-Hill

Warranty available free from Control Data Publishing Co. 4455 Eastgate Mall, San Diego, CA 92121

PLATO
COMPUTER-BASED EDUCATION

CONTROL DATA PUBLISHING

First there was Hardware. Then there was Software. Now there is Knoware™.

THE KNOWLEDGE COMPANY

Introducing Knoware™



The first truly relevant educational experience that brings something new to personal computer learning—fun!

Are the personal computers out of control in your company? Do your professionals understand their PCs? Do they use them effectively? Do they use them at all? Someone has to bring some direction to your company's use of personal computers. Why not you? And at a fraction of the cost of one of those expensive computer seminars. And in a fraction of the time. All you need is Knoware...from out of KNOWARE, The Knowledge Company.

Knoware is entertaining software in game form that can teach just about anyone how to use a PC productively—without written instructions, wordy manuals, or long-winded explanations. Knoware can break down even your most stubborn professional's resistance to PCs. It's easy to use and it's also fun! Knoware combines entertainment with practical software experience and useful application programs. With Knoware, your people can learn productive ways to use a PC in their offices or at home. (Imagine what that can save on training, travel and hotel bills.) Knoware has been developed by Professor John J. Donovan and Professor Stuart E. Madnick, M.I.T. faculty members and award-winning educators. Will you be the one who helps your company unlock the potential of its personal computers? All it takes is Knoware...from out of KNOWARE.

KNOWARE gives you experience with:

Spreadsheet
Word processing
Database management
Basic programming
Graphics
Financial decision support

KNOWARE gives you these useful application programs:

Introductory spreadsheet for data analysis
Introductory word processor for writing letters and memos
Introductory database manager for maintaining lists
Graphics program for making bar and pie charts
Financial analysis programs for investment decisions



Available on Apple® II+ and IIe, 64k IBM® PC and XT, DOS 1.1 or 2.0, 128k color graphics. Knoware for IBM® personal computers is published by IBM®. For information about how you can get Knoware fast contact your retail dealer or write or call us at 617-576-3625.

Knoware 30 Vassar Street Cambridge, MA 02139

FASTALK

Fastalk is a quick guide to popular, specialized, new, and classic software. When you need a particular kind of program or just want to see what's new, Fastalk is the place to look for fast answers.

If a program has been reviewed in *Softalk*, it carries the issue date of the review in italics at the end of its listing, and the capsule description given reflects the published review.

A new software entry, which must be of professional quality to be included, is designated by a check mark preceding its name. A new entry loses its check mark after its first appearance and drops out of Fastalk after one to three appearances (depending on genre) if it fails to gain popularity.

A bullet preceding a title indicates a program that *Softalk* has designated as a classic, based on its ability to stand up over time, its significance for its time (breaking new ground or introducing a new genre), or its archetypal qualities.

Other entries in Fastalk are there either by virtue of current activity (the programs are selling at least as much as the least-selling entry on any of the bestseller charts) or because they are representative of the best of programs for a special interest or need (such as card games or non-Basic-specific language terminal programs).

Softalk may arbitrarily omit any package from Fastalk, whether or not it meets the foregoing criteria.

Adventure

Adventuresome story games in which players must deduce commands, make maps, and solve logical puzzles.

● **Adventure.** Crowther, Woods. The original text adventure, created on mainframe, contributed to by many over a long time. Very logical within fantasy framework, excellent puzzles, maps; complex, convoluted, and great. Several publishers: Microsoft, 10700 Northup Wy., Bellevue, WA 98004. $28.95. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $35. Frontier Computing, Box 402, 666 N. Main St., Logan, UT 84321. $10.

Critical Mass. Blauschild. Rungistanian author's next adventure; more colorful graphics, sophisticated and challenging puzzles. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. $39.95. *7/83.*

● **Cyborg.** Berlyn. Text adventure with brief action skill game hidden in plot. As a futuristic part man, part robot, you're lost in a strange forest, desperately needing food and power. At its release, in its realism and use of true plot, *Cyborg* represented one of the most significant advances in adventuring since the original *Adventure*. Sentient, Box 4929, Aspen, CO 81612. $32.95. *11/81.*

The Dark Crystal. Williams. Hi-res adaptation of fantasy movie. New puzzles challenge even those who've seen the movie. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $39.95. *4/83.*

Deadline. Blank, Lebling. Episode one in a series of murder mysteries by the authors of *Zork*. Includes inspector's casebook, lab report. Text. Infocom, 55 Wheeler St., Cambridge, MA 02138. $49.95. *8/82.*

Death in the Caribbean. Hess, Hess. Challenging quest for pirate treasure features a mischievous ghost, huge maze, lush graphics. Well worth it. Micro Lab, 2699 Skokie Valley Rd., Highland Park, IL 60035. $35. *9/83.*

Enchanter. Blank, Lebling. First of trilogy sequel to *Zork*s expands interaction with other characters, goes above ground, increases use of logical magic. No big breakthroughs, but simply delightful. Infocom, 55 Wheeler St., Cambridge, MA 02138. $49.95. *9/83.*

✓ **Gruds in Space.** Sommerville, Dudar. Solve puzzles, teleport to different planets while on mission to deliver fuel to stranded ship. Cute spacelings try to stop you. Challenging and frustrating. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. $39.95.

● **Hi-Res Adventure #1: Mystery House.** Williams. Whodunit in a Victorian mansion. First adventure with pictures. Two-word parser with logical comprehension. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $24.95.

● **Hi-Res Adventure #2: The Wizard and the Princess.** Williams, Williams. The king has offered half his kingdom to the one who will bring back the kidnapped princess. Cross mountains, deserts; battle the wizard to claim your reward. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $32.95. *11/80.*

Mask of the Sun. A unique animated graphic quest with full though sometimes frustrating parsing. Moving from room to room involves seeing scenery along the way go by—a graphics breakthrough with nice puzzles. Ultrasoft, 12503 Bell-Red Rd., #200, Bellevue, WA 98005. $39.95. *11/82.*

● **Prisoner 2.** Mullich. Totally relandscaped but loyal version of original game: full-color hi-res graphics added, puzzles reworded, obstacles expanded. Sophisticated and difficult exercise in intimidation with elements of satire. Escape from an island requires player to solve logical puzzles, overcome obstacles, and answer riddles. Excellent computer fare; nothing else like it. Edu-Ware, Box 22222, Agoura, CA 91301. $32.95. *The Prisoner, 3/81*; *Prisoner 2, 10/82.*

The Quest. Snell, Toler, Rea. As the king's newest advisor, you must accompany a champion on a dragon-slaying mission. Champion, parser accept advice in full and multiple sentences. Penguin, 830 4th Ave., Geneva, IL 60134. $19.95. *9/83.*

● **S.A.G.A. Series.** Adams. Scott Adams's prototypical adventures—12 in all—spruced up with 16-color graphics and Votrax vocals. Fun, not always logical, very story-oriented series. Each adventure has its own theme and often exotic locale. They map small but score big on imagination. Adventure International, Box 3435, Longwood, FL 32750. $29.95 each. *7/82.*

Starcross. Science-fiction prose adventure that comes wrapped in a flying saucer. Set in the year 2186, main puzzle is to discover *raison d'etre* of miniworld asteroid. Likable, engaging. Superior puzzles. Infocom, 55 Wheeler St., Cambridge, MA 02138. $39.95. *11/82.*

Suspended. Berlyn. Well-plotted adventure demands control of six independent robots who can act simultaneously. Intelligent, challenging exercise in logic. A milestone. Infocom, 55 Wheeler St., Cambridge, MA 02138. $49.95. *4/83.*

● **Swordthrust Series.** Set of adventures, seven so far, that integrate fantasy role playing. Create one character, make friends in each new adventure, battle monsters and achieve goals together. Good stories, fun to map. Vocabulary no mystery, but puzzles are. Single character goes through all. CE Software, 801 73rd St., Des Moines, IA 50312. Number 1 prerequisite for rest. Each adventure, $29.95. *8/82.*

Transylvania. Antiochia. Some of best graphics ever in a hi-res adventure. Excellent puzzles and logic—no unfair tricks. Enjoyable. Penguin, 830 4th Ave., Geneva, IL 60134. $34.95. *6/81.*

Witness. Galley. It's 1938, a society woman is dead, the killer is loose and may strike again. You have 12 hours to figure out whodunit before someone else takes the deep six. It may be you. Infocom, 55 Wheeler St., Cambridge, MA 02138. $49.95. *7/83.*

● **Zork I, II, III.** Blank, Lebling. Text lives! Three masterpieces of logic and grand adventure to revel in. Hard, logical puzzles with erudite parser that understands complete compound sentences and questions, has amazing vocabulary. *I* and *II* use standard scoring, standard goals; *III* has unique point system, and benevolence pays. Infocom, 55 Wheeler St., Cambridge, MA 02138. $39.95. *Zork I, 6/81*; *Zork II, 3/82*; *Zork III, 9/82.*

Business

Accounting Plus II and IIe. *II* version is integrated package; general ledger, accounts receivable and

We Help Bring Your Family Together

6 Types of Charts and Sheets
Indices
User Fields
Notes, Footnotes and Sources
No Limits
Adapts to Your Hardware
Comprehensive
Easy to Use

And Much, Much More

Send for brochure and sample printouts.

Family Roots includes detailed manual and 2 full diskettes of programs for your Apple II * or IBM PC **

Other genealogy software also available.

Price: $185 plus $3.50 Postage

American Express, Visa & Mastercard Accepted

* TM Apple Computer, Inc.
** TM International Business Machines

Family Roots™

QUINSEPT, INC.
P.O. Box 216, Lexington, MA 02173
(617) 862-0404

payable, and inventory-purchasing modules. Menu-driven; prompting. *IIe* version is stripped and rebuilt to take advantage of available functions. Software Dimensions, 6371 Auburn Blvd., Citrus Heights, CA 95610. *II*, $1,250; *IIe*, $995.

Apple Barrel II. Twenty-five programs on one disk include mortgage loan, checkbook, savings, text writer, plotter, games. Software House, 695 E. 10th N., Logan, UT 84321. $29.95.

Apple II Business Graphics. Converts numerical data into charts and graphs. Features mathematical and statistical functions. Requires 64K. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $175.

BPI System. Popular six-module business package; programs also available separately. Includes *General Ledger* (a bestseller), accounts receivable, accounts payable, payroll, inventory control, and job costing. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $395 each; job costing, $595.

Cdex Training for VisiCalc. Brandt. Self-contained Apple-assisted training program and reference guide for the #1 electronic spreadsheet. User-selectable information. Cdex, 5050 El Camino Rd., Los Altos, CA 94022. $49.95. *3/83.*

✓ **Compiled Customer Client Processor.** Burbidge. Database keeps information about customers, manipulates files using up to five comparison criteria, searches files to make specific mailing lists. Prints a telephone directory by name or company. Proflo, Box 7115, Murray, UT 84107. $59.95.

The Data Factory. Passauer. Database management system allows users to list files, get file statistics, select another file, transfer records to new database, and add fields to update forms. Disk swapping required; excellent product overall. Several compatible products available. Micro Lab, 2699 Skokie Valley Rd., Highland Park, IL 60035. $150. *8/81.*

dBase II. Speedy relational database-management system. Requires SoftCard. Ashton-Tate, 9929 W. Jefferson Blvd., Culver City, CA 90230. $700.

DB Master. Comprehensive database-management system with password protection, extensive report creation options. 1,000 characters per record. Stoneware, 50 Belvedere St., San Rafael, CA 94901. $229. *10/81.*

DB Master Utility Pak #1 and **Utility Pak #2.** Compatible with version III. Translates *DB* files to Apple text, restructures existing files, replicates and merges, and recovers crashed files. *Pak #2* includes label printer, global editor, file merge, reblocker, and forms printer. Stoneware, 50 Belvedere St., San Rafael, CA 94901. $99 each.

FCM (formerly *1st Class Mail*). Schoenburg, Pollack. Fantastically user-friendly program for specialized database applications. Twelve fields, ability to sort and filter on any field or combination. Continental, 11223 S. Hindry Ave., Los Angeles, CA 90045. $74.95. *6/82.*

FilePro. Organizes files by any of 32 criteria, designs, prints up to 10 reports or mailing lists per file. Small Computer, 230 W. 41st St., #1200, New York, NY 10036. $300 with SoftCard.

Financial Planning for VisiCalc and the Apple II, Financial Planning for Multiplan and the Apple II. Expert Systems. Series of 18 templates provides solutions to complex financial questions from real estate wraparound mortgage to break-even analysis. Howard W. Sams, 4300 W. 62nd St., Indianapolis, IN 46206. $79.95 each. *9/83.*

General Manager. User-definable database-management system; can use one to four disk drives or hard disk. Change screen and field formats without reentering data. Current version supports IIe and 80-column card at no extra cost. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $229.95. Hard-disk version, $374.95.

The Incredible Jack. Word processor, database, and spreadsheet, plus mailing label print and sort. Gives 80-column u/lc display automatically on the IIe, with 64K, 80-column card on the II Plus. Business Solutions, 60 E. Main St., Kings Park, NY 11754. $129. *8/82.*

List Handler. Keary, Elekman. List-lover's delight. Prints lists, labels, and letters. Handles 3,000 records per disk and eight disk drives. Takes requests. Silicon Valley Systems, 1625 El Camino Real, #4, Belmont, CA 94002. $49.95. *2/83.*

Magicalc. Graves. Electronic spreadsheet with automatic page formatting and support of additional memory boards up to 512K. Compatible with *VisiCalc* and *Magic Window II*. Artsci, 5547 Satsuma Ave., North Hollywood, CA 91601. $149.95.

Money Street. Easy to use checkbook financial system for small business, office, or home use. Keeps books, tracks deductions, helps cut expenses. CTS, Box 4845, Incline Village, NV 89450. $99.95. *9/83.*

Multiplan. Easy-to-learn electronic work sheet using plain-English commands. Powerful modeling and presentation capabilities. For use in analysis, forecasting, technical engineering, and the home. Versions 1.04 and up use 80 columns and extended memory on the IIe. Microsoft, 10700 Northup Wy., Bellevue, WA 98004. $275.

PFS:File. Page, Roberts. User controls data in totally unstructured database. Up to 32 pages (screens) of information in each record. IIe version has 80 columns, u/lc. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. $125. *10/80.*

PFS:Graph. Chin, Hill. Works alone or interfaces with files created with *PFS:File* and *VisiCalc*. Produces bar, line, and pie charts merging data from several sources. 80 columns and increased graphics support in IIe version. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. $125. *5/82.*

PFS:Report. Page. Powerful report generator designed for use with *PFS:File*. Sorts, calculates, totals, formats, and prints presentation-quality columnar reports. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. $125. *6/81.*

Postage Saver. English, Hill. Mailing-list program sorts up to 30 data disks by zip code, name, special code or entry number. Helps save postage. Gray Matter Limited, Box 7900, Incline Village, NV 89450. $99.95.

Quick File IIe. Easy-to-use personal database filing system that generates reports, sorts. Fifteen fields; files as long as disk allows. IIe, two disk drives. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $100.

Risk Simulator. Estimates probability distributions related to risk situations, such as automobile maintenance expenses or employer funding of health benefits. Actuarial Microcomputer Software, 3915 Valley Ct., Winston-Salem, NC 27106. $185.

SDM: Screen Data Manager. Gooding. Database manager featuring custom screen entry formatting and report generation. Twenty-one databases (mail, invoice, libraries, inventory) with 10 reports each. The Software Mill, 19 Grist Mill Rd., Acton, MA 01720. Two disks, $49.

State of the Art System. Standalone or interfaceable modules for a 12-month accounting period. Includes *General Ledger*, *Accounts Receivable*, *Accounts Payable*, *Payroll*, *Inventory Control* ($495 each), *Budget and Financial Reporting*, *Sale Invoicing* ($395 each), and *Professional Time and Billing* ($795). State of the Art, 3183A Airway Ave., Costa Mesa, CA 92626. *Accounts Receivable, 10/83.*

Videx Preboot VisiCalc. Prepares *VisiCalc* to run in 80 columns, u&lc. Advanced version uses mix-

Business Managers,
If you have to ask
WHAT IF...?
when making business management decisions, you need Bottomline V.



When you are preparing a budget, arranging for a loan, planning production, forecasting cash flow or other business management functions, you are going to have questions. Decisions involving a look at long-range information are difficult. Variables affect the entire financial picture. With Bottomline V, just enter your data and a logically integrated financial analysis will result.

Bottomline V is a ready-to-use management tool that allows you to integrate income statements, balance sheets, sources and uses of cash, or other pertinent data for instant analysis.

Bottomline V

For use with the following personal computer spreadsheets: MULTIPLAN™ on the IBM™ personal computer, SuperCalc™ on the Osborne,™ VisiCalc™ on the Apple,™ and other systems soon to be announced.

A $6,000 plus value retailing for $295.00. Ask your local dealer for a demo today. Or call direct: Strategic Software Systems, Inc., 1300 Dove Street, Suite 200, Newport Beach, CA 92660. Telephone (714) 476-2842.



JUST BECAUSE YOU PICK AN APPLE, DOESN'T MEAN YOU HAVE TO BUY THE WHOLE ORCHARD.

The only thing more important than having your printer compatible with your personal computer is having it compatible with you.

Which is why mixing an Okidata printer with your Apple computer is more like mixing apples with apples than you'd think.

More Printers. More Printing. For instance, Okidata gives you eight high performance printers to choose from. Apple only gives you four. We give you two-color capabilities on some models. They give you basic black and white. With Okidata you can get three print modes. With Apple, you're stuck with one. Our speeds go up to an incredible 350 cps. Theirs stop at 120.

As for quality, our correspondence quality rivals the best daisywheels. And at up to 80 cps. Their letter quality printer is a daisywheel but moves along at only 40 cps. We also give you a full year's warranty on our print head. They give you 90 days. And we bring you the lowest warranty claim rate in the industry: less than ½%.

And More: Personal Touch & Plug 'n Play. With Okidata's Microline 92, 93 and 84 printers, you can get Personal Touch. A downline loading software package that lets you print personalized characters, customized symbols and typefaces, even foreign languages. From Apple, you only get the hardware

Of course all Okidata printers are compatible with Apple computers. But now, all Okidata Microline printers interface in a matter of minutes, thanks to our new Plug 'n Play interface kit.

So, the choice is yours. Wait for a better Apple to ripen. Or pick Okidata.

For information, call 1-800-OKIDATA. In New Jersey, (609) 235-2600.



OKIDATA

Mt. Laurel, NJ 08054

A subsidiary of Oki Electric Industry Company Ltd.

ture of existing memory cards. Videx, 897 N.W. Grant St., Corvallis, OR 97330. $49; advanced: $89.

VIS/Bridge/SORT. Utility allows user to sort either rows or columns of *VisiCalc* templates. Solutions, Box 989, Montpelier, VT 05602. $89. *9/83.*

● **VisiCalc.** Bricklin, Frankston. Electronic work sheet for any problem involving numbers, rows, and columns. No programming necessary. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. $250. *10/80.*

VisiFile. Creative Computer, Jameson, Herman. Database-management information system for organization and retrieval of information, allowing sort and modification of records. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. $250.

VisiSchedule. Critical path PERT schedule planner. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. $300.

VisiTrend/VisiPlot. Kapor. Combines *VisiPlot* graphics with time-series manipulation, trend forecasting, and descriptive statistics. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. $259.95. *7/81.*

Communications

ASCII Express: The Professional. Robbins, Blue. Greatly improved version of original modem software package features automatic redial, individual macro files, and conversion of Integer, Applesoft, or binary programs into text files. Works with a plethora of hardware. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. $129.95. *12/82.*

Data Capture 4.0. Copyable, modifiable smart terminal program; compatible with Apple III and most lower-case adapters. Southeastern Software, 6414 Derbyshire Dr., New Orleans, LA 70126. $65. *7/81.*

Dow Jones Connector. Guide to the use of the company's News/Retrieval Service and Blue Chip membership, too. Dow Jones Software, Box 300, Princeton, NJ 08540. $95.

Hayes Terminal Program. Standalone disk designed for the Micromodem II lets CP/M, DOS 3.3, and Pascal disks create, list, delete, send, and receive files. Opens access to nonkeyboard ASCII characters and prints incoming data as it's displayed. Hayes Microcomputer Products, 5835 Peachtree Corners East, Norcross, GA 30092. $99. *9/81.*

Micro/Courier. Electronic mail program. Provides transfer of any DOS 3.3 file (correspondence, *VisiCalc*, charts) automatically and unattended, connected to another *Micro/Courier*. Built-in text editor; maintains 100 mailboxes; permits optional clock and calendar scheduling. Microcom, 1400A Providence Hwy., Norwood, MA 02062. $250. *9/81.*

Micro/Terminal. Access and exchange information with mainframes and minis, databases like the Source, and other remote terminals and personal computers. Allows keyboard mapping, u/lc, 80-column cards. Microcom, 1400A Providence Hwy., Norwood, MA 02062. $84.95.

P-Term: The Professional. Supports all Pascal-compatible interfaces, asynchronous serial cards, Apple-compatible modems, and baud rates up to 2400. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. $129.95.

Softerm. Stricklan. Emulation program makes the Apple II Plus into a look-alike for many other popular CRT terminals, allowing use of programs written for other terminals without programming changes. Also enables access to mainframes, time-sharing services, and other Apple computers. Keyboard macros and automatic answerback capabilities. Softronics, 6626 Prince Edward, Memphis, TN 38119. $150.

Transend 1, 2, 3. Intelligent-terminal software with multiple hardware compatibility. Advanced, easy to use. *1* sends text only; menu-driven, limited editor. *2* sends text and files like *VisiCalc*, verifies transmission. *3* does both and handles electronic mail with automatic redial, clock calendar, and password protection. Upgrade: difference in price between two packages plus $20 service fee. SSM, 2190 Paragon Dr., San Jose, CA 95131. $89, $149, $275. *9/82.*

Z-Term: The Professional. More than an update. Compatible with a great variety of modems, interface cards, and screen modes. Simple file transfer with integrity. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. $149.95. *5/81.*

THRILL YOUR FRIENDS THIS CHRISTMAS



with a gift from

bitCards

PERSONALIZED SOFTWARE

Only **$18.50**



Christmas draws near. Santa has disappeared from his ice-castle. The player can solve the mystery using the available clues. Along the way he'll discover that this is no ordinary adventure game: In a storage room, he'll find a shimmering package addressed to *him*. And in Santa's coat pocket, a scrap of a note signed by you! Santa's computer will call upon him *by name* to help solve the mystery. And there's more. Graphics. Humor. Action. We'll even include your own personal greeting message—right in the program!

A **bitCard** is the perfect gift for everyone on your list who has access to a micro. They'll love being part of their own adventure. And they'll love *you* for stuffing their stocking with this Christmas delight.

BitCards. A personalized greeting card. A customized gift. Now isn't that a better idea than a polka-dot tie?

Disk version available for 48k Apple™ II (all models). 16k cassette versions avail. for TRS-80® CoCo and Models I & III. 16k cassette also available for Commodore-64™ and Atari® 400/800. For VIC-20: 5k or 5k+8

TO ORDER A CUSTOMIZED BITCARD: BY PHONE: (Visa or M/C accepted) call 1-800-555-1212 and ask for the **TOLL FREE NUMBER FOR BITCARDS. BY MAIL:** (money order or MasterCard/Visa number & exp. date) use separate sheet for each bitCard ordered. Give your name and address and following info about *recipient*: (1) name (2) address (3) computer (e.g., TRS 80® Model I) (4) (optional) his/her phone number. Also include your personal message to recipient (25 word max.). Indicate if you want bitCard sent to you or directly to recipient. Order should arrive before **Dec. 12.** Send order or requests for info to: **bitCards, 120 S. University Dr., Suite F-8, Plantation, FL 33317.** Canadian orders welcome.

Apple is a trademark of Apple Computing, Inc. Vic-20 and Commodore-64 are trademarks of Commodore Business Machines, Inc. Atari is a registered trademark of Atari, Inc. TRS-80 is a registered trademark of Tandy Corp.

Fantasy

Role-playing games involving characters that develop through experience in adventuresome stories, and whose actions players determine via set commands.

● **Beneath Apple Manor.** Worth. The original dungeon game for the Apple, created in 1978. Newly released version has hi-res, sound effects, a few more magic items, but still the classic game. Quality, 6660 Reseda Blvd., #105, Reseda, CA 91335. $29.95. *2/83.*

✓ **Exodus: Ultima III.** British. Super third installment of *Ultima* saga. Contains many features not found in *Ultima II*. Original score, wind and wave motion, four characters who can interact, tactical combat, and full-color dungeons combine with much more solid, involved plot to make an engrossing fantasy. Origin Systems, 1902 Back Bay Ct., Box 58009, Houston, TX 77258. $54.95.

Knight of Diamonds. Second scenario of *Wizardry*, requiring thirteenth-level characters from the original. Individual quests on each of six dungeon levels. Great. Sir-tech, 6 Main St., Ogdensburg, NY 13669. $34.95. *7/82.*

Legacy of Llylgamyn. Greenberg, Woodhead. Third scenario in classic *Wizardry* series. To save Llylgamyn, descendants of the adventurers of other *Wizardry* scenarios (requires *Overlord*) must wrest a mystical orb from the dragon L'kbreth. New full-screen dungeon, Lisalike information screens. Sir-tech, 6 Main St., Ogdensburg, NY 13669. $39.95. *7/83.*

● **Odyssey: The Compleat Apventure.** Clardy. Fantasy adventure far beyond one place and one setting. Castles, catacombs, an ocean voyage, and the orb of power. Synergistic, 830 N. Riverside Dr., #201, Renton, WA 98055. $30. *10/80.*

● **Temple of Apshai.** Lead title in Dunjonquest series, winner 1981 Academy of Adventure Gaming Arts and Design "Computer Game of the Year" award. Epyx/Automated Simulations, 1043 Kiel Ct., Sunnyvale, CA 94086. $39.95.

● **Ultima.** British. Hi-res color adventure, progressing from Middle Ages to beyond the space age. A masterpiece. California Pacific, 757 Russell Blvd., Davis, CA 95616. $39.95. *6/81.*

Ultima II. British. Faster play in a bigger universe with a time-travel option. Typically British look and feel. Events are much more interdependent; larger realm of fantasy with more transactions available. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $59.95.

● **Wilderness Campaign.** Clardy. First fantasy game to leave the dungeon for the great outdoors; first in hi-res; first to bargain with merchants; and more. Synergistic, 830 N. Riverside Dr., #201, Renton, WA 98055. $17.50.

● **Wizardry.** Greenberg, Woodhead. Ultimate role-playing fantasy; ten-level maze in hi-res. Generate 20 characters, 6 at a time on expeditions. Gripping game; superbly reproduced. Sir-tech, 6 Main St., Ogdensburg, NY 13669. $49.95. *8/81.*

COMPUTER GRAPHIC



William A. Giese 82

penguin software™ *the graphics people*



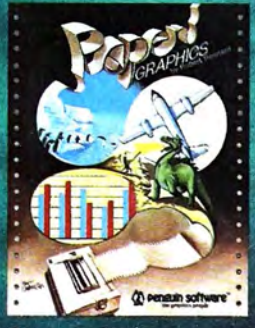
A slide show and presentation utility.



Animation and compact pictures for programmers.



Drawing, design and art in 2-D and 3-D for non-programmers.



Print graphics screens and graphs to almost every printer.

Also available: Magic Paintbrush, a drawing program; Additional Type Sets, 50 extra fonts; and Map Pack, computer map pictures.

Write for our free catalog. 830 4th Ave. Box 311, Dept. 8 Geneva, IL 60134 (312) 232-1984

Graphics

Alpha Plot. Kersey, Cassidy. Hi-res graphics and text utility with optional xdraw cursor and proportional spacing. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $39.50.

The Complete Graphics System. Pelczarski. A wealth of graphics tools at a reasonable price. Make 2-D drawings with game paddles; add text in destructive, nondestructive, or reverse modes; create 3-D figures and shape tables. Manual features complete outline of command structure. Penguin, 830 4th Ave., Geneva, IL 60134. $69.95; Apple Graphics Tablet version, $119.95. *7/81.*

Fontrix. Boker, Houston. Character generator creates unlimited number of typefaces, uses them to write on a screen extended 16 times. Extremely significant development in graphics. Data Transforms, 616 Washington St., #106, Denver, CO 80203. $75. *7/83.*

The Graphics Magician. Jochumson, Lubar, Pelczarski. Outstanding animation package consisting of picture editor and shape-table extender. Comes with utility program to transfer binary files. Penguin, 830 4th Ave., Geneva, IL 60134. $59.95; Apple Graphics Tablet version, $69.95. *5/82.*

● **LPS II.** Superb hi-res-graphics drawing system with light pen. Draw freehand or use circles and lines to create geometric shapes. Fill routine with colors and patterns; fun animation demo; programmable Pentrak driver. Gibson, 23192-D Verdugo Dr., Laguna Hills, CA 92653. $349. *10/82.*

Micro-Illustrator. Island Graphics. Fun and friendly drawing program for the KoalaPad graphics tablet. Easy to learn and use, compatible with most game software. Koala Technologies, 4962 El Camino Real, #125, Los Altos, CA 94022. $124.95. *7/83.*

Prime Plotter. Argon. Powerful and flexible plotter draws line, bar, pie charts; combines them with text, drawings for slide-show-like display. Doubles as general graphics tool. PrimeSoft, Box 40, Cabin John, MD 20818. $240; plotter interfaces $60 to $75. *9/83.*

Special Effects. Pelczarski. Artist's graphics package for creating and enhancing computer graphics. With 108 colors, 96 brushes, magnification and editing point-by-point. Reverse colors, create mirror images, move images. Penguin, 830 4th Ave., Geneva, IL 60134. $39.95. *3/82.*

Zoom Grafix. Holle. Graphics-printing utility allows display of picture on-screen prior to print; prints out selected portion at any size. Phoenix, 64 Lake Zurich Dr., Lake Zurich, IL 60047. $39.95. *2/82.*

Home

The Accountant. Forman. Simple-to-use double-entry finance system features seven integrated files and a set of automatic transactions. A sleeper just beginning to get wider distribution. Decision Support, 1438 Ironwood Dr., McLean, VA 22101. $129.95. *1/82.*

Bowling Data System. Data Dynamics. Two-disk record-keeping and report-preparation program for infinite number of leagues, up to 40 teams. Weekly recap, season average, more. Rainbow Computing, 9719 Reseda Blvd., Northridge, CA 91324. $149.95.

✓ **Chequemate Plus.** Moch, Collins. Maintains 500 checks at one time, 20 accounts per disk. Tracks charges, includes user-defined expenditure and tax breakdowns. Masterworks Software, 25834 Narbonne Ave., Lomita, CA 90717. $79.95.

● **Crossword Magic.** Crossword puzzle maker. Choose subject, words, and clues; program automatically connects words. Play on-screen or make printout. L&S Computerware, 1589 Fraser Dr., Sunnyvale, CA 94087. $49.95. *10/81.*

Dow Jones Market Analyzer (formerly *RTR Market Analyzer*). Automatically collects, stores, and updates historical and daily market quotes. Provides technical analysis and plots 18 different types of charts. Dow Jones Software, Box 300, Princeton, NJ 08540. $350.

Einstein Memory Trainer. Rubin, Samet. Interactive tutorial with color graphics and gamelike practice sessions teaches methods for remembering names, faces, phone numbers, dates, and lists. Set your own pace, store personal memory techniques. Three disks, user guide included. Einstein, 11340 W. Olympic Blvd., Los Angeles, CA 90064. $89.95.

Family Roots. Professional genealogy database with unlimited-records capability. Unprotected; works with 80-column and u/lc. Extensive documentation. Quinsept, Box 216, Lexington, MA 02173. $185.

Golf Statistician. Haberle. Helps golfers lower their scores by examining their strengths and weaknesses. GolfSoft, 10333 Balsam Ln., Eden Prairie, MN 55344. $34.95.

✓ **Health-Aide.** Tracks food intake, exercise, and personal data on daily, monthly, or yearly basis. Calculates calories, helps plan menus, evaluates diet for nutritional requirements. Comprehensive. Knossos, 422 Redwood Ave., Corte Madera, CA 94925. $79.95. *10/83.*

NEW!

"VIDEO TEACHES APPLE!"

- If you **SELL** Apples and want to provide a take-home instructor
- If you **TEACH** Apples and want to multiply your effectiveness
- If you **OWN** an Apple and want to become its Master

YOU NEED COMPUTER TUTOR INTERACTIVE VIDEOCASSETTE TAPES

"Computer Tutor" is a series of four one-hour videocassettes which explains how to use the Apple II and IIE Personal Computer. Each tape is divided into easily manageable 15-minute segments. No need to depend on printed guides. Each tape provides a proven, professional method of instruction that accelerates learning through "hands-on" experience. You can learn about the computer from the very beginning—from the ON switch—or join "Computer Tutor" at the segment appropriate to experience and skill.

CT 101 FIRST BYTE OF THE APPLE...$135.00 EA.
Part I Outlines course content. Examines hardware to show function & optional hook-up.
Part II Teaches general software: booting D.O.S. 3.3 master diskette. Explains PR#6, RESET, CATALOG, RETURN, RUN, SYNTAX ERROR, LIST, CTRL S, REM, CTRL C, NEW, HOME, SPEED.
Part III Examines floppy disk; initializing disk & developing a simple greeting program. Teaches INIT, SAVE, DELETE, LOCK, UNLOCK, RENAME.
Part IV Explains INPUT, OUTPUT, CPU, RAM & ROM. Teaches concept of binary storage in bytes. Demonstrates FID, BRUN, FRE & CHR$.

CT 102 BASIC PROGRAMMING...$135.00 EA.
Part I Explores coding numerical information into variables. Teaches subscripted variable. DIM, LET & INPUT.
Part II Examines coding words into string variables. Explains READ, DATA, RESTORE, GOTO, IF...THEN. Demonstrates a simple counter.
Part III Teaches FOR...NEXT looping & IF...THEN comparing statements with relational operators. A bubble sort is developed & demonstrated.
Part IV A round up of commands is added. Explains GOSUB, RETURN, ON...GOTO, GET, ASC, ONERR, GOTO.
PLEASE NOTE: This tape may be used to teach BASIC on any computer.

CT 103 GRAPHICS...$135.00 EA.
Part I Explains low resolution graphics. Explains GR, PDL, TEXT, COLOR, PLOT, VLIN, HLIN. A program for an elementary histogram is developed.
Part II Teaches high resolution graphics. Explains HGR, HGR 2, HCOLOR, HPLOT, BSAVE, BLOAD. A program for plotting functions is developed.
Part III Explores text windows, introducing PEEK & POKE. Commands are developed for understanding memory maps.
Part IV Examines concept of shape tables. Explains DRAW, XDRAW, ROT & SCALE.

CT 104 PROBLEM SOLVING...$135.00 EA.
Part I Teaches math functions, RND, ABS, INT, SIN, COS, ATN, LOG, etc. illustrated by graphics.
Part II Explains HTAB, VTAB, TAB, SPC for formatting data. FLASH, NORMAL, INVERSE, LEFT$, RIGHT$, MID$, LEN, VAL & STR$ are demonstrated.
Part III Teaches writing to disk & recovering data from text files. Explains OPEN, CLOSE, READ, WRITE, APPEND, etc.
Part IV Presents an overview of VisiCalc (R) and Apple Writer (R).

AVAILABLE AT YOUR SCHOOL SUPPLY STORE OR AUDIO-VISUAL/APPLE DEALER

☐ Please send information on your dealer program. ☐ My dealer does not yet carry it, please send full color brochure.

The Computer Tutor Publishing Co.
925 Demun Avenue • St. Louis, MO 63105 • 314-725-1088

Apple® is a registered trademark of Apple Computer Inc.

Statement of Ownership and Circulation

1.-2. Softalk (publication number 02749629); October 17, 1983.
3. Softalk is published monthly, 12 issues annually, at an annual subscription price of $24.
4.-5. Office of publication and general business offices are located at 11160 McCormick Street, North Hollywood, CA 91601.
6. Publisher: Al Tommervik, 11160 McCormick Street, North Hollywood, CA 91601. Editor: Margot Comstock Tommervik, 11160 McCormick Street, North Hollywood, CA 91601. Managing Editor: Patricia Ryall, 11160 McCormick Street, North Hollywood, CA 91601.
7. Statement of ownership: Softalk Publishing Inc., 11160 McCormick Street, North Hollywood, CA 91601; Robert Comstock, 11160 McCormick Street, North Hollywood, CA 91601; William Depew, 5547 Satsuma Avenue, North Hollywood, CA 91601; John Haller, 11160 McCormick Street, North Hollywood, CA 91601; Mary Sue Rennells, 11160 McCormick Street, North Hollywood, CA 91601; Daniel Rothman, 11160 McCormick Street, North Hollywood, CA 91601; William V. R. Smith, 5547 Satsuma Avenue, North Hollywood, CA 91601; Craig Stinson, 11160 McCormick Street, North Hollywood, CA 91601; Margot Comstock Tommervik and Al Tommervik, 11160 McCormick Street, North Hollywood, CA 91601; Kurt Wahlner, 11160 McCormick Street, North Hollywood, CA 91601.
8. None
9. Not applicable.
10. Extent and nature of circulation

	Average number of copies of each issue during preceding 12 months	Actual number of copies of single issue published nearest to filing date
A. Total number copies printed (net press run)	132,695	153,774
B. Paid Circulation		
1. Sales through dealers and carriers, street vendors, and counter sales	16,570	23,356
2. Mail subscription	30,753	38,570
C. Total paid circulation	47,323	61,926
D. Free distribution by mail, carrier, or other means, samples, complimentary, and other free copies	78,511	89,435
E. Total distribution	125,834	151,361
F. Copies not distributed		
1. Office use, left over, unaccounted, spoiled after printing	3,546	2,413
2. Return from news agents	3,315	—
G. Total	132,695	153,774

11. I certify that the statements made by me above are correct and complete.
Al Tommervik, Publisher

KRAFT PREMIUM JOYSTICK

For Apple II, IBM PC, TRS-80 Color*



TAKE COMMAND!

Kraft puts total mastery of home computer games at your command. Only Kraft gives you:

- PRECISION LINEAR POTENTIOMETERS for more accurate cursor control and quicker response.
- TOGGLE SWITCHES for instant selection of "spring-centering" or "free-floating" operation.
- PATENTED STICK MECHANISM for smooth, fingertip control.
- DUAL-AXIS TRIM CONTROLS for fine tuning joystick to individual software.
- TWO FIRE BUTTONS, conveniently placed for fast action.

The Kraft difference is advanced engineering. Kraft's high-performance design features are the result of intensive, on-going research — and backed by over twenty years manufacturing experience.

Color coordinated, plug-in Kraft Premium Joysticks are suitable for game, business and graphics software. Take command with Kraft computer products . . . you can feel the difference. Ask your retailer about our complete line of computer products.

All Kraft computer peripherals carry a FULL 1-YEAR LIMITED WARRANTY.

KRAFT

KRAFT SYSTEMS COMPANY, 450 W. California Ave., Vista CA 92083
A division of Carlisle Corporation since 1972

* Apple II, IBM and TRS-80 are trademarks of Apple Computers, Inc., International Business Machines Corp. and Tandy Corp. respectively

Home Accountant. Schoenburg. Thorough, powerful home finance program. Monitors five checking accounts against a common budget, plus credit cards and cash; one-step record or transfer of funds. Continental, 11223 S. Hindry Ave., Los Angeles, CA 90045. $74.95. *4/82.*

I.Q. Baseball. Carasik. Detailed hi-res trivia featuring tough questions that span history of both leagues. Wonderfully playable. For one or two. Davka, 845 N. Michigan Ave., Chicago, IL 60611. $24.95. *9/83.*

Know Your Apple, Apple IIe. Visually oriented computer tutorials with manuals cover disks, drives, and peripherals. Models of clarity. Muse, 347 N. Charles St., Baltimore, MD 21201. *Know Your Apple*, $34.95; *Know Your Apple IIe*, $24.95. *Know Your Apple, 3/83.*

Micro Cookbook. Recipe-management system allows entry and modification; selection of recipes by common ingredients, name, or classification. Calorie and nutrition guide. Virtual Combinatics, Box 755, Rockport, MD 01966. $40. *6/83.*

NFL Scoreboard. Football pointspread prediction system gives probable scores, team performance summary, divisional standings, and season playoff predictions. Can be used season after season. Micro Data, 741 Surrey Dr., Streamwood, IL 60103. $49.95.

OpVal. Emmons. Stock option analyzer forecasts prices, tracks risk/reward potential, locates better trades. Receives market prices from Dow Jones or keyboard. CalcShop, Box 1231, W. Caldwell, NJ 07007. $250.

Personal Finance Manager. Gold, Software Dimensions. Handles 200 entries a month from 14 separate accounts. Search-sort-enter routine. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $75. *11/81.*



ONLY $2.00 PER GAME

- SHOOT • CATCH
- BOUNCE • BOMB
- CHASE • DRAW
- CHASED • GUNNER
- COLOR TRAIL • CAR





- GO HOME • THE BLOB
- MAZE • TIC TAC TOE
- RAINBOWS • KEY FUN
- BUZZ • HELICOPTER
- BIG GUN • MISSILES

Don't Delay . . . Order Now!

For Apple II+ or IIe SEND $39.95
PLUS $2.00 FOR SHIPPING
IN AZ ADD 6% TAX Visa & MasterCard accepted

SouthWest EdPsych Services, Inc.
P.O. Box 1870, Phoenix, AZ 85001 (602) 253-6528

✓ **Personal Inventory.** Benson. Organizes your home library, personal property for easy access and for insurance purposes. Loaned your widget and forgot who has it? Check your inventory. 8th Dimension Enterprises, Box 62366, Sunnyvale, CA 94088. $59.95.

Power of Words. Funk. Ten interactive word games by the author of the *Reader's Digest*'s "It Pays To Enrich Your Word Power." Humor, graphics, auditory clues demonstrate words and reinforce memory. Funk Vocab-Ware, 4825 Province Line Rd., Princeton, NJ 08540. Two disks, $49.95. *7/83.*

✓ **Real Estate Property Management.** Thomas, Marlow. Helps real estate owners monitor the expenses and income generated by each property. Keeps track of security deposits, upcoming vacancies, slow-paying tenants; keeps accurate reports for tax purposes. Tomar Productions, Box 740871, Dallas, TX 75374. $149.95.

ThinkTank. Idea processor program allows you to see ideas in outline form. Outline can be collapsed to see the big picture or expanded to reveal hidden details. Living Video Text, 450 San Antonio Rd., #56, Palo Alto, CA 94306. $150. *8/81.*

Home-Arcade

Fast-action skill games; may include elements of fantasy.

A.E. Horai. Blast away like mad in 3-D. Time the release and detonation of missiles and repel the next wave. Innovative graphics, new firing technique, and fugues to boot. Broderbund, 1938 4th St., San Rafael, CA 94901. $29.95. *2/83.*

● **Alien Rain.** Suzuki. Monsters in this classic seem to take it personally when you gun down one of their own kind. Broderbund, 1938 4th St., San Rafael, CA 94901. $29.95. *9/81.*

Apple Cider Spider. Strand. Good but limited hopping and dodging game. Three preset levels. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $33.33. *9/83.*

● **Apple Panic.** Serki. Rid a five-story building of crawling apples and butterflies by running up and down connecting ladders, digging traps, then covering critters before they devour you. Extremely addictive, excellent hi-res play. Broderbund, 1938 4th St., San Rafael, CA 94901. $29.95. *9/81.*

Axis Assassin. Field. Blast-away arcader that gives 3-D perspective of fighting grid, allows bottom-to-top movement. Twenty possible grids, five zones. Electronic Arts, 2755 Campus Dr., San Mateo, CA 94403. $35. *7/83.*

Aztec. Stephenson. Graphic fantasy arcade with animation throughout. Datamost, 8943 Fullbright Ave., Chatsworth, CA 91311. $39.95. *1/83.*

Beagle Bag. Kersey. Twenty games and miscellany, written in Basic and unprotected. Great humor, good two-player games. Manual is worth the price of admission. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $29.50. *1/83.*

✓ **Buzzard Bait.** Ryeburn. Save the humans from man-eating buzzards in three-level shoot-'em-up-and-catch-'em. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. $34.95.

✓ **Caverns of Callisto.** Chuckles. Arcade adventure by author of *Laf Pak* and *Lunar Leepers*. Retrieve stolen jet parts from cave-dwelling alien monsters. Origin Systems, 1902 Back Bay Ct., Box 58009, Houston, TX 77258. $34.95.

● **Choplifter.** Gorlin. Fly your chopper to rescue 64 hostages, avoiding interceptor jets, homing mines, and tanks. Challenging, realistic, and playful. Stunning graphics. Broderbund, 1938 4th St., San Rafael, CA 94901. $34.95. *7/82.*

● **Crossfire.** Sullivan. Critters come at you from four directions on a grid laid out like city blocks. Strategy and intense concentration required. Superb, smooth animation of a dozen pieces simultaneously. One of the great ones. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $29.95. *1/82.*

✓ **Cubit.** Oswal. An adult, well-made interpretation of classic cube-hopping game. Clean-lined graphics; requires strategy. Micromax, 6868 Nancy Ridge Dr., San Diego, CA 92121. $39.95. *10/83.*

● **Epoch.** Miller. Superbly stylized animation enhances this filmic shoot-'em-up. Tremendous sense of being in space; neat classical music and dramatic time-warp sequences. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. $34.95. *10/81.*

Frogger. Lubeck. Not even close. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $34.95. *12/82.*

● **Gorgon.** Nasir. Fly over planet shooting and dodging invaders and saving kidnapped inhabitants. Outstanding hi-res graphics, challenging refueling sequence. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. $39.95. *8/81.*

Hard Hat Mack. Abbott, Alexander. Poor Mack. He must avoid vandals, inspectors, falling rivets, and hungry cement mixers to complete his building. Electronic Arts, 2755 Campus Dr., San Mateo, CA 94403. $35. *7/83.*

Jawbreaker 2. Bueche. No relation or resemblance to *Jawbreaker 1* or Bueche's first. Very playable and addictive. Fun and refreshing. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $34.95. *1/83.*

✓ **Lancaster.** Harvey. Exciting play and fine graphics in colorful bug and bubble blasting shoot-'em-up. Silicon Valley Systems, 1625 El Camino Real, Belmont, CA 94002. $29.95. *10/83.*

The Last Gladiator. Field. Gross me out, like totally. Snakes, spiders, bats, lizards, octopi, vampires and you, the gladiator. Good but grody. Electronic Arts, 2755 Campus Dr., San Mateo, CA 94403. $35.

Lode Runner. Smith. 150 unique levels in super run-climb-dig-jump game—or design your own puzzles, scenes, and setups—in quest to retrieve stolen gold from the Bungeling Empire. Use monkey bars, trap doors, and ladders to your advantage. Broderbund, 1938 4th St., San Rafael, CA 94901. $34.95. *8/83.*

Maze Craze Construction Set. Hammond. Play their mazes or construct your own. Two can enter the same maze. DTI Data Trek, 121 West E St., Encinitas, CA 92024. $39.95. *8/83.*

● **Meteoroids (Asteroids) in Space.** Wallace. Make little asteroids out of big ones, plus occasional hostile alien ships. Hyperspace, autobrake, autofire. Quality Software, 6660 Reseda Blvd., #105, Reseda, CA 91335. $19.95.

● **Microsoft Decathlon** (formerly *Olympic Decathlon*). Smith. Ten standard decathlon events. Hi-res animated athletes, muscle-stirring music; you provide the sweat. Microsoft, 10700 Northup Wy., Bellevue, WA 98004. $29.95. *6/81.*

Miner 2049er. Livesay, Hogue. Run, jump, climb, and slide through the mines, reinforcing the groundwork along the way. Elevators, cannons, chutes, and ladders help; mutants don't. Hot stuff, best of the genre. Micro Lab, 2699 Skokie Valley Rd., Highland Park, IL 60035. $39.95. *1/83.*

✓ **Minit Man.** Malone. Build a bridge, fight off robots, fly a helicopter. Difficult and very detailed. Penguin, 830 4th Ave., Geneva, IL 60134. $19.95.

Mission: Escape. Schumann. Your mission, should you choose to accept it, is to rescue the Tweenies from the twelve planets of the Appel System. Armed only with short-range torpedoes, you must pilot a shuttlecraft through an asteroid belt and return the Tweenies to the mothership. Got it, Jim? MicroSparc, 10 Lewis St., Lincoln, MA 01773. $29.95. *10/83.*

GET TRIPLE THE FUN WITH SAMS NEW APPLE® GAMES.



Sams three new Apple® games are so fun, you won't know which one to play first.

The games themselves are relatively simple. The challenge is in winning. So whether you're an experienced player or beginner, Sams new games give you a lot of entertainment for a little money—only $29.95 each.

In REGATTA, you sail a boat around one of four lake courses displayed in full-screen, hi-res graphics. By working your sails and centerboard as indicated in the corner of your screen, you race in real-time against a clock or competitor. The game moves quickly so you must think fast. Sams complete documentation, including 17 illustrations, make it easy to learn and play. Game paddles, joysticks and color monitor are optional. No. 26147.

BERMUDA RACE is the ultimate test for sailing enthusiasts of all levels. Unlike REGATTA, you have time to think out every move. To play, you respond to the conditions indicated on the screen by changing your sail capacity, centerboard depth and compass direction. Then by pressing a key, you can check your progress on a vivid, hi-res graphics map. Sail alone or against a competitor. But watch out! A few compass degrees can make the winning difference or leave you stranded in the Bermuda Triangle. No. 26129.

If you like battle games, you're going to love SPUD. The object is to shoot at the Spud, moving it away from you and toward your competitor. If it touches his fort, he's destroyed. The Spud itself acts like a hot potato as it bounces back and forth between forts. Three kinds of ammunition let you move the Spud, destroy your competitor's shield, intercept shots, gain bonus points, and more. It's hi-res, high-action in its purest form, and fun for all ages. Includes single player game. Game paddles, joy sticks and color monitor are optional. No. 26162.

Sams new games are available for any Apple II® compatible computer with 48K RAM and one disk drive. So get triple the fun with Sams new Apple games now. Visit your local Sams dealer. Or call **800-428-SAMS** or 317-298-5566 and ask for Operator 464.

SAMS™

Howard W. Sams & Co., Inc.
4300 West 62nd Street, P.O. Box 7092
Indianapolis, IN 46206

Offer good in USA only. Prices subject to change without notice. In Canada, contact Lenbrook Electronics, Markham, Ontario L3R 1H2

Apple and Apple II are registered trademarks of Apple Computer, Inc

AD464

Challenge yo

Make beautiful music. Everyone loves music. And anyone who has ever hummed a tune can write one, now. Scarborough has taken the universal language of music and developed a software program that makes it fun and easy to write songs for budding composers of any age.

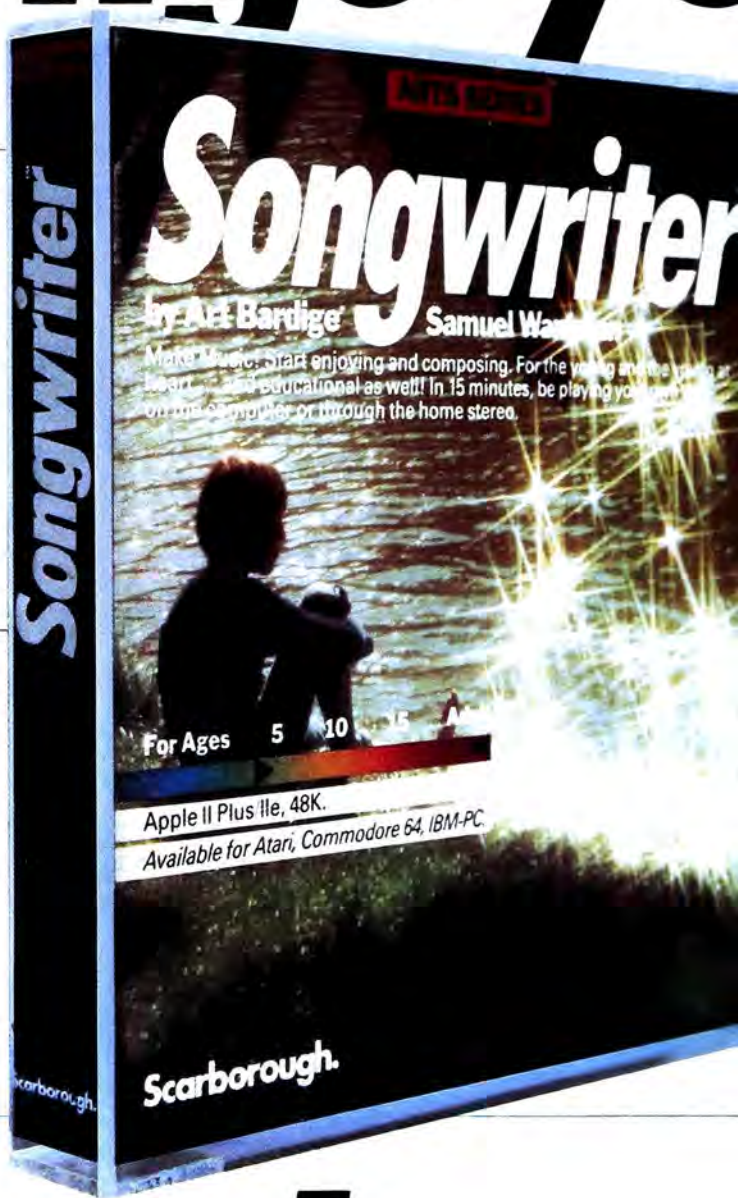
Even those who don't recognize a single note can be composing songs in 15 minutes. Simulated piano roll graphics and on-screen commands serve as a guide every step of the way — from scales and rhythm to more complex musical forms and theory.

With Songwriter, composing songs is as simple as "do-re-mi." Write a song, change, delete or add a note, change tempo and teach the computer to repeat musical motifs. Even save compositions to play back through the computer or your home stereo. For added fun, there is also a library of 28 popular songs to listen to and experiment with, as well as a series of educational activities for adults and children.

Songwriter is like a word processor for music that will bring the whole family back to the computer, again and again — because Songwriter encourages experimentation and makes the whole process fun. Isn't that why you bought a personal computer in the first place?

Every kid has a song in his heart. (So does the "kid" in every parent!) Help yours express it with Songwriter.

Available for Apple,® Atari,® Commodore 64™ and IBM-PC® $39.95



The Scarboro

© Scarborough Systems, Inc., 25 North Broadway, Tarrytown, New York 10591, 1-800-882-8222 in New York: 1-914-332-4545.

ur creativity.

Be quick on the draw. PictureWriter is magic! Create any shape or pattern, instantly. Fill areas with glowing colors and even hear pictures set to music.

PictureWriter brings out the artist in anyone. With this program, your child can create his or her own picture gallery and watch the computer redraw the pictures like magic on the screen. PictureWriter also includes a library of masterpieces by other "picture writers" that can be colored, edited and redrawn.

Like all Scarborough programs, PictureWriter encourages experimentation and continually challenges the child to explore new avenues. And all the while, PictureWriter subtly develops the child's familiarity with the fundamentals of step by step computer programming.

Getting started is simple. The built-in tutorial zips the artist into the program quickly and keeps him or her creatively occupied for hours.

The possibilities are endless with PictureWriter. In fact, children find it so captivating that parents will probably want to doodle with it, too. And why not?

You can't stay an adult forever.

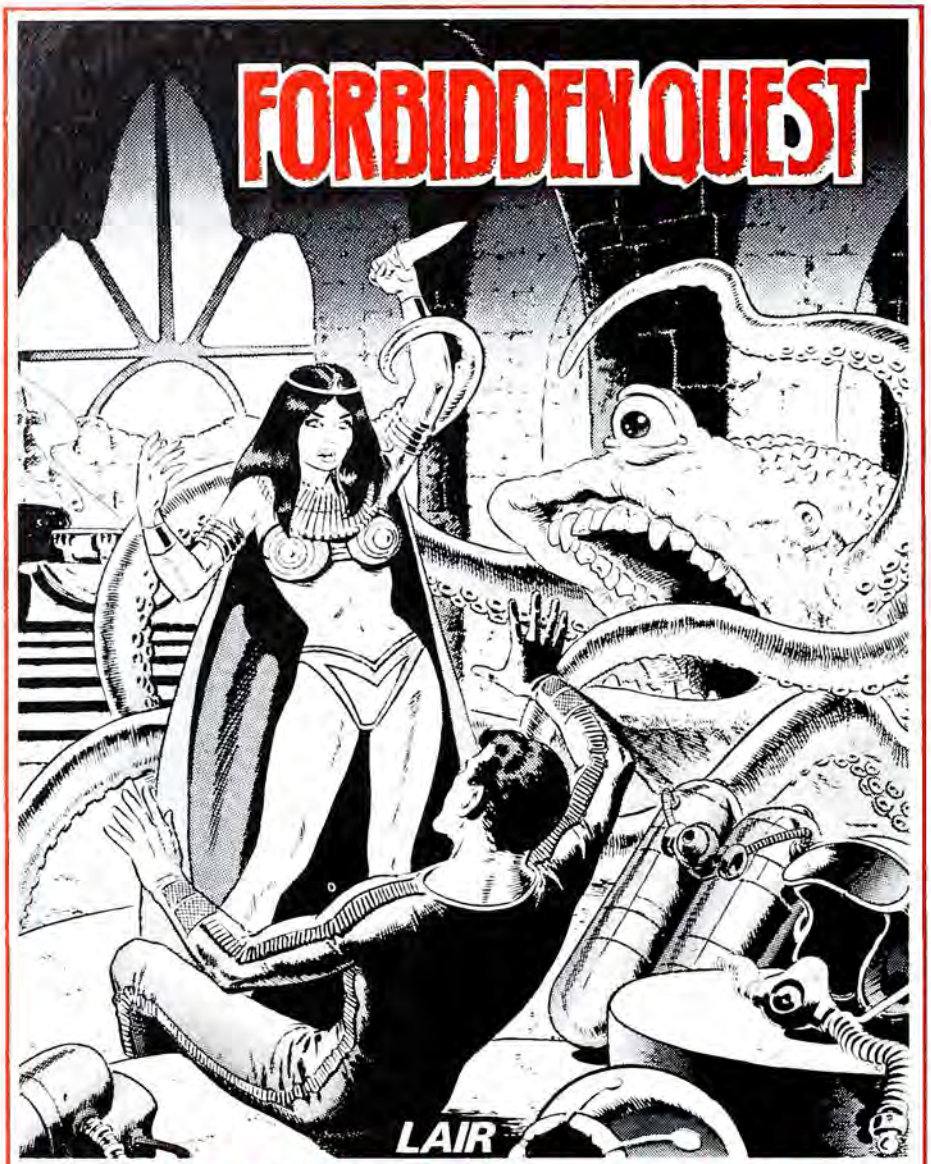
Available for Apple® $39.95
(Soon, Atari®)

Reproduced on Wabash disks.

Apple, IBM and Atari are registered trademarks of Apple Computer, Inc., International Business Machines Corp. and Atari, Inc. respectively. Commodore 64 is a trademark of Commodore Electronics Limited



ugh System.



A BOLD NEW CONCEPT IN COMPUTER ADVENTURES

FORBIDDEN QUEST™ is the first in a series of **ARTEXT**™ adventures combining spellbinding prose and five 8½ by 11 original graphic art prints. Clues within the 5 prints must be cleverly deduced and applied to solve your quest.

As the hero in this science fiction thriller, you alone are responsible for your fate. You must call upon all of your skill and cunning to prevail against hostile environments and treacherous aliens to attain the ultimate conclusion.

The beautiful princess in the illustration (**Forbidden Quest ARTEXT** print No. 3) is one of the many challenges you will face in conquering the worlds of **FORBIDDEN QUEST**.

THE DESTINY OF THE CITIZENS OF YOUR GALAXY DEPENDS ON YOUR SUCCESS!

TREAT YOURSELF TO A NEW ENTERTAINMENT EXPERIENCE

Ask your local dealer or CALL
TOLL-FREE 1-800-522-1500 ext. 831
(orders only)
1-408-625-0125
(orders, general information, HINTS)
OR SOURCE (TCP007) ☐ COMPUSERVE (74035,130)

$39.95 plus $1.50 postage, add $3.00 for C.O.D. Calif. add 6% sales tax
Mastercard, Visa, C.O.D. WELCOME

Forbidden Quest for Apple®][/][e (48k) DOS 3.3 and Apple /// emulation IBM®-PC and compatibles. (CP/M® versions available soon)

Pryority Software INCORPORATED
P. O. Box 221959
Carmel, Calif. 93922

DEALER AND DISTRIBUTOR INQUIRIES ARE INVITED

APPLE, IBM, and CP/M are registered trademarks of Apple Computer, Inc., International Business Machines, Inc., and Digital Research, Inc., respectively. **Forbidden Quest** and **ARTEXT** are trademarks of Pryority Software, Inc. ©copyright 1983 Pryority Software, Inc. All Rights Reserved.

Pinball Construction Set. Budge. Design and play your own computer games on-screen, with zero programming. A miracle of rare device. Superior. BudgeCo, 428 Pala Ave., Piedmont, CA 94611. $39.95. *2/83.*

Plasmania. Lubar. Shoot your way past antibodies and bacteria as you take a fantastic voyage through the veins of a critically ill patient. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. $34.95. *8/83.*

● **Pool 1.5.** Hoffman, St. Germain, Morock. Makes most shots you could on a real pool table, with the advantages of instant replay and slow motion. Four different games. IDSI, Box 1658, Las Cruces, NM 88004. $34.95. *6/81.*

● **Raster Blaster.** Budge. First realistic pinball game. *Softalk* readers' Most Popular Program of 1981. BudgeCo, 428 Pala Ave., Piedmont, CA 94611. $29.95. *5/81.*

Round About. Gumby Bitworks. Your ship can move along all sides of screen in highly animated alien blaster. Enemies ram instead of shoot. Datamost, 8943 Fullbright Ave., Chatsworth, CA 91311. $29.95. *9/83.*

Sammy Lightfoot. Schwader. Sammy must dodge a variety of obstacles as he tries out for the circus. He evidently used to be a miner. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $29.95.

Sea Dragon. Anderson. Talking tunnel endurance test in which a variety of underwater nasties try to keep player from freeing the little sea serpent. Adventure International, Box 3435, Longwood, FL 32750. $34.95. *1/83.*

● **Sneakers.** Turmell. Many-layered shooting game; one of the best. Stomping sneakers and other creatures requires varying techniques. Fun. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. $29.95. *9/81.*

Spartan & Galactic Gliders. Brodersen, Warner. Two games in one package. In *Spartan*, slay dangerous sea creatures to recover lost diamonds, and in *Galactic Gliders*, brave meteors and a space brick to find origin of the Glider family. Micro Arcade Software, 5809 Scenic Dr., Minnetonka, MN 55343. $34.95.

✓ **The Spy Strikes Back.** Hardy, Pelczarski. Follow-up to *Spy's Demise* proves that sequels are sometimes better. This one's a sneak-and-hide game, technically impressive, challenging, and lots of fun. Penguin, 830 4th Ave., Geneva, IL 60134. $19.95. *10/83.*

Stellar 7. Slye. It's you against the Arcturan world in excellent 3-D animated arcader. Seven levels, 14 types of enemies to blast in quest of the alien armada. Software Entertainment, 537 Willamette St., Eugene, OR 97401. $34.95. *9/83.*

✓ **Stickybear Basketbounce.** Worthington, Hefter, Worthington. Involving fun for the whole family features 16 challenging screens, a handsome bear, and no shooting, squishing, or hacking. Just dandy. Xerox Education Publications, 245 Long Hill Rd., Middletown, CT 06457. $39.95. *10/83.*

● **Super Invader.** Hata. Progenitor of home arcades. Still good hi-res, still a challenge. *Softalk* readers' Most Popular Program of 1978-80. Astar International, through California Pacific, 757 Russell Blvd., Davis, CA 95616, and Creative Computing, 39 E. Hanover Ave., Morris Plains, NJ 07960. $19.95.

Thunderbombs. Becklund. You'll need two sets of eyes, hands, and reflexes to survive this one. Your cloudship is under bilateral attack, and it's just you and your bilateral lightning torpedoes. Penguin, 830 4th Ave., Geneva, IL 60134. $19.95.

● **Wayout.** Exciting 3-D maze that moves in perspective as you play. Map displayed at all times. Lots of angles and cleptangles. Separate version for IIe. Exquisite motion animation is a breakthrough. Sirius, 10364 Rockingham Dr., Sacra-

MEMORABLE



CONCORDE

The new leader in the world of floppy disk drives introduces its new family of Apple® compatible peripherals! Combining the finest quality drives with their own advanced electronics, **CONCORDE** gives you proven reliability and superior performance at a dramatic cost savings.

- **CONCORDE** Model C-111, Single Sided Disk Drive, gives you as much as 163K bytes of data storage... form, fit and function compatible with the Apple Disk II.
- **CONCORDE** Model C-112, Double Sided Disk Drive, with double the storage capacity, up to 326K, is the perfect subsystem for your Apple or Apple compatible computer.

® Apple is a registered trademark of Apple Computers Inc.

Remember **CONCORDE**!
Check it out with your favorite computer dealer, or contact:

CONCORDE

CONCORDE PERIPHERAL SYSTEMS, INC.
23152 Verdugo Drive
Laguna Hills, CA 92653
[714] 859-2850

mento, CA 95827. $39.95. *10/82.*

Zaxxon. Garcia. 3-D scrolling air raid brought to the Apple with little sacrifice in playability. Datasoft, 9421 Winnetka Ave., Chatsworth, CA 91311. $39.95. *9/83.*

Home Education

Algebra 1-4. Sets of learning units progressing from algebraic rules to definitions to graphing and inequalities. Individualized teaching styles to fit everyone's needs. Good for adults wanting to overcome math anxiety as well as for schoolkids. Edu-Ware, Box 22222, Agoura, CA 91301. $39.95 each. *Algebra 1, 5/81.*

Algebra 5-6. For use after *Algebra 1* through *Algebra 4*, this set completes equivalent of a first-year course. Edu-Ware, Box 22222, Agoura, CA 91301. $49.95.

Apple Logo. Papert. Custom version (by its inventor) of turtle graphics language. First-rate educational tool. Great kid-friendly documentation. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $175.

Arcademic Skill Builders in Language Arts. Chafin. *Word Invasion, Word Master, Word Radar, Word Man, Verb Viper, Spelling Wiz.* Lots of action and great detailed graphics in arcade-style vocabulary building games. Comes with teaching package. Developmental Learning Materials, 1 DLM Park, Allen, TX 75002. $44 each. *7/83.*

Arcademic Skill Builders in Math. Chafin, Maxwell. *Alien Addition, Alligator Mix, Demolition Division, Dragon Mix, Meteor Multiplication,* and *Minus Mission.* Arcade action blended with addition, subtraction, multiplication, and division problems. Shooting correct answers to problems gets rid of pesky attackers. Choose speed, difficulty levels, game length. Developmental Learning Materials, 1 DLM Park, Allen, TX 75002. $29.95 each. *7/83.*



Cdex Training for the Apple IIe. Zunkel. Self-paced, graphically oriented training program. Cdex, 5050 El Camino Real, Los Altos, CA 94022. $59.95, three disks.

Compu-Read. Set of programs develops speed and retention in reading. Stresses character and word recognition, comprehension. Edu-Ware, Box 22222, Agoura, CA 91301. $29.95.

Compu-Spell. Teaches spelling through positive reinforcement for grades four to eight. Program keeps a file to monitor spellers' progress. Additional unit designed for adult user included. Edu-Ware, Box 22222, Agoura, CA 91301. Program and one data disk, $39.95. Additional disk, $19.95. *5/81.*

Computer SAT. Prepares college-bound students for admittance test. Diagnoses strengths, weaknesses; creates study plan, exercises. Harcourt Brace Jovanovich, 1250 6th Ave., San Diego, CA 92101. $79.95.

Counting Bee. Conrad. Introduces young children to counting, addition, subtraction, shape discrimination, weight, and measurement. Ages four to eight. Edu-Ware, Box 22222, Agoura, CA 91301. $29.95.

Decimals. Master those elusive decimals. Eight programs including pre-test and learning units directed at conversion, addition, subtraction, rounding off, multiplication, division, and percentage. Edu-Ware, Box 22222, Agoura, CA 91301. $39.95.

Delta Drawing. Kids can make colorful drawings by using single-key commands. No special talent needed; this one develops programs that create complex graphics. Spinnaker, 215 1st St., Cambridge, MA 02142. $59.95. *11/82.*

Dragon's Keep. Sunnyside Soft. Graphics adventure in which youngsters find and free imprisoned animals. Written for second-grade-level readers; requires the touch of a key, no typing, to execute actions. Encouraging and rewarding. All upbeat. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $34.95.

Early Games for Young Children. Paulson. Basic training in numbers, letters, Apple keyboard for children ages two to seven with no adult supervision. Has a neat little drawing program. Counterpoint Software, Shelard Plaza N., #140, Minneapolis, MN 55426. $29.95. *11/82.*

Early Games Music. Paulson. Illustrates music with fun and theory. Children compose music and set to graphics or learn note reading and piano keyboard. Counterpoint Software, Shelard Plaza N., #140, Minneapolis, MN 55426. $29.95. *8/83.*

Early Games Piece of Cake. Eyestone. Kids become baker's assistants; adding, multiplying, subtracting, dividing cakes. Includes CatchaCake, a problem-solving race against time to stop a cake from falling. Counterpoint Software, Shelard Plaza N., #140, Minneapolis, MN 55426. $29.95. *10/83.*

Ernie's Quiz. CTW. Four games, four subjects, one disk. Image recognition, counting skills, creativity, and Muppet expertise are introduced with lots of positive feedback. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $50. *2/83.*

Facemaker. DesignWare. Exercises kids' creativity and introduces programlike command sequencing as kids create faces and link them together in animated patterns. Spinnaker, 215 1st St., Cambridge, MA 02142. $34.95.

First Categories. Wilson, Fox. Uses graphics, speech, text to teach six noun categories. Designed for beginning readers or handicapped. Laureate Learning Systems, 1 Mill St., Burlington, VT 05401. $120.

Fractions. Hi-res addition, subtraction, multiplication, and division of fractions. With learning manager system. Edu-Ware, Box 22222, Agoura, CA 91301. $49.

● **French Hangman, Latin Hangman, Spanish Hangman.** Protelsch, Earl. Hangman games that tell you the answer—in a foreign language. Interesting sentences, many formats. Addicting! George Earl, 1302 S. General McMullen, San Antonio, TX 78237. Two-sided disk, $29.95. *9/83.*

Game Show. Guess mystery words from clues given by "celebrity" partners—no threat to Liz Montgomery. Fifteen subjects cover vocabulary, history, algebra, and more. Add topics. Computer-Advanced Ideas, 1442A Walnut St., #341, Berkeley, CA 94709. $39.

● **Gertrude's Secrets.** Gertrude the Goose teaches four- to nine-year-olds shape and color relationships. Solve logic puzzles, create forms. The Learning Co., 545 Middlefield Rd., #170, Menlo Park, CA 94025. $44.95. *2/83.*

Hey Diddle Diddle. Disharoon. Three reading and vocabulary games that strengthen reasoning ability. Ages three to ten. Spinnaker, 215 1st St., Cambridge, MA 02142. $29.95.

Highrise. Calabrese. Hard hat Barnaby needs a keen eye for balance as he uses a springboard to stack oddly shaped blocks and build his skyscraper. Teaches eye-hand coordination. Includes a nontiming, nonscoring learning mode. Micro Lab, 2699 Skokie Valley Rd., Highland Park, IL 60035. $30. *5/83.*

In Search of the Most Amazing Thing. Snyder. Role-playing game lets kids negotiate with aliens, fly hot-air balloon. Ages 10 to adult. Spinnaker, 215 1st St., Cambridge, MA 02142. $44.95. *7/83.*

Jeepers Creatures. Orelove, Hoffman, Prieboy. Mix and match animal parts, names to create catowlroos or normal animals. Gleeful fun for the very young. Kangaroo, 332 S. Michigan Ave., #700, Chicago, IL 60604. $34.95. *9/83.*

Jenny of the Prairie. Stott, Ewell. Adventure designed specifically for girls ages 7 through 12 involves a pioneer girl who gets separated from her family and must survive a winter alone. Rhiannon Computer Games for Girls, 3717 Titan Dr., Richmond, VA 23225. $34.95. *9/83.*

Juggle's Rainbow. Nine learning games for prereading tots. Kids can create colorful pictures by using the keyboard. The Learning Co., 545 Middlefield Rd., #170, Menlo Park, CA 94025. $29.95.

Kindercomp. Learning exercises for ages three through eight. Spinnaker, 215 1st St., Cambridge, MA 02142. $29.95.

Krell Logo. Concentrates on underlying principles of Logo; sections on assembly language interfaces and music creation, plus Alice in Logoland tutorial. Krell, 1320 Stony Brook Rd., Stony Brook, NY 11790. $149.95. *7/82.*

Language Arts. Mitchell, Roblyer. Drills grades 1 – 8 in letter recognition, alphabetization skills. Includes Manager Program that allows teachers to make assignments and review progress of 100 students on each disk. Milliken, 1100 Research Blvd., St. Louis, MO 63132. $75.

Master Match. Robbins. Matching game with a TV quiz show format. Designed to enhance memory, teach vocabulary and concepts. For one to two players. Additional subject disks include: *Basic Skills, Science and Math, Math and Social Studies,* and foreign language. Computer-Advanced Ideas, 1442-A Walnut St., #341, Berkeley, CA 94709. $39.95; additional subject disks, $19.95.

● **MasterType.** Zweig. Learn to type by playing a game; simple and ingenious. IIe version teaches new keyboard. Lightning, Box 11725, Palo Alto, CA 94306. $39.95. *4/81.*

Math Blaster. Davidson, Eckert. Elementary-school-level training in four basic math functions. Options to create lessons; several levels of difficulty for various ages. Human cannonball arcade

The Apple IIe has always been great.

Now
incre


JACK JACK JACK JACK JACK JACK JACK JACK JACK JACK
SERIAL: 217390
(PRESS ANY KEY TO CONTINUE)
THE INCREDIBLE JACK.
business solutions
disk II
disk II
apple //e

it's dible.



Introducing The Incredible Jack. First and only integrated software program for the Apple IIe. It gives you calc analysis, form letter generation, mailing list, filing, word processing – all the things you buy an Apple IIe for – all on one disk. It gets more work done faster than any other program designed for the Apple IIe. And it lets you perform all the functions with one set of commands, so it's a cinch to learn and use. If you own an Apple IIe, or if you're thinking of buying one, call 1-800-645-4513 (in New York call 516-269-1120). We'll give you the name of the dealer nearest you so you can arrange for a demonstration. It's a must. When you see what The Incredible Jack and the Apple IIe can do together, you'll agree we named the product right.

THE INCREDIBLE JACK business solutions

60 East Main Street, Kings Park, New York 11754

Apple is a trademark of Apple Computer Inc.

Do you want the #1 Seller or the #1 Financial System?

FEATURES	The Home Accountant	The ACCOUNTANT Finance Data Base System *
Transactions Per Disk	1000	2000-4000
Number of Codes	1	63
Automatic Transactions		900
Number	25	Unlimited
Frequency	Once a month	YES
Double Entry	NO	NO
Accounting Background Required	NO	YES
Accommodates Any Type Transaction	NO	Screen at a time
Transaction Retrieval	One at a time	YES
Backdate Transactions	NO	ALWAYS
Ability to Interrupt While Printing	SOMETIMES	NO
132 COL PRINTER REQUIRED	YES	292,661.42
NUMERIC FORMATTING	292661	YES
Optional VisiCalc Interface	NO	
PERFORMANCE*		
Startup to Transaction Entry	113 sec	44 sec
Begin Printing Balance Sheet After Entering Transactions	162 sec	1 sec
Begin Printing Transactions After Entering Transactions	106 sec	2 sec
RATING	B D	A
Peelings II evaluation		
PRICE		
APPLE II IIe Personal Version	$75	$129
IBM PC Personal Version	$150	$195
APPLE II IIe The Business ACCOUNTANT ™	—	$255
IBM PC The Business ACCOUNTANT ™	!	$295

*Based on APPLE benchmarks. The Accountant's performance superiority is even greater on the IBM PC

MONEY MAGAZINE — Nov. 1982
"Among bookkeeping programs, earns high marks and is easy to use"

CREATIVE COMPUTING — Jan. 1983
"The documentation is thorough, easily read, and complete"
"The program is so easy to use that rarely will reference have to be made to the manual"

SOFTALK — Jan. 1982
"For the home user (and perhaps in some less complex small business), *the best package we evaluated was The ACCOUNTANT by Decision Support Software*"
"The ACCOUNTANT does [illegible], make financial management a simple and straightforward p[illegible]"

Now available for IBM PC

INFOWORLD — Jan. 3/10, 1983
"Complete flexible financial data base package for the home user."
" exceptionally fast highly recommend"

The ACCOUNTANT
Finance Data Base System™

Decision Support Software Inc.
1438 Ironwood Drive, McLean, VA 22101 • (703) 241-8316 • Orders Only: (800) 368-2022

Apple™, IBM™, VisiCalc™, The Home Accountant™ are trademarks of Apple, IBM, VisiCorp., and Continental Software respectively

game for each function. Davidson & Associates, 6069 Groveoak Pl., #12, Rancho Palos Verdes, CA 90274. $49.95.

Mix and Match. CTW. Create mixed-up Muppets and teach the Apple about animals. Logic and word-guessing games. Add your own word lists. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $50. *2/83*.

Moptown. Two appealing and educational games require children to arrange Moppet characters in imaginary Moptown. *Moptown Parade* teaches logic, strategy development, and pattern recognition for ages 6 to 10. *Moptown Hotel* teaches use of analogies, strategic thinking, and sequential reasoning for ages 9 and up. The Learning Co., 545 Middlefield Rd., #170, Menlo Park, CA 94025. $39.95 each.

● **The New Step by Step, Step by Step Two.** *The New Step by Step* teaches beginning programming. *Step by Step Two* teaches intermediate Basic programming, peek and poke, hexadecimal numbers, concatenations, and more. Program Design, 11 Idar Ct., Greenwich, CT 06830. $89.95. *7/83*.

On Becoming a Hero. Nidorf. Nonjudgmental program for teenagers helps them evaluate their value system, decide what kind of person they are and what kind of person they want to be. Psychological Psoftware, 4757 Sun Valley Rd., Del Mar, CA 92014. $29.50.

✓ **Pascal Tutor.** Teaches UCSD Pascal. Comes with textbook; menu-driven for easy review access. Denver Software, 14100 E. Jewell Ave., Aurora, CO 80012. $125.

Plato Fractions. Correct use of fractions breaks balloons in elementary school-level tutorial. Features automatic adjustment of difficulty level. Control Data, Box 261127, San Diego, CA 92126. $45.

Rocky's Boots. Robinett, Grimm. Rascally racoon helps children build logical thinking and computer understanding. Construct machines of logical gates in convolutions of thickening complexity. Music and sound effects add to fun. The Learning Co., 545 Middlefield Rd., #170, Menlo Park, CA 94025. $49.95. *2/83*.

SAT English I. Designed to help high school students prepare for college entrance exam. Covers verbal half of test; learn by mistakes. Micro Lab, 2699 Skokie Valley Rd., Highland Park, IL 60035. $30. *11/81*.

SAT Word Attack Skills. Priven. Teaches college-bound students testing skills, vocabulary, and methods of deciphering unfamiliar words. Edu-Ware, Box 22222, Agoura, CA 91301. $49.

Snooper Troops. Snyder. Ongoing hi-res mystery series in form of educational games. Highly structured; excellent fourth-through-eighth-grade educational tool. Fun for adults too. Spinnaker, 215 1st St., Cambridge, MA 02142. $44.95 each. *9/82*.

Spelling Builder. Victor. Unique set of eight programs and audio cassette teaches students and adults reasons behind spelling; overcomes spelling difficulties. Ideal for those who have mastered basic spelling but have trouble with tricky words. Superior. Program Design, 11 Idar Ct., Greenwich, CT 06830. $26.95. *5/81*.

Stickybear. Hefter, Worthington, Rice, Howe. Animated early education programs. In *Stickybear ABC*, moving pictures with sound represent letters. In *Stickybear Numbers*, groups of moving objects teach numbers and simple arithmetic. Ages three through six. In *Stickybear Bop*, ducks, planets, and balloons bop across screen in three shooting galleries. For all ages. Xerox Education/Weekly Reader, 245 Long Hill Rd., Middletown, CT 06457. $39.95 each. *5/83*.

Story Machine. Helps develop positive attitude toward writing and ability to write correctly. Words come to life when sentence is acted out on-screen. Kids five to nine love to type "The tree

Our competition hopes we keep a low profile on our new disk drive.



And we plan to. Because our new low profile design saves space. (It's just half the height of ordinary drives.) But compact size is only one of the many improvements we've made in our Apple®-compatible disk drive, the MicroDrive II.™ Our advanced mechanical design gives you greater reliability, plus faster start-up and access time. And an automatic disk eject mechanism makes disk removal a snap.

We're also the only non-Apple® drive that's FCC type approved.

That's right. We're small, but we're good. So good that we're the only non-Apple® drive certified to comply with FCC Rules governing radio interference. (Operate your computer with a non-certified peripheral and you could cause interference to TV and radio reception in your neighborhood.) So good that our MicroDrive II, 5¼ subsystem is fully guaranteed. Its one year warranty covers both parts and labor.

Our new MicroDrive II puts the byte on competition.

You can put two of ours in the same space as one of theirs. You buy a computer to save time, why not buy a drive that saves space? (And that gives you top performance.)

Phone (612) 623-0293 for the dealer nearest you.

Apple® is a Registered Trademark of Apple Computer, Inc. Atlantic Data Products™ are products of Atlantis Corp., Mpls., MN. ©1983 Atlantis Corporation

Atlantic™ Data Products

Quality Today. Quality Tomorrow.

ran down the street" and see it do so. Spinnaker, 215 1st St., Cambridge, MA 02142. $34.95.

Super Speed Reading. Carpet. Exquisitely clear, logically organized. Classic speed reading method brought faithfully to computer. Integrates 120 computer text pages with books. Keeps time, saves progress record. Magnum, 21115 Devonshire St., #337, Chatsworth, CA 91311. $149. *9/83.*

Terrapin Logo. MIT. The Logo language, using a Terrapin turtle to teach state, control, and recursion. Terrapin Inc., 380C Green St., Cambridge, MA 02139. $149.95.

Tic Tac Show. Teaches facts and concepts about the world in general. Solo or double play; add topics. Computer-Advanced Ideas, 1442A Walnut St., Berkeley, CA 94709. $39.95.

Troeger Math Placement Guide. Troeger. Enables teachers to administer math placement tests without paperwork. Seven levels of testing, automatic level advance. Merit Audio Visual, Box 392, New York, NY 10024. $59. *9/83.*

Type Attack. Hauser. Learn to type while defending the planet Lexicon from invaders. IIe version teaches IIe keyboard. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. $39.95.

Typing Tutor. Ainsworth, Baker. Four levels of proficiency; individualized drills created with time-response monitoring. Microsoft, 10700 Northup Wy., Bellevue, WA 98004. $24.95.

Strategy

Thinking, planning, plotting games, from war games to backgammon to cards.

Broadsides. Garris. Re-creates famous naval battles from the days of sail. Plays in either arcade or strategy mode. Strategic Simulations, 883 Stierlin Rd., A-200, Mountain View, CA 94043. $39.95.

Casino. Five hi-res games, Vegas style: blackjack, baccarat, keno, poker, and roulette. Datamost, 8943 Fullbright Ave., Chatsworth, CA 91311. $39.95. *10/82.*

● **Castle Wolfenstein.** Warner. First game to fuse successfully strategy, home-arcade, fantasy. Escape from Nazi stronghold with secret plans. Room layout changes with each new game. Enemy speaks (in German). Muse, 347 N. Charles St., Baltimore, MD 21201. $29.95. *10/81.*

Chess 7.0. Atkin. A loving piece of programming; neither too slow nor too easy. Plays a mean end game. Tops yet. Odesta, 930 Pitner, Evanston, IL 60202. $49.95. *1/83.*

● **Computer Ambush.** Williger. Gutty soldier-to-soldier street fighting in World War II France. Latest version is 40 times faster than the original, which was one of best games ever created for Apple, except for slowness. Strategic Simulations, 883 Stierlin Rd., A-200, Mountain View, CA 94043. $59.95.

● **Computer Baseball.** Merrow, Avery. Simulates individual player abilities from the teams of 13 famous World Series. Enter and play teams of your own creation. Strategic Simulations, 883 Stierlin Rd., A-200, Mountain View, CA 94043. $39.95. *9/81.*

Conquering Worlds. Hochbrueckner. Manifest Destiny in space. Wipe out robotkind and claim new worlds for humans in cosmic leapfrog land race. Tough to learn; enjoyable and challenging once mastered. Contains arcade sequence. Datamost, 8943 Fullbright Ave., Chatsworth, CA 91311. $39.95. *10/83.*

Eagles. Raymond. World War I aviators climb, dive, shoot, run for home in historic aircraft. Be either German or Allied ace. Strategic Simulations, 883 Stierlin Rd., A-200, Mountain View, CA 94043. $39.95.

● **Flight Simulator.** Artwick. Uses aerodynamic equations, airfoil characteristics for realistic take-off, flight, and landing. Two years on Top Thirty. SubLogic, 713 Edgebrook Dr., Champaign, IL 61820. $33.50.

Geopolitique 1990. Ketchledge, Billings. Diplomatic, economic, and military simulation that pits the United States against the Soviet Union in a struggle for world supremacy. Features two phases: global diplomacy and geowar, a simulation of non-nuclear combat. For one player. Strategic Simulations, 883 Stierlin Rd., A-200, Mountain View, CA 94043. $39.95. *10/83.*

Germany 1985. Keating. NATO forces tangle with Soviet troops in West Germany in the first act of SSI's *When Superpowers Collide* saga—accompanied by *RDF 1985* and *Baltic 1985*. Includes rulebook necessary for play of the other acts. Strategic Simulations, 883 Stierlin Rd., A-200, Mountain View, CA 94043. $59.95. Others, $34.95. *4/83.*

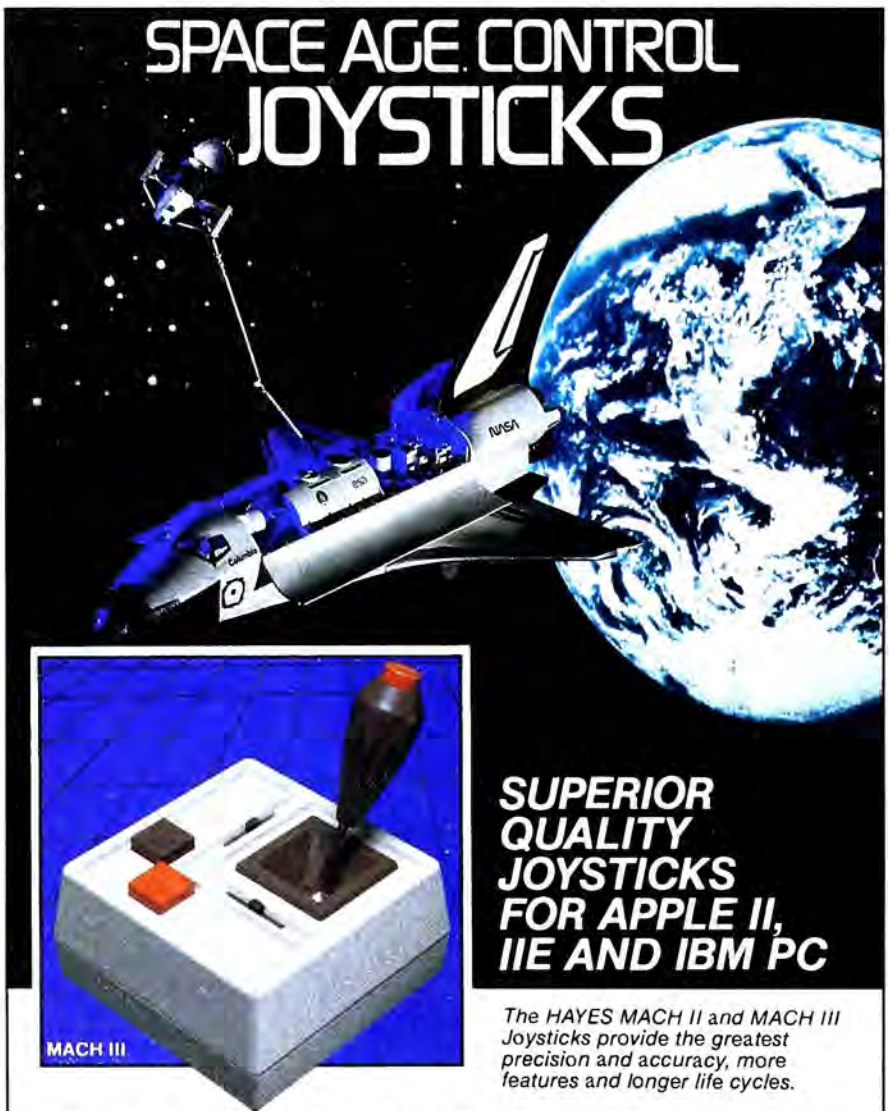
Gin Rummy. Carpet. Play against computer. Hi-res hand can be arranged. Knocking allowed. Computer plays pretty well. Datamost, 8943 Fullbright Ave., Chatsworth, CA 91311. $29.95. *6/82.*

Hi-Res Computer Golf 2. A masterpiece; requires judgment, strategy, and visual acuity. One of the few computer sports simulations that require dexterity. Avant-Garde, Box 30160, Eugene, OR 97403. $34.95. *6/83.*

● **Microgammon II.** Program for play, practice, improvement of backgammon skills. Pretty good competition. Softape, 5547 Satsuma Ave., North Hollywood, CA 91601. $19.95. *2/81.*

North Atlantic '86. Grigsby. The Soviet Union has seized Europe. NATO has retreated to Iceland. Desperate land-sea-air strategy for one or two players. Strategic Simulations, 883 Stierlin Rd., A-200, Mountain View, CA 94043. $59.95. *9/83.*

Oil Barons. Glass. Live out your J.R. fantasies on



The HAYES MACH II and MACH III Joysticks provide the greatest precision and accuracy, more features and longer life cycles.

Added features are a totally coordinated 360° cursor control with fine trim adjustments on both axes, and a self centering feature which can be externally disengaged to allow for positive true positioning movement. In addition, the MACH III Joystick is constructed with a stainless steel ball as its main pivot and offers a push button switch on the stick handle to give the competitive edge for games, business and graphics applications.

MACH II
Apple II $39.95
Apple IIE, IBM PC $44.95

MACH III
Apple II $49.95
Apple IIE, IBM PC $54.95

All mail orders add $2.00 for postage & insurance. California residents add 6% sales tax. Dealer inquiries invited

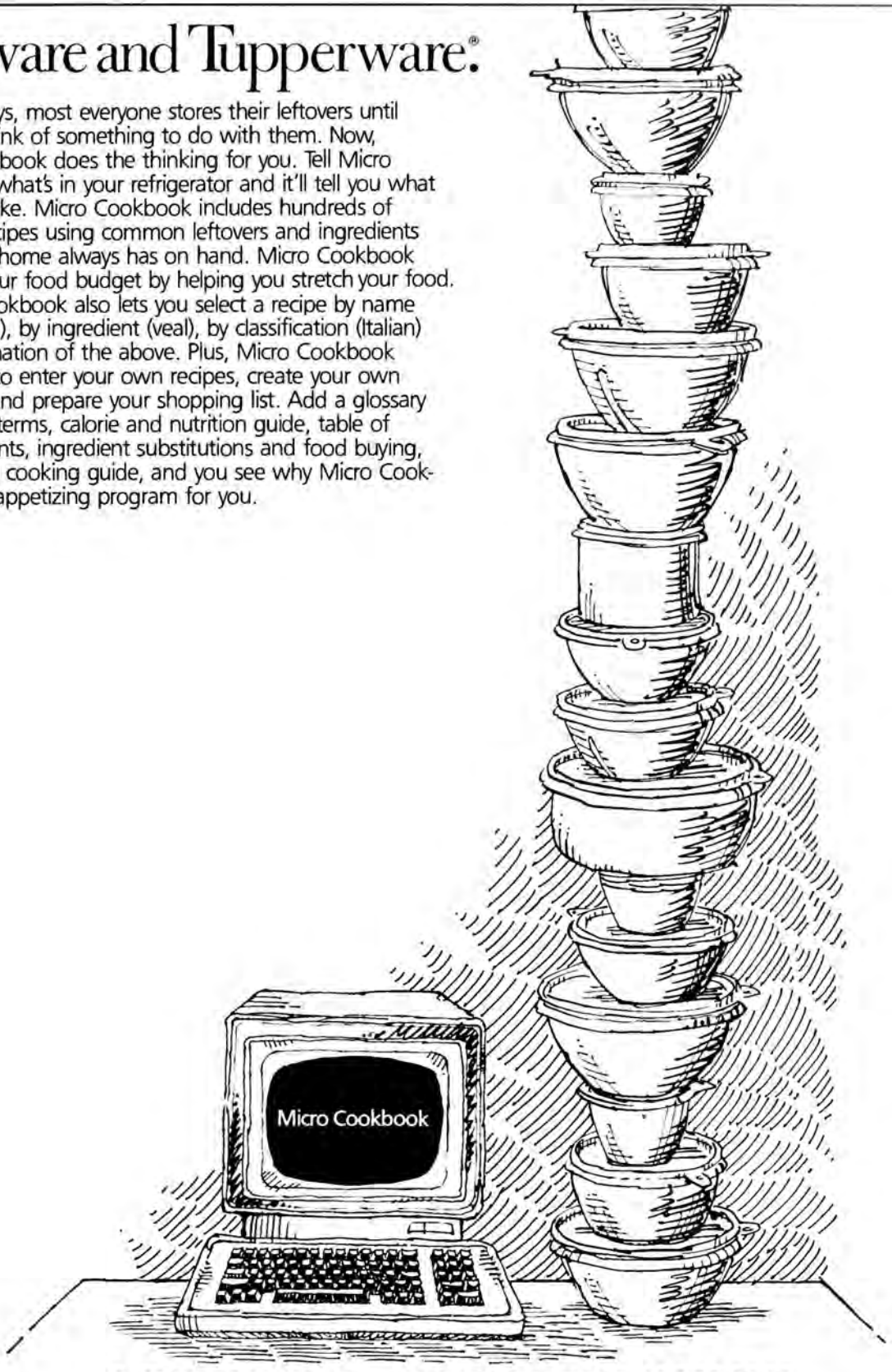
Apple II, IIE and IBM PC are registered trademarks of Apple Computer Inc. and International Business Machines respectively

HAYES PRODUCTS
1558 Osage Street
San Marcos, CA 92069
(619) 744-8546

Software and Tupperware®

These days, most everyone stores their leftovers until they can think of something to do with them. Now, Micro Cookbook does the thinking for you. Tell Micro Cookbook what's in your refrigerator and it'll tell you what you can make. Micro Cookbook includes hundreds of delicious recipes using common leftovers and ingredients most every home always has on hand. Micro Cookbook stretches your food budget by helping you stretch your food.

Micro Cookbook also lets you select a recipe by name (Veal Picatta), by ingredient (veal), by classification (Italian) or a combination of the above. Plus, Micro Cookbook allows you to enter your own recipes, create your own cookbook and prepare your shopping list. Add a glossary of cooking terms, calorie and nutrition guide, table of measurements, ingredient substitutions and food buying, storage and cooking guide, and you see why Micro Cookbook is an appetizing program for you.



VIRTUAL COMBINATICS

P.O. Box 755, Rockport, MA 01966 (617) 546-6553

Look for Micro Barmate, the computer age bar guide and companion to Micro Cookbook.

Versions available for APPLE II + , APPLE IIe (80 column) and IBM PC (64K, PC DOS). The cost, $40. Available at your favorite dealer or by mail. VISA, MC or phone orders accepted. Please add $1.50 handling charge.

APPLE, IBM and Tupperware are registered trademarks of Apple Computer, Inc., IBM Corporation and Dart Industries Inc., respectively.

game board and disk. For one to eight players. Epyx/Automated Simulations, 1043 Kiel Ct., Sunnyvale, CA 94086. $100.

✓ **Parthian Kings.** Bradley. City-state warfare set in a magical kingdom complete with kings, wizards, legendary creatures. Create your own armies, game board. Avalon Hill, 4517 Harford Rd., Baltimore, MD 21214. $25. *10/83.*

● **Pensate.** Besnard. Chess-type thinking game with new tactics. Computer's many pieces move in relation to player's piece; each of 10 types of computer pieces has unique rules. Makes full use of computer capabilities. Intriguing, progressive, and addictive. Penguin, 830 4th Ave., Geneva, IL 60134. $19.95. *7/83.*

Rendezvous. Huntress. Space-shuttle simulation in 3-D, created by a senior scientist at JPL. Orbit Earth, match orbit, and dock with space station. Authentic, demanding. Edu-Ware, Box 22222, Agoura, CA 91301. $39.95. *7/82.*

Ringside Seat. Saracini. Who really was the greatest? Find out by managing matches between Joe Louis and Rocky Marciano, or Muhammed Ali and Jack Dempsey, among others. Strategic Simulations, 883 Stierlin Rd., A-200, Mountain View, CA 94043. $39.95.

● **RobotWar.** Warner. Strategy game with battling robots is great teaching device for programming. Muse, 347 N. Charles St., Baltimore, MD 21201. $39.95. *1/81.*

● **Sargon II.** Spracklen, Spracklen. Computer chess game with seven levels of play. Hayden, 600 Suffolk St., Lowell, MA 01853. $34.95.

✓ **Sargon III.** Spracklen, Spracklen. Plays good chess fast. Much improved from *Sargon II*, contains 107 classic games from the past for instruction or entertainment. Hayden, 600 Suffolk St., Lowell, MA 01853. $49.95. *10/83.*



Available December 1, 1983

$39.95

The fog has finally lifted from the shire, exposing the great walls of the enemy castle. Cold chills run through you in your heavy armor, making all about you seem hostile and foreboding. Thoughts of the previous night's battle with the horrible dragon still rage in your mind as you prepare to join your troops in the final assault. You've tried diplomacy...you've tried bribery...you've even tried magic, but all to no avail. Force of arms seems to be the only way with this one. You must defeat this last lordling to secure the freedom of the land and be crowned Lord of the Realm once and for all. Now...visor down...shield forward...onward to victory!!

LORDLINGS OF YORE—the ultimate "Fantasy" (fantasy/strategy) computer game. Hi-res full-color graphics, sound, animation, and REALISTIC combat action and results all combine to make this Apple* game a must for any player age 8 to 80... 1, 2, 3, or 4 players with levels of computer opponent's ability determined by you. Hidden movement, passwords, and limited intelligence of enemy moves keep players "in the dark" for added realism.

Never before has a combat system THIS good been available in a computer game. Don't miss it!! Available at software stores everywhere, or order direct with Master Card, Visa, or American Express. Call (512)691-2800 or mail order to P.O. Box 29000 Department 160 San Antonio, Texas 78229

*Apple is a registered trademark of Apple Computers, Inc.

Softlore Corporation
8714 Wellesley Manor
San Antonio, Texas 78240

COPYRIGHT 1983 SOFTLORE CORPORATION

Space Station Zulu. Shields. The movie *Alien* married to a tactical combat game. Not bad, but suffers by comparison to similar siblings. Avalon Hill, 4517 Harford Rd., Baltimore, MD 21214. $25. *9/83.*

Spitfire Simulator. Air flight simulator—Spitfire in combat with German aces—with 3-D scenery and moving target aircraft. Mind Systems, Box 506, Northampton, MA 01061. $40. *12/82.*

Utility

Apple Mechanic. Kersey. Multiple disk utility with shape editor, custom typefonts, byte rewriter, and tricks to facilitate music, text, and hi-res generation. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $29.50. *9/82.*

Apple Mechanic Typefaces. Twenty-six new fonts for use with *Apple Mechanic*. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $20.

Apple Pascal. Structured operating system featuring enhancements of color graphics, sound generation, and Apple's I/O features. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $495.

The Assembler. Floeter. Machine language assembler that understands Basic, generates machine language code from Basic commands. Includes line editor. When used with *MacroSoft*, a library of routines, system acts as a complete high-level language. MicroSparc, 10 Lewis St., Lincoln, MA 01773. *The Assembler*, $69.95; *MacroSoft*, $49.95; both, $99.95. *9/83.*

Audex. Collection of utilities to create, edit, and play back sounds, in Basic and assembly language. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. $29.95.

Bag of Tricks. Worth, Lechner. Four utility programs for dumping and examining raw tracks, sector editing, reformatting tracks, and repairing damaged catalogs. Indispensable. Quality Software, 6660 Reseda Blvd., #105, Reseda, CA 91335. $39.95. *6/82.*

Beagle Basic. Simonsen. Allows you to enhance and customize Applesoft by adding up to 12 functions. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $34.95. *10/83.*

DOS Boss. Kersey, Cassidy. Utility to change DOS commands; customize catalog. Good ideas and witty presentation. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $24. *10/81.*

DOS 3.3. Increases disk storage capacity more than 20 percent over 3.2. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. $60.

Double-Take. Simonsen. Multiple-utility features two-way scrolling for catalogs, hex/ASCII dumps. Improved list format. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $34.95. *10/83.*

Einstein Compiler. Goodrow, Einstein. Translates Applesoft programs into machine language for run-time up to 20 times faster. Supports all graphics modes, defined functions, and DOS commands. Einstein, 11340 W. Olympic Blvd., Los Angeles, CA 90064. $129. *5/83.*

Flex Text. Simonsen. Adds graphics to text and vice versa; prints variable-width text with no hardware. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $29.50.

Frame-Up. Weishaar. High-speed display utility generates professional presentations of graphics, text frames. Text screen editor lets you create text slides, add type live during shows. Optional preprogrammed display for unattended shows. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $29.50.

GALE. Mossberg. Global Applesoft line editor lets single key stand for long programming commands, renumbers program lines, merges, finds, deletes. MicroSparc, 10 Lewis St., Lincoln, MA 01773. $39.95.

How a fireman and a broken leg made software simple.

What does a fireman know about designing software? Nothing. Usually.



Meet Dennis Jarvis, a fireman from Southern California. About five years ago, Dennis was injured in a fire-related accident and was confined to the house for about six months. To keep him occupied, Dennis' wife bought him a gift. A computer.

Dennis had never used a computer before. But he found that he had a natural ability to understand all aspects of computer usage.

Before long, Dennis was writing his own programs. And Basic Accounting from Firefighter Software was born.

It was brilliant. Naturally.

THE IDEA BEHIND BASIC ACCOUNTING.

What's so innovative about the software is it's simplicity.

Unlike other programs, it requires no understanding of basic accounting theory. It's virtually impossible for you to type something that'll damage either the program itself or any data you've entered.

BUT IT'S FAR MORE THAN JUST EASY.

Because Dennis made his Basic Accounting simpler doesn't mean it's not smarter, too. He's added more practical features and capabilities than the number-one seller.

Dennis' program allows for an unlimited number of individual financial transactions, and all balances are automatically updated after each entry.

Dennis added Password Protection. So your financial records aren't open to just anyone.

You can print checks of any size and format.

Plus, Firefighter can create a wider variety of on-screen and printed reports.

AND THE LIST OF SMART FEATURES GOES ON...

Dennis? He returned to the Department soon after his leg healed, but remains the spearhead of Firefighter Software.

In fact, in his never-ending efforts to make Firefighter the most personal, most supported software, Dennis has set-up a telephone hotline especially for you. Standing by to answer your questions and provide consultation. That's just Dennis' way of insuring Firefighter remains superior, always simpler yet smarter.

HOTLINE: (213) 991-8200

FIREFIGHTER. SIMPLER, SMARTER SOFTWARE

PRACTICAL PERIPHERALS 31245 La Baya Drive, Westlake Village, CA 91362

● **Global Program Line Editor.** Enhanced version of *Program Line Editor* with programmable cursor and listing control. Edit line by line or by range of lines and search for strings. Synergistic, 830 N. Riverside Dr., #201, Renton, WA 98055. $60. *12/82.*

Merlin. Does assembly language programming with a dozen editing commands and 28 pseudo-ops. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. $64.95. *1/83.*

ORCA/M. Westerfield. Object relocatable code assembler for micros. Macro language features; linker produces executable binary files. Coresident screen editor and system disk sector editor. Hayden, 600 Suffolk St., Lowell, MA 01853. $149.95. *5/83.*

ProntoDOS. Weishaar. High-speed disk utility cuts about two-thirds of the time off bload and save functions. Compatible with all DOS commands; frees up to 15 extra sectors per disk. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $29.50.

Ramdisk IIe. Kraemer. High-speed pseudo-DOS for 64K RAM. Large amounts of storage for the price. Precision, 6514 N. Fresno St., Milwaukee, WI 53224. $19.95. *9/83.*

✓ **Skyforth.** Tosch. Forth operating system with on-board tone generator, editor, assembler, sorting routines, and capability of using special character sets. Tosch Information Associates, 3711 S.W. 107th St., Seattle, WA 98146. $95. *10/83.*

Sphinx. Software giving single-pass encryption beyond 10 to the 400th power. Crane Hill, Box 273, Gonzalez, FL 32560. $37.50.

● **Super Disk Copy III.** Hartley. Easy-to-use menu-driven software utility; correct file sizes, undelete, free DOS tracks, more. Sensible, 6619 Perham Dr., W. Bloomfield, MI 48003. $30. *10/81.*

✓ **Super Disk Labeller.** Latona. Creates disk labels, configures with many printers. Requires little typing. Lakefront Software, 7754 Balboa Blvd., Van Nuys, CA 91406. $34.95.

✓ **T&G.** Set of machine language routines that place text, graphics on hi-res screen. Includes three sizes of text characters, graphics editor, tutorial. C & C Software, 5713 Kentford Circle, Wichita, KS 67220. $65.

Tip Disk #1. Kersey. One hundred *Beagle Tip Book* programs on disk. Includes Apple command chart and peeks/pokes chart. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $20.

Utility City. Kersey. Twenty-one utilities on one disk. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. $29.50.

✓ **XPS-Diagnostic.** Peters. Comprehensive hardware diagnostic utility by author of *Apple Cillin* includes graphic display of bad memory chips, tests for printers, RAM, ROM, and peripheral cards. XPS, 323 York Rd., Carlisle, PA 17013. $49.95.

★NOW★
AVAILABLE
FREE
SOFTWARE
CATALOG
3
SOFTWARE BROKERS
THREE sigma Inc.
P.O. BOX 716
MORRISVILLE PA
19067

Word Processing

Apple Writer II and **IIe.** Includes WPL (word processing language). Additional functions menu; continuing features and functions menu; continuous readout of characters and length. *IIe* has shift, shift-lock, and tab, four-arrow cursor control, and delete key; data files compatible with *II*. Apple, 20525 Mariani Ave., Cupertino, CA 95014. *II*, $150; *IIe*, $195.

Apple Writer II Preboot. Armstrong, Borgersen. Allows you to run *Apple Writer II* in 80-column format with the Videoterm 80-column card. Videx, 897 N.W. Grant Ave., Corvallis, OR 97330. $19.

Bank Street Writer. Kusmiak, Bank Street College of Education. Designed for use by whole family. Universal search and replace, word wrap are standard. U/lc without hardware. On-disk tutorial. Takes advantage of memory, keyboard on IIe, if you have one. Broderbund, 1938 4th St., San Rafael, CA 94901. $69.95. *2/83.*

Format-II, Enhanced Version. Hardwick, Beckmann. Word processor supports all popular 80-column cards, stores up to 50 pages of text on one disk. Includes single keystroke editor, mailing list database; displays text on-screen exactly as it will print out. Compatible with hard disk drives. Kensington Microware, 919 3rd Ave., New York, NY 10022. $150.

✓ **Lexicheck IIe.** Spell-checking companion to *Word Juggler IIe* has 50,000-word vocabulary, room for auxiliary personal dictionary, features global replacement of misspelled words. Quark, 2525 W. Evans Ave., #220, Denver, CO 80219. $129. Requires *Word Juggler IIe*, 128K. *10/83.*

Magic Window II. Forty, 70 (in hi-res), or 80 columns in this expanded version. Compatible with Pascal 80-column. With user-tailored, fast menu; underlining; global search and replace. IIe version uses all 64K, more if you have it. Artsci, 5547 Satsuma Ave., North Hollywood, CA 91601. $149.95.

MegaWriter. Gives 80-column page without 80-column card, prints in boldface, underlines via menu; features mail list merge, find, replace, text block move. Written in Pascal. Requires 64K. Megahaus, 5703 Oberlin Dr., San Diego, CA 92121. $59.95. *8/83.*

✓ **Pen-Pal.** Moller, Moller. Small, friendly word processor that's particularly gentle with beginners. Includes almost every feature needed for manuscripts or correspondence. Howard W. Sams, 4300 W. 62nd St., Indianapolis, IN 46268. $59.95. *10/83.*

PIE Writer. Business processor allows 9,999 pages. Word deletion, auto indent, spooling, and type-ahead buffer. Hayden, 600 Suffolk St., Lowell, MA 01853. $149.95.

ScreenWriter II. Kidwell, Schmoyer. No extra hardware for u/lc, 70-column display, printer spooling. Edits Basic, text, and binary files; complete search and replace. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. $129.95. *1/83.*

● **Sensible Speller.** Hartley. Spell-checking program sports listable 85,000 words, extensible up to 110,000 words. Recognizes contractions, gives word counts, word incidence, number of unique words. Clear documentation and simplicity of operation. Works with many word processors' files. Best of breed. Sensible, 6619 Perham Dr., W. Bloomfield, MI 48033. $125. *11/82.*

Super-Text Professional (40/80). Automatic 80-column, u/lc on equipped IIe; with appropriate equipment on II Plus. On-screen formatting and help reference guides. Muse, 347 N. Charles St., Baltimore, MD 21201. $99. *12/82.*

Word Handler II. Elekman. Simple program with straightforward documentation. Eighty-column printing with the IIe. Silicon Valley Systems, 1625 El Camino Real, #4, Belmont, CA 94002. $199. *11/82.*

Word Juggler IIe. Gill. Sophisticated word processor with search, replace, and block move. Printout can be viewed on-screen prior to printing; multiple copies printed of selected pages. Quark, 2525 W. Evans Ave., #220, Denver, CO 80219. $239. *10/83.*

WordStar. Screen-oriented, integrated word processing system in CP/M. Z-80. MicroPro, 33 San Pablo Ave., San Rafael, CA 94903. $495.

✓ **Write Away.** Stinson. Manages a mailing list, interfaces with *VisiCalc* DIF files, uses predefined macros. Includes five tutorials. Powerful and full-featured. Midwest Software Associates, Box 301, Saint Ann, MO 63074. $175. *10/83.*

Zardax. Phillips. Highly recommended. Single program includes supersimple use of word processing features. Considerable extras including communication by modem. Good 80-column facility with board, automatic in IIe version. Computer Solutions, Box 397, Mount Gravatt, Queensland, Australia. In the U.S.: Action-Research Northwest, 11442 Marine View Dr. S.W., Seattle, WA 98146. $295. *Zip-Comm* modem program. $80. *11/82.*

Apple III

Access III. Communications program for time-sharing and standalone tasks; gives access to remote information services, minis, and mainframes. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $150.

Apple Business Basic. High-level structured programming language. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $125.

Apple III Business Graphics. BPS. General-purpose graphics program draws line graphs, bar graphs in three formats, overlays, and pie charts in 16 colors. Continuous or discrete data; curve-fitting capabilities. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $175.

Apple III Pascal. Program preparer with editor, compiler, disassembler, linker, filer, system library. Features cursor control, text modeling, formatting. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $250.

Apple Writer III. Lutus. Uses WPL (word processing language) to automate text manipulation and document creation. Adjusts print format during printing; translates from typewriter shorthand to English or other language and back again. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $225.

BPI General Accounting. BPI Systems. Includes *General Ledger, Accounts Receivable, Accounts Payable*, and *Payroll*. Maintains customer, employ-

ee, and vendor files; prints customer statements, checks. Analyzes budget, compares historic information, keeps independent financial records for 99 different departments and locations. Provides password protection for each company, can be maintained on one disk. Requires 256K Apple III, ProFile hard disk. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. $495.

Catalyst. Allows boot from hard disk; transfers all programs to ProFile. Quark, 2525 W. Evans Ave., #220, Denver, CO 80219. $149.

Hardisk Accounting Series, 2.0. General ledger, accounts receivable, and accounts payable handle 32,776 customers or accounts; inventory features five methods of evaluation. Also payroll, management analysis, and mailing labels. Great Plains, 123 N. 15th St., Fargo, ND 58102. $395 to $595 per module.

✓ **Lexicheck.** Spelling checker that runs from inside *Word Juggler*. Fifty-thousand-word dictionary; add your own words. Eight-thousand-word legal dictionary disk also available. Quark, 2525 W. Evans Ave., #220, Denver, CO 80219. $145.

Mail List Manager. Generates, stores, sorts, edits, and prints mailing list files. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $150.

Micro/Terminal. Gives access to any in-house or remote database; set up and log only once. Built-in editor or edit off-line. Microcom, 1400-A Providence Hwy., Norwood, MA 02062. $99.95.

PFS:File. Page. Form-oriented information-management system stores and retrieves up to 32,000 entries. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. $175.

PFS:Graph. Chin, Hill. Works alone or interfaces with *PFS* databases and *VisiCalc* files. Produces bar, line, and pie charts, merging data from several sources. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. $175.

PFS:Report. Page. Generates reports; sorts, calculates, and manipulates data filed with *PFS:File*. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. $125.

Quick File III. Personal index card or filing system that generates reports, sorts. Fifteen fields; file as long as disk allows; can be put on ProFile. Apple, 20525 Mariani Ave., Cupertino, CA 95014. $100.

State of the Art General Ledger and Business Modules. Standalone interfaceable modules for 12 accounting periods. Includes *General Ledger*, *Accounts Receivable*, *Accounts Payable*, *Payroll*, *Inventory Control* ($595 each), *Sales Inventory*, *Budget and Financial Reporting* ($495 each), and *Professional Time and Billing*, $795. State of the Art, 3183A Airway Ave., Costa Mesa, CA 92626.

VersaForm. Landau. State-of-the art business-forms processor. Does invoicing, purchasing orders, mailing lists, client billing. Powerful, complex, worth getting to know. Hard-disk-compatible. Applied Software Technology, 14128 Capri Dr., Los Gatos, CA 95030. $495. *8/82*.

VisiCalc Advanced Version. For corporatewide modeling applications; develop sophisticated templates to be filled in by novice users. On-screen help, IRR and calendar functions, macro facility, variable column widths, locked cell values, and hidden cell contents. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. $400. *10/83*.

VisiCalc III. Software Arts, Bricklin, Frankston. Just like it sounds; expanded memory, u/lc, 80 columns. Four-way cursor movement. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. $250.

VisiSchedule. Critical path PERT scheduler. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. $300.

Word Juggler. Gill. Word processor uses expanded memory. Printout can be viewed on-screen prior to printing; multiple copies printed of selected pages. Quark, 2525 W. Evans Ave., #220, Denver, CO 80219. $295. *12/82*. ■

A name to remember for memory in a hurry.

flashcard™

solid state disk for Apple® computers



Packaged with business software for lightning fast processing.

Or, *flashcard* is packaged alone with drive diskettes for DOS 3.3, CP/M® and Pascal for software compatibility with popular programs such as WordStar® and dBase II®.

Bonus Offer: For a tidy turnkey solution to boosting business output, *flashcard* also comes packaged with MagiCalc® spreadsheet software from Artsci. MagiCalc is a superior, state of the art program that is fast, friendly and filled with features. And it is fully compatible with VisiCalc files.

Why *flashcard*?: Plug *flashcard* into your Apple and enjoy fast, smooth, no-wait computing. No more "disk wait" messages. No mechanical delays. No more noise as the disk chatters and clatters through a file search. And no wear and tear on your program diskettes. Instead, *flashcard* displays your data the instant you ask for it.

Your computer store should have *flashcard* in stock. If not, ask him to order one for you.

***flashcard* with MagiCalc $595**
***flashcard*, 147k disk $349**
***flashcard*, 294k disk $529**

Synetix, Inc.
15050 N.E. 95th St.,
Redmond, WA 98052
(206) 881-8440 **(800) 426-7412**

™Flashcard is a registered trademark of SYNETIX, INC.
® Apple is a registered trademark of APPLE COMPUTER, INC.
® MagiCalc is a registered trademark of ARTSCI, INC.
® CP/M is a registered trademark of Digital Research Inc.
® WordStar is a registered trademark of MicroPro.
® dBase II is a registered trademark of Ashton-Tate.

How to get in touch

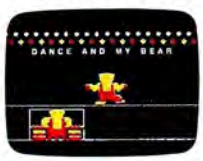
KoalaPad™ Touch Tablet puts the controls at your fingertips.



Paint the screen with colorful graphics or play lightning-fast games with just a touch of your finger. The KoalaPad™ Touch Tablet makes using your computer more fun than ever before. Just moving your finger across the special touch-sensitive surface controls graphics, game commands, and much more. It's a great way to get the most out of your computer while you just sit back and

with your computer.

relax. The KoalaPad fits comfortably in the palm of your hand for easy use. And once you have it in your hands, it's hard to put down. That's because the KoalaPad does much more than joysticks, paddle controllers or the "mouse." Each KoalaPad set is packaged with a KoalaWare™ graphics program* for creating beautiful, high-resolution graphics right on the screen.



Dancing Bear™ *brings a funny, furry cabaret star right into your home where your own programmed performances will win applause every time.*



Spider Eater™ *the game that attacks musical education with a voracious appetite, taking a bite out of the task of learning the musical scale.*

And that's just the beginning.

There's a full line of KoalaWare programs to choose from with a perfect combination of entertainment and education.

Logo Design Master™ *uses computerized graphic design to help children and adults learn the basics of programming and prepare for more advanced applications.*



Spellicopter™ *takes off into the world of spelling with aerial acrobatics to challenge young students.*

Add a touch of excitement today to your Apple,® Atari,® Commodore® or IBM® computer.

See the KoalaPad Touch Tablet at the computer store nearest you. To locate the dealer in your area, call toll free 800-227-6703. (In California, 800-632-7979.)

Koala™ Technologies Corporation

We make computing more personal.™



*Software included with Touch Tablet varies with computer type.

KoalaPad, KoalaWare, Logo Design Master, Spider Eater, and Dancing Bear are trademarks of Koala Technologies Corporation. Spellicopter is a trademark of DesignWare, Inc.

Koala Technologies Corporation,
3100 Patrick Henry Drive,
Santa Clara, Ca. 95050

$5.00 REBATE*

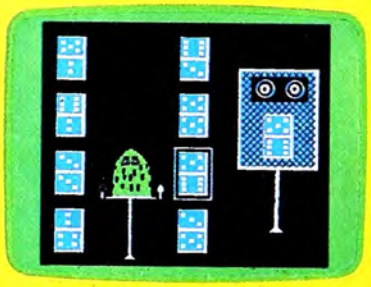


ROMP AROUND WITH FUZZYWOMP!™

Fuzzywomp lets loose a barrage of games that keep little hands and growing minds busy at the computer. It's not just fun and games. Each time children play, they're building essential basic skills in reading, writing and math. Whether making silly monsters, blowing bubbles or juggling with a clown, your children learn to have fun learning!

AGES 3 TO 6







Sierra ON-LINE™

SIERRA ON-LINE BUILDING COARSEGOLD CA 93614
209 683 6858

APPLE • COMING SOON TO COM 64

*When you buy eny Hi-Res Learning Game™ by Sierra On-Line™ between Oct. 1, 1983 and Feb. 29, 1984.

TM designates a trademark of Sierra On-Line, Inc.

OPEN DISCUSSION

Open Discussion gives you the chance to air your views and concerns, to seek answers to questions, to offer solutions or helpful suggestions, and to develop a rapport with other readers. It's what you make it, so share your thoughts, typed or printed, and double-spaced (please), in Softalk*'s Open Discussion, Box 60, North Hollywood, CA 91603. To ensure the inclusion of as many contributions as possible, letters may be condensed and edited.*

Format for Loyalty

I have been a *Softalk* subscriber for about a year and a half, and in that time I have seen a lot of letters praising and lambasting publishers, retailers, and other purveyors of software. Today something happened that made me want to put in my two cents.

This letter is being composed with the aid of Kensington Microware's *Format-II*, which I purchased several months ago. I made my choice based on reviews, an advertisement, and about fifteen minutes' time spent peering over the shoulder of my favorite software retailer as he demonstrated it to another customer. I bought it shortly thereafter, brought it home, and installed it. Immediately I started cranking out letters, resumes, and all manner of processed words. Happy ending—until the next issue of *Softalk* arrived.

One of the first things that caught my eye was an advertisement for *Format-II, Enhanced Version*. And priced at a whole lot less than I had just paid! I decided to be philosophical about the whole thing, since this sort of thing happens fairly often. I happened to mention this in passing to the above-mentioned retailer, and he suggested I call Kensington and ask about their upgrade policy. He had a very high opinion of the company and thought they would be liberal about upgrading. This seemed sound advice, but somehow that phone call never got made.

Today, when I came home, there was a large padded envelope in the mail from Kensington. It felt as though it had a binder in it, the kind of binder you might expect to find a manual in. I opened it and found—*Format-II, Enhanced Version!* Manual! Disk! Not copy-protected! Slipped inside the manual was a notice that, like all new programs, this one had had some bugs in it, but they had been eliminated from this disk.

Many letters have appeared in Open Discussion praising various hardware manufacturers and software publishers for delivering the goods when called on, but this is the first instance I have seen of a customer's receiving something he hadn't gotten around to asking for yet. This is the sort of thing that inspires brand loyalty!

Alan A. Jimenez, Torrance, CA

Street of Dreams

I find myself compelled to second the comments of Daniel J. Thomas regarding *Money Street* (September Open Discussion). This simple checkbook program has got to be the best designed, debugged, and user-friendly applications software in existence. Not only do I use it to manage my own finances, but it has completely replaced some rather expensive and well-known bookkeeping software in my two optometry practices. It has saved me tremendous amounts of both time and money and has put me more in touch with my finances than I've ever been before.

It actually takes our bookkeeper less time to enter and reconcile all transactions with *Money Street* than it did for her to reconcile the checkbook manually in the past. The report feature provides easy-to-understand, up-to-the-minute, comprehensive information on our financial situation. Greater detail and conventional financial formats are quickly obtainable by plugging data directly from *Money Street* into a spreadsheet program.

The program is a joy to use, does exactly what it's supposed to do, is easy to customize, and impossible to bomb. What more could anyone ask for?

Arthur B. Epstein, Roslyn, NY

Responsive Muse

To the list of companies offering great after-the-sale support for customers I'd like to add Muse, publishers of the *Super-Text* word processor. I've been using *Super-Text* for several years and whenever I've contacted the company with questions I have received prompt, courteous, helpful answers. Recently I wrote to inquire about updating my *Super-Text II* to their new professional version. Within a week I had the complete new edition at half price. Perhaps other software companies have this same policy, but as someone used to dealing with book publishers, I am impressed. When was the last time a publisher offered you a 50 percent discount on the new edition of a book you already own?

When I had some questions about the new version of *Super-Text*, I called Muse and got immediate answers. (My main problem was how to get the new version to print italics. Control-I was supposed to do it, but on the new version, control-I in the Add mode is a tab function. The answer, for anyone else who may be interested, is that control-I still works, but only from the Change mode. The easiest way to do this is probably to enter a dummy control character that you won't use anywhere else, then go through with find and replace at the end to change it to italics.)

At any rate, I'd like to recommend *Super-Text* and Muse as a company that stands behind its products.

Rosalie S. Ault, Winchester, MA

Unabashedly Unprotected

Users of application programs, as opposed to programmers and hobbyists/hackers, will generally find they need three types of application programs: word processors, database management systems, and spreadsheets. Now it is possible to get a great non-copy-protected program in each of these categories.

PIE Writer (a greatly enhanced and improved version of *Apple PIE*) is distributed by Hayden Book Company and is the very best word processor for the Apple in my opinion.

The Spreadsheet 2.0 is the very inexpensive spreadsheet program sold by Apple PugetSound Program Library Exchange (A.P.P.L.E.). *The Spreadsheet 2.0* may not be the fastest spreadsheet around, but it has some features many of the others do not, such as the ability to display seventy-column mode without hardware or eighty-column mode with hardware, variable width columns, and hidden columns. In addition, some of the *VisiCalc*-type utilities, such as *VisiBlend*, seem to work quite well with *The Spreadsheet*.

The Data Reporter (version 3.0) by Synergistic Software is just now appearing on the market and is the first version of this great database management system to be unlocked. Now the fastest, most versatile, and most fun-to-use database system can also be backed up.

For nonapplication uses (programming and such) there are also a number of companies now putting out unlocked software. Almost any

SLASH YOUR FUEL BILLS

Shelter Software's
HOME ENERGY OPTI-MI$ER

- Finds the best ways for you to save energy—and money
- Tells how much you'll save by switching to solar heat or other fuels
- Makes specific, accurate recommendations keyed to your home
- Easy to use
- For homes anywhere in North America

YOU COULD SAVE HUNDREDS OF DOLLARS EVERY WINTER

For Apple II* (48K min., DOS 3.3) or Atari 400/800* (32K min.)

Disk, workbook. Delivery in 4–6 weeks.

$39.50 PA residents add $2.37 tax

Shelter Software
Box 521 Dpt. S
Emmaus PA 18049

SOFTWARE THAT PAYS FOR ITSELF

*Apple II * Apple Computers, Inc. *Atari 400 800 * Atari, Inc.

ZAP THOSE DINOSAURS!!!



WITH
PERSON-TO-PERSON™

You know the monsters we mean. Species: *Databasis Commonus*. First you program them, later you can use them. And after sweating through the manual, what do you get? Right. A real dinosaur. Painfully slow. Hard to use.

Person-to-Person is the custom solution for your most used data. PTP is our simple and productive phone, mail and memo system. It *does things for you*. Right away. *And fast*.

- **Autodialer*:** Instantly dials person-to-person, via alternative long-distance, or computer terminal calls (automatic log-on, optional use of 80 columns)
- **Address Book:** Displays any address in 2 seconds
- **Mailer:** Address a single envelope, print filing card, prepare mailing list, or merge-print form letters with individual salutation and address
- **Memos:** Conveniently displayed and updated during calls

PTP is totally menu-driven with interactive prompting throughout. It's simply one of the fastest, friendliest databases you'll ever use. And so convenient to use you'll never lose another number.

Person To Person for the Apple II and Apple //e from Trutec Software™. Only $69.95.

Ask your dealer for a demo. Or order direct by phone or mail.

Credit card orders accepted by phone. By mail send check or money order. Add $3.00/shipping. California residents add 6% sales tax. Dealer inquiry invited.

Minimal system: 48K, 1 disk drive. Optional hardware employed: modem, printer, 16K card, 2nd disk drive, 80 column card. //e features. Capacity (64k) about 1500 listings per file. Also suitable for general filing.

*Optional modem required for dialing. Uses Hayes Micromodem II or Smartmodem with Apple Super Serial Interface or other compatibles.

Apple is a registered trademark of Apple Computer. Micromodem II and Smartmodem are registered trademarks of Hayes Microcomputer Products.

TRUTEC SOFTWARE™

1700 Solano, Berkeley, CA 94707
Orders: 800-621-3744 (In CA 415-525-4901)

product from A.P.P.L.E. is assured of being a quality, useful item. Of course, everyone knows of the great stuff by Beagle Bros. For graphics, there is always Penguin Software.

With this lineup of unlocked programs, it should never be necessary to use copy-protected software.

The reason more and more programs are now being sold on unlocked disks and are still making a profit is that it's become quite clear to companies that application programs (as opposed to games and other trivials) are virtually useless without documentation and manuals. Companies that continue to try and palm off copy-protected software have not learned that it's the good, usable documentation that keeps these programs from being pirated. The extensive and useless copy-protection schemes do nothing but cause frustration and anger among users.

Not only is each of the programs I've mentioned outstanding in its own right, but the fact that all of them are unlocked makes them even more attractive. I feel we should all support companies that make it a matter of policy to sell unprotected software. And, if the software is among the best in its class, what else need be said?

This next section is in response to the question asked by Jeffrey S. Grudin of Newbury Park, California, in the September If Then Maybe column. More exactly, it is a response to the answer given by Roy Hicks.

Jeff, it is my opinion that most of the information given in the answer may be wrong or is, at least, open to debate. I personally do not use the reverse side of disks, but for my own reasons, not those given by Roy Hicks. If you really want some good information on the use of both sides of disks, I refer you to articles in the *Newsletter of the Washington Apple Pi*, June, July, and August 1982 issues. At the very least, this series of articles will show you that the subject is open to discussion, rather than being an "if-then" question.

By the way, I think the If Then Maybe column is a great idea. My favorite parts of all the many computer magazines I read are the "letters to the editor" and "questions and answers"-type columns.
Thomas E. Militello, Rancho Palos Verdes, CA

A Modest Master

A rare experience is finding a complete, comprehensive set of programs for a modest cost. *MasterChart*, by Spectral Graphics Software, provides a variety of bar, pie, and line charts in both two- and three-dimensional perspectives. It is simple to use and worth many times the cost. It also provides the ability to make your own figures, symbols, and so forth in any shape you can imagine. Our sales department uses these programs to prepare charts for customer presentations. I use these programs personally for presentations to my board of directors. Thanks to Spectral Graphics Software for dreaming up *MasterChart* and selling it at a reasonable price.
Robert J. Morris, Middlebury, IN

Gallant Support

I would like to tell about a software company that really cares about and knows the meaning of service.

I enjoy an occasional game of *Knight of Diamonds* by Sir-tech. After a week or so of playing, I started having bad sector or read/write problems. I went through five disks and was about to call the company to ask them why the game never worked properly for longer than a couple of days, when I received a call from Mrs. Bresett. She spent almost an hour on the phone long distance talking about how and where I used the game. We came to the conclusion that, due to a power flux at my home, the disk drive was half tracking.

This effort was costly to this company, and all I can say is thank you, Sir-tech.
Warren Cartright, Canyon Country, CA

Telling a Disk by Its Cover

I have a complaint about the software industry. The problem is software advertising. When I look at an ad for a piece of software, I like to know what I'm being asked to buy. What is often shown is the package art or an artist's conception of the program's graphics. Rarely do we see actual program displays reproduced.

What I am asking for is simple. If a program uses graphics, show one or more sample displays in the advertising. I would also like to see the same concept applied to program packaging. Once in a while I find a great program with lousy cover art. These programs could be saved if the consumer could be given a reason to give the program a second glance. It would make software purchasing decisions easier for everyone, both the dealer and the consumer.
Dennis Mitchell, Rapid City, SD

As we all know, many software companies have very impressive artwork on their disk jackets. This gives false impressions as to the actual program graphics and actions. I'm sure it has been discussed, but so far, as I look at the ads, not much has been done to correct this deceptive practice. It seems to me that the software producers should show an actual screen image from a program—on the disk jacket as well as in the ads.

I commend those software companies that do have the actual screen showing in their ads. They are being honest with us and deserve our support.
Gus Schneider, Yonkers, NY

I simply won't read or even get interested in product ads that don't tell me anything. Here's what I need to know: What is the retail price? If I'm interested, I will shop around to find the best discount I can find. But if, for example, Epson brings out a new model, how much does it cost? If they can't advertise the price, I won't bother with it. More important, I'll probably forget it because I won't even read the ad! Advertisers should publish a price in large print.
Keith Brewster, Sunnyvale, CA

The Positive Sort

I thought that I might write to inform your readers about some of the Apple-related products I have recently used. *Master Sort*, published by Marshall Associates in Huntsville, Alabama, is a machine language sort routine that sorts and

merges random or sequential text files in a matter of seconds. I was able to sort more than nine hundred random records, in both a descending and an ascending order, in just a few seconds. I particularly appreciated Mr. Marshall's help with some technical questions. His follow-up service, his documentation, and his product are well worth the price.

There are two pieces of hardware I purchased that I wish I could be as positive about. The first is the Okidata 93 dot-matrix printer. Though the print quality is everything I would want from the printer, there are a number of shortcomings. The tractor feed works very poorly. I cannot leave the printer alone; after six to eight pages the paper becomes misaligned. The documentation is also very poor. Nowhere does the documentation describe how to align the paper for the tractor feed. Also, the documentation never tells the owner how to use the self-test with 8.5-inch-wide paper. The self-test seems to be set up only for 15-inch paper. Although the printer seems to work fine with the exception of the tractor feed, I do not feel I have the professional product I sought.

The final piece of hardware I wish to comment on is the Pkaso printer interface by Interactive Structures. The problem with the Pkaso card is very much the same as with the Okidata. Namely, the documentation is poor. Nowhere does the manual tell the user about the programs that are on the disk that comes with the card! This shows a complete lack of respect for the purchaser. When I called Interactive, an employee there acknowledged that a new manual was in the works but could not say when it would be ready. Again, the product seems to work just fine, but I question whether I am getting full use of it since the instructions seem so incomplete.

Karl F. Thompson, Forest Hills, NM

Star of the Sea

Since *Softalk*'s Open Discussion seems to be the place to relate experiences with companies, I would like to add mine.

This concerns Star Micronics, manufacturer of the Gemini 10 printer, which I own. I was recently transferred to sea duty and found myself somewhere at sea aboard a naval vessel. Star Micronics recently released their new printer manual. It arrived at my former address and was forwarded by my wife. I guess the postal system dropped a bit somewhere and forwarded the manual to an obscure hole in the wall.

I wrote to the company requesting information on cost of the manual and shipping. Three weeks later a new manual arrived on my desk sent via first-class mail. At no time was Star Micronics in any way responsible for the replacement of the lost manual. They took it upon themselves to see that this one customer was pleased.

To Star Micronics go my thanks for the new manual. It is excellent, to say the least. I'll do business with this company again.

Dwain Morse (somewhere at sea)

The Making of a Docupirate

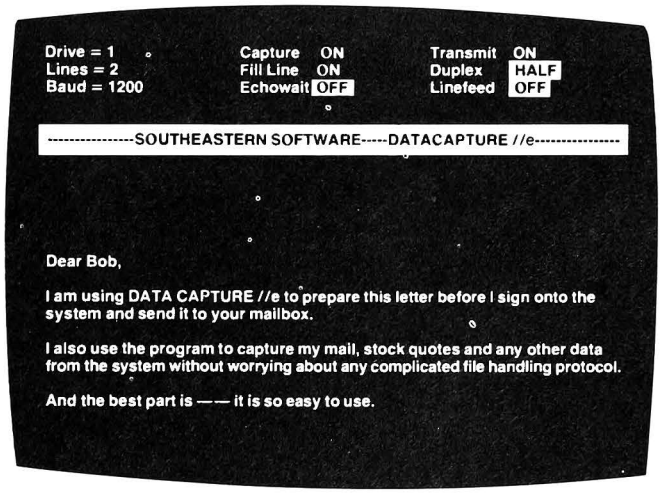
Simply put, I purchased some used computer equipment, both hardware and software.

The company that has over 18,000 Apple II owners using DATA CAPTURE 4.0 now brings you:

DATA CAPTURE™ //e

An all new modem program for the Apple //e.

- **300/1200 Baud Operation**
- **80 or 40 Column Display** – Automatically takes advantage of the Apple //e 80 column card if it is present.
- **All New Manual** – Includes Table of Contents, Tutorial, Reference Section, Troubleshooting Guide, and Index.
- **Editor** – for preparing text files for transmission or editing received data. Editor features include Insert Character, Delete Character, Delete to End of Line, Find Character in Line. Editor can be used to scroll forward and backward through Capture Buffer.
- **Capture Buffer** – List, Save, Print, or Transmit all or part of the Capture Buffer.
- **Disk Files** – Transmit, List, Print, Edit or Delete Disk Files.
- **One Key Commands** – for output of frequently used commands to remote systems.
- **Supports** auto dial, hangup and answer with all popular modems.
- **Menu Driven** – for ease of use by the beginner.
- **Fast Menu Feature** – for the experienced user allows skipping of menu screens.
- **Technical Support** – We have a history of fully supporting you when you purchase our modem software.
- **Not Copy Proctected** – We trust you.



DATA CAPTURE //e is available from your Local Dealer or direct from **Southeastern Software**, the people who help you communicate with **DATA CAPTURE //e, DATA CAPTURE 4.0** and **DATA CAPTURE/pc.**

Price – $90.00

Requires Apple //e Computer. Standard 40 column display or Standard or Extended 80 Column Text Card. One or more Disk Drives (or hard disk). Micromodem II, Smartmodem or other autodial modem, or acoustic coupler

DATA CAPTURE is a trademark of Southeastern Software. Apple //e is a trademark of Apple Computer Corporation. SmartModem, Micromodem II is a trademark of Hayes Microcomputer Products.

SOFTWARE DESIGNED WITH YOU IN MIND

Southeastern Software

7743 Briarwood Drive, New Orleans, LA 70128 • 504/246-8438 or 504/246-7937

Among the items was a Microsoft Z-80 SoftCard. However, there was no software or documentation available. I therefore called Microsoft to help me out with my dilemma. In no uncertain terms the person on the phone made me feel like a thief. I tried to explain and told him I would do whatever was necessary to prove my legal ownership of the SoftCard. The answer was that their policy was not to supply either software or documentation to anyone for any reason, with no exceptions. Thereupon, I wrote a letter to the president of Microsoft Corporation to tell him that, although I was not a thief, he had created a pirate. The only possible way for me to obtain what I should have the right to buy was to pirate it.

I quickly found out that Microsoft's dealers do not agree with its policy, since I was able to get documentation (to either read, make notes from, or whatever) and was allowed to copy the software right on the dealer's premises. As a matter of fact, the owner of one store went so far as to suggest that Microsoft's policy was, if not illegal, at least a restraint of trade.

On the other side of the coin, among the equipment I have also purchased is an Echo II card from Street Electronics. One phone call to that company brought me not only the software and documentation, but also a speaker and cable. Also during this same period, I developed a problem with the data disk I was using for *EZ-Ledger* by Highlands Computer Services. After receiving a return call from the company's programmer one evening and discussing the problem with him, I returned both the program disk and my own data disk to him. Within ten days I received a brand-new updated program disk and my old data disk, from which he was able to save most of the data. Simply put, a problem that I probably caused myself was cured by Highlands, and four disks were exchanged for two—all at no cost to me.

I was forced to return my Kraft joystick when it was barely ninety days old on a one-year warranty. As I packaged the joystick, I inadvertently broke off a pin on the plug. In my letter to them I explained the problem and said I would be happy to pay for the cost of the new plug. They did return a new joystick to me because the pots were not working reliably. However, I was charged $14 for the cost of a new cable—approximately 40 percent of the total cost of the joystick.

Due to my being upset with Kraft, I dug out my old TG joystick, which was about twenty-two months old. I found two broken pins on the TG joystick plug. After speaking with a representative of TG, he suggested I return the entire joystick to them so they could check it out for me. I was told that this would cost me approximately $5. Twelve days later I received the joystick with a brand-new cable and plug—at no additional cost.

I hope this letter will enlighten fellow consumers as to where they can find good support and where they will find little or even none.
Mario J. Trovarelli, Santa Ana, CA

Always Room for Improvement

I purchased Continental's *Home Accountant* late in 1982 and it's a good program, but it has a long learning curve for someone unaccustomed to working with accounting. I have made it a habit to enter two or more dummy transactions each month to allow for omitted entries. These can be edited to enter the omissions; the totals will be correct. Mine are payable to "dummy" in the amount 00.00 with the memo "for error of omission." I find it helpful to date them on the last day of the month to make a search easier.

My suggestions for improving *Home Accountant* include a faster DOS; an express command to allow exit without going through all menus; embedded pokes that would keep the data disk drive spinning during the reading of the many files in the printed report mode; a method of specifying that split amounts are to be included in the totals of some reports (I must get out the old calculator for some of these or enter several things separately); the option of not watching the graphics at every loading; and the option to view reports on the screen before printing.
J.W. Buchanan, Jr., Austin, TX

Disclaimer Disclaimed

Open Discussion is always one of my favorite portions of *Softalk* and I felt it was about time that I got involved in it. In the September issue, Hari Wiguna wrote expressing an interest in Forth but didn't know which way to turn. One of the nice features of Forth is its availability at a reasonable price. Here are a couple of suggestions.

The Forth Interest Group (Box 1105, San Carlos, CA 94070) has published a public-domain version of fig-Forth available for the Apple; it costs $30 with an installation manual. Another way to go (which I personally recommend), is through Mountain View Press (Box 4656, Mountain View, CA 94040). They have a public-domain version called MVP-Forth. Source code for MVP-Forth is available for $20, or you can order it on disk.

Also, I would like to take a moment to toss my two cents into the copy-protection/backup fray. Recently I bought a copy of Continental Software's *Home Accountant*. As a programmer, I normally find improvements that I would like to see in a program to make it easier for me. This program is no exception. It was, however, "copy-protected" after a fashion to prevent me from making it more usable. This is annoying, but I realized that when I bought it. What is truly upsetting about these situations, however, is after you purchase the package, get it home, and remove the shrink-wrap. Then you find the disclaimer. In this case it reads: "Continental Software Co. makes no warranties, either expressed or implied, with respect to this manual or with respect to the software described in this manual, its quality, performance, merchantability, or fitness for any particular purpose. Continental software is sold or licensed 'as is.' The entire risk as to its quality and performance is with the buyer."

Here we have a case where I, the buyer, must assume all risk but do not have the ability to modify the program to suit my needs. As a kicker, Continental provides no backup disk. If my disk goes bad, I must wait for a replacement; and, if I am not covered under their warranty, the backup will cost me an additional $17.50. Continental's warranty program costs $20 and allows me to obtain service, improvements, and enhancements. These are items of which no mention is made on the outside of the package. One would expect them to be included in the purchase price.

There have been positive sides to my relations with vendors, however. Hayden Software's *ORCA/M* assembler is one of the finest products I have seen produced for the Apple. Its documentation is superb; it comes unprotected and source code is provided to allow one to make enhancements as needed. More vendors should step back and take a look at what Hayden is doing. They are producing quality software, with quality documentation, at a reasonable price. As a bonus, they are producing it on copyable disks so I can make backups and modify it as needed.
G. Edw. Learned, Brooklyn Center, MN

Consumers Arise

I wish to vent my anger at a publication I thought was pretty objective in its reviews of equipment and software. After reading a very favorable review of the Vista V1200 six-megabyte disk system (Hardtalk, August 1983) by Jeff Mazur, I plunked down a grand and bought one. What a nightmare! The first unit I took home (after an eighty-mile round trip) died, coming to a grinding halt after about five minutes of use. I returned it immediately and had the replacement unit tested before I left the store. Unfortunately, I did not test the software disk that came with this second unit. Two of

DISKETTES
3M Scotch BRAND
AT SUPER LOW PRICES
FOR YOUR APPLE COMPUTER
Scotch DISKETTES
ARE TESTED AND GUARANTEED
ERROR FREE
FILEWARE ™ Scotch
COMPATIBLE DISKETTE
AVAILABLE (TM APPLE COMPUTER)
APPLE CLUB MEMBERS WELCOME
WE SHIP WITHIN 24 HOURS

MASTERCARD • VISA • C.O.D.
WE PAY SHIPPING CHARGES
TM BEREVTON
CALL TOLL FREE
800-922-8193
IN CA 800-468-1068
Tayco Business Forms
Computer Supplies
P.O. Box 605
Newbury Park, CA 91320

Jimmy The Greek says, "Increase your knowledge and chances of winning with Advanced Blackjack.™"



Blackjack, the all time favorite card game, is now even more fun as you learn the secret to winning. Learn the most proven and effective card counting strategies with Advanced Blackjack.™

With Advanced Blackjack™ you actually play the exciting game of blackjack as you master the Basic, Zen and Advanced Zen strategies of card counting. No more flash cards or monotonous memorizing; practice is made easy as the program teaches you how to play your hand. Learn to bet skillfully with an understanding of how the odds affect the game.

Entertain yourself, dazzle your friends and family or seriously take up the game. No matter what your goal, Advanced Blackjack™ will provide you all the tools necessary to increase your chances of winning.

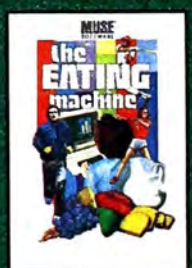
$49.95

FOR APPLE II & APPLE IIe 48K DISK DRIVE

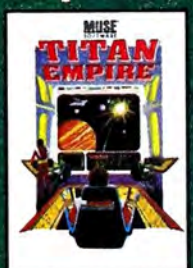
Look for these other fine Muse products.



AWARD WINNING ARCADE ADVENTURE GAME $29.95



GOOD NUTRITIONAL PLANNING & DIET MANAGEMENT $49.95



EXCITING SPACE GAME REAL SOLAR SYSTEM $34.95



SLAY THE EVIL DRAGON IF YOU CAN! $29.95

MUSE
SOFTWARE
347 N. Charles Street
Baltimore, Maryland 21201
(301) 659-7212

three patch disks were apparently unformatted blanks.

That was only the start of a week-long bad dream. I drove back to the retailer (by the way, located just across the street from Vista) and got another CP/M patch disk. So far, so good. That night, the thing mysteriously went off into nowhere while writing to disk. I figured that it might be a transitory glitch and wouldn't happen again. It started happening often, with DOS 3.3, CP/M, whatever. For no apparent reason, the thing up and quits every couple of hours. I didn't notice anything about the quality or reliability in Mazur's review, but Vista has a spec that says that mean time before failure is five thousand hours. There are about four hundred or so of these machines made, or that's what customer support at Vista says. I have sampled two of them, which failed in fifteen minutes and five hours of use respectively. It seems that Vista should revise its specs.

I haven't even mentioned the documentation and the utility programs that don't agree with each other as to installation procedures. I could at least figure those out. Spending many hours copying files onto this thing only to have it stop in the middle of a file transfer (resulting in glitched files and sometimes an entire blown disk) has made me *really* angry. It is beyond me how this product could get a positive review in your fine magazine. I would just be happy if this product worked as advertised.

I'm bringing this wretched thing back to Vista this time, and will ask them to give me a unit that will operate reliably for more than a few hours. (I hope they make such a product.) I think consumers should be more active in personal computing and tell the vendors that we will not stand for poor-quality merchandise.

I hope that future *Softalk* reviews will address the quality and reliability aspects of evaluated equipment.
Robert L. Stein, Azusa, CA

Shuffling the Cards

After purchasing an Advanced Logic Systems Z-80 card about three months ago, I eagerly took it home and placed it into slot 4 of my Apple II. I booted up the CP/M system disk and bingo—I was working in CP/M. However, the system that is shipped when you purchase the ALS card alone is configured for 48K of memory, so as to fit in a standard Apple.

As I had installed an Andromeda 16K card about two years ago, I attempted to use the Bigsys program that was included with the ALS card to reconfigure CP/M to work with the extended memory. The program seemed to run fine, but the disks produced with the 64K CP/M would not work! They would boot, but any attempt at reading the directory, or even running the ALS hello program, would lock up the computer.

I wrote to Advanced Logic Systems and Andromeda about the problem and received word from Andromeda that their card wouldn't work with the CP/M 2.2 that is shipped with the ALS card. Thinking that the 16K card was the problem, I ordered a new card from A.P.P.L.E. to fix my problem. I received my new card, plugged it in, and tried one of my 64K CP/M disks. The same thing was happening; the system would lock up. This time I called ALS. In my conversation with a technical representative, she asked if I had tried the card in slots 4 and 7. I thought the standard slot for a Z-80 card was slot 4, and the 48K version of CP/M worked there. I had never tried slot 7. Sure enough, there in the instruction booklet it mentioned that the card should be placed in slot 4 or slot 7. After moving the ALS card to slot 7, my 64K system would boot up and operate with no trouble!
Steve Nelson, Arlington, TX

The Proof of a Product

I am writing about something that has been bothering me for some time now. It concerns the spelling and punctuation found in some computer programs. I don't know how the situation stands in other types of software, but my experience with it in adventure games is distressing.

Several of the programs I have examined and/or purchased have contained so many misspelled words that, even if the game is good, I feel very disappointed with the product as a whole. I like to feel that authors and programmers are intelligent, clear-thinking individuals. When I see so many incorrectly spelled words, it really bothers me. One recent example I can cite is Penguin Software's *The Quest*. The game looked like fun and I was contemplating purchasing it, but the many spelling and punctuation errors ruined it for me. I have also found quite a few mistakes in Sierra On-Line's games. I think one of the reasons I like Infocom's games so well is that I have never found a single spelling error in any of its programs.

I realize that there are a lot of clever people out there who simply are not good spellers, but isn't that what proofreaders are for? I think some of these software companies should start paying a bit more attention to the honing and polishing, which I feel is an important part of any finished product.

My compliments to *Softalk*'s proofreaders. You do a good job.
Marian Apgar, Napa, CA

Fiction Feedback

The story "Dragon, Dragon, Burning Bright" by Lisa Michaels Jones was great. I hope *Softalk* prints more in the series. It reminded me of "True Names" by Vernor Vince. I also like the Sam Sledgg stories by Ralph Mylius. I hope you print more of those, too.
Gayle Ann Sanford, Memphis, TN

Getting Beyond

I am glad that you are beginning new graphics and assembler series. I came in on both in the middle and a lot of the information was beyond me. I did spend enough time working with the assembler on my own to understand what was going on. The graphics I didn't even try to work on.

Now for some suggestions I hope *Softalk* will consider. First, how about a few applications programs and articles on Pascal? Hopefully, people will catch on to Basic soon and its use will diminish. Also, how about a few articles each year on Modula II? I realize that Jim Merritt's articles are helpful to a lot of people, but some useful Pascal programs simply serve to highlight his tutorial even more.

I would also like to see Mr. Merritt start a series on the Pascal system and on p-code. DOS is certainly well handled by *Softalk* and it would be nice if you started to treat Apple Pascal the same way. I don't know just how complicated this would be, but the challenge would be there for everyone.
Ron Pavone, Mishawaka, IN

Public Pictures

If you are interested in any aspect of graphics for your Apple, you should check out a relatively new user group devoted specifically to graphics applications. The High Resolution Picture Library is primarily concerned with the compilation and dissemination of public domain graphics software. We are interested in collecting hi-res pictures, shape tables, fonts, and graphics demos. A graphics system is being developed that will include modules for creating and manipulating shape tables, fonts, and pictures. Membership is free.

If you would like to receive the HRPL software currently available, send a disk in a returnable mailer to HRPL. Return postage is required. If you have something to contribute to the library (programs, shapes, fonts), include it on your disk. Artists are encouraged to contribute their hi-res pictures. We are also interested in your comments, suggestions, and questions about graphics.

Send your disk or request for more infor-

RING IN CHRISTMAS WITH
Sof-tecH SPECIALS
FROM SANTA'S HELPERS

Beagle Brothers
Datamost
Eduware
Lightning Software
Nikrom
Penquin
Sierra On-Line
Spinnaker
Synergistic
Broderbund Software
Datasoft Inc.
The Learning Co.
Muse
Phoenix
Sensible
Sir-tech
S.S.I.
Xerox

Season Greeting from
Sof-tecH
P.O. Box 366
Sycamore, Il. 60178

* Call about our Blank Media & Gift Certificates

Success: More than blind luck.



Many people believe you'll lose if you gamble. However, skillful gaming strategy, combined with intelligent money management, can make you a winner at any casino.

With Casino Master and your home computer, you can now learn successful, proven techniques and strategies for seven of the most popular casino games. Choose from 21 (Blackjack), Craps, Roulette, Poker, Baccarat, Keno, or even Slots.

Casino Master accurately simulates each game in full color graphics with exciting animation and realistic sound effects. Comprehensive rules for each game can be displayed with a single keystroke and all the playing opportunities you'd find at the casino are available.

Casino Master, more than an elaborate computer simulation, helps you develop winning skills for each game. Casino Master interactively follows you through each gameplay and, at your option, will provide you with instructional suggestions for the next bet or play decision. At any point you can display continuously updated statistical evaluations. Casino Master monitors your performance so you can refine your strategy and get the feedback you need to win.

CASINO MASTER™ $34.95
California residents add 6½% sales tax

STARFIRE GAMES, Division of Omnisoft Corp.
Dept. ST2, 9960 Owensmouth Avenue, Suite 32
Chatsworth, California 91311

Available for: IBM PC and XT (requires 64K, disk drive, Color and monochrome versions both supplied); Apple II (requires Basic, disk drive, and DOS 3.3); Commodore 64 (requires cassette or disk - please specify). Atari and TRS-80 versions soon to be released.

Photo courtesy of the MGM GRAND HOTEL, Las Vegas

IBM, Apple, Commodore, Atari, and TRS-80 are trademarks of IBM Corp., Apple Computer Inc., Commodore Business Machines Inc., Atari Inc., and Tandy Corp., respectively.

YES! Please rush me **CASINO MASTER™**
for the: ☐ IBM ☐ Apple ☐ Commodore 64 computer.
Enclosed is my: ☐ check ☐ money order for $34.95.

Name _____

Street _____

City _____ State _____ Zip _____

STARFIRE GAMES, Division of Omnisoft Corp.
Dept. ST2, 9960 Owensmouth Avenue, Suite 32
Chatsworth, California 91311

mation to HRPL, 2353 South Eighth Street, Omaha, NE 68108.
Paul Pritchard, Omaha, NE

Of Fast Cars and Rickety Airplanes

In reference to Rudy J. Stricklan's mention of a Ferrari 308 (September Open Discussion), let me ask the readers a question: If you were to buy a Ferrari 308, would you insure it? Well, in the business world, many programs are worth more than a Ferrari 308. The businessman who loses his database program may lose much more than that. The problem is, software cannot be insured like a car. It cannot be backed up. The best you get from some companies is that, if the disk crashes, you can send it back with fifteen dollars and they'll send you a new one. That delay could be disastrous for a big business; moreover, the software company is trying to make money off of a disk crash. The result is piracy.

Perhaps if there were no copy protection, piracy would be reduced, at least in the business world. If you want to look at how non-copy protection is doing, just look at Beagle Bros, whose unprotected programs are at the top of the Hobby list and even in the Top Thirty.

I'd like to reply to the letter from the president of Avant-Garde entitled "A Jumpy Reaction" (September Open Discussion). As an owner of around five hundred Apple games, I can sincerely say that *Jump Jet* stinks. When compared to a similar game of a year ago, *Star Blazer*, *Jump Jet* suffers. Not only is the idea jaded, but I think the graphics are poor and the sound obnoxious. Even compared to a game of two years back, *Pegasus 2*, *Jump Jet* looks pretty bad.

I hope readers won't be enticed by Ms. Smith's letter calling *Jump Jet* "action-packed and exciting." Hah! I urge readers to look at the game itself, if the computer store will let them. In reference to the adventure game that Ms. Smith suggested in conclusion, I doubt it would sell if Avant-Garde used the same graphics as *Race for Midnight*, which were created with another Avant-Garde miscreation, *Hi-Res Secrets*.
Theodore Chen, Potomac, MD

Sparks Fly

I cannot believe that you printed the letter from Edward Parker in August's *Softalk*! I will not go into a course on proper grounding procedures, but suffice it to say that there are very good reasons for using a local green-wire ground and not the white wire as Mr. Parker advocates. Ac power does not have any polarity, despite Mr. Parker's innuendo, although frequently the white wire is referenced to earth ground. The white wire should be thought of only as an ac return and not a ground wire. Unfortunately, since the dc return wires are frequently called "ground," many believe (incorrectly) that the same name can apply to the ac return. If anyone does add his own ground wire to a water pipe, I strongly suggest that he make it a green wire. This will tell any electrician in the future that it is referenced to the local earth ground and not the ac return.

Fortunately for most of us, the local electrical codes are almost always followed. By not locally grounding the ac return wire, the electronic noise can be drastically reduced, if not eliminated. That allows most of us to use our computers without getting complaints of interference with our neighbors' televisions or radios.
David P. Stroup, San Diego, CA

Edward Parker's instructions for rewiring an ungrounded outlet ("A Wiry Solution," August Open Discussion) would give any electrical inspector gray hairs! While his method of providing a grounded outlet may not result in an electrical hazard, it is not in compliance with the National Electrical Code.

First of all, the white wire connected to the chrome screw of a properly wired receptacle is a grounded conductor, not a grounding conductor (which must be green or bare). Since the green grounding conductor is by definition a non-current-carrying conductor, it is never the "same ground line" as the white conductor, as Mr. Parker implies.

Second, the proper way to install a grounded receptacle is to run a length of 14/2-WG ("with ground")-type NM cable for a 15-amp circuit, or 12/2-WG cable for a 20-amp circuit, all the way from the circuit breaker panel to the receptacle. Mr. Parker suggests using a white wire as a ground in violation of the code, which requires that grounding conductors be either green or bare. The black wire is "hot," the white wire is "neutral," and the bare wire is "ground." In most properly wired power panels, the neutral and ground wires are bussed together at the point where the neutral bus is grounded; this is the only point in the system where the neutral and grounding conductors are at the same potential.

Finally, the best advice I know on this subject is this: Have a qualified electrician install a separate, 20-amp, grounded receptacle especially for your computer system. Remember that your insurance probably won't cover a fire or accident caused by a jury-rigged electrical circuit. Another advantage of such a special circuit is that it will provide "cleaner" power, being separate from heavy, glitch-causing loads elsewhere in the house.
Eric G. Lemmon, Lompoc, CA

The Micro and the Minister

In response to Victor O. Schwartz's "Apples Revered and Reverent" inquiry in the August Open Discussion, I am a minister and use my Apple IIe system for filing, time management, and word processing. Currently I have an Apple Dot Matrix Printer and a Dynax DX-15 letter-quality printer. The system is my own, hence I do not use the machine for bookkeeping or stewardship records.

Membership in the congregation I serve is at just one hundred fifty. My Apple system allows me to efficiently produce my weekly newsletter and worship bulletin and a substantial amount of correspondence with a minimal investment of time. The two main software packages I use are *Apple Writer II* and *Quick File*. They are quite sufficient for my "low end consumer" needs.

The value of the system? With the time I've freed up from office work I have been able to study and visit more, and our attendance and

PROTECTING YOUR APPLE . . .
AN OPEN AND
SHUT CASE





applecenter

The APPLE-CENTER Model 12 protects your Apple system from theft and unauthorized use. All metal construction, the APPLE-CENTER bolts easily to a table-top, securing your Apple II or IIe, 2 disk drives and your monitor. Unlocked, the APPLE-CENTER opens up to allow you quick and easy access inside your Apple. The key switches power to your Apple system and the filtered cooling fan. The SURGE SENTRY, by RKS Industries, protects your Apple from harmful voltage spikes.


Rear Cooling Fan


Our Model 10

Call or write
for additional information:

DOSS
INDUSTRIES
1224 Mariposa
San Francisco, CA 94107
(415) 861-2223

membership have been on the increase. In my opinion, the microchip is an able servant of ministry.
Tim Johnson, Raleigh, NC

Forth Sooth
In response to Hari Wiguna (September Open Discussion), a good group to contact is the Forth Interest Group.

A public domain version (Lyons-Forth) and fig-Forth are available. Both are excellent programs. TransForth and GraForth are available from Insoft for a reasonable price. I have had GraForth for more than a year and I love it. GraForth deals mostly with graphics. Insoft has superb user support. The staff answers calls and letters promptly and informs users of program and manual revisions.

While on the subject of service, I have nothing but praise for *Double-Take* and *Bag of Tricks*. Both are excellent utilities. Also, the *ORCA/M* 6502 assembler can't be beat. I wouldn't be caught without it. DOStalk is just what I've been waiting for. I have one question: Is it best to leave one's disk drive doors open or closed when not in use? I can't find this information anywhere. Please help!
Chris Baker, Portland, OR

First Down
In response to Margie Zembal (September Open Discussion), the Tackler can be operated very easily with the following program:

```
10  PRINT CHR$(4)"PR#1":PRINT
    CHR$(9);"G":PRINT CHR$(4)"PR#0"
```

This program was found on page 13 of the *Tackler Operation Manual* and will print anything that is on hi-res screen one. There are other options that can be used by adding numbers or letters in the quotes with the "G." The options are: "2"—print hi-res page two rather than one; "D"—print the hi-res screen twice the size of the screen image; "E'—this will print in an emphasized mode (some printers cannot use the "E" option); "I"—print an inverse image; "R"—this will rotate the screen ninety degrees. Also, when printing in the graphics mode, make sure the switch on your Tackler card is in the up position.

I would also like to thank Stuart Landry, Jr., for his helpful comments in the August Open Discussion.
Kenny Tepper, Pikesville, MD

DOStalgia
I enjoyed the DOStalk article in the August issue of *Softalk*, which touched on the history (not to say checkered past) of Apple DOS. There were two inaccuracies, however, that I'd like to correct.

The first is related to the existence of Disk Applesoft. I got my first Apple in February of 1979 and, after one week of trying to save and load programs on cassette, I decided to lay out another $500 for one drive and a controller card. There really was such a creature as Disk Applesoft then. It was a forty-three-sector Integer Basic file called Applesoft that was issued on the earliest versions of the DOS 3.1 master disk. If you loaded the file and listed the program, it looked something like this:

```
120  GOSUB p HIMEM: INPUT p HIMEM:
     INPUT ,
120  GOSUB p HIMEM:-p HIMEM: (p
     HIMEM:@p - , ASC( HIMEM:# ASC(
     HIMEM:, ASC( HIMEM:( ASC( HIMEM:,
     ASC( HIMEM:( ASC( HIMEM:- ASC(
     HIMEM:# ASC( HIMEM: !p HIMEM:@p
     HIMEM:J
```

and so on. (The above isn't the real Applesoft file. Alas, the disk containing that has long since disappeared.)

This was known as "pseudo-hex": A binary file was bsaved on a disk and then its identity was doctored so DOS thought it was Basic. Like the early Cassette Applesoft, Disk Applesoft lived at $800 and interfered with hi-res page one.

You weren't supposed to run this file, mind you; you were supposed to type *FP* and DOS would automatically load the program and get it running. If you did run it, dire things were supposed to happen. I don't recall them happening, but then I never actually used Disk Applesoft. (I had purchased an Applesoft ROM card along with my Apple.)

The second inaccuracy in that DOStalk article has to do with the contents of the Integer Basic file. Integer Basic does indeed begin at $E000, but that doesn't tell the whole story. The area $D000.D7FF is occupied by something called the Programmer's Aid. This is a series of utilities that allow you to do hi-res graphics, music, program renumbering, machine language relocation, a memory check, and a few other things from Integer Basic.

A small demonstration is in order. First bring up Integer Basic. Enter the Monitor with a *call -151* and then type *D0000G*. You are now looking at a cleared hi-res page one from Integer. Hit reset and make sure you're in Integer Basic. Type in the following:

```
10  MUSIC = -10473 : PITCH = 767 :
    TIME = 766 : TIMBRE = 765
20  POKE TIME, 40: POKE TIMBRE, 32
30  FOR I = 1 to 49
40  POKE PITCH < I : CALL MUSIC
50  NEXT I
60  END
```

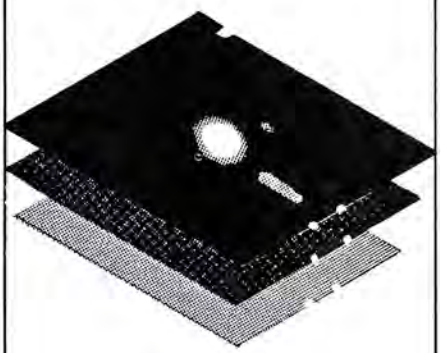
Nice? Now type in the following direct commands:

```
CLR
START = 1000
STEP = 10
CALL -10531
```

And when the fireworks are done, list the program. It will have been renumbered to begin at line 1000. If you want to play around with this, make sure you follow the series of steps exactly. You can make the start and step values almost anything you want. It's even possible to renumber your program so that all the lines are greater than 32767! Negative step values are also possible.

Apple has been distributing a copy of the Programmer's Aid with every language card and presumably every DOS 3.3 for the Apple IIe (it's part of the Intbasic file), but I have never seen a copy of the documentation other than what I received when I purchased my original Apple II. Programmer's Aid consisted of a

When you need competitive prices on Verbatim diskettes, you need SJB Distributors.



We're SJB. One of the fastest growing distributors in the country. And the reasons are simple. Our prices are competitive and we deliver fast.
SOFTWARE HOUSES:
Verbatim Datalife® available labeled or blank 'n bulk, with or without envelopes.
Call today about our quantity pricing.

Dealer inquiries invited.
C.O.D.'s accepted.

SJB Distributors, Inc.
10520 Plano Rd., Suite 206
Dallas, Texas 75238
(800) 527-4893 or
(800) 442-1048 in Texas

ROM chip that was inserted into the motherboard. Its product number is #A2L0011.

The area $D800.DFFF was indeed a blank on the original Apple II—there wasn't even a ROM chip there—but the Intbasic file on your master disk contains rather curious garbage.

The real surprise is what takes place between $E000 and $F7FF. Integer Basic itself only extends to $F424. Part of the remaining space is occupied by the Apple's miniassembler ($F500.F63C). It's activated by tying *F666G* (the number of the Beast?) from the Monitor with Integer Basic enabled. Two other denizens of this forgotten shadow-land are an authentic sixteen-bit (pseudo) machine living at $F689.F7FC and a mysterious floating-point number package that hangs out at $F4S5.F4FB and at $F63D.F65D. Who knows what lurks in the interstices?

I still have the original *Disk II Floppy Disk Subsystem Installation and Operating Manual*, subtitled *Apple Intelligent Subsystems* (part number 030-0011-00). Rereading it today brings tears to my eyes. Actually it brought more than tears back in 1979 when I thought about how I'd laid out $500 for the thing.

The manual is a massive thirty-eight pages long! It contains a few more of the weak jokes and many of the typos still present in current versions of the DOS manual, but very little else. Writing and reading something called text files is mentioned in all of ten lines—no examples, of course. The exec command is given a little more coverage, but the additional verbiage just makes the command seem even more arcane. Nowhere did the manual address what was for me the burning question: How do I implement *store*, *recall*, and *shload*? Today it all seems so obvious.

DOS, back in those days, also had some bizarre bugs. The first one that most people encountered was the connection between the drive cable and the controller card. It was quite easy to get it wrong. I figure the average person had about a 50 percent chance of getting it right. (I didn't, and the drive had to go back to the shop.)

Locking a file sometimes mysteriously caused the length of the first file in the catalog to change. We weren't supposed to worry about that. In fact, we weren't supposed to pay any attention to the sector counts in the catalog at all.

At one time DOS wouldn't execute read or write statements if they were in program lines numbered more than (are you ready?) 256. And, for a long time, you couldn't do this:

```
10  ON ERROR GOTO 1000
20  PRINT D$"VERIFY FILE":PRINT
    D$"OPEN FILE":PRINT D$"READ FILE"
```

DOS wouldn't allow you to have more than one DOS command on the same line.

Finally, it took more than a little while to figure out that *3D0G really meant "type *3D0G* from the Monitor." Like I said, it all seems so obvious now. Today all you have to do is hit control-reset.

Bob Bragner, Istanbul, Turkey

Computer Error

In Tom Weishaar's July DOStalk, page 228, he suggests poking a 1 (or whatever) into −27839 to change the maxfiles value. On my Apple II Plus, I did a *maxfiles2*, peeked at −27839, and printed the result of 76?! Then, with the help of W. Leubbert's *What's Where in the Apple*, I discovered that maxfiles uses location −21929. Indeed, a peek there found my 2. Is this a typo, or did Weishaar really pump gas into his Apple?

P.V. Blakeman, Monmouth Junction, NJ

Tom Weishaar responds:

The number at byte −21929 (43607, $AA57) is the current maxfiles value. The number I was referring to is the default maxfiles value, the number of buffers DOS builds when it is booted or when you enter the *fp* or *int* commands. Here's the gasser: Due to a computer error, the negative poke location was wrong. It should have read −21839 rather than −27839. The other values given for this byte, 43697 ($AAB1), were correct. I give most pokes in all three notations in the hope that the computer will have calculated at least two of them correctly.

Tom Weishaar, Overland Park, KS

State of Grace

There seems to be a bit of confusion (perhaps it's mine) about the use of monico and nomonico in the debugging of a DOS program. Basically, there is no way to tell if information is going to the disk under monico. This is due to the use of print statements for output both to the screen and to the disk. While it is true that if information is sent to the disk it is echoed to the screen, the converse is not true. If you see data on the screen, it might have gone to the disk. However, it also might simply be the normal non-DOS function of print taking over. I use the following scheme: Use monico to tell what is going to the disk, but use nomonico to tell if information is getting there.

Generally under nomonico, if you see it, DOS didn't (the Captain is not infallible).

Also, I've discovered a seemingly undocumented feature in Applesoft that can affect DOS statements within a program. There is no carriage return printed after a *print spc(X)* statement, whether there is a semicolon after it or not. This can be a problem if the next statement is a *print D$; "DOS command"* which looks for a preceding carriage return. This program says it better than I can.

```
10 INVERSE: PRINT SPC(10)
20 NORMAL: PRINT "Hello"
```

Jay Nabonne, Castro Valley, CA

Shaping Up

I am a beginning programmer who recently purchased a copy of *SoftGraph*. I am learning a lot from it, though I have a long way to go before I really understand it. I would like to use Shapefile in my programs, but I don't know how to access it. I tried *bload Shapefile* but all I got was a "file not found" message.

How can I access Shapefile? May I use parts of *SoftGraph* in my programs?

Edward Mirsky, Del Mar, CA

David Durkee responds:

I consolidated three or four binary files, including Shapefile, into one file on the *SoftGraph* disk in order to accelerate loading. Shapefile can be isolated from the rest like so:

```
BLOAD SOFTGRAPH.B-FILES (on SoftGraph disk)
BSAVE SHAPEFILE, A$6000,L480
```

Load the file and set the pointers in the following manner:

```
10  SL = 24576
20  PRINT CHR$(4);"BLOAD SHAPEFILE
    < A";SL
30  POKE 233, INT(SL/256):POKE 232,
    SL - (INT(SL/256)*256)
```

SL determines the shape location, which defaults to $6000 or 24576. You can change that value in line 10, and line 30 will take care of the pointers for you.

You may use the hi-res print routine from the January article with this table. It begins at line 9000 in both of the chart programs on the disk.

David Durkee, Burbank, CA

Jaded Jockey

I am sixteen years old and I'm bored. Bored with Basic, bored with Applesoft, and bored with games. We have had our Apple for more than five years and I have yet to find any sort of material that will transform me into a "machine language jockey" (to quote *Softalk*). I am not



TIRED OF THE SAME OLD STORY?

MY *Supplier, Inc.*

believes you deserve more when you buy Computer Products from us. After all, you keep us in business.

We will do all we can to assure your complete satisfaction and trust.

We offer at low prices:
3M Scotch Diskettes
Ribbon•Paper•Binders
Diskette Storage Equipment
and much more!

...AND WE PAY THE SHIPPING

MasterCard VISA C.O.D.



CALL TOLL FREE
800-448-4016
IN CA 800-556-6786

MY *Supplier, Inc.*
COMPUTER AND WORD PROCESSING SUPPLIES
348 No. Moorpark Road
Thousand Oaks, CA 91360

We want to Get to the Core Of Your Payroll Problems

Payroll Check for Apple II and Apple IIe is the solution to your payroll problems. An easy-to-use payroll program written for small businesses.

PAYROLL CHECK ✓

- prints checks and all necessary payroll detail reports
- prints W-2's and quarterly reports
- enables you to update federal and state tax tables
- includes a user manual with a tutorial section, quick reference section and operating procedure charts
- has superior menu design
- provides fiscal, calendar, quarter and month to date totals

PAYROLL CHECK has been used for over a year in test site businesses and is ripe and ready to meet your payroll needs today.

Visit your Apple computer dealer for details and ask for a demonstration, or receive your own PAYROLL CHECK demo disk for only $40.00.

Key Enterprises gives full support to licensed users.

System requirements: 48K, Applesoft, two disk drives, 132 col. printer or 80 col. printer with compressed mode capability.

***Available third quarter for the IBM PC



Return coupon to:
Key Enterprises
P.O. Box 5429
Amarillo, Tx. 79117-5429
(806) 372-8962

Name _____ Payroll Check $395.00

Address _____ Demo Disk $ 40.00

City _____ State ____ Zip _____

Make check payable to Key Enterprises
(Texas residents add 5% sales tax)

Apple II and Apple IIe are registered trademarks of Apple Computer Inc.
IBM PC is a registered trademark of IBM Corporation.

complaining, don't get me wrong, it is just that I seem to be searching for a holy grail of knowledge that only the fittest and most deserving can find. I consider myself fit and I know I deserve better than Applesoft.

When we bought our Apple, there were no spectacular 3-D adventure games or fantastic arcade games to play. Our Apple came with three—count 'em, three—tapes. The years flew by and I mastered Basic out of sheer boredom. There was nothing else to do with the damn thing. During the last couple of years, I have grown very restless. I hear of binary wizards who have mastered languages that I can't even pronounce. Where do they gain their information? Who can teach me the great secret that will clue me in on lightning graphics and flawless programming?
John Schomp, Fort Worth, TX

Overhead Presentation
While offices and boardrooms of the future may have screens so that individuals and groups may view presentation graphics, that time has not come yet. For my own part I have found that overhead projectors still have very wide use. I would like to see development of this kind of interface pursued more actively by software publishers.
Norman J. Wood, Saratoga, CA

Emergent Problem
I have been using Apple's *Quick File II* for several months. I find it to be fast, versatile, and user-friendly, with excellent documentation. This program, however, suffers from a fatal flaw. No capability is provided to merge one file with another (identical formats are obviously assumed). This limitation severely limits the usefulness of this otherwise fine software package. Can anyone help me with a method of merging files with *Quick File II*?
Steve Kirkham, Grafton, VA

What Do You Expect?
I have owned my Dynax DX-15 for three weeks and have enjoyed using it very much, except that I cannot get it to shadow-print and double-strike using the escape commands from *Apple Writer IIe*. (My system includes an Apple IIe, two disk drives, Apple Parallel Interface, an Apple DMP, and the Dynax.)

My dealer, Carolina Computer Store in Raleigh, North Carolina, has tried diligently to discover why the printer will not accept print commands through *Apple Writer*. Their very sincere efforts have not brought success. We have called Dynax and have not found a person who has worked with a system like mine. The first person we talked with at Dynax said of my problem, "What do you expect from a cheap sixty-dollar word processing package?"

I would appreciate any help anyone could offer to help me use both my word processor and Dynax printer to their best advantage.
Tim Johnson, Cary, NC

Search for the Right Preboot
I have an Apple II Plus and like it very much. I use *Apple Writer II* and like that very much as well. Recently I purchased a Smarterm II eighty-column card, which will not work with *Apple Writer II* (although it will work with *Magic Window II*). I was told I needed a preboot, which I purchased from Compular. I now have an eighty-column display, but there is a two- or three-second delay between the time a character is struck on the keyboard and the time it appears on the screen, which is very distracting. Compular tells me that's the way it works and I'll just have to get used to it. I've tried, but it's no use. The people who sold me the Smarterm tell me there is nothing wrong with the hardware, since it works with other word processing programs. They say I just need the right preboot, but they don't know where to find it. Can any readers help?
James Frey, Berkeley, CA

Wanna Trade?
I am interested in trading in commodities. I would like to find a software package that calculates moving averages and graphically shows where these averages cross over. I have seen this referred to as a dual movement cross-over system and I was wondering if any readers could recommend one. Please let me know through Open Discussion.
Kim McCartney, Winnipeg, Manitoba, Canada

Salesman's Dilemma
I had a number of requirements for a printer to use with my Apple II Plus that I purchased in October 1981. At that time, the only available printers that had a carriage large enough to hold my company's order forms that were friction and tractor fed were completely out of my financial reach.

Along came the Radio Shack Line Printer VI. It was everything I needed, plus it was within my budget. After a couple of changes were made to the cable, it worked perfectly—with the exception that I could not find out how to use the graphics that both the printer and Apple have available.

Can someone help me? I am a salesman and I am continually sending bulletins and price changes to my customers. Graphics would certainly enhance these bulletins.
C.G. Witbeck, Fallbrook, CA

Sporting Request
I'm an Apple owner and an avid sports fan. I'm truly disappointed by the lack of good sports games available. I have heard about *Micro League Baseball* by Stoneware. Would someone please describe this or any other good action baseball game for the Apple?
Richard Ronsbottom, Thousand Oaks, CA

The Verdict, Please
I am a recent purchaser and proud owner of an Apple II Plus. This has caused me a small dilemma. I have a friend who has been kind to me and has given me various copies of different kinds of programs. I have come to enjoy using these programs. But I question whether it is appropriate (legal) to use copied programs given to me. I realize that the use of copied programs is widespread. Could a knowledgeable person please inform me as to whether I'm legally in the wrong to use programs that others give to me?
Mark R. Palmer, Staples, MN

Sirius Is GIVING AWAY Over $35,000.00 In VIDEO GAMES!!!

You Can Win A Sirius Game OF YOUR CHOICE!

Correctly answer the questions below to qualify for the FREE GAME DRAWING. Enter all of the Grud Quizzes and qualify for all 20 drawings!

GRUD QUIZ #19: BANDITS

1. **Which Bandit does not try to steal supplies from your base?**
2. **Can the Torrent's Bombs be destroyed before they hit the ground?**
3. **How is shield energy gained?**
4. **How many times does a Nerve Gas Balloon bounce?**

TO ENTER:

Just send a postcard or 3 x 5 piece of paper to Sirius containing the following information:
1. Your name and address
2. The Grud Quiz number and your four answers

RULES:

1. All entries must be handwritten and individually mailed.
2. All entries must be postmarked by midnight, February 29, 1984.
3. Only one prize per person per quiz is permitted.

1,000 WINNERS!

If ALL of your answers are correct you will qualify for that Grud Quiz drawing. 50 winners per quiz will be randomly chosen and notified by mail on or before March 31, 1984. Each winner will receive a complete Sirius catalogue listing from which they can select the game or games of their choice.

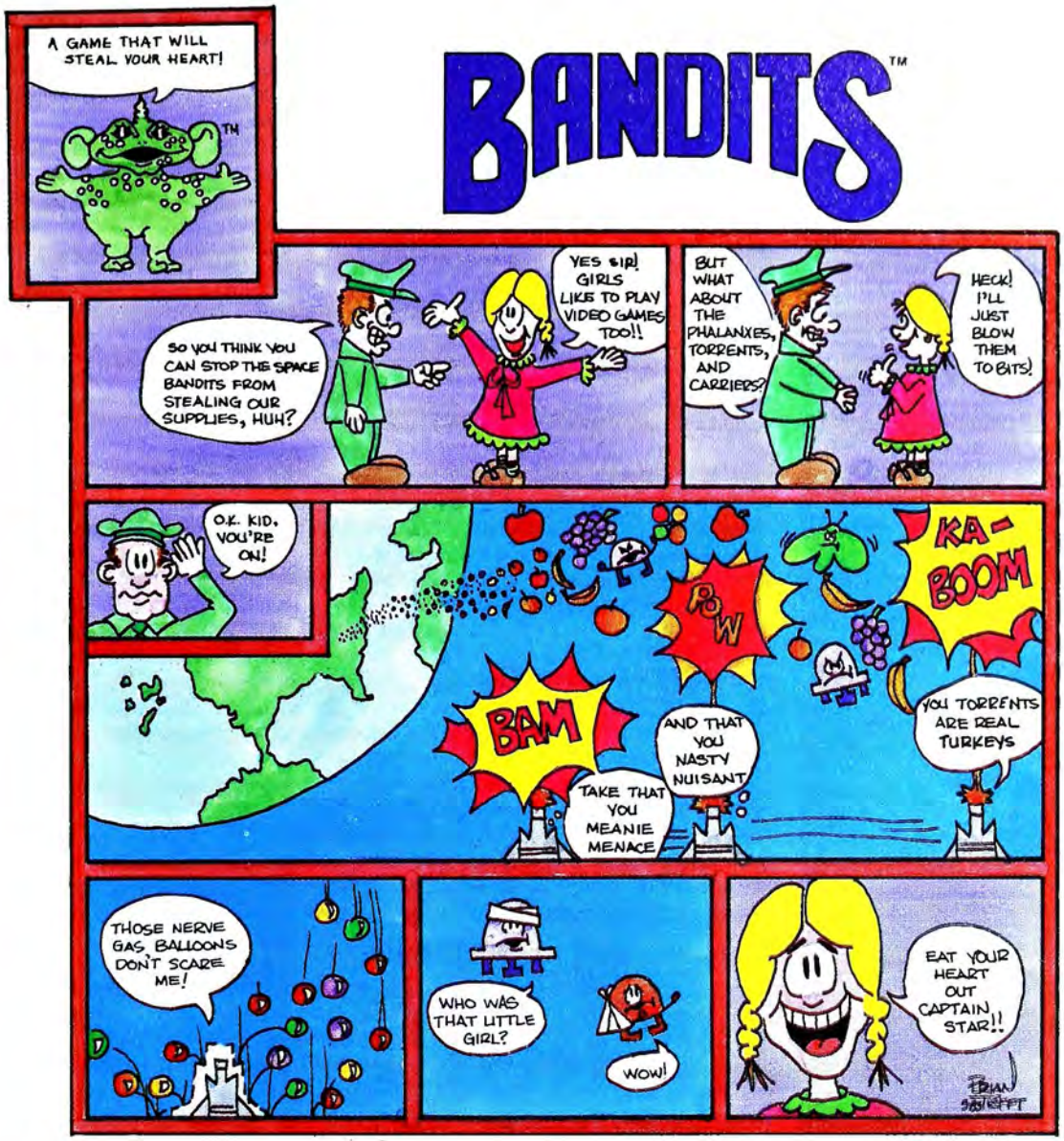
LOOK FOR MORE GRUD QUIZZES in the Oct., Nov., and Dec. issues of your favorite computer magazines or at participating software retailers.

ALL CONTESTANTS WILL RECEIVE A FREE FULL COLOR SIRIUS COMIC CATALOGUE



Sirius Software, Inc.
10364 Rockingham Drive
Sacramento, CA 95827

(VOID WHERE PROHIBITED BY LAW)



© 1983 Sirius

Sirius™

For more information contact your local Sirius dealer or contact Sirius directly at 10364 Rockingham Drive, Sacramento, CA 95827, (916) 366-1195.

Game design by Tony and Benny Ngo.
VIC-20 version programmed by Leonard Bertoni.
Package, program and audio visual © 1982 Sirius Software, Inc.
All rights reserved.

Sirius and Bandits are trademarks of Sirius Software, Inc. Atari 800 and 1200 are trademarks of Atari, Inc. Apple II, II + & IIe are trademarks of Apple Computer, Inc. VIC-20 and Commodore 64 are trademarks of Commodore Business Machines, Inc. Sirius is not affiliated with Apple, Atari or Commodore.



Apple II, II + & IIe Disk
Atari 800 & 1200 Disk
Commodore 64 Disk
VIC-20 Cartridge





Softalk *to the rescue! If you've been stumped by something Apple, then take heart; maybe someone from the Softalk Applewise Guild and Experts' Syndicate can help. Choose an expert from among the likes of Doug Carlston, Bob Clardy, David Durkee, Roy Hicks, John Jeppson, Mark Pelczarski, Jock Root, Roger Wagner, Tom Weishaar, and Matthew Yuen. You can direct your questions, typed or printed, and double-spaced (please), to a specific expert or just write to this column. Send all letters to Softalk Sages, Box 60, North Hollywood, CA 91603. We can't answer questions about the products of specific vendors; instead, we recommend you contact them directly or see your dealer.*

IF I've written a program that I want to market. It has to be copyable but hard to list. It is already well protected, but I still want to make it so catalog will not work. I know how to do that from within a program, but not directly on the disk. I do not want the user to be able to boot another disk, then put my disk in, type *catalog*, and get it. Any suggestions? *Mike Vircsik, Fernley, NV*

THEN Putting the statement *poke 2049,1* into the program will prevent someone from listing it after it has been run. Instead, the list command repeatedly lists the first line of the program. Poking in other numbers to location 2049 does interesting things as well.

Another way of slapping the wrists of those who try to list your programs is to include the following as the first line in your program:

```
11  IF ZZ = ZZ THEN ZZ = Z:A$= "FP
```

The secret here is in the string at the end of the line. There is an invisible control-D between the quote mark and the FP. The list command will refuse to list anything past this line, because by listing the line, control-D FP will be the first thing printed on the second line of the listing. This executes the DOS command, erasing the program!

The if-then statement is just nonsense to take up enough space on the line so the control-D is the first character on the next line when you try to list. You can even use an ordinary rem statement, if you prefer. Whatever you use, the line number should be such that it forces the control-D to be shoved to the next line when a list is tried.

When the list command encounters a control-D followed by a DOS command as the first thing on a line, it can't resist executing the command. If you include a quote mark at the end of the line, the command won't be executed, but the program won't list either. Instead, you'll receive a syntax error message from DOS.

Variations on this theme are possible by using catalog, delete filename, init hello, or other disastrous DOS commands in the string. The results would be the just desserts for anyone trying to list your program.

Messing around with the catalog is a bit more tricky. Memory location 44033 is where the catalog's track number is stored, but changing the track number (*poke 44033,13*, for instance) and then initializing a disk doesn't seem to be the answer.

Trying to hide the catalog and rearrange the VTOC (volume table of contents) is one of those things software publishers spend a lot of money on, and programmers earn a lot of money from. *Matthew Yuen*

IF My Apple II Plus does not have a flashing cursor. However, whenever I use the *GPLE* or the built-in editor, my cursor just disappears. Any idea why or how to fix it? *Jeffrey J. Duquette, Southwick, MA*

THEN The published character display modes for the Apple are normal, inverse, and flashing. You have apparently discovered the additional mode of invisible text.

A nonflashing cursor is definitely not Apple standard. There are three possible causes I can think of: You (or someone) have modified your Apple to remove the flash by bypassing the 555 timer chip that handles it; you have a software patch to give you a nonflashing cursor; or your 555 timer is defective. Any of these nonstandard conditions could conflict with *GPLE* or other programs. If you aren't using a software patch to get the nonflashing cursor, then you should get your Apple fixed. Most programs are easier to use when they have a visible cursor. *Robert Clardy*

IF *Beneath Apple DOS* says on page 3-1, "A track is a physically defined circular path which is concentric with the hole in the center of the diskette." In that case, why doesn't track 0 (the outermost one) have more sectors, or more storage space, then track 34 (the innermost one)? According to figure 3.1, track 0 should be much "longer" around than the rest. *Rob C. Knauerhase I, Hilliard, OH*

THEN Track 0 is in fact about 50 percent longer than track 34. However, it takes exactly the same amount of time for track 0 to pass under the head as for track 34 because the disk in an Apple drive spins at a constant rate of speed of 300 r.p.m.

No matter what track a sector is in, it takes the same amount of time for that sector to pass over the read/write head. Thus, the sectors in track 0 take up more physical space on the disk than the sectors in inner tracks.

More expensive drives, including the ones built into the Lisa, vary the disk speed according to which track the disk arm is on. In these systems, all the sectors take up the same amount of physical space, and the outer tracks do have more sectors.

Woz figured you wouldn't want to pay for a variable-speed drive, however, so the Apple disk system was designed around the somewhat less efficient and much less costly fixed-speed drive. *Tom Weishaar*

IF If I can get it to run properly, the following program ought to be useful in many applications, such as timing a user's responses. I've

tried every variation I can imagine, but it simply doesn't work! (Contrary to what is stated on page 130 of the Applesoft Basic reference manual, it appears that the *poke -16368,0* command won't reset the keyboard strobe.) I currently have a nice little keyboard-piano program that records notes as you play them. If I can get the following program to work, the notes could be replayed with precisely the same timing between them that they had when input.

```
10 X = PEEK (-16384)
20 POKE -16368,0
30 IF X > 127 THEN 60
40 TIME = TIME + 1
50 GOTO 10
60 PRINT X
70 TIME = 0
80 GOTO 10
```

John W. Field, Fairfax, VA

THEN The reason that your program doesn't work very well is that you clear the keyboard strobe every time you peek it, rather than clearing it once and then looping through the keyboard read line until it comes up with something. As a result, the program loop misses many keystrokes and only works sporadically. Try rewriting the program like this:

```
10 POKE -16368,0
20 X = PEEK (-16384)
30 IF X > 127 THEN 60
40 TIME = TIME + 1
50 GOTO 20
60 PRINT X
70 TIME = 0
80 GOTO 10
```

This way the keyboard is cleared only after the program has identified a character. *Doug Carlston*

IF How do you enter the characters with the ASCII values of 28 and 31 (whatever they are)? *Anick Jesdanun, Edison, NJ*

THEN In order to enter the characters with ASCII values of 28 and 31, you need an Apple IIe. You can't get these characters on the Apple II Plus. Control-\ (control-backslash) is the character hiding behind ASCII code 28. Control-– (control-minus sign) gets you an ASCII code 31. And, while we're at it, ASCII code 29 is control-] and control-^ produces an ASCII 30. On the II Plus these are typed as control-shift-M and control-shift-N. None of these are printable characters, and they carry no intrinsic meaning, but they can be typed. Use them wisely. *Matthew Yuen*

IF The people I bought my Apple from told me that nothing I could enter at the keyboard could hurt the internals—unless I used a hammer—but recently I was entering a short eight-line program and bombed the whole thing. I couldn't even access my printer. I finally got the thing back in order by physically rocking the disk card back and forth with the Apple turned on. It finally accessed drive 1 and loaded DOS. I quickly deleted the binary program that bombed the whole thing and began wondering what I had done wrong. I had hoped to use this method to load several subroutines that could be used by a variety of programs without making them a part of all the programs. This would save loading time. Should I have changed the beginning address? Or is this not the right way to go about it at all? *Tom Bredehoft, Saint Louisville, OH*

THEN It's true that nothing you enter at the keyboard can hurt your Apple's internals. Jiggling interface cards while the computer is on can fry all kinds of stuff, however, and isn't recommended. If the problem of DOS not booting when the computer is turned on occurs again, turn your computer off and remove the disk controller card. Then carefully clean the contacts that plug into the Apple with alcohol (the nondrinkable kind) and cotton swabs. A pencil eraser can also be used, but in the long run this will do more harm than good by removing the gold plating from the leads. If you're lucky and careful, this will work wonders.

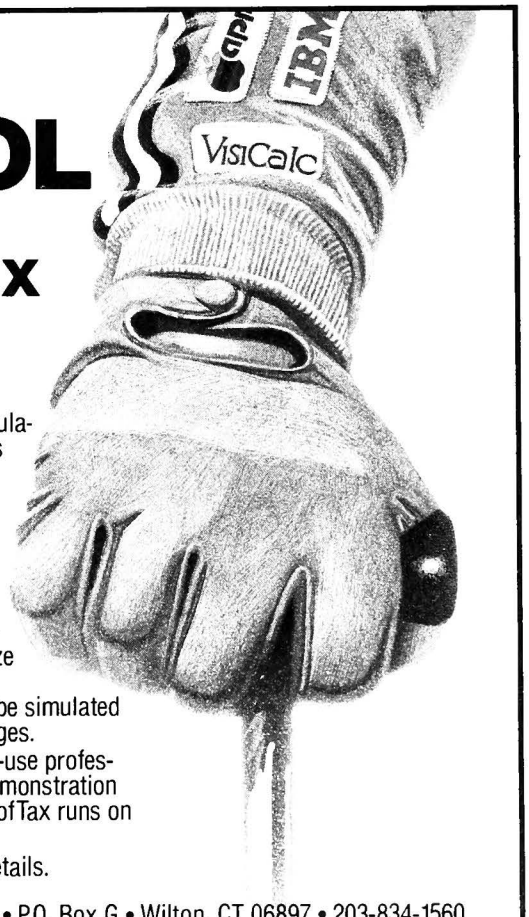
The idea of initially loading a few subroutines into memory that could be used by a variety of programs later is original and creative. Keep those ideas coming. You may find this one more trouble than it's worth, however.

It's difficult to tell if you're referring to Applesoft subroutines or machine language subroutines. Keep in mind that machine language routines can be put in any free memory area. Check out a memory map.

DOS loads Applesoft files starting at the address pointed to by *txttab*, bytes 103–104 ($67–$68)—mistakenly called lomem in a recent DOStalk. If you want to append a program on disk to Applesoft routines already in memory, try changing the value here manually before loading the main program. Change the value back before running the program. You may have to change some other pointers to get this to work right. Brief experimentation has shown that the solution, if there is one, is not obvious. If Applesoft doesn't double-cross you by changing *txttab* on its own, and if the stars are right, it may work. *Tom Weishaar*

IF I am a relatively new Apple owner and have a question concerning Apple files that is perplexing me. I am working on a piece of software that at one point needs to read a sequential text file to give values to certain variables. I wrote the program and entered the records, but when the program I was working on read the records, I was gifted with a message from the Apple: "reenter." I got the variables, however. Every time I came to this part of the program, I would see a series of reenters until the proper record was located. This would occur again for the following files. I corrected all but one of the reenters and found I needed to pause after writing to the file with my file-making program. I also found that the reenter was being caused by the fact that somehow the user prompt ("continue? (Y/N)" was ending up in the file as part of each record. By adding print statements after the record-writing routines I was able to rid myself of

TAKE CONTROL
OF THE MOST POWERFUL TAX PROGRAM IN THE FIELD



SofTax is a complete tax analysis, simulation and preparation package for users of VisiCalc® software.

Designed for individuals, partnerships, trusts, or corporations, SofTax allows you to prepare all appropriate forms and schedules for direct submission to the IRS—automatically.

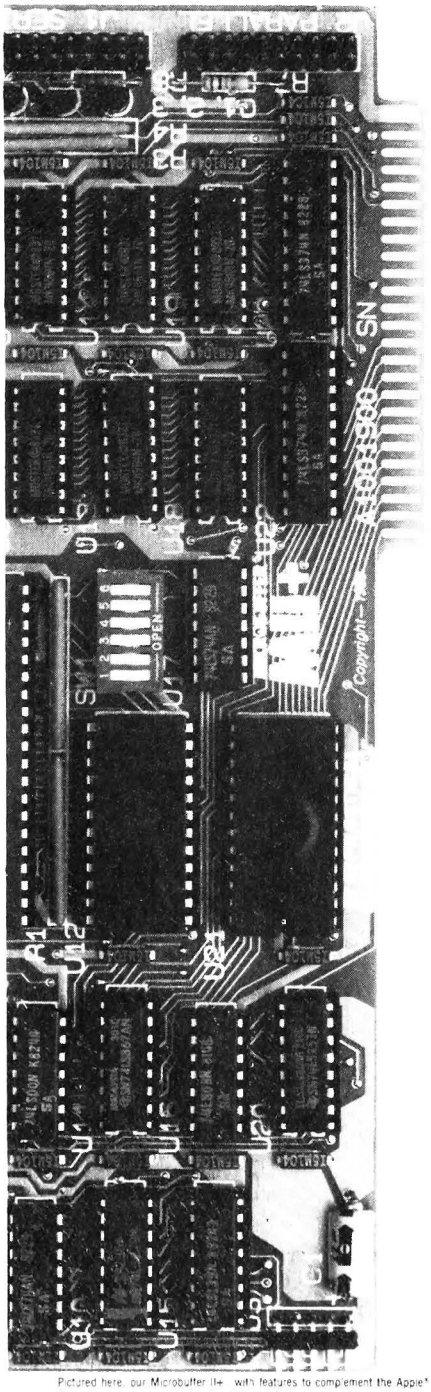
SofTax is comprehensive and economical. You can set up, modify, and finalize a model before SofTax prepares the final returns. And the model itself can be simulated before you commit to permanent changes.

You can try this easy-to-learn, easy-to-use professional tax package with our special demonstration package available now for only $25. SofTax runs on IBM-PC & XT, Apple II+, IIe, & III.

Call *1-800-243-4358* (outside CT) for details.

SofTax™ Design Trends Ltd. • P.O. Box G • Wilton, CT 06897 • 203-834-1560

INTRODUCING THE TWO-PRINTER PRINTER BUFFER: MICROBUFFER II+™



Pictured here, our Microbuffer II+ with features to complement the Apple® Computers. Just one model in the full line of Microbuffers designed to accomodate virtually every computer/printer combination.

Like all Microbuffer models, the Microbuffer II+ eliminates waiting for your printer to finish before you can use your computer again. It allows you to print and process simultaneously.

But the Microbuffer II+ has one unique quality not found in any other Microbuffer: it can be used with virtually any printer—serial or parallel, or both at once!

If you have an Apple II, II+, IIe and more than one printer, Microbuffer II+ can eliminate a tremendous bottleneck.

While your parallel printer is going at full speed, your serial printer can be printing the same file or a different file right along with it. And you can be using the Apple to do something else at the same time.

The Microbuffer II+ printer interface will fully support the Apple IIe 80-column format. And it allows an 80-column screen dump from the Videx™ 80-column board in your Apple II or II+.

Perhaps, best of all, Microbuffer II+ is versatile and smart. It supports over 30 commands for text formatting, sending printer controls, printing screen dumps and setting up the MII+ itself. AND it includes graphics print routines for nine popular printers as well as 8 additional graphics printing commands. Whether you have 1 printer or 2, Microbuffer gives you the maximum amount of printing flexibility in the minimum amount of time.

The new Microbuffer II+ is available now in 16K, 32K, and 64K models. Ask your dealer for a demonstration, or for further information.

MICROBUFFER.™ SO WHAT ARE YOU WAITING FOR?™

Another fine product from

PRACTICAL PERIPHERALS

31245 La Baya Drive, Westlake Village, California 91362
(213) 991-8200 • TWX 910-336-5431

all but one of those nasty reenters. This reenter was the one right after the first time the append statement was used.

I hope this gives enough information for someone to help me with the problem. Perhaps I shouldn't use print statements after writing my routine. If not, what can I use as a pause? Any suggestions? *T.F. Bade, New Britain, CT*

THEN Your letter brings up several questions. I'll try to cover them one at a time. What causes the "reenter" error message? This message is generated when an input statement is expecting numeric data and string (nonnumeric character) data is entered. In your case, your program probably had an *input X* type of statement and yet it was trying to read the character string "continue? (Y/N)" from your text file. A string input statement (such as input A$) will accept anything typed with no error message.

How did "continue? (Y/N)" get into the data file on your disk? The program that generated the data file is the culprit here. When you open a text file to write to it (using the DOS open and write commands), *anything* printed will be sent to that text file. This includes input statements with prompts (such as input "continue? (Y/N)";A$). The prompt will be written to the text file. You must never try to print to your screen while a text file is open for writing. The solution is to stop writing to the file before printing the prompt. Any DOS command, or just printing a control-D, will accomplish this. Executing another write command starts writing to the file where you left off—provided the file has not been closed in the meantime.

How can you get a pause feature without using an input statement? You can directly read the keyboard strobe to see if a key has been pressed. Listing 1, below, writes data continuously and pauses if you press a key. Listing 2 pauses after every ten writes, then beeps and waits for a keypress.

Listing 1.

```
100  D$ = CHR$ (4): DIM X(100)
110  PRINT D$ "OPEN FILE": PRINT D$
     "WRITE FILE": FOR I = 1 TO 100
120  PRINT X(I)
130  IF PEEK (-16384)>127 THEN GOSUB
     1000: REM IF KEY PRESSED,
     GOSUB 1000
140  NEXT I: PRINT D$ "CLOSE": END
1000  POKE -16368,0: REM CLEAR LAST
     KEY PRESSED
1010  IF PEEK (-16384)<128 THEN 1010:
     REM WAIT FOR ANOTHER
1020  POKE -16368,0: RETURN
```

Listing 2.

```
100  D$ =CHR$(4): DIM X(100)
110  PRINT D$ "OPEN FILE": PRINT D$
     "WRITE FILE": FOR J = 0 TO 9
120  FOR I =1 TO 10 : PRINT X (J*10+I)
130  NEXT I: CALL -198: GOSUB 1000:
     REM BEEP AND WAIT FOR KEYPRESS
140  NEXT J: PRINT D$ "CLOSE": END
1000  IF PEEK (-16384)<127 THEN 1000
1010  POKE -16368,0: RETURN
```

You should be able to adapt one of these. *Robert Clardy*

BOOKENDS™



The Reference Management System

Sensible Software would like to introduce you to BOOKENDS, a revolutionary new system designed to manage your references. BOOKENDS will take the guess work out of hunting for lost articles or information. Think of it as a personalized, state-of-the-art catalog system.

Pay for BOOKENDS. And not for your time.

BOOKENDS tracks down articles, magazines, and books for you quickly and effortlessly. It even prepares professional bibliographies for you. If you've ever spent time looking for important information, then BOOKENDS is for you.

BOOKENDS remembers for you.

The purpose of BOOKENDS is to keep track of information from articles and books so you don't have to. BOOKENDS works with your Apple Computer, and is menu-driven for ease of use. It has a word processor quality editor which supports upper and lower case entry and display, and also allows you to re-type just your typos, not the entire entry.

BOOKENDS allows you to store the author, title, journal, volume, page number, date, publisher, and keywords (all up to 255 characters), and an abstract (to 720 characters).

BOOKENDS also permits you to chain your reference files together, to contain any number of references you might have.

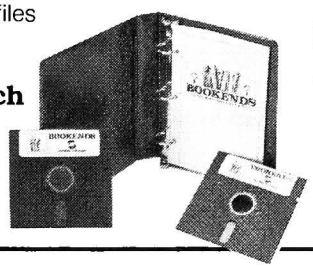
Eliminate the guesswork from your search

BOOKENDS eliminates most of the guesswork from your data search because it finds your stored information quickly and effortlessly. References can be searched for quickly by author, portions of titles, or by the keywords of your choice. And if you forget the keywords or the author, don't despair. BOOKENDS provides you with a complete, alphabetized list of the keywords and authors in the data base.

BOOKENDS is your state-of-the-art card catalog system.

BOOKENDS is particularly innovative because it can present you with professionally produced bibliographies that can be printed or used directly with your word processor. You have complete control of printouts, from simple lists including an abstract, up to professionally formatted, formal bibliographies suitable for inclusion in your word processor. When retrieving your references, the bibliography can be sorted by author, keyword, or title.

Give up the search.
Put your library in BOOKENDS. $124.95



Sensible™ Software, Inc.

6619 PERHAM DRIVE
WEST BLOOMFIELD, MI 48033
(313) 399-8877

Copyright 1983 - Sensible Software, Inc.
APPLE is a Registered Trademark of APPLE Computer Co.

THE SENSIBLE SPELLER™ IV CORRECTS SPELLING MISTAKES *IMMEDIATELY.*

The most popular new word-processing product introduced for the Apple computer in 1982 was not a word processor—it was the SENSIBLE SPELLER IV proofreading program.* A perfect complement to your current Apple word-processing program, the SENSIBLE SPELLER IV is fast, friendly, and gives you the features you need in a spelling checker.

First in features**

It only takes a minute or two for the SENSIBLE SPELLER to scan through a ten-page document and compare each word against its 80,000-word dictionary. Each misspelled word is shown to you in the middle of a small excerpt from your document, so you won't waste time trying to remember how you used the word.

You can immediately correct the misspelled word by replacing it with the proper spelling. The SENSIBLE SPELLER even suggests the correct spelling for your misspelled words!

First in dictionaries

The SENSIBLE SPELLER includes the largest, most authoritative dictionary available for the Apple computer. Over 80,000 words are supplied, direct from the official Random House Dictionary. And there is unlimited room to add your own special words. The official Black's Law Dictionary is available separately.

First in word-processor compatibility

The SENSIBLE SPELLER works with more Apple word processors than any other spelling program, including: DOS 3.2, DOS 3.3 (Apple Writer—all versions, Bank Street Writer, Magic Window, Screen Writer, etc.), SuperText, Word Handler, CP/M (Wordstar, etc.), and Pascal word processors.

The SENSIBLE SPELLER is available for $125 and runs on all Apple //e, II +, and Apple-compatible computers with one or two disk drives.



Sensible® Software, Inc.

6619 Perham Drive
West Bloomfield, MI 48033
(313) 399-8877

Please add $1.25 for shipping.
Visa/Mastercard/Check/COD welcome!

*April 1983, Softalk magazine reader survey.
**Not all features are available with CP/M, Pascal, and Word Handler.

Apple, Apple Pascal and Apple Writer are trademarks of Apple Computer, Inc.; Bank Street Writer — Brodebund, Black's Law Dictionary — West Publishing; CP/M — Digital Research Corp.; Screen Writer — Sierra On-Line, Inc.; SuperText - Muse Software; Word Handler — Silicon Valley Systems; WordStar — Micropro International

SOFTALK CLASSIFIED ADVERTISING

Adventure

HELP WANTED?

Detailed and *accurate* maps and clues. We have them for *"Mask of the Sun"*, *"Serpent's Star"*, *"Ulysses"*, *"Softporn Adventure"*, and *"Wizard and the Princess"*. $4.95 each. NDA, P.O. Box 665, Sandy Hook, CT 06482.

CLUES FOR ADVENTURERS

Puzzled? Lost? Bewildered? We can help! Hint books come with clues and maps. The clues range from subtle to full answer. Choose from: *Orig. Adv., Hi-Res #0-6, Zorks, Deadline, Starcross, Mask Sun, Serp. Star, Sherwood, Rungistan, Kabul, Crit. Mass, Blackpoole, Desecration* and *Transylvania*. Each $5.95, two $10. Send check or MO to: Witt's End, 42 Morehouse Rd., Easton, CT 06612. Write for free catalog.

ADVENTURE TIPS & SOLUTIONS

The ultimate in frustration relief! Individual pamphlets on *The Colossal Cave, Adventureland, Pirate's Adventure, Curse of Crowley Manor, Mission Asteroid, Wizard and the Princess, Cranston Manor, Ulysses and the Golden Fleece, Transylvania*, and *Zork I*. Each complete with Keyword List, Full Maps, Hints, and Solutions. $3.95 each. Send check or money order to: TIPS, P.O. Box 6907, Stockton, CA 95206.

ADVENTURE GAME PLAYERS

Help is on the way—get out of those dead ends. Step-by-step 48 pg. manuals divided into nonpeek sections. Full story, hints, instrux. plus maps. *Serpent's Star, The Quest, Critical Mass, Witness, Gruds in Space*. Send $4.95 + $1 hand. per title. FL + 5% tx. *Ultima III* hint and clue sheet $4.95. send self ad. stmp. env. for list of other adventure walk-throughs. Adventure Solutions, 5199 NE 12 Ave, Ft. Laud., FL 33334.

Business

THE DISK LABELLER

A powerful program for AUTOMATIC printing of diskette labels showing FILES, DOS—sec free & used. Built-in default & escape functions, auto config. for printer slots & drives. Completely MENU driven. Req. no doc. Includes 300 5 in. labels. Req. 64K Apple II, II+, IIe disk dr., printer. Only $59.95 + $3 ship. NY res. add sales tax. Practical Software Ltd., Dept. ST, Box 3000, Pomona, NY 10970; (914) 425-1158.

3-D PIE CHARTS & BAR CHARTS!

Make perfect two/three-dimensional pie and bar charts—color or b/w. Choose from 26 different styles, then just type in your data. *MasterChart* does the rest! Store to disk for later viewing or editing with powerful graphics illustrator & letter. Plot on paper with any standard screen printer. *Satisfaction or money back (really)!* Apple II+ or IIe., $19.95. Spectral Graphics, 540 N. California, #22, Stockton, CA 95202.

STOCK OPTION ANALYZER

Maximize your return. For APPLE, TRS-80, IBM PC. $125. M/C Visa. Free Brochure. OPTIONS-80, Box 471-R, Concord, MA 01742.

A-STAT 83.1

Comprehensive statistical analysis system. FACTOR ANALYSIS, FREQUENCIES, CROSSTABS, T-TESTS, ANOVA, CORRELATIONS, MULTIPLE REGRESSION with RESIDUALS, DATA ENTRY, SORT, REPORTS, TRANSFORMATIONS, MERGING, AGGREGATION; APPLE PLOT, FILE CABINET, and VISICORP DIF INTERFACES. For the Apple since 1979. $175 from: Rosen Grandon Associates, 7807 Whittier St., Tampa, FL 33617; (813) 985-4911.

70 INCOME TAX PROGRAMS

Federal Income Tax programs for tax preparers, C.P.A.'s, lawyers and individuals. Programmed in Applesoft 3.3 DOS. Calculates tax, etc., prints in REVPROC format. Thirteen disks at $24.75 per disk, postpaid. GOOTH SOFTWARE, 931 S. Bemiston, St. Louis, MO 63105.

THE INVENTORY SYSTEM

Stores date, price, part #, location, type, PO#, vendor for each record. Unlimited multiple disk storage. Create your own filing system. Many useful features. Appelsoft, 48K, 1 drive. Send $34.95 + $1 postage to RMT Software, P.O. Box 721, Champaign, IL 61820.

CAPITAL STRATEGY

For investors. There is one best capital fraction for each investment. Optimize your capital growth rate. Gives best fraction, runs loss patterns, probability of success or ruin. Return privilege, $175. Visa or MC. Brochure. Ventura Data Systems, 1061 Sage View, Chula Vista, CA 92010; (619) 421-1251.

MANAGEMENT BY OBJECTIVES

Apple 48K DOS 3.3 disk teaches popular business application. Develops MBO reports and graphs. $49.95. CAMBO, 151 Lindberg Drive, Aliquippa, PA 15001. PA and overseas add $3.

COMPUTER CONSULTANT/PROGRAMMER. Hardware/software modification or creation to meet your needs in stocks, business, science, telecommunication, etc. Gennaro Conte Computer Consultant/Programmer, 2522 Holland Ave., Bronx, New York 10467. CompuServe ID; 74005,1064, Delphi: CONTE, (212) 798-2964.

AP-ECOM:E-COM INTERFACE FOR APPLE II. Eliminate form letter stuffing. Let Apple do all of the work using the new U.S. Postal E-COM service and a Hayes Micromodem II. As many letters as desired may be sent. NO CP/M REQUIRED. 48K, 2 disk drives, Micromodem II required. $75. Audubon Software, 1818 Carondelet St., New Orleans, LA 70130; (504) 524-7966.

$5 COMPUTER CONSULTANT

Invest $5 and save hundreds. This 15-page booklet is a must if you are automating your business. It pinpoints features to look for in General Ledger, Accounts Payable, and Payroll programs. To make sure you choose the right software send $5 to: Jerry Kapp, 306 Sycamore St., Highland, IL 62249.

REAL ESTATE SOFTWARE including property management, home purchase, loan amortization, ACRS/depreciation, tax deferred exchange, property sales analysis, loan sales/purchase, income property analysis, APR loan analysis, construction cost/profit, and property listings/comparables. Visa/MC/Amex. (213) 372-9419. REALTY SOFTWARE COMPANY, 1926 South Pacific Coast Hwy., Suite 229, Redondo Beach, CA 92077.

ZIPSCRIPT

Complete word processing package for those who favor the line-oriented editor. For Apple II+/IIe, $39.95. Send for more information. Carter-Mation, 3245 Pursell Dr., Pensacola, FL 32506.

TAX BREAK PLANNER

APPLE AND IBM-PC OWNERS—Paying too much tax? Plan 1983+ with super-fast *TAX BREAK PLANNER* optimizer. Written by IRS Enrolled Agent to expose all loopholes and benefits. Great for what-if simulations. Scores return for audit risk! TAX BREAK PLANNER $180 + $3 P&H. Annual updates for only $50. *NEW FOR 1983*—High speed modules prepare Federal or California official forms. $75/module. Unhappy with last year's late delivery, slow tax program? Escape! We honor their update price. MC/Visa. PROFORMA SOFTWARE, 2706 Harbor Blvd., Costa Mesa, CA 92626; (714) 641-3846).

ARCHITECTS—BLDRS—ENGRNS

	EXACT DIMENSIONS! turns
34'-8¾ "+	your Apple into a powerful
7⅞"+	PRINTING CALCULATOR that
9'3½" -	adds and subtracts in 3 sys-
0⅞"+	tems of measurement simultaneously:
??????????	*FEET/INCHES/FRACTIONS
	*DECIMAL INCHES
	*METRIC

$124.95 + $2.50 shipping—For info/order CALL NOW TOLL FREE 800/824-7888 OP 175 ASPEN INCHware Corp—Box 3203—Aspen, CO 81612—(dealer inquiries invited)

REAL ESTATE PROPERTY MANAGEMENT software for owners of single family apartments, condos, offices, mini-storage, duplexes. Provides instant cash flow analysis, records expenditures on each unit, prints cash flow reports and summary of operations report, and accumulates cost for tax purposes. Tomar Productions, P.O. Box 740871, Dallas, TX 75374, (214) 363-3059. $149.95.

Fantasy

REDESIGN ULTIMA II

Modify or replace existing towns, villages and wilderness. Change characters! Disk + instructions $19. Send to:

J&B Software
425 SE 70th, Portland, OR 47215

ULTIMASTER II

How are your *Ultima II* or *Ultima III* characters faring these days? Can you use that newly bought phaser? Are the Balrons giving you trouble? ULTIMASTER II can change all stats. Be a Hero! Save the Universe! DOS 3.3/48K/Applesoft. $20. Infinity Software, 1792 Maryland, Golden Valley, MN 55427.

WIZARDRY PLAYERS

Modify your characters for all three scenarios with this utility program. Resurrect the dead or lost. Alter characteristics, age, spells, hit, experience & gold points. CHEAT! Create a 20,000 level superhero. Supports line printer. Disk 48K & Applesoft. Includes some maps. $20. CA + 6½% tax. ARS Publications, 3710 Pacific Ave., #16, Venice, CA 90291.

THE SPIDER'S REVENGE

Modify your Wizardry and Knight of Diamonds characters any way you wish. Make them young, rich and powerful. Create, resurrect or recover. Delete or change passwords whether you know the old password or not. Written in assembly language, runs on any 48K Apple with DOS 3.3. Manual includes maps of Proving Grounds and Knight of Diamonds. Send check or MO for $14.95 plus $1.50 P&H to: SpiderSoft, P.O. Box 757, Muldraugh, KY 40155.

WIZARDRY VICTIMS!

Zapped by unseen entities? Both novices and pros win with our system—no cheating needed! Enhanced manual (60+ pages) packed with powerful tips, charts (monster, equipment, etc.), other goodies for all 3 scenarios! ($12.50). The *best* maps $5 each scenario. All $22.50. Nichols Services, 6901 Buckeye Way, Columbus, GA 31904.

WIZARDRY MAPS

Proving Grounds or Knight of Diamonds $5 each. #3 Legacy of Llylgamyn $6 each. Send to Stanley Kasper, 4932 N. Ridgeway, Chicago, IL 60625.

Graphics

80 GRAPHICS PROGS $24.95

Apple Graphics Pak 1—$24.95. 80 Great original, copyable & listable computer graphics programs packed on the same disk. *Apple Graphics Pak 2*—$24.95. 80 More original & fascinating Apple graphics programs. Send Visa/MC, check or MO to FOXXIVISION INC., 28090 Tavistock Trail, Southfield, MI 48034. Please add $1.50 for shipping. Extremely fast and reliable delivery.



KoalaPad™ $94.95
with Micro Illustrator™

Price includes UPS delivery. MC/VISA
MN residents add 6% sales tax.



yukon computer
9925 Lyndale Avenue So.
Bloomington, MN 55420

GRAPHICS & TEXT LAYOUT

Plot-A-Lot: a 2-sided laminated sketch board for Apple II+ lined for Hi & Lo-Res graphics. Aspect ratio corrected. The shape you draw is the shape you get on the screen. Just enter X-Y values from the board into your program. Or, layout a text screen and avoid trial & error. Includes 8 color pens. Send $19.95 to CompAid Products, Box 143, Trafford, PA 15085.

COPY III

Your 256K Apple III with COPY III reads an entire unprotected disk into memory in just 46 secs and then automatically formats, writes and verifies all data to blank disks every 68 secs using 1 to 4 drives for multiple copies incl SOS, DOS, CPM, etc. $49.95. DIGITAL MICROWARE, P.O. Box 289, Los Olivos, CA 93441; (714) 855-0555.

3D DISPLAY, PROCESSING, & PLOTTING

Display 600 to 2200 points & lines—orthographic & isometric orientations—Fast! Engineering quality & accuracy. Powerful data entry & Global Editing. Input: keyboard, graphics tablet, text files. Output: printer, HP plotter, binary picture files. Required: Applesoft in ROM, 48K or 64K, & DOS 3.3. $75 with disk, documentation & tutorial. Send a self-addressed, stamped envelope for flyer. Turtle Software, 8526 Calmada, Whittier, CA 90605.

HI-RES SCREEN DUMPER

For Prowriter 8510A with Microtek RV-611C Parallel Card. Copyable. Written in Applesoft and machine language. Menu options: rotate, inverse, vert & horiz sizing, page 1/2, centering. Fast. $30. Sandy Software, ,Box 1403, Sandy, UT 84070.

LIBRARY MATE

Bibliographic system for books, articles, excerpts. Other uses. Boolean retrieval by keyword, author, title, other. User formatted. $99.95. Manual $6.

CONTOUR MAPPING

Contouring on CRT, printer, plotter. Editor, file utilities. From $395. Manual and hi-res demo $20. Geological/Geographical software for Apple/other systems. GEOSYSTEMS, 802 E. Grand River, Williamston, MI 48895; (517) 655-3726.

OVER 2,000 SHAPES

Ready-to-use shape tables. Character sets, animation sets, spaceships, animals, flowers, ghosts, beasts, trees, snowflakes, houses, flowchart symbols & more, in various sizes. $29.50 includes viewing & demo programs, directory & instructions. CA +6% tax, foreign +$6.50. DOS 3.3, 48K & Applesoft. LUSTER SOFTWARE, Dept. S2, 8401 Fountain, Suite 16, Los Angeles, CA 90069.

CUSTOM-MADE SHAPES

We do the tedious work. Very affordable for amateur & expert alike. Send for Custom Shapes Ordering Kit. LUSTER SOFTWARE, Dept. S2, 8401 Fountain, Suite 16, Los Angeles, CA 90069.

RGB COLOR BOARD

FOR APPLE IIe, II+; FRANKLIN ACE 1000

Model VCB 8: The Color Master
A new video board that provides the Apple IIe with RGB (red/green/blue) video signals for crisp, vivid display of color graphics and text, with exceptional resolution and color quality, is now available.

Can be used with 80 column text and expanded memory board so color graphics and text are displayed on one RGB monitor. Text can be displayed in any one of 8 colors, software selectable. A text mode enhancement circuit improves resolution & readability.

Plugs into slot 7 and comes with 4' of ribbon cable for signal output. Optional video monitor connector and longer length cable available.

Model VCB24: The Kaleidoscope.
Same as above, except each of 24 text lines can be set to any one of 8 colors, on any of 8 colors of background.

Model VCB 8 — $139 Model VCB24 — $189

TELEMAX. INC.
COMPUTER & VIDEO PRODUCTS
Warrington, PA 18976
(215) 343-3000
Dealer, Distributor, Rep. Inquiries Invited.

COMPUTER-AIDED DRAFTING

General-purpose CAD system for Mechanical Architectural or Electrical for Apple II+, IIe. Software $1,995. Also Digitizers and Plotters. Dillon, 1986 Stonecroft, Westlake Vlg., CA 91361.

Hardware

VERBATIM DISKS

5¼" SSDD $218/100, MX-80 cartridge $5, Flip 'N' Sort (75 capacity) $18.95, Gemini 10X Printer $310. Dealer inquiries invited. Free brochure. UNIK Associates, 12545 W. Burleigh, Brookfield, WI 53005; (414) 782-5030.

80-COLUMN BOARD OWNERS

Tired of switching cables between displays? Logic switch is a software-controlled video switch that plugs into the game port. It comes with proper connectors if you specify type of 80-column board when ordering. Free details or send $23.95 + $2.00 shipping (Calif. res. add sales tax) to: Vytron, Box 7019, Alhambra, CA 91802; (213) 289-8936.

DO IT YOURSELF

Detachable keyboard for the II+ or IIe! Freedom at last! Complete plans/parts list. Send $8.95 to J. Brothers, 3221 Behrman Pl., Suite 205, New Orleans, LA 70114.

3M SCOTCH DISKETTES $20.95

Authorized 3M distributor. Buy wholesale. 5.25" SS/DD $20.95. DS/DD $29.95. Reinforced hub. Why buy generic? Complete price list available. Call (415) 778-2595 or write Argonaut Distributing, 1104 Buchanan Rd.STA, Antioch, CA 94509. Prompt delivery!

3M DISKETTES LOW PRICES!

SSDD 5¼" (Apple II, IIe), $21.50/Box; DSDD 5¼" (IBM PC), $31.25/Box; LISA DISKETTE, $47.50/Box. MC/Visa. Call or write for whole price list. Martin Sales, Box 353, Loveland, OH 45140; (513) 489-9669.

SOFTALK CLASSIFIED ADVERTISING

THE TEDDY-PORTABLE COMPUTER

Take Your Apple with You!

The Teddy kit is a beige aluminum case with mounting hardware to turn your Apple II/II+ into a self-contained portable. Room for motherboard, power supply, keyboard, 1 or 2 disk drives, 9" monitor and as many cards as you can fit into your slots. Full assembly instructions included. The TEDDY costs $395 + $20 shipping. IIe available soon. Dealer inq. invited. Softwarestop Inc., 10975½ Santa Monica Blvd., Los Angeles, CA 90025; (213) 479-0206.

WINTER SPECIALS

APPLE STUFF * HARDWARE * SOFTWARE

Send $2 and receive a diskette containing:
our "WINTER SPECIALS CATALOG"
and selected "PUBLIC DOMAIN PROGRAMS"

OTI
10431 Los Alamitos Boulevard
Los Alamitos, California 90720
(213) 594-4534

Home

HORSERACE HANDICAP HELPS

A disk and instr. for Apple II+ and compatible computers. Speeds popular methods and provides systems. Only $12. P & H Enterprises, Box 34730, Bethesda, MD 20817.

GAMES/GRAPHICS ! ! !

Introducing *FOXXIVISION!* A *bright* new company with *excellent new ideas and talent!* We've got quality games & entertainment for everyone in the family. Send $2.50 for our extremely entertaining demo disk to FOXXIVISION INC., 28090 Tavistock, Southfield, MI 48034., *We've got great Christmas gift ideas!* Also, see our half-page ad in Softalk Nov. '83.

—BANK ACCOUNT(S)—

Easily keep track of up to 21 accounts: checking, savings, money market, stock, CDs, etc. Reconcile accounts and categorize transactions to make tax preparations easy. Many options/reports! Printer optional with II/IIe, 48K, and one disk drive. Intro offer. $17.95. Backup disk $5. Check/MO to EHN, 2506 Hollywood Dr., Pittsburgh, PA 15235.

1040PLAN A TAX PLANNING TEMPLATE FOR 1-2-3

Includes tax changes for 1983 & new Alternative Min Tax. Flexible, up to four different alternatives can be computed at once, but easy to use. Follows IRS forms, includes: 1040 schedules A,B,C,D,E,G,W,SE & forms 2119,2441,3468, & 6251. An update, if needed, sold at cost to registered owners in Jan. Req. 256K. $45. William A. Permar CPA, 1125 Sunnyhills Rd., Dept. ST, Oakland, CA 94610.

DOG$

Greyhound Handicapping Tutorial

Three menu-drive, multi-factor systems. Modeling coefficients to meet YOUR needs. Apple II+,e, DOS 3.3. $39 incl. tax. TOUT Co., Box 3145, Pomona, CA 91769

THE STORE HOUSE

Personal Inventory System—Protect yourself from loss by keeping a complete inventory of your personal items. Packed with features: *User Friendly*—Menu driven with easy to use prompts. *Automatic file init. Multiple files*—Set up different files for home, workshop, DISKS. Up to 13 *user* definable categories—ANTIQUES-ELECTRONICS-TOOLS-GAMES-PROGRAMS etc. $34.95 + $2 shipping & handling. Apple II+, IIe, DOS 3.3. ShadeTree Software, Box 12161, Columbia, SC 29211.

PLANT LOVERS

Hey, Uncle Ed, let Aunt Em benefit from your Apple! Give her the easy to use Houseplant Survival Kit. This menu driven program contains quick reference to survival and maintenance of over 100 familiar and exotic houseplants. Brighten your home this winter and give her a Xmas gift that she will appreciate for years to come. DOS 3.3, 48K. Send $19.95 check/MO to CMI Inc., Box 491, White Plains, MD 20695.

COMPUTER ROAD ATLAS

You enter departing city and destination city. ROADSEARCH computes the shortest practical route-and more. Prints a detailed route with miles, time and fuel. Contains 406 USA/Canada cities and 70,000 road miles. DOS 3.3. 15-day moneyback guarantee. $34.95 (plus $1.50 S/H). Check/Visa/MC. At your dealer or Columbia Software, Box 2235P, Columbia, MD 21045; (301) 997-3100.

SPORTS FANS! !

The Sports Trax Series tracks player and team stats as well as league standings during a season. Enter game results for each player and the program automatically updates totals, averages, and standings. Each disk can store eight leagues of eight teams each. Can be used to track amateur leagues as well as sports simulations, such as Strato-Matic or APBA. Sports now available are: *Baseball/Softball *Soccer *Basketball *Hockey

Select the sport and send $24.95 to: FJ VOSS, 459 Seirra Vista Ln., Valley Cottage, NY 10989.

MINUTE MANUALS

Minute Manual for Apple Writer IIe	$ 7.95
Minute Manual for DB Master	$12.95
Minute Manual for Apple Writer II	$ 7.95

Minute Manual for Apple Writer IIe contains commands for Epson FX/MX, Apple, Prowriter, NEC, Gemini & Okidata 92 dot-matrix printers. Glossary disk with all these codes $9.95. Send check + $I S/H. MinuteWare, P.O. Box 2392, Columbia, MD 21045; (301) 995-1166.

KITCHEN PLANNER

Create 1-14 day Menus and a Shopping List in less than 5 minutes. The only program available that composes balanced meals and lets you change them! Also the fastest and easiest to use. Compact, usable printout. Clear, concise manual. Order Now! Send $29.95 + 1.50 (hand) to: Sav-Soft Products, Box 24898, San Jose, CA 95154. In CA add 6½%. Visa/MC call (408) 978-1048. Apple II+, IIe.

Home-Arcade

PINBALL PLAYERS!!

If you love pinball you will love Pinball Magic. Four quality pinball games for the price of one! Features fast-action, smooth animation, and endless variety. Only $21.95 from: REBEL SOFTWARE, 1440 Quince, Denver, CO 80220.

Home Education

BASIC GUITAR 1—TUTORIAL

Learn guitar chords to songs through sound and graphics. Req. 48K, II+ or IIe. Two disks plus manual, $49.95. Brochure available. Visa/MC OK. Call or write: DIGITAL CONCEPT SYSTEMS, 4824 Bucknell, San Antonio, TX 78249; (512) 692-1201.

ELMO'S APPLE DISK

A disk of nifty fun and useful programs for the Apple II/IIe and Franklin. $10 postpaid. Pay by Check/MO/MC/Visa. Send name, address, type card, no. & expire date for credit.

St. Elmo Software
Box 2496, W. Helena, AR 72390

RAVE REVIEWS for our educational software: "excellent"; ". . . well planned, carefully sequenced educational package"; "very effective and well worth its price." FREE CATALOG! SouthWest EdPsych Services, Box 1870, Phoenix, AZ 85001; (602) 253-6528.

HEBREW SCRIBE

Type Hebrew with your Apple. Makes Hebrew school homework more fun. Satisfaction guaranteed or money back. Makes a great gift! Requires: Applesoft, Disk, 48K, DOS 3.3. (Optional hardcopy requires screendump and dot matrix printer.) Call, ask for Gary Rosen Ph.D. To order send $29.95 (We pay tax!) to: GAMMA PRODUCTIONS, 817 10th St., Suite 102, Santa Monica, CA 90403; (213) 451-9507.

GRADE BOOK

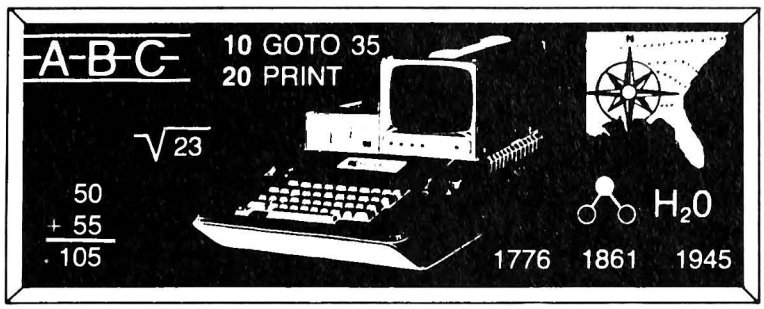
Teachers! It does your grades. Fast & easy! Apple II+, IIe, Documented. $30. Miller Computer & Software Service, 833 N. Main, Cambridge, MN 55008. Specify grades or scores.

HEBREW

Highly praised proven educational software adapted for Hebrew. Built-in Hebrew/English units for vocabulary, grammar and religion or do your own. (Yes, with Hebrew). *Easy. Zippy. Friendly.* 6th grade to adult. You'll love it at $40. Feedback welcome. Compu-Tations Inc., Box 502, Troy, MI 48099.

THE ELECTRONIC GRADEBOOK

Store, Calculate, Sort, Average Grades. Much more. The best gradebook program available! Only $25. Contact: M. A. C. Software, P.O. Box 27, Chillicothe, Ohio 45601.



YOUR CHILDREN'S FUTURE BEGINS TODAY

Your computer can become the gateway to your children's future. It can patiently drill youngsters on the basics, lead them on creative avenues of learning exploration, and prepare your teenagers for high school graduation and college entrance. Discover how you can help your children grow with educational software from OPPORTUNITIES FOR LEARNING. Write for your FREE catalog today!

OPPORTUNITIES FOR LEARNING, INC.
8950 Lurline Ave., Dept. L61
Chatsworth, CA 91311
(213) 341-2535

DRUG EDUCATION

Home Educational Programs answer hundreds of questions about how drugs can be taken safely and effectively. Input specific medications for potential interactions with food, alcohol, or other drugs. Order: "Consumer" Drug Watcher. Applesoft/disk/48K, $39.95 (CA res add 6%).
MEDICAL WATCH SOFTWARE
1620 Ensenada Dr., Modesto, California 95355

MULTI-LINGUAL SOFTWARE

French, Spanish, and other language Software for the Apple II+ or IIe. FREE CATALOG. LE PROFESSEUR, P.O. Box 301T, Swanton, VT 05488; (514) 747-9130.

FREE SOFTWARE CATALOG

Big Savings on Educational Software for school and home. Write or phone:
Program Peddler
P.O. Box 859, Bound Brook, NJ 08805
(201) 469-1449

Publications

LEARN ASSEMBLY LANGUAGE!

Apple Assembly Line, a monthly newsletter for beginning or advanced assembly language programmers. Get more than ever out of your Apple! Now in 4th year, all back issues available. Subscription $15/year. S-C Software, 2331 Gus Thomasson #125, Dallas, TX 75228; (214) 324-2050.

"SCREEN WRITER II MADE EASY" "APPLE WRITER II MADE EASY"

Learn to use Screen Writer II or Apple Writer II in one sitting with my "plain English" booklets. Send $5.95 each, post-paid (check or M.O.) to J. Mandell, Box 7063, Charlottesville, VA 22906.

FREE PASCAL NEWSLETTER

Tips, techniques & info on Apple Pascal. Also catalog of LOW cost Utilities & fun programs (with SOURCE). Kingdom Computer Concepts, Box 182, St. Johnsbury Ctr., VT 05863.

APPLE WRITER IIe TAPE & DISK TUTOR

LISTEN to an expert *TALK-U-THRU: Apple Writer IIe*. Complete treatment of all features. 3 Cassettes, Disk Tutor, & Ref. Guide: $49.95. In CA add 6.5% ST TX. Send check or MO to *TALK-U-THRU* Tutorial Systems, 6519 Fountain Ave., Los Angeles, CA 90028; (213) 466-8496. Also: ask about our Apple Writer II+/IIe WPL TEMPLATES.

WORDSTAR TAPE & DISK TUTOR

LISTEN to an expert *TALK-U-THRU: WordStar for the Apple II+*, IIe & III. Includes Intro To CP/M, Installing WS (+ Apple III patches), & much more. 3 Cassettes, Disk Tutor, & Ref. Guide: $49.95. In CA add 6.5% ST TX. Send Check or M.O. to *TALK-U-THRU* Tutorial Systems, 6519 Fountain Ave., Los Angeles, CA 90028; (213) 466-8496.

Services

APPLE GAME DISK EXCHANGE

Adventure games are great until solved. Arcade games can become stale. Now exchange your unwanted games for ones you would like to play. WRITE FOR INFORMATION or SEND your original manufacturer's disk, documentation, a list of five games for us to make your exchange from, and $5.50 to:
National Home Computer Game Exchange
P.O. Box 20929, Columbus, OH 43220

COMPUTER USERS DO IT WITH BYTES

For this hilarious bumpersticker, send $2.50 to The Originality Office, Suite 246, 251 Baldwin Ave., San Mateo, CA 94401. A great gift idea!

Technological Breakthrough

16K On a Tie Clip

Impress your friends and co-workers. Do like us Silicon Valley guys. Keep your tie out of your zipper with this technological marvel. Pilots have their wings, police their badge. Now for the computer buff, the Chip Clip. A computer chip on a stainless steel tie clip adds attractive styling and lets everyone know you're part of the computer revolution. Send $5.95 check/MO to SOFT WAREHOUSE, P.O. Box 153, West Islip, NY 11795.
MONEY-BACK GUARANTEE.

QUALITY**SERVICE**PRICE

Our "MONTHLY SPECIALS" are *always* Softalk's "Bestsellers"—at the lowest mail order prices available. Write or call for your FREE "XMAS SPECIALS" price list containing over 50 "gifts" for you. Or, send $1 for our next 4 monthly price lists (refunded with your first order). TRIAD Software Products (402) 331-7312, 1414 Cherry Tree Lane, Papillion, NE 68046.

WHY WASTE YOUR MONEY!

When you can get great prices on computer software and hardware. We carry equipment for most home computers. Send for a free catalog today (specify computer). S&J Software, 7701 Queensferry Ln., Dallas, TX 75248.

APPLE OWNERS

Join the club where you never have to buy software again.
JUST RENT IT FOR $4 per program
For a unique catalog and information on a disk send $4 for postage & handling to:
COMPUCLUB INTERNATIONAL
DEPT. C
P.O. box 265
YORBA LINDA, CA 92686

GREAT PRICES!

Apple software, C. Itoh printers, Rana drives. Write for price list.
THE COMPUTER WORKSHOP
7603 E. FIRESTONE BLVD., STE. 155
DOWNEY, CA 90241

SOFTALK CLASSIFIED ADVERTISING

BLIND? We have designed talking software specifically for the print-handicapped. Word processing, data base management, and more! COMPUTER AIDS, P.O. Box 5502, Fort Wayne, IN 46895. (219) 456-4053. Cassette tape demonstrations available.

MONEY BACK GUARANTEE

All of our software for the Apple comes with a money back guarantee. Write for our free brochure. Jersey Shore Software Co., 155 Village Drive, Barnegat, NJ 08005.

SAVE ON SOFTWARE

(219) 534-1012
MC/Visa, $1 off orders over $50 for the phone.
Hoosier Software
Box 275, Goshen, IN 46526

LOW PRICES! TOP SERVICE!

We carry software & hardware for Apple, Atari, Commodore and TI computers. Write or call for free price list. HELM SOFTWARE INT'L., Box 708, San Fernando, CA 91340; (213) 897-4305. Please specify computer make.

SUPER SOFTWARE SAVINGS

For a complete catalog of personal and small business computer software and hardware at excellent prices, write: SBCC, P.O. Box 1191, Thousand Oaks, CA 91360, or phone (805) 492-9391.

*FREE SOFTWARE CATALOG!
LOW, LOW, LOW, LOW Prices. Specify system. Write to: New York Software Exchange,
P.O. Box 722
Newtown, PA 18940

FREE SOFTWARE

Join The Big Red Apple Club, a national Apple user's group with benefits including monthly newsletter and a large library of free software. Annual membership $12. Sample newsletter $1. BIG RED APPLE CLUB, 1301 N. 19th, Norfolk, NE 68701; (402) 379-3531.

SAVE AT GOLEM COMPUTERS

Our **SOFTWARE* prices are lowest. We carry business, education and entertainment software. All major brands are available. Call for **FREE** catalog. (800) 345-8112. In Pennsylvania (800) 662-2444.

MAILING LIST ON DISK

Authorized Apple Dealer Mailing List on Quick File II data disks or sorted/printed on gummed labels. For details & prices write AEROCAL, Box 799, Huntington, NY 11743.

WE CAN'T AFFORD A BIG AD

Because we're keeping our overhead low so you'll get the *cheapest* software prices. Write for our free catalog. Alligator Enterprises, 1105 Alameda, Austin, TX 78704; or call (512) 443-2621.

PRINTER SUPPLIES AT LOW PRICES

Ribbons, paper and labels.
For price list write or call:
SUNSET COMPUTER SERVICES
Box 781-F, Wheeling, IL 60090; (312) 459-1030.

S — O — S

Too Many and Too Low to list here
VALLEY ENTERPRISES
P. O. Box 228
Redwood Valley, CA 95470

! Brand New Software Source !

Total access to Apple software. Attractive prices, toll free ordering, prompt shipping, free catalog with programming tips. Access Micro, 11306 Southland Rd., Forest Park, OH 45240; (800) 543-1114/AK, HI; OH: (513) 825-5803.

FREE DATABASE PROGRAM

with first $50 order. Mention this ad. *Fantastic* prices on software and peripherals. Write or call (312) 679-2650 (ans. mach.). NORCOM, Dept. ST2, Box 914, Skokie, IL 60076.

SOFTWARE AUTHORS

Send us your original software with $50. Our qualified review team will send you a comprehensive evaluation. If TOP QUALITY, EVALU-WARE will act as your commissioned agent. We know *who* is buying *what* and *where* the best royalties are. EVALU-WARE, 72 Valley Hill Rd., Stockbridge, GA 30281.

THE SOFTWARE HOUSE

Selling software for the Apple Computer: TG, Stoneware, Muse, On-Line, Sirius, SubLogic, Budge, Ashton-Tate, Broderbund, Hayes, Lotus, Silicon Valley, Videx, VisiCorp & Many MORE!! Low Low Prices!! Free price sheet. MC & Visa accepted. Write: 411 Rices Mill Rd., Wyncote, PA 19095; (215) 885-6151.

LOW APPLE SOFTWARE PRICES!

Check out our fantastic prices! Write for our **FREE** price list! KERR SOFTWARE, P.O. Box 5301-ST, Long Beach, CA 90805. Or call (213) 428-8193. Source: CL0854.

MAKE MONEY—HIGH PROFIT

National Diskette Distributors expanding mkt. area. Quality diskettes—sales kit, small investment $30. Call/Write today for details. NDD, Box 1210, Vista, CA 92083; (619) 744-8910.

HOLIDAY SPECIALS

Think Tank	Exodus (Ultima III)
Book Ends	Koala Pad
BurgerTime	Lode Runner

Just a sample of our over 50 programs **on special** this month, for your holiday giving. All our other programs are at **low, low prices** too. Call or write for our free price list. Bytes & Pieces, Box 525, Dept. S, East Setauket, NY 11733; (516) 751-2535. Source TCP637, CompuServe, 72135,1710.

DESCRIPTIVE CATALOG

Our catalog is not merely a software listing, each title is described. Guesswork is eliminated. We guarantee quality service and low prices. Send $1, refundable with first order. Creative Computer Resources, P.O. Box 745, Spring Lake, MI 49456.

FLOOBY DUST IS HERE!

The world's first computer frustration drug. Ask your dealer or write: WALLACE MICRO-MART, Flooby Dust Div., 2619 N. University, Peoria, IL 61604.

CLOSE TO DEALER PRICES

on software and hardware. *Printer sound enclosure* $49.95 is one example. We carry all *major* brands. *Free* catalog: Homes Corp., Dept. ST, P.O. 6950-660, Ventura, CA 93006.

SAVE AT SOFT WAREHOUSE!

We offer the lowest prices on business, education, and entertainment software. All major brands are available. Write for our free catalog.
SOFT WAREHOUSE
P.O. Box 153
West Islip, NY 11795

SOFTWARE JUNKIE?

RENT recreational and educational software for your Apple computer. Low prices. FREE brochure. The Soft Source-R Inc., Dept. J, Box 2931, Joliet, IL 60434.

Strategy

FRIDAY NIGHT POKER

Play real poker with your Apple II. You play against 4 computer gamblers who randomly bluff and sandbag. PLAY BOTH DRAW AND STUD. Choose from 3 levels of betting. Options for saving a game and seeing all cards. Uses full graphics. Includes a casino style poker game. Needs 48K II+ or IIe. At your dealer or send $24.95 to Excel Software, Box 240942, Charlotte, NC 28224.

A SOLITAIRE CARD GAME

Spider—Hi-res graphics, save/restore game to disk, move prompting. Copyable. Two decks, ten piles. Written in Applesoft. A challenge. $30. Sandy Software, Box 1403, Sandy, UT 84070.

Utility

IIe PASCAL 1.1 RAMDISK

Turns extended 80-column card into a 126-block RAM disk drive. Speeds up compiling, editing. Easy to use; files remain after rebooting; uses only 13 bytes of main memory. Source code included! $16.95. David Neves, 2801 Monroe St., #2e, Madison, WI 53711; (608) 238-0020.

EXPERT SYSTEMS

Production system software tools to create knowledge-based expert systems using IF-THEN production rules. Interrupt debug mode for fast production rule checkout. $200. Documentation $10. Mark Watson, 535 Mar Vista Dr., Solana Beach, CA 92075.

FORMULATOR

A "formula calculator" for any Apple II. A powerful scientific calculator with so many extra features you'll never want to use an ordinary calculator again. Save formulas on disk, 255 "interactive" variables, formatted results, hard copy, extensive math functions, and more. Send $29.95 to R. Thompson, 5503 Aldrich Lane, Springfield, VA 22151.

NO MORE RETYPING

YOUR DATA FILE when changing over to a new database system! TRANSIFILE is designed to do this work for you and can accommodate DB Master, Data Factory, General Purpose and File Cabinet. Reformats the database and transfers it onto diskette to run under one of the other three database systems. For information write to: LEG, 3609 Glennmeadow, Rosenberg, TX 77471, or send $20 for program & instructions.

DOCTOR DOS

Utility programs to improve the health of your disk. CREATE UNIQUE DOS COMMANDS AND ERROR MESSAGES. Help ailing catalogs. Implant undeletable lines and REM statements. Exhume deleted files. Delete tracks for limited Copy A protection. Edit tracks and sectors byte by byte. For II+ or IIe. At your dealer or send $24.95 to Excel Software, Box 240942, Charlotte, NC 28224.

EDUCATORS, Scientists, Engineers: MATRIX II, the machine-language extension to Applesoft, adds matrix functions, speeds programming, executes at compiled-language speeds. Matrix mult, TRN, INV, SYS, DET & much more. Easy to use. Disk with MATRIX II, demo programs & tutorial manual, $19.95. Apple II+/48K or IIe, DOS 3.3. LRS Systems, 810 N. Seventh St., Charles, MO 63301.

Softalk's classified advertising section offers a considerably less expensive way than normal display advertising to reach tens of thousands of Apple owners.

Classified advertising space is available at the rate of $10 per line for the first ten lines, with a five-line minimum. Each line over ten lines is $25 per line.

Heads will be set in 10-point boldface, all capitals only. Italics are available for body text only; please underline the portions you would like italicized.

The body text of the ad will hold roughly 45 characters per line. Spaces between words are counted as one character. Heads will hold roughly 24 characters per line, with spaces between words counted as one character. Please indicate if you would like the head centered or run into the text.

Display advertising may be placed in the classified section at $100 per column inch; no advertising agency commisions shall be granted on such advertising. Ads must be black and white, may be no larger than ½-page, and must fit within the three-column format.

Ad copy for classified ads and camera-ready art for classified display advertising should be received no later than the 10th of the second month prior to the cover date of the issue in which you want the ad to appear. Payment must accompany ad copy or art.

Please call or write for additional information.

Softalk Classified Advertising
11160 McCormick
Box 60
North Hollywood, CA 91603
Attention: Linda McGuire Carter
(213) 980-5074

* TELEPHONE DIALER *

Use your Apple II to automatically dial numbers stored in memory. Your computer becomes a "one button" dialer. Complete plans + driver program listing. Price: $9.95. JF SYSTEMS, P.O. Box 4544, Warren, NJ 07060.

LINE EDITOR. Auto line numbering. Locate any variable. Insert, delete, change and more. Complete with disk, cue card and instructions. Send $29 to Sofcom, Box 55, Clearfield, UT 84015.

EXXPAND-A-COMMAND with Amper-Magic. Add more commands to Applesoft without knowing any machine language. Add PRINT USING to your program. Vol. 1: 23 commands, $75. Vol. 2: 27 for $35. $2 shipping. Anthro-Digital, P.O. Box 1385, Pittsfield, MA 01202; (413) 448-8278.

APPLE II+ & IIe DOS & INIT UTILITIES

Simple DOS 3.3 modifications & compatible with other utilities. Features include: free sector display: wild card file names: text dump file command + more. Faster init routines using special sectoring. Gives control over the type of hello program & the number of tracks (35 to 40). MC/Visa. Send $29 to: R.SHU Software Co., 3242 Gillham Rd., Kansas City, MO 64109: (816) 561-6309.

ULTIMA II & III PLAYERS

use these programs to edit your character(s)! Change name, race, class, abilities, hp, exp, gp, spells, weapons, armor, equip., anything! Give yourself as much as you want! $9 each or $15 for both disks. Mike Scanlin, 34 Giralda, Long Beach, CA 90803. Specify II or III.

CUSTOMIZE YOUR APPLE III

. . . with CustomFONT. Design, display and print special characters, symbols, and fonts. Include special symbols, logos, mathematical formulae, foreign language characters, graphics, and special fonts in word processing and spreadsheet. Enhance your own Business BASIC and Pascal programs with distinctive displays and reports. Fully documented and fun to use. $149. Requires 256K and Epson, IDS 4/560 or Prism, Prowriter, or Apple DMP. Printer must have graphics option. Call or write: Swenson Associates, Inc., 45 Newbury Street, Boston, MA 02116; (617) 267-3632.

64K/128K RAMDRIVE IIe

RAMDRIVE IIe is a fast disk emulation (up to 40 times) for all extended 80-column cards, including Applied Engineering's Memorymaster IIe. All DOS 3.3 and Apple Pascal 1.1 F(iler commands, double hi-res, and 80 columns will work. Features audio-visual access indicator, reinitialize directory ability, menu-driven documentation, and easy turnkey operation. Send $29.95: Precision Software, 6514 N. Fresno St., Milwaukee, WI 53224; (414) 353-1666.

MATRIX UTILITY computes eigenvalues, inverse, determinant, characristic polynomial and rank of a matrix. Solves linear equations and polynomial equations. Easy to use; menu-driven. Manual included. Send $34.95 to WESWARE, 2349 Fir, Glenview, IL 60025.

Wanted

AMPER-EXPANDER I

Have *fast* machine language routines in *your* Applesoft programs. *Input anything*—enter those commas & colons from keyboard or disk. *Print Using*—print those amounts. *Ring Bell. Clear to End of Line. Clear to End of Page. Swap Variables*—make fast sorts. *Music*—notes & noise. *If/Then/Else*—put the *else* back in the *if/then*. *Wait*—for specific time. *Wait Key*—time or key. *DOS Free Space.* $29.95+$2 ship. Apple II+, IIe, DOS 3.3.

ShadeTree Software
P.O. Box 12161, Columbia, SC 29211

MAKE GREAT MONEY ! ! !

for your dBASE II knowledge! Trainers needed across the country for aggressive computer training company. Micro Educators Inc. Call Mr. Mathe at (805) 522-2303.

Word Processing

ANNOUNCING APPLE QWERTY . . .

The word processor for professional typists and non-typist professionals is now available on the APPLE II (CP/M) for the amazingly low introductory price of $59. **PC Magazine** (April) says: "Because of its excellent manual and logical integration of printing, file-handling, and editing, this package is a good choice for personal or small office use."
(603) 456-2111 VISA or MASTERCARD
Eastern Mountain Software, Warner, NH 03278

APPLEWRITER II+/IIe/III

Introducing for use with Applewriter a unique WPL program to build WPL programs $24.95. Incl: WPL prog-builder, Zip code sort prog., program to search user-specified files for Wd/Item/Phrase. Plus complete printable doc. on disk and usable demo prog. Specify model. New Horizons, Box 4655, Medford, OR 97501.

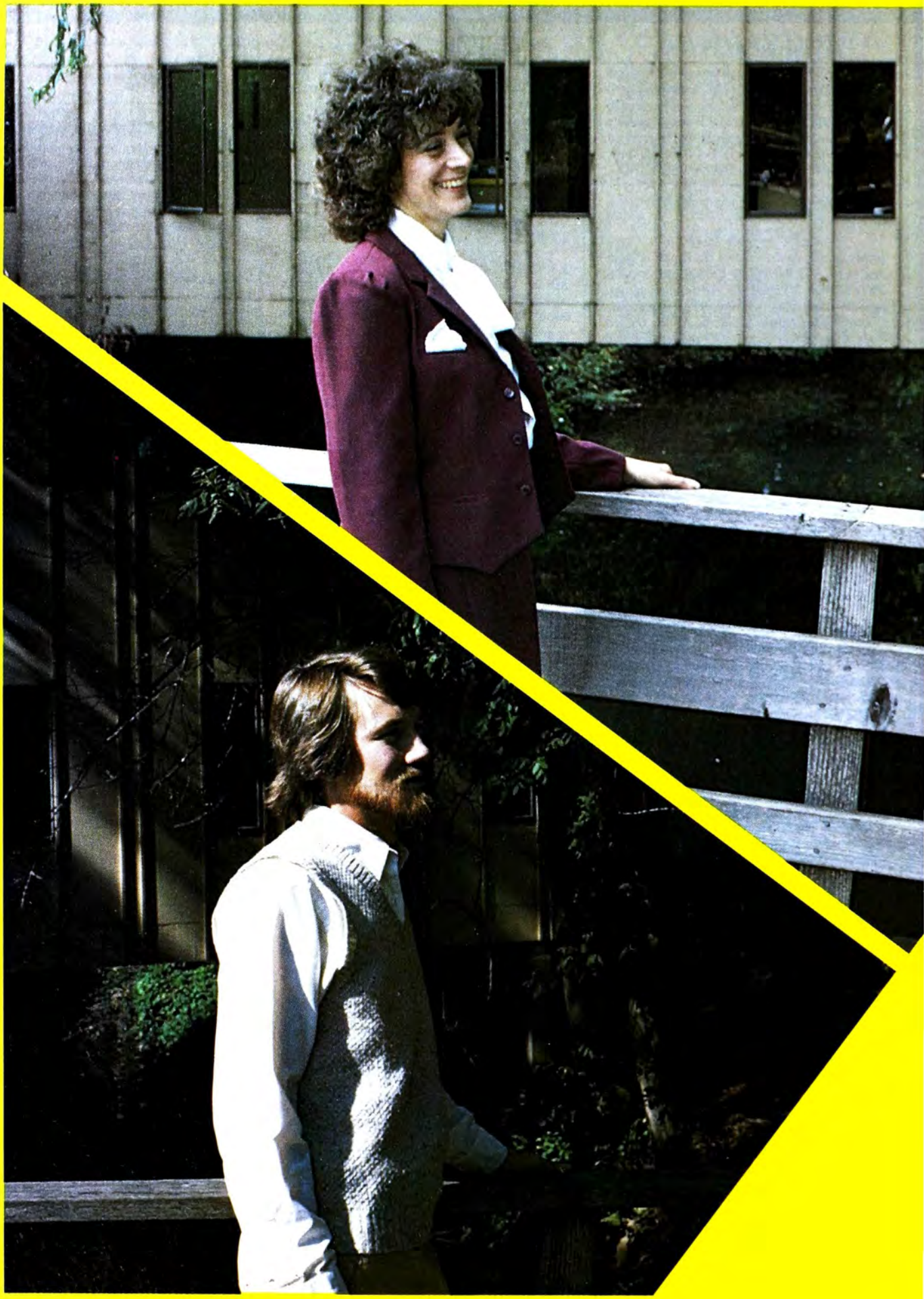
Dear (Name):

Apple Writer II, IIe formletter program, written in WPL. Print personalized formletters, labels, envelopes, & more! Store tested. Demos available for dealers. Send $29.95 to: Autoletter/Plus, Box 44, Greensboro, NC 27401.

Apple III

APPLE III GRAPHICS

This is the joystick/trackball/keyboard-controlled graphics drawing package. Draw complex pictures w/ or w/o text in minutes in color or B&W, 2-D or 3-D, w/paintbrushes of any size or color. Many other features. Is in Business Basic. Not copy-protected. Free listing & user manual. Buy the best for less, $25. Herb V.H., Box 6392, Carmel, CA 93921.





EXEC AVANT-GARDE

The Dynamic Zone

BY HARTLEY LESSER

This book is dedicated to everyone who is willing and eager to get off it and get on with it in spite of anything that used to be; the courage to really go for it, in spite of the constant deluge of forces pushing us in the direction of unaliveness, is the most beautiful quality in evidence in the world today, as well as one of the most scarce.

—From *The Creativity Life Dynamic Book and Program Manual*, Avant-Garde Creations, 1980

There seems to be something more at work than simply selling software at Avant-Garde. The company possesses a mysticism unique to the industry. The *Creativity Life Dynamic* package, introduced in 1980, managed to philosophize, instruct, and entertain in an entirely new fashion. Avant-Garde saw game playing as an effective method by which people could perceive difficult truths. But some people questioned the truth of the truths: Were these folks at Avant-Garde without the wherewithal for rational thought?

"Must be some kinda hippie throwbacks"—something overheard from a mumbling customer at a retail computer store in July 1980 as he perused the *Life Dynamic* manual, which discussed right-brain perceptivity in conjunction with artistic programs.

"Yeah, but look at the price, Dad," responded a youngster, eyes glazed with excitement at the prospect of owning *Instant Graphics* (with or without sound), *Instant People, Poem Writing*, and *Music (Write: Record: Play)*, for less than twenty dollars. The price hit the correct nerve. Two tenners soon evacuated the gentleman's wallet and merged with other greenery inside the retailer's happy register. Little did the adolescent know he was in for an educational experience. Little did the father realize this was the support Avant-Garde needed to grow into one of the major software companies around. What kind of company is Avant-Garde? What are its people really like?

Trailblazing. Eugene nestles comfortably in the midvalley region of Oregon between pine-peppered mountains. Morning fogs, temperate rains, and sun-filled days coax blackberries the size of golf balls from the rich soil. Once a thriving center of the timber industry, Eugene now proudly boasts its diversity, beckoning to the knowledge industry for more than a visit. The waters of the Willamette and McKenzie rivers merge near Eugene, as do those seeking the sense of community that permeates the well-manicured city. Eugene certainly

This page: Steve Robinson, Avant-Garde's vice president of finance and administration. Opposite page (top): Mary Carol Smith, cofounder and president, (bottom) Dan Erdmann, manager of product acquisition and development.

seemed to be an unlikely setting for the believed commune of Avant-Garde.

Avant-Garde is set among what appear to be professional office buildings with wood-pane exteriors, typical habitats for working doctors and dentists. But Avant-Garde's building is different—there's a small river flowing beneath it. Deep water occupies the area where a foundation should be. A three-story bridge anchored in berry-bushed embankments hails as Avant-Garde's home. A scenic bridge amid teeming greenery leads from the parking lot to the building. A sign above the glass entranceway indicates that this is indeed the home of Avant-Garde.

The brains behind Avant-Garde, Mary Carol Smith, appears more in keeping as the chairperson of the board for a giant conglomerate, rather than someone who can be caught running around in a space suit promoting an arcade game. Nor does she conjure images of hippies and flower children. But she's perfectly in keeping with an underlying current of excitement that permeates the atmosphere of Avant-Garde's offices.

Warm and energetic, exuding self-confidence, Smith speaks of the company and her partner, Don Fudge, in glowing terms. There has been a great deal of struggle to put Avant-Garde in a leading position, with the recently incorporated company evolving from a book-publishing venture initiated in 1976.

"Don and I had been through the frustration of trying to get books into the marketplace. We realized that computers presented a new and open line of communication, and we took advantage of an opportunity at the right time," she said.

"The books were published in Eugene. We thought they were important, but they didn't have mass-market appeal. These were books more for particular types of people. They had to do with the quality of life and presented alternatives to make life work. A lot of books ask questions and point out problems, but our books offered solutions. They were unusual."

Strange Days. Given the nature of these books, the differences found in the *Creativity Life Dynamic* series, and the fact that for their first year in business they had no telephone and had to drive forty miles to their post office box for communication with the world, the initial "strangeness" that consumers perceived in Avant-Garde is more easily understood. The first software, entitled *The Life Dynamic Transformation Experience*, attempted to have users look at themselves and be willing to be uncomfortable in the process. According to Smith, the software created a "space" for people to experience themselves, if they were willing to go through the process. Decisions had to be made about making personal changes, to understand exactly what required change. "You have to be where you're at before you can get anywhere," she says.

Where Smith and Fudge were before Avant-Garde was the outback of northern California. A "country experience" found the two residing and working as part of a self-sufficiency group of nine people. This introspective life style played an important role in their coming to a deeper understanding of themselves and of the world. Some of the group's members had regular city-type jobs but still shared responsibility for maintaining the residences and the land of the homeside along with everyone else.

"This was not a big isolation trip," Smith remarks. "I was getting my act together. This was a chance for me to decide what I was going to do with my life. The most important thing about the country experience was realizing that there were important things to be done in the world. I had to make an intrinsic decision to do things that I felt were of greater value to my life." Smith gardened, which included reaping rye with a sickle, and aided in the construction of cabins and a barn.

Fudge became involved with building and managed to find time to clip the toenails of a flock of sheep. "I built a one hundred eighty-seven foot bridge all by myself, as well as a cabin, a barn, and many puppets for puppet shows. I played some volleyball and invented a machine for a factory in town. I was really into things like that."

The bridge that Fudge built was strictly for pedestrian traffic and spanned a river that was twenty feet wide. One whole summer was exhausted completing the bridge. Eventually Fudge obtained a mainstream job in the village. The group slowly dwindled as people learned what they needed to learn and went on to their next objectives. For Mary Carol Smith and Don Fudge, this proved to be their publishing venture in Eugene, Oregon.

Magic Bus. Steve Robinson is vice president of finance and administration for Avant-Garde. A graduate of Williams College, Robinson began computing on mainframes in 1963 and continued through attendance in 1965 at the Stanford School of Business.

Robinson's introduction to an Apple occurred while he was working as a computer consultant in San Francisco three and a half years ago. He observed a *VisiCalc* demonstration in a computer store. The software seemed to be just the tool he was looking for, so he inquired how the spreadsheet worked. When the salesperson told him that he was trying to figure that out, Robinson said, "Move over," and found all the reason he needed to buy his Apple II.



The Avant-Garde staff (from left to right): Sally Callantine, Pam Shute, Shirley Reeves, Caroline Bloomfield, Lynnette Zabroski, Judie DeVille, Tami Taylor, Lews Macken, Chris Baldwin, Dan Erdmann, Karen Ludwig, Monya Neal, Irma Johnsen, Evelyn Lee, Matt Oppenheimer, Mary Carol Smith, Robin Standafer, and Steve Robinson.

"*VisiCalc* answered my calculation needs," he remarked. "*VisiCalc* had a much faster response time than any mainframe I had ever used." Robinson seems to be the type who enjoys defeating obstacles. He's currently a member of the Eugene school board and also manages to work with the community in promoting Eugene as a business center. A one-man chamber of commerce.

Technical expertise also characterizes Dan Erdmann, who recently joined Avant-Garde as manager of product acquisition and development. Born in what was once known as Fort William in Ontario, Canada, Erdmann attended college in Massachusetts and eventually landed a research assistant's position at Harvard. He found the transition from mini to micro uncomplicated, as programming in Basic and Pascal on either system is similar in nature. "Certainly not Cobol to Applesoft," he added with a grin.

It's the influence of national sales manager and marketing consultant Barry Becker that keystoned the last year's substantial increase in Avant-Garde's business. Increasing business isn't new to Becker. In his previous job, as vice president of marketing and sales for PalmTex Corporation, he generated six million dollars of sales activity in 1982.

In general, Avant-Garde's staff is enthusiastic about the opportunities they see in the company. The growth phase of any company is often the most exciting. What seems to make Avant-Garde special is a sense of family. "Avant-Garde . . . it's a good group of people," is a common sentiment among the staff members.

Don Fudge, Avant-Garde's cofounder and star programmer, exists on a plane somewhat different from most. The Indiana-born programmer, schooled in Pennsylvania, resident of California and Oregon, is also a Vietnam veteran with definite ideas as to everyone's responsibility in fixing the mess he sees the world in today.

"I'm not on a holy quest," he says with conviction. "If Mary Carol and I ever have more money than we know what to do with, we'll put those funds toward any of those things we'd like to see happen in the world." After noting that the world's population would be six billion before the turn of the century, that the food supply system is going awry,

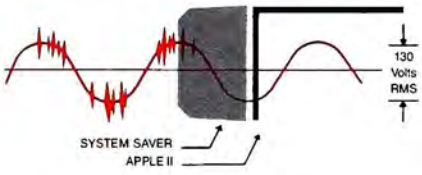
System Saver™

The most important peripheral for your Apple II and IIe.



For Line Surge Suppression

The SYSTEM SAVER provides essential protection to hardware and data from dangerous power surges and spikes.

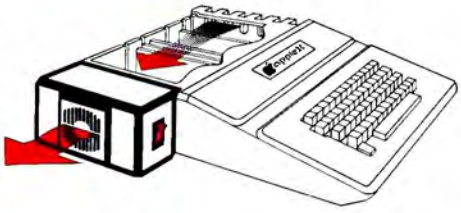


By connecting the Apple II power input through the SYSTEM SAVER, power is controlled in two ways: 1) Dangerous voltage spikes are clipped off at a safe 130 Volts RMS/175 Volts dc level. 2) High frequency noise is smoothed out before reaching the Apple II. A PI type filter attenuates common mode noise signals by a minimum of 30 dB from 600 khz to 20 mhz, with a maximum attenuation of 50 dB.

For Cooling

As soon as you add 80 columns or more memory to your Apple II you need SYSTEM SAVER.

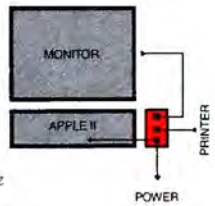
Today's advanced peripheral cards generate more heat. In addition, the cards block any natural air flow through the Apple II creating high temperature conditions that substantially reduce the life of the cards and the computer itself.



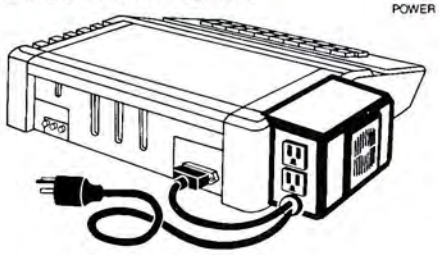
SYSTEM SAVER provides correct cooling. An efficient, quiet fan draws fresh air across the mother board, over the power supply and out the side ventilation slots.

For Operating Efficiency

SYSTEM SAVER contains two switched power outlets. As shown in the diagram, the SYSTEM SAVER efficiently organizes your system so that one convenient, front mounted power switch controls SYSTEM SAVER, Apple II, monitor and printer.



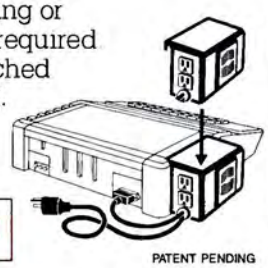
Available in 220/240 Volt 50 Hz



The heavy duty switch has a pilot light to alert when system is on. You'll never use the Apple power switch again!

Easy Installation

Just clips on.
No mounting or hardware required.
Color matched to Apple II.



UL LISTED

PATENT PENDING

Compatible with Apple Stand



$89.95 at your local dealer or order direct by phone or mail.

For phone or mail orders include $2.50 for handling. New York State residents add sales tax. VISA and MASTERCARD accepted. Dealer inquiries invited.

Kensington Microware Ltd
919 Third Avenue, New York NY 10022
(212) 486-7707 Telex 236200 KEN UR

KENSINGTON MICROWARE

and that there are forty wars being waged at this very moment, he adds, "There's all kinds of things that aren't going right. If nobody applies any force, you know where it's all going to end up. That's a quest everybody has the responsibility to take—you, and me, and everybody else. Some people just like to take dope and drink a lot and stick their heads into their pillows to forget everything. That kind of attitude got us here in the first place, with Russia and the United States unable to agree about their bombs. I just think everybody has the responsibility to try to make the world work. A lot of people don't take this responsibility on. So maybe I have to make a bigger noise to make up for some of those that aren't doing their fair share. And in order to make people take notice, you have to have clout. That means making money. That's okay with me. It's something I had to learn."

Route 66 Revisited. Avant-Garde's past history reveals several software successes. *Hi-Res Secrets*, Fudge's graphics tutor and subroutine package, *Jump Jet*, and *Hi-Res Golf 1* and *2* have sold well. Smith believes Fudge's *Sentence Diagramming*, the only program of its kind available, is an exceptional educational offering. *Lazer Maze*, *Death Race '82*, and a newer offering called *Trompers* have held their own in the marketplace.

A professional version of the already popular *Hi-Res Architectural Design* is currently being tested by practitioners of that occupation. This is one of Mary Carol Smith's favorite packages because it allows for creative expression.

Avant-Garde's future is here today. With Avant-Garde working in conjunction with Synetix of Redmond, Washington, hardware and software supporting sprite graphics for the Apple have recently been released by both companies. Synetix's SuperSprite graphics board is bundled with Don Fudge's *StarSprite I* tutorial, which instructs the user in the board's graphics, sound, music, and voice capabilities and provides three arcade games as a bonus.

The collaboration began when, at last year's Minneapolis Applefest, the two companies' booths happened to be next to one another. Synetix observed Avant-Garde's graphic capabilities, and Fudge and Smith looked at the Synetix sprite board with wide eyes. Together, they've undertaken the development of the product with rare cooperation and give and take on both companies' parts.

"I think you'll see some things coming from Avant-Garde that take some big steps. The *StarSprite* package is a huge step into the future of software," says Smith. "We're not staking the company on *StarSprite*, but we're ready to capitalize on the potential we believe the product has." Dozens of boards were sold in September after ads for it began appearing, despite the fact that dealers at first didn't have the product on the shelves and that it bears a price tag of nearly four hundred dollars, according to Avant-Garde's president. "We'll also be selling *StarSprite* educational products. It's a strong product for that market because of the Echo II voice on the board and the ability to animate large objects on the screen."

"*StarSprite* software and the SuperSprite board are looking to fill a big gap in Apple graphics," remarks Steve Robinson. "A lot's going to depend upon the product's initial acceptance. If we come up with ways of introducing the capabilities to everyone, the product will feed upon itself."

Robinson feels that this product is the most revolutionary step in Apple graphics since the machine's creation. "Graphics was the only area where Apple was falling short against the other machines. Now they can be more than competitive."

Don Fudge is thoroughly excited about the new product line. He relates that, where it took him five weeks to program a machine language game with Apple 6502, three machine language games using sprite graphics took an average of only five days apiece. "And I wasn't even familiar with the system! There's none of those difficult and weird things—none of the preshifted shapes, no worry about colors that you had with the 6502. No erasing or concern about restoring backgrounds. The problems with machine language before the sprite board can be traced back to the hardware.

"It'll be just like the 16K RAM card and eighty-column video card for Apple," Fudge continues. "They're considered standard peripherals now. So will the sprite graphics board and the software. I see the Apple IIe Plus, and of course it'll have the Super Sprite board in it."

The Righteous Stuff. Avant-Garde certainly seems to be doing something right. Nineteen eighty-one's staff of four has increased to twenty-five full-time and part-time employees. Their catalog boasts thirty-seven software products. An injection of venture capital has already occurred, with another major infusion due any day. Avant-Garde is studying the software markets for the Commodore 64, IBM pc, Coleco's elusive Adam, and even Wang, Mary Carol Smith reveals. She believes that only four or five computer companies will continue to impact the market and that their computers, plus Apples, are the heavyweights.

There is definitely more than a human-to-machine relationship active at Avant-Garde. Fudge has deep and serious feelings about computing. "The computing experience isn't about *Pac-Man* and business systems. It's a different context of consciousness and awareness. It's something unverbalizable. It's a whole new means of communication and a way of creating awareness and consciousness. There's a tremendous potential with the whole thing."

Smith views computing with healthy respect. "There are so many possibilities, and I'm open to them all. There are so many directions to explore and we haven't even begun to think about them all. We've only taken baby steps."

For Fudge, Avant-Garde has been quite a series of progressions—from living on one soyburger a day and acquiring an old Apple II Plus in late 1979 in order to manage mailing lists, to learning assembly language in a week and a half. For Smith, self-sufficiency and living in the country with friends was a good experience, but "that wasn't where it was at. It was devolving instead of evolving. There are too many important things to do."

A daily regimen of dance classes at 6:30 in the morning starts Smith's cycle, while Fudge jogs a mile and a half daily, regardless of climatic conditions. "Rain's the best," he claims. Programming requires thirteen to seventeen hours of Fudge's conscious work each day, with about four hours of unconscious development. He requires "spaces," significant pauses, which permit his mind to handle both linear and holistic thinking. Everything has to fit together. Neither Fudge nor Smith smoke or drink, as it "gets in the way."

How do they believe the big shakeout Smith mentioned will affect Avant-Garde? Smith doesn't foresee any problems for the company. There'll be mergers. As long as people are provided with a choice, as long as what occurs works best for the world, the Avant-Garde president won't fight against conglomerate takeovers. Fudge feels that the shaky ethics he sees in some companies today are caused by fear of this shakeout. Even if companies are taken over by the conglomerates and the big publishing companies, they still don't have the programmers. "We've got the programmers," he responds, with a big smile. "The only thing the conglomerates know how to do is sell."

As to piracy, Fudge sees it as an unsolved problem that will stay unsolved. He respects Penguin Software for having the "guts" to lower prices, but he doesn't see many other companies following suit. Smith hates even to think about the problem. She believes people copy disks without really knowing what they're doing. It's an unconscious element of human nature. "There's a feeling that copying is so easy to do that it's more like Xeroxing. There's no intent to hurt any software company. If they only knew."

The Long and Winding Road. In the future, Fudge predicts, given a strong financial base, he and Smith will return to publishing their ideas. In a contemplative mood, he reiterates the concept of Avant-Garde.

"There has to be more space in the world for life, awareness, creativity, and potential. We've got to get closer to experience and further away from beliefs. There should be a transformative thing where you can give people the right inspiration to look at something a different way, to shift a context. Then you've made something happen. You can't do that just by sitting back and complaining, or by doing dope—those are just ways to run from the problem. But if you want to run toward the problem, instead of away from it, then you have to get active. I really want to do something with this whole computer experience."

There's no commune in Eugene, only a professionally managed company with its foot in today and its head in the future. Warm people with the necessary know-how to make a difference are looking forward to the coming months. Exciting products, they promise, and a new Avant-Garde. In the meantime, they're indeed wearing ties, and, as Fudge puts it, Avant-Garde's success is measured as a life force, a part of the computing experience that is "a different context of consciousness and awareness . . . it's some unverbalizable thing." ■

P/S™ Buffer Card

The ONLY BUFFER that let's your Apple II™ & IIe™

ALL AT THE SAME TIME

ALL FOR $125

PRINT PARALLEL!
PRINT SERIAL!
PROCESS/COMPUTE/ENTER DATA!

EXPANDABLE TO 64K

No more waiting for your printer or other peripherals to finish with your Apple before you can use it again. Just plug the P/S Buffer Card into any slot and cable-connect to your parallel output card. After transfering your data to buffer (it takes only seconds), you'll be able to continue using your Apple in a normal fashion while printing parallel, or serial. . .or both parallel and serial – all at the same time.

In the dual printing mode, data to be printed parallel and serial are stored separately in the buffer memory. The memory is divided between them by intelligent firmware, proportional to the storage requirements of each. The memory is expandable to 64K maximum in increments of 16K with plug-in RAM modules available from your dealer.

P/S Buffer Card has both a parallel output port and an RS-232C standard serial output port. When you need to change from parallel to serial, serial to parallel, or output both simultaneously, you don't have to physically change cards. The intelligent firmware lets you do it by either software command or (optional) hardware switch.

P/S Buffer Card interfaces with most popular parallel printer cards including Apple,™ Epson,™ Grappler,™ Graphitti™ PRT-1,™ and Tymac.™ If you don't already have a parallel card, order the P/S Buffer "Stand-Alone" Card. It includes a built-in parallel interface. An optional graphitti plug-in ROM allows you to dump the Apple hi-res graphic screens with a few simple keyboard commands.

Many applications programs and operating systems such as CP/M™ and Apple Pascal™ require that the parallel interface be in a specific slot. So, leave it there. When you wish to print parallel, or serial, or both at the same time, just "tell" P/S Buffer Card what to do. It's that easy.

See your local dealer for details.

SUGGESTED RETAIL PRICES:

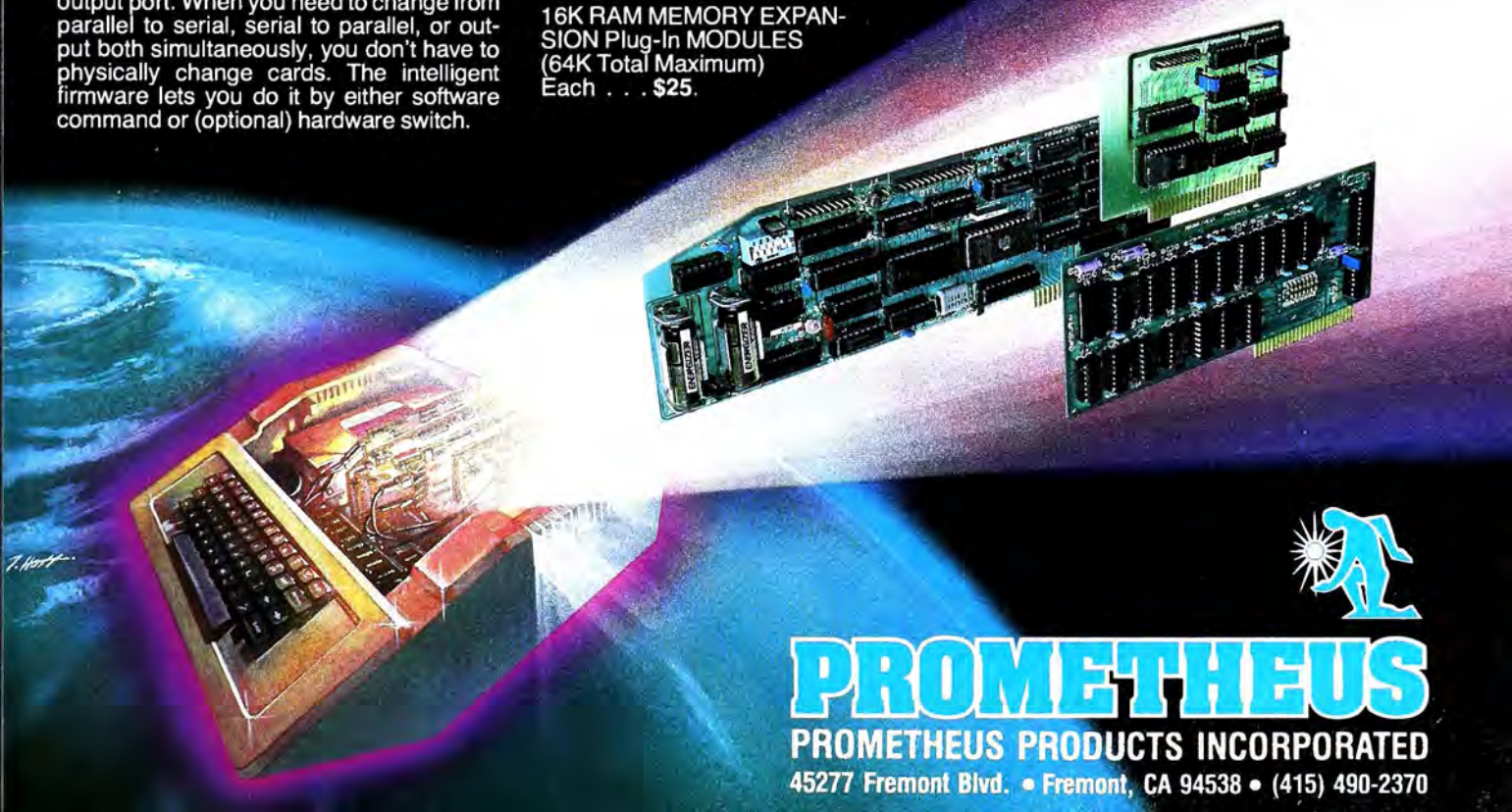
P/S 16K BUFFER CARD. For use with existing parallel interface card . . . . . **$125.**

P/S 16K BUFFER "Stand-Alone" CARD with PARALLEL INTERFACE . . . . . **$199.**

SPECIAL! 16K P/S BUFFER "Stand-Alone CARD with GRAPHITTI GRAPHICS and Cables . . . . . **$249.**

16K RAM MEMORY EXPANSION Plug-In MODULES (64K Total Maximum) Each . . . **$25.**

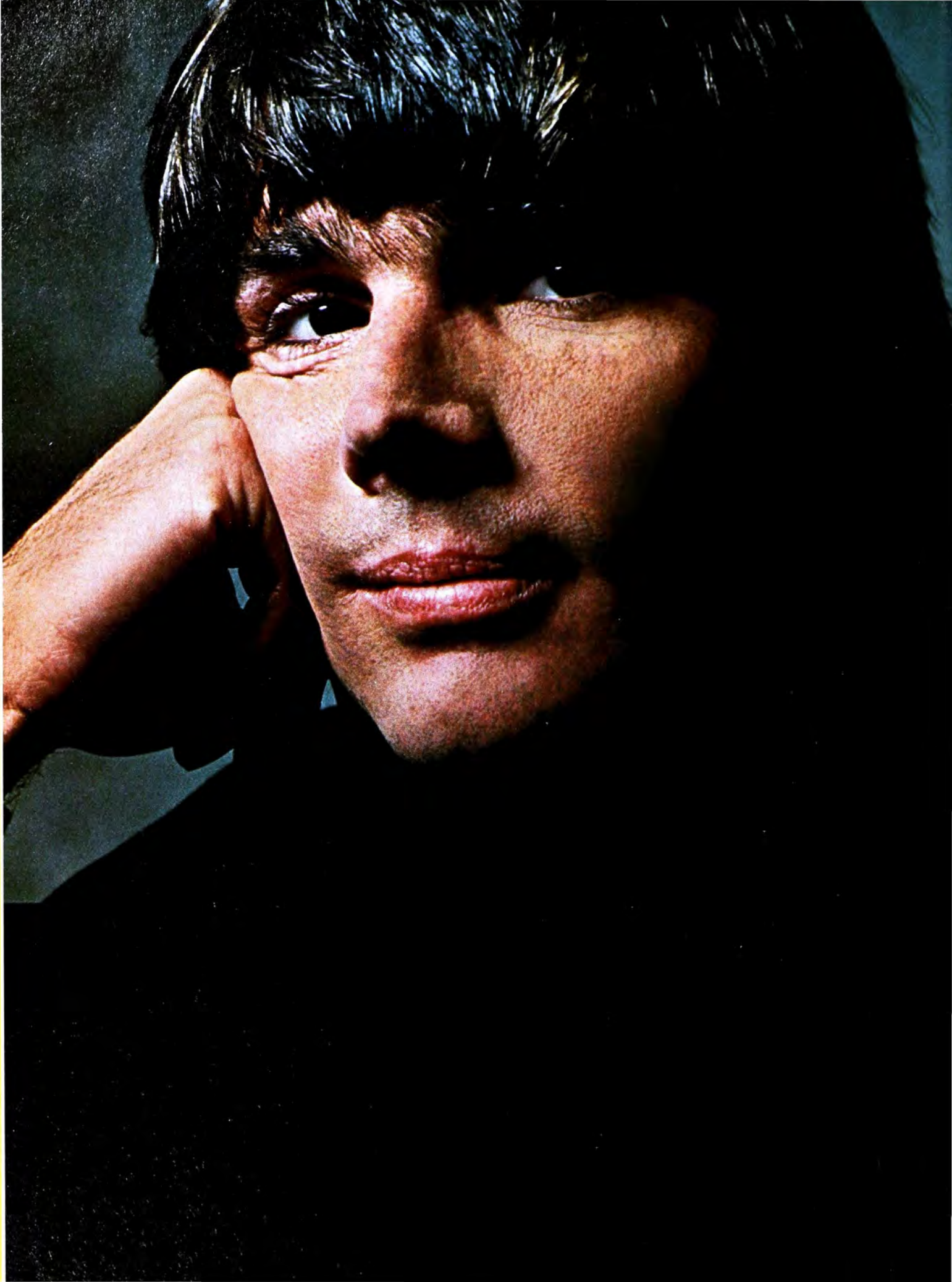
Hardware "SWITCH" Option . . **$25.**



PROMETHEUS

PROMETHEUS PRODUCTS INCORPORATED

45277 Fremont Blvd. • Fremont, CA 94538 • (415) 490-2370



Bill Budge wants to write a program so human that turning it off would be an act of murder.

ARE YOU SURE YOU WANT TO CALL THIS GUY AN ARTIST?

IN A BEDROOM in a frame house in Berkeley, California, a guy who looks like he might have stepped out of a TV family series is playing with some ideas that could change your life. They are ideas that are amusing, even charming. And they are ideas that are, quite frankly, a little scary.

His name is Bill Budge and he talks about things like how programming for a microcomputer is like writing a poem using a 600-word vocabulary. He talks about how the elements are so limited and how you have to make them mean so much. And he talks about how, if you do it right, you can make those elements suggest something more than aliens—something that begins to make you believe it has a life of its own, something he calls "a software friend."

A software friend. It sinks in slowly.

To create a personality in the computer, you have to come to some decisions about what personality is in the first place. We often think of it in nearly the same way we think of "habit" or "character traits"—a way of describing continuity in our behavior from one moment to the next. (F. Scott Fitzgerald called it "a series of consistent gestures.")

According to Budge, however, the essence of a software friend is quite the opposite. "Creating the illusion of personality," he says, "means creating an intelligence that's always changing. It reacts differently to different situations."

The idea is probably ten years away from actuality. But when it comes to working such a mojo on our home computers, well, Budge stands about as good a chance as anyone of pulling it off.

After all, look at PINBALL CONSTRUCTION SET. Everyone always knew Budge was good, but when he cranked out PINBALL, well, the switchboard lit up like a Christmas tree.

It was a program that changed the way people thought about personal computers. Instead of reacting to the machine, you were suddenly inside it, trafficking information this way and that, making things. It was like programming, but with familiar items—you'd grab this bumper, move those flippers, change the colors, then shoot a ball through it all and wonder. Maybe for the first time in a popular program, you could feel the power of the computer.

Steve Wozniak called it "the best program ever written for an 8-bit machine." And suddenly, what-Budge-would-do-next was something you heard people talking about. To Budge himself, however, things weren't quite that simple.

"Sometimes I worry," he says. "I worry about the ability of software to absorb you, focus on you, steal you away from your family and friends. Because in its short-term excitement, it seems to be more interesting. Of course, it's not."

He leans on his hand. "Not yet."

Bill Budge's classic PINBALL CONSTRUCTION SET is just one of more than a dozen remarkable publications by a company called Electronic Arts. We're an association of software artists, united by a common goal: we want to realize the potential of the home computer. To do this, we're creating software worthy not only of the capabilities of these machines, but also of the minds that use them. If you'd like to know more about our company and its products, call (415) 571-7171, or write us at 2755 Campus Dr., San Mateo, California 94403.

ELECTRONIC ARTS™

PINBALL CONSTRUCTION SET is now available for Apple, Atari, and Commodore computers. To see it, and to receive a free "We See Farther" poster, stop by the authorized Electronic Arts dealer nearest you.

The next most precious gift





Programs by The Learning Company are available for major personal and home computers. The Learning Company and all product names are trademarks of The Learning Company. © 1983 The Learning Company. All rights reserved.

The love of learning

Next to your love, you can give your child nothing more precious than the confidence and the joy that comes from learning.

Now you can provide a new kind of learning experience for your child: an opportunity to develop thinking skills at a very early age, in a very natural way. At last, The Learning Company™ software truly fulfills the educational promise of the personal computer.

The Learning Company's 11 award-winning programs are as colorful, as fast-moving, as many-faceted as a child's curiosity. Your child will grasp new concepts eagerly as each success opens the door to a new challenge in logical thinking. As an adult, you will notice how skillfully The Learning Company's educators and software designers have combined sophisticated teaching techniques with pure fun.

What will you see as your child explores the wonders of The Learning Company software? Possibly a delighted three-year-old building *Juggles' Rainbow*™ in brilliant color. Perhaps an utterly fascinated five-year-old sorting out the tall thin red Gribbits and short fat blue Bibbits in *Moptown Parade*.™ A seven-year-old, a ten-year-old or even a teenager, deeply involved in designing logical kicking machines to control *Rocky's Boots*.™

What's your reward? It may be a moment of shared pride as your six-year-old shows you the solution to one of *Gertrude's Puzzles*.™ Or it may be the special satisfaction you feel when your grown-up teenager calls home from college to say that Boolean algebra seems, somehow, very familiar.

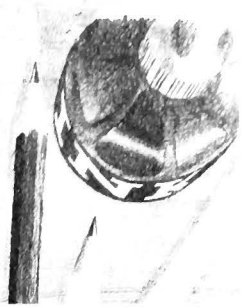
You can be sure of one thing. It will be very precious.

The Learning™ Company



The Schoolhouse Apple

by Jock Root



Software development seems to come in waves, or cycles. When personal computers were first introduced, the big thing was business software: word processors, spreadsheet programs, database systems, and the like. Then the focus shifted to games, and we had a flood of adventure programs, arcade-style games, and fantasy role-playing simulations. Now the big interest seems to be in academic software; most of the established software houses are announcing new teaching programs, and there are several specialist publishers that do nothing else but.

This last trend has produced a tremendous variety of educational software for teachers to choose from and, at the same time, an increasing demand for more and better of the same. Thus we thought this might be a good time to offer some criteria for judging the published material, as well as some suggestions as to how to write it yourself, if that's what you want to do.

Different Approaches. There are several different ways to design a teaching program. Most academic software falls into one of the following categories (although some courseware packages include several modules, using more than one technique): tutorial programs, drill and practice, simulations, model or demonstration programs, and administrative aids. Tutorial programs are perhaps the most familiar in terms of teaching technique, since a tutorial program is essentially a "computerized textbook." Like paper textbooks, tutorial software employs a wide range of styles, but the common factor is that a tutorial program gives the student information about a subject and then asks him or her to answer questions about it.

Some of the early tutorial programs were nothing more than "textbooks on disk." Students were given several pages (or screens) of text to read and then asked a series of questions about the text. As you might expect, this technique was little more effective than the textbook it imitated. In fact, it was often worse, since the early programs did not allow students to move back and forth through the text in order to reread paragraphs that were not clear on first reading. This kind of software is one of the reasons that teachers at first tended to distrust the computer as a teaching tool.

Modern tutorial software is more sophisticated. The text is presented in smaller chunks and interspersed with demonstrations, animated diagrams, and other teaching aids, with the keynote being variety. More important, the student is asked to respond frequently. Typically, at least one meaningful response is required for every screen of data. Programs require the student to think about the material as he or she reads it and to use ideas as fast as they are presented. In this way, a program not only delivers information but also helps students to develop the thinking habits associated with using the information. In short, a good tutorial program serves much the same purpose as a good textbook: It provides review, reinforcement, and amplification of the material taught in class.

Drill-and-practice programs are primarily for review. They provide no information and ask a lot of questions. In the beginning, these were even worse than the early tutorial programs, since a quiz on a monitor screen is no improvement over a quiz on paper. Like tutorial programs, however, drill-and-practice software has improved dramatically in the last few years. Nowadays it usually comes in a game format, and the best of such programs are almost as exciting as an arcade video game. They use fancy color graphics, sound effects, and scoring based on the speed of the student's response, combined in a dramatic scenario. Typically, the student must defend something (or someone) against a succession of nasty creatures by answering the questions that make up the drill. Such programs have proved to be highly motivating—"entertaining" might be a better word—to younger students, and even adults are not immune to their attraction.

Drill and practice were once the most boring activities the classroom had to offer, but with the right kind of software a drill session can be a reward instead of a punishment.

A "model" program uses the computer to demonstrate some process or event that cannot easily be observed: dangerous chemical reactions, the movement of electrons in a circuit, economic or social processes involving large numbers of people over long periods of time, and the like. With a computer model, the student can vary the parameters of the situation and immediately observe the result. The representation is symbolic, of course, and can only demonstrate those elements of "reality" that have been incorporated into the program. Nevertheless, this kind of software can provide a clear conceptual image of a number of processes and principles that are difficult to describe clearly in words. Modeling programs are relatively limited in application, being used mostly in the sciences, but where such programs are appropriate they often provide an understanding of the modeled process that is not available from any other source.

A "simulation" program is similar to a model in that it represents a real situation that the student could not otherwise experience. In a simulation, however, the student is an active participant, with the computer offering an environment for role-playing: making a trip down the Oregon Trail in the 1840s, managing the finances of a family in the 1980s, or piloting an airplane.

Another difference between simulation and model programs is that a

DYNACOMP presents –

QUALITY EDUCATIONAL SOFTWARE FOR THE APPLE II plus AND APPLE IIe

InfoWorld
Software Report Card

Kiri's Hodge-Podge

	Poor	Fair	Good	Excellent
Performance	☐	☐	☐	☑
Documentation	☐	☐	☐	☑
Ease of Use	☐	☐	☐	☑
Error Handling	☐	☐	☐	☑

HODGE PODGE is a computer "happening" for children from ages 18 months to seven years and older. It is a learning device which provides knowledge in a most enjoyable fashion. The program consists of many cartoons, animations, and songs which appear when any key on the computer is depressed. Each key provides something different for the child to explore. With an adult present, the child can be told about magnets, numbers, musical notes, animals, up and down, color, and much, much more. When alone, the child will be kept endlessly amused by the color, sound, and wonderful pictures. Requires 48K.

Price: $18.95 Diskette

InfoWorld
Software Report Card

Children's Carrousel

	Poor	Fair	Good	Excellent
Performance	☐	☐	☐	☑
Documentation	☐	☐	☐	☑
Ease of Use	☐	☐	☐	☑
Error Handling	☐	☐	☐	☑

CHILDREN'S CARROUSEL is composed of nine menu-selected games which have great color and sound (including the carrousel and alphabet songs). The games include matching shapes, counting, letter recognition and more. It has been "field tested" with many children. We are very proud of this one! Recommended for preschoolers. Requires 48K.

Price: $19.95 Diskette

Add $2.00 for shipping and handling. New York residents should include 7% sales tax. Master Card, Visa and Purchase Orders accepted. SHIPPED WITHIN 48 HOURS.

These are only two of the hundreds of programs available from DYNACOMP. Write for a free catalog or see your local dealer.

DYNACOMP, Inc.
1427 Monroe Avenue
Rochester, New York 14618
(716) 442-8960
(800) 828-6772



ELECTRONIC PLAYGROUND
by Jeff Tunnell

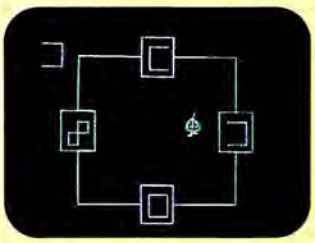
Learning for the fun of it!
ages 3 – 8

SOFTWARE ENTERTAINMENT COMPANY introduces a playful new program to develop early learning skills. **ELECTRONIC PLAYGROUND** will keep your child's attention for hours with colorful graphics, animation and cheerful sound effects.



■ **HI-RES MENUS:** Requires no keyboard input or parental assistance. Movement throughout is accomplished by simply using the joystick.

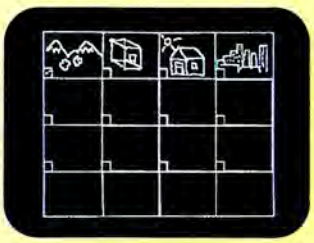
■ **MATCHBOX:** Kids will delight in the animated antics of the MATCHMAN character while matching shapes, letters and improving counting skills.





■ **MAGIC BLACKBOARD:** Your child will create colorful and imaginative pictures by drawing with their joystick. Natural and easy use of the full hi-res capability of the Apple.

■ **HI-RES CATALOG:** Saves pictures created on the Magic Blackboard and then displays miniatures of the pictures that were stored on the disk. All this without using any keyboard input!



And best of all - only $24.95!

To order send $24.95 plus $2.00 shipping and handling to: SOFTWARE ENTERTAINMENT COMPANY, P.O. Box 10854, Eugene, Oregon 97440. (503) 342-3495.
Dealer inquiries invited.

SOFTWARE ENTERTAINMENT COMPANY

Graphics created with Penguin Software's Graphic Magician
Requires Apple II, II + or Apple IIe • Apple II is a trademark of Apple Computer, Inc
©1983 SOFTWARE ENTERTAINMENT COMPANY

model adheres strictly to the rules that govern the process being modeled—that is, everything that happens is predictable, if you understand the rules of the system. A simulation, on the other hand, often includes a number of random events. It follows the rules of the situation it simulates, but it usually adds a few surprises—for example, in a family financial management simulation, you might have your wallet stolen. Murphy's Law is specifically excluded from most modeling programs but included in most simulations. Modeling programs tend to be most useful in the "hard sciences," for example, chemistry, physics, and math, while simulations are more appropriate to the social sciences, such as economics and history.

Administrative aid programs, the final category, are not directly concerned with teaching; rather, they take care of things like scoring exams, keeping class records, and the like.

Games. You may be wondering why we didn't include games as a separate category in the above classification. Many articles about teaching programs, as well as some courseware catalogs, have a separate category for games, but we feel that this is a mistake—an oversimplification at best and at worst a misunderstanding of the learning process.

In human behavior, the concept of "game," and the related one of "play," refer not so much to specific activities as to a particular style or approach to an activity—any activity. *Homo sapiens* can (and usually does) create a game version of every type of behavior, from "playing house" (which was probably "playing cave" in the original version) to such recent activities as "war games" and "strategic exercises" (less violent and deadly than war itself, but a long way from "playing").

In short, the purpose of a game is to let you practice some necessary skill without suffering the penalties that reality would exact for making mistakes. In a game situation, you lose only points, not blood, so you can keep practicing until you get it right.

From this viewpoint, almost any teaching program has a game element built in. The difference is that some programs emphasize the game aspect, while others try to minimize it.

Many teaching programs are also entertaining games. The game-style drill programs were mentioned specifically, but similar comments apply to most of the simulation programs as well. A good modeling program will be fun to play with as long as you have any interest in the process it models. Even a straight tutorial, if it's done right, will be self-motivating: You can feel the increase in your understanding as you go through it, and that's the best reward of all, since it gives you power (that is, knowledge) that extends beyond the game situation (learning situation) into the real world.

If you plan to write a teaching program, keep in mind that it not only has to teach but also motivate students, either by actively entertaining them or by increasing their confidence as they work through the program. If your program doesn't do that, students will soon find something more interesting to occupy their attention; but if it does, they'll spend as much time as possible with it.

Interaction. Probably the most important single aspect of courseware design is "student interface"—the interaction between program and student. This may seem like a strong statement, but consider a parallel situation: the interaction between teacher and student. No one would deny that the first priority in that situation is good communication between the two, and the same applies when the teacher is a machine. We don't usually speak of communicating with a computer. We prefer to call it interaction, but it refers to the same process.

Good teachers do more than just lecture or explain. They also listen to their students. If that were not the case, we would have replaced all our teachers years ago with phonograph records. Mark Hopkins, a nineteenth-century American educator, used to tell his students that "the ideal college consists of a log of wood, with a student at one end and a teacher at the other." The implication is clear that communication must flow both ways.

In the same way, a good teaching program must listen to the student, in the sense of accepting input from the student and responding to such input in meaningful ways. That doesn't mean simply asking, "How much is 2 plus 2?" and accepting "4" as correct; it means allowing the student to have some control over the teaching process. The more control the student has over the flow of instruction, the more powerful he or she will feel in the computer learning environment; and the more powerful the student feels, the more he or she will enjoy the experience. Enjoyment is the best kind of motivation, and motivation has a profound effect

It's still around if you know where to look.

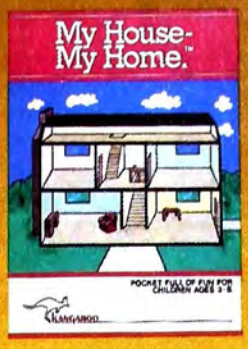
We are Kangaroo™ Inc., dedicated to just plain fun for kids 3 to 8 years old.

Jeepers Creatures™ - 30 basic animals with interchangeable heads, torsos, and legs or tails. Create an owligator or an octo-catfish or one of over 26,000 funny colorful combinations in this goofy collection of mixed up animals.

My House-My Home™ - Let's move into the house on Somewhere Street. It's ready for furnishing and family. Oops, you put the kitchen sink in the bedroom and Aunt Nellie's bed in the kitchen. That's silly.

Jeepers Creatures and My House-My Home have no winners or losers, no right or wrong answers, no high scores to beat, just hundreds of hours of creative play.







Give your child's imagination a boost with Kangaroo games designed for Apple and Atari computers.

Jeepers Creatures and My House-My Home are each available for $34.95 at your software dealer or from Kangaroo, Inc., 332 South Michigan Ave. Suite 700, Chicago, IL 60604, (312) 987-9050. Visa, MasterCard and personal checks accepted.

KANGAROO™ ***For a pocket full of fun.***

© 1983 Kangaroo Inc.



What ever happened to just plain fun?

Apple is a registered trademark of Apple Computers, Inc. Atari is a registered trademark of Atari, Inc. Graphics created with Penguin Software's Graphics Magician.

on the learning process. If a student thinks that the program is "paying attention," he will much more likely pay attention to the program.

There are obvious limits to this approach. Even with the best of communication between a student and a flesh-and-blood teacher, the student will inevitably have to do a certain amount of hard work, which he will probably object to. But a good teacher will know which of the student's requests to agree to and which to refuse; or, more precisely, when to offer the student a choice and when not to. A good teaching program can and should include that same flexibility.

For example, a program could offer the student choices such as the following: "Would you prefer to review the last lesson or take a quiz on it?" After the student has passed a quiz on the previous lesson, "Would you rather play a game based on the material of the last lesson or start studying the next?" Or, if the student doesn't pass the quiz, "Would you like to take the whole lesson over again or just read a summary of it?" Another option that can be offered to the student is setting the speed and difficulty of drill items by adjusting the scoring value for each question on the drill—the more difficult the item requested, the higher the per-item score. This is similar to the scoring levels in many arcade games.

Another way in which a program can pay attention to the student is to address her by name (but don't overdo this, especially with older students; and above all, don't patronize). It's particularly important for the program to recognize and acknowledge good performance (such as a high score on a quiz), but in general the student's work should be compared to her own previous record, not to a class norm. However, if the purpose of the program is to prepare the student for some kind of general examination (such as the SAT), then comparisons to a general norm are appropriate, especially if the student should ask, "How am I doing?" Needless to say, the program should give her the opportunity to ask that question, where appropriate.

Whether you're trying to write a teaching program yourself or trying to select the best one from a number of existing programs, the first thing to consider is the interaction between program and student. Other factors are important, too—teaching strategies, content, techniques of presentation, and the like; but the thing that determines the "personality" of a teaching program is the way in which it interacts with the student. Students will likely do their best work for teachers whose personalities they admire and respect; the same is true for teaching programs.

Update. In the September issue, we described a program called the Seeing-Eye Elephant Network (SEEN for short): a rather unusual approach to teaching college English students how to understand and appreciate what they read. The "Seeing-Eye" part of the program is an interactive tutorial that helps the student analyze a character in a book and write a brief description of the character, covering motivations, actions, purpose in the story, and the like. This description (called a "notice") is entered into the "Elephant" part of the system, which remembers it. The other students in the class then read the description and add comments or criticisms, which can be reviewed and answered by the student who wrote the original notice. Within the system, all of the students use pen names to preserve objectivity.

In its original form, the program required CP/M in order to operate and did not provide hard-copy printouts of the notices and comments. The program has now been revised to run without CP/M, on an Apple II Plus with 48K and one or two disk drives; and the notices are stored in text files that can be edited and printed through an Apple-compatible word processor (such as *Apple Writer*). For information contact Helen Schwartz, Department 9S, Box 911, Rochester, MI 48063.

Seminars and Conferences. The Northwest Regional Educational Laboratory, in Portland, Oregon, is holding a whole series of workshops this fall, covering various aspects of computer applications in education. These are what you might call second-generation workshops: not the kind of "general introduction" conferences described here previously, but specialist stuff. They include workshops devoted to specific languages (such as Logo), software systems (*VisiCalc* and the like), and fields of education (business, special education, gifted students, multicultural education). If you're already comfortable with the computer in your classroom and want to learn about more advanced applications and refinements, write to them for a brochure.

Speaking of specialized applications, the Assistive Device Center at California State University in Sacramento is holding a workshop on Matching Assistive Devices to Skills and Needs of Individuals with Disabilities (February 11 and 12, 1984). This one is about hardware and

ALF COPY SERVICE

1315F Nelson Street Denver, CO 80215 (303) 234-0871

FAST • RELIABLE • LOW COST

If you produce software, ALF's disk copying service is the quick, convenient answer to your duplication needs. Most orders are shipped in less than a week. Every disk we copy is verified bit by bit and guaranteed 100% flawless.

We can copy virtually any soft-sectored mini format. Standard formats: Apple II (including nibble-copy proof, double-boot, and fast load), Apple III, Atari, IBM PC, Kaypro, NEC PC8000, Osborne, TRS-80 I and III, Zenith Z-90 and Z-100, and more. Copy protection is available for most formats.

Our "no frills" pricing means you don't have to buy extras you don't need—set-up charges start at $10, and copying charges are 30¢ to 40¢ per side. (See blank disk prices at right. Minimum: 50 copies.) Quantity discounts available for large orders.

Of course, we have the frills too: label application, 3-hole vinyl pages, printing of labels and sleeves, shrink packaging, heat sealing, and much more. We can put your product in a customized package—vinyl folder or IBM-style binder/slip case—for a low price in small or large quantities.

ALF is one of the oldest and most trusted names in the duplication business. ALF designs and manufactures copying machines that other copying services and software publishers around the world rely on every day. Our complete understanding of duplication technology assures you of the finest reproduction available.

We're eager to solve your duplication and packaging problems—whether you want one service or a total package. Give us a call today!

BLANK DISKS

ALF buys large quantities of disks for our disk copying service—and we can pass our savings on to you. If you're buying hundreds of disks, ALF is your ideal source for top quality disks at a reasonable price. We buy our disks in bulk packages, avoiding the expense of fancy printing and labeling.

The disks listed below are 5 1/4", single sided, double density (except as noted), unlabeled, with hub reinforcement ring. Other disks are available, call for details.

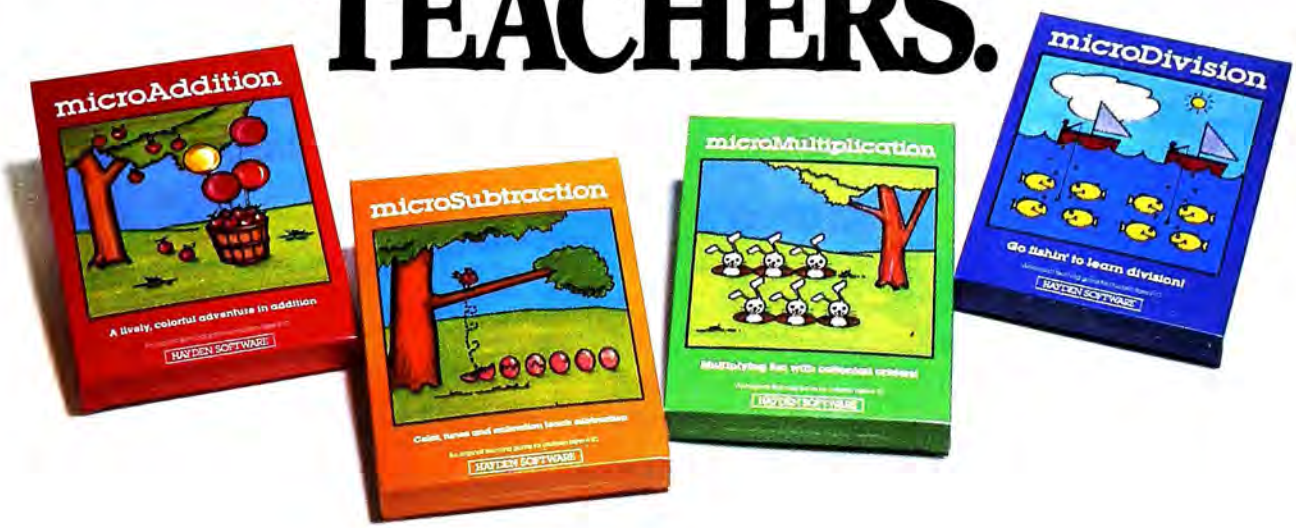
3M	**$165** per 100
MEMOREX	**$165** per 100
NASHUA	**$160** per 100
NASHUA (single density)	**$140** per 100
VERBATIM	**$190** per 100

Without sleeves: add $2.50 shipping per 100.

With tyvek sleeves: add $7 plus $2.50 shipping per 100.

Packed in boxes of 10 with tyvek sleeves: add $15 plus $3.00 shipping per 100.

INTRODUCING 4 OF AMERICA'S MOST ENTERTAINING MATH TEACHERS.



Buy two or more microMath games and get free Fisher-Price toys.



The four microMath learning games from Hayden Software really motivate your children to learn math. Each microMath game has plenty of animation, color and tunes to keep your kids fascinated for hours.

They'll learn division from a school of fish, multiplication from rabbits, subtraction from birds and addition from balloons and apples.

Older children will also find microMath is a wonderful way to improve their math skills because each game offers increasingly difficult exercises.

Each microMath game offers a child four options—an introduction to numbers, the values of numbers, the particular math function and a quiz. It even has a built-in calculator. Everything children need to learn math at their own pace.

And microMath games can be played on Apple IIe, Atari, Commodore 64 and popular compatibles.

How to get your free toys.

Right now, we're giving you a little extra incentive to buy microMath. Free toys from Fisher-Price.

Here's how it works. Just buy any two microMath programs and we'll send you one of the smaller vehicles with its driver. Buy three programs and you'll receive the Mini Bus complete with driver, family, and dog. Buy the complete microMath series and we'll give you the School Bus.

For more information on this great deal, see your Hayden Software dealer soon.

microMath

HAYDEN SOFTWARE

Hayden Software Company, 600 Suffolk Street, Lowell, MA 01853

we dare you

To Find More Advanced, More Sophisticated Apple® Software For Less!

We've taken a "byte" out of the competition with advanced, easy-to-use programs for your Apple® Computer at "pared-down" prices.

FORTH WRITE

One of the first programs to conform to the Fig. Forth 1983 Standard. Includes hi-res color graphics, string functions, RWTS Interface, assembler and versatile screen editor. Available by Dec. 115.95

6502 MASTER KIT

All the tools needed for an assembly language program. This disk now gives Apple® users the benefit of Automatic Flowcharting, as well as an assembler, editor and debugger 124.95

TEST MASTER

Developed by an educator using the Forth Write System, this program emphasizes the skills necessary for successful test-taking. Through testing and analyses, you will develop better skills in reading, studying and decision making. It also allows the user to enter his own questions. $44.95

CATALOG MASTER

A catalog maintenance and organization system for disks. Depending on catalog size, it can hold 64 catalogs on file. 24.95

NOTICE

We welcome Dealer and Private Author inquiries. We pay competitive royalties. Authors using our Forth Write™ System will receive better royalties from us. We are a consumer based company. We strive to keep our products affordable and we welcome your suggestions.

SPECIAL 10% DISCOUNT
when you use this order form

Please send check or money order with this order form.

□ Forth Write □ 6502 Master Kit
□ Test Master □ Catalog Master

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Va. residents add 4% sales tax. Please add 1.25 Postage and handling fee. Allow 3 to 5 weeks for delivery. We accept Visa and MasterCard.

COMPUTER CHALLENGES INC

11110 Gainsborough Ct. Suite 11, Fairfax, Va. 20030 (703) 591-3326

software that can help handicapped people gain better access to education, communication, and computers.

Assistive Device Center, California State University, 600 J Street, Sacramento, CA 95819. Northwest Regional Educational Laboratory, 300 S.W. Sixth Avenue, Portland, OR 97204; (503) 248-6800.

The Voice of
THE TURTLE
A Schoolhouse Apple Tutorial

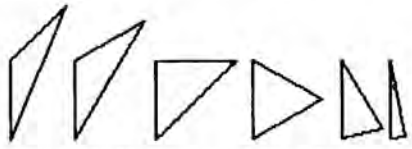
LOGO

DONNA BEARDEN

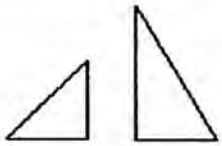
Whatever anyone else tells you, all triangles are not created equal. It's just that they get so complicated to draw once you go beyond the equilaterals. But I looked at my roof and it wasn't an equilateral. And I looked at a sail on a sailboat and it wasn't an equilateral. I even looked at a wizard's hat and it was far from an equilateral.

"And so," I said to the turtle, "you'll just have to draw a new kind of triangle."

He didn't seem to mind as long as I did all the thinking, so we set to work. Here's what we came up with: a single procedure to draw many different kinds of triangles



and two other procedures to draw right triangles (one for a 45-45-90 triangle and another for a 30-60-90 triangle).



First let's look at the procedure to draw any triangle of any size. It is an extension of an example given in the *Apple Logo Reference Manual* (page 9).

```
TO TRI :X :A :S
MAKE "SAVEPOS POS
MAKE "SAVEH HEADING
FD :X RT :A FD :S
SETPOS :SAVEPOS
SETH :SAVEH
END
```

The MAKE command gives the variable SAVEPOS the value of the position where the turtle starts. If he starts at HOME, SAVEPOS is HOME. If he starts at -100 50, then SAVEPOS is -100 50. (The variable is called SAVEPOS because we are saving the position.)

SETPOS moves the turtle to a specific position. Usually SETPOS is followed by two numbers representing the X and Y coordinates. This time, however, we are telling the turtle to move to SAVEPOS, the position where he started. In doing so, he will draw the third side of the triangle.

In order to have the turtle end up heading in the same direction in which he started, we'll use the MAKE command to save the original heading and then we can tell the turtle to return to it.

When we give the command TRI, we'll have to give three inputs: the length of the first side, the measure of the angle through which the turtle must turn to get ready to draw the second side, and the length of the second side.

We could stop right there because we now have a procedure to draw any triangle from ice cream cones to mountain peaks. However, for all you geometry lovers who know the formulas for figuring out right triangles, let's look at a couple of other procedures. (Besides, this will

Flight Simulator II

For Apple II, Apple II+, & Apple IIe



Put yourself in the pilot's seat of a Piper 181 Cherokee Archer for an awe-inspiring flight over realistic scenery from New York to Los Angeles. High speed color-filled 3D graphics will give you a beautiful panoramic view as you practice takeoffs, landings, and aerobatics. Complete documentation will get you airborne quickly even if you've never flown before. When you think you're ready, you can play the World War I Ace aerial battle game. Flight Simulator II features include ■ animated color 3D graphics ■ day, dusk, and night flying modes ■ over 80 airports in four scenery areas: New York, Chicago, Los Angeles, Seattle, with additional scenery areas available ■ user-variable weather, from clear blue skies to grey cloudy conditions ■ complete flight instrumentation ■ VOR, ILS, ADF, and DME radio equipped ■ navigation facilities and course plotting ■ World War I Ace aerial battle game ■ complete information manual and flight handbook.

See your dealer . . .

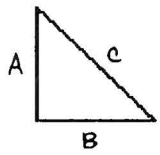
or write or call for more information. For direct orders please add $1.50 for shipping and specify UPS or first class mail delivery. American Express, Diner's Club, MasterCard, and Visa accepted.

Order Line: 800/637-4983

subLOGIC Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

give us a good excuse to use some of the arithmetic operations of Logo.)

In a 45-45-90 triangle, label the side opposite the 90-degree angle *C* and the other two sides *A* and *B*.

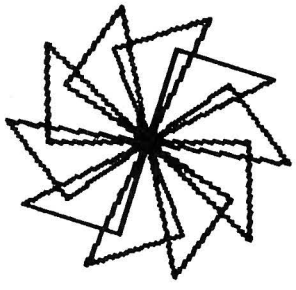


The length of *C* is found by the formula *A* squared + *B* squared = *C* squared. Or, to put it in Logo symbols, (A * A) + (B * B) = (C * C). Or C = SQRT (A * A) + (B * B). Since two sides opposite equal angles will always be equal, we can simplify it even further: C = SQRT (A * A) + (A * A). Now look at the following procedure:

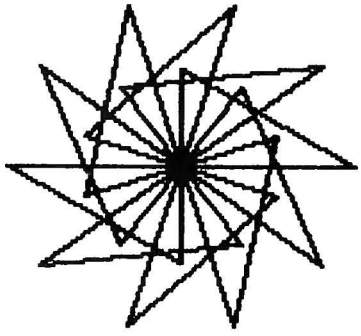
```
TO RT.TRI :X
FD :X RT 90 FD :X
RT 135
FD SQRT (:X * :X) + (:X * :X)
RT 135
END
```

One hundred thirty-five is the angle through which the turtle must turn to draw a 45-degree angle.

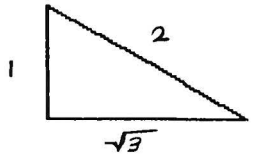
Here is a pinwheel made with 45-45-90 right triangles:



The 45-45-90 triangle is okay, but the 30-60-90 triangle is much more dynamic. For example, compare the sun below, drawn by rotating 30-60-90 triangles, to the pinwheel.



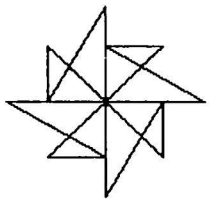
The proportions of the lengths of the sides of a 30-60-90 triangle are as follows:



Thus, if the turtle makes the first side X, the second side will be X * 2 and the third will be X * (SQRT 3). Look at the following procedure for a 30-60-90 triangle:

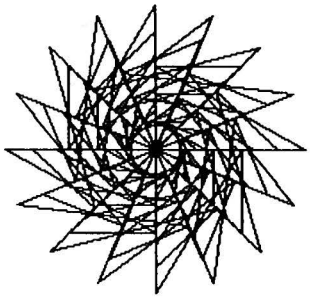
```
TO RT.TR12 :X
FD :X RT 120 FD :X * 2 RT 150
FD :X * (SQRT 3)
RT 90
END
```

You can really have some fun by combining the two types of right triangles in one design. (How many triangles can you count in this design?)



```
TO COGS :N
REPEAT 4 [RT.TR12 :N RT 90]
REPEAT 4 [RT.TRI :N RT 90]
END
```

Try putting several COGS together and spinning them and you'll end up with:



This design was made by giving the command WEB RT 22.5 WEB. WEB was defined:

```
TO WEB
COGS 20 COGS 40 COGS 60
RT 45
COGS 20 COGS 40 COGS 60
END
```

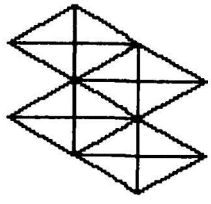
If we define another 30-60-90 triangle, this one going to the left, we could put several together to form a rhombus divided in quarters. (A rhombus is a parallelogram with four equal sides.) First let's define the triangle:

```
TO RT.TRI2L :X
FD :X LT 120 FD :X * 2 LT 150
FD :X * (SQRT 3)
LT 90
END
```

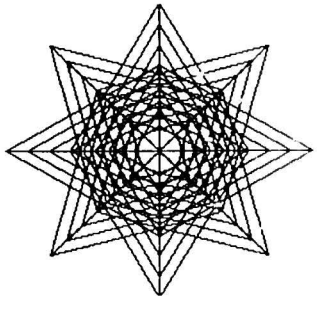
Then the rhombus:

```
TO RHOMBUS :N
REPEAT 2 [RT.TRI2 :N RT.TRI2L :N RT 180]
END
```

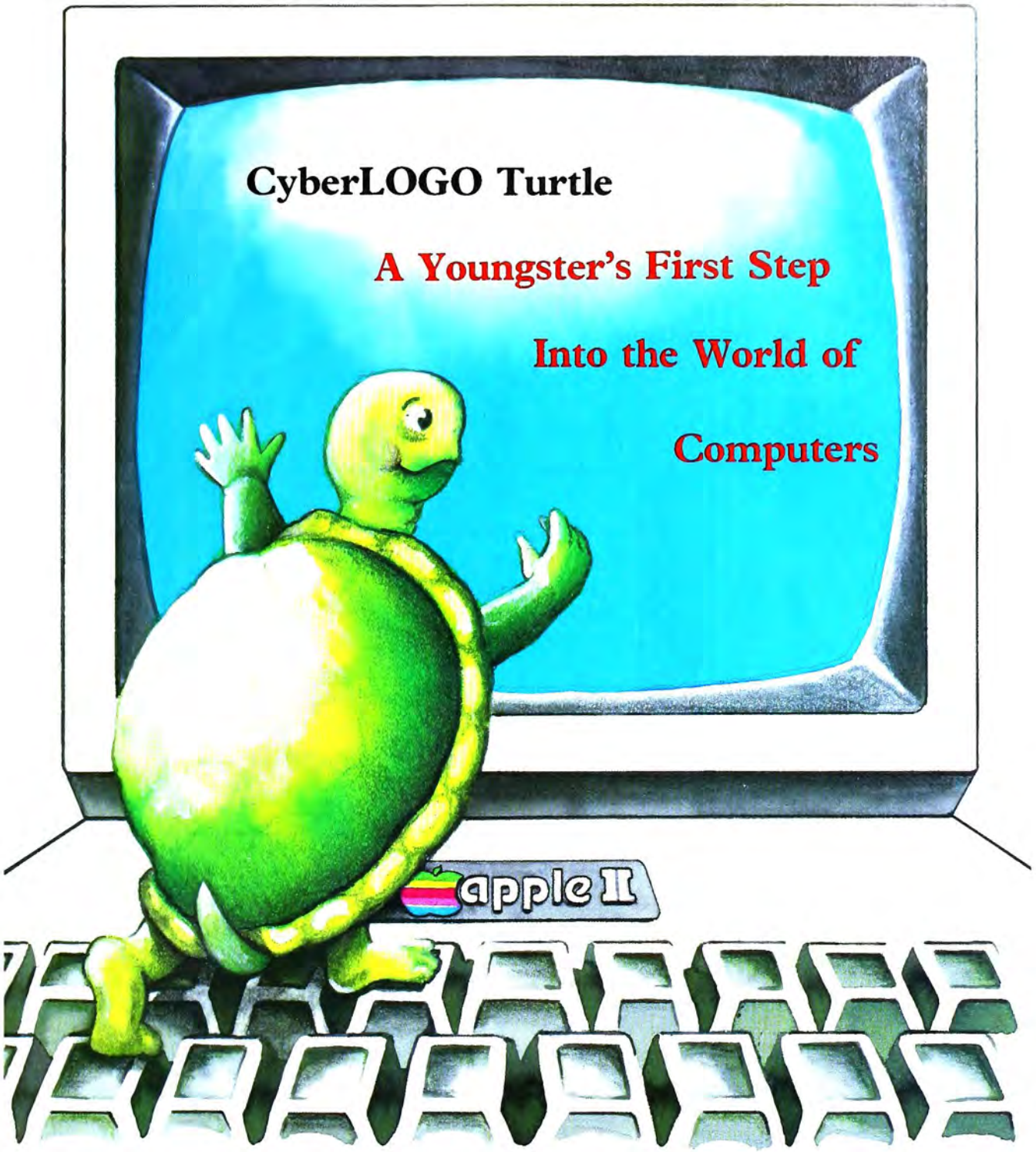
Look at these repeating rhombuses. What happens when you put two 30-60-90 triangles back to back (the sides opposite the 60-degree angle)? How about that, an equilateral triangle.



Here's one last design made from rhombuses that were made from 30-60-90 triangles. Notice how the lines give the illusion of curving.



Aren't you glad all triangles weren't created equal?



CyberLOGO Turtle is a youngster's perfect introduction to computer literacy. It's easy to learn and fun to use. **CyberLOGO Turtle** is one of the best ways for children to learn about computers and to explore their graphic capabilities—capabilities that are limited only by the child's imagination. What better way to become acquainted with the computer than through a friendly language which immediately encourages interaction, investigation, thinking, creativity, and discovery. For the Apple II (with Applesoft BASIC), II+, IIe, and III, requires only 48K and no language card!
R1203-0, box/disk package. $79.95

Available soon . . .

The CyberLOGO Primer
By Gary Bitter/Nancy Watson

This book takes the user even further into the world of CyberLOGO. There is a section for beginners and a quick-start section for experienced users. Plenty of activities encourage learning Logo through discovery and exploration. R1200-6, paper. $14.95.

Contact: Reston Computer Group
Reston Publishing Company, Inc.
11480 Sunset Hills Road
Reston, VA 22090

Toll-free phone: 800-336-0338
(in Virginia: 703-437-8900)


√892
a² = b² + c²
θ
Language
Algebra

Peachtree Software® by EDUWARE®

The Science Of Learning.™

The smartest way™ to build specific skills.

Discover how your computer thinks with The Science of Learning.

Computer Literacy

Put the ABCs of computer programming right at your fingertips. The Hands On BASIC Programming™ Book is written in English and requires only a basic knowledge of mathematics. It takes you through the entire programming technique.

You'll learn to develop new computer skills and you'll be backed up with the tools to learn from your experience.

Language Skills

The basics of spelling, reading and computer operation become fun and easy for young children. It captures their attention and entertains as it teaches.

Parents and teachers have a wide variety of teaching options from which to choose according to an individual child's needs. A learner's recorded progress can be periodically reviewed and systematically approached with new programs.

Elementary Mathematics

This program is where a strong foundation in basic mathematics begins. Correct responses advance a learner, while repeated errors bring review. This simple, step-by-step process with an animated figure takes the viewer through each stage of the learning process.

Advanced Mathematics

Mastery of algebra prepares you for success in a competitive world by sharpening your ability to think analytically, apply logic and identify solutions.

Business people who know the connection between sharp analytical skills and advancement use the program to brush up on their knowledge and understanding of algebra.

Parents and teachers enrich a child's schooling by allowing gifted learners to advance at their own pace.

Hands On BASIC Programming, Language Skills programs, Compu-Math™, EduWare® Fractions, EduWare® Decimals and Advanced Mathematics programs are available on Apple II, II+, IIe and Franklin Ace. Compu-Math™ Fractions and Compu-Math™ Decimals are available on Atari 400 and 800 Introduction to Counting™ is available on Apple II, II+, IIe, Franklin Ace and Atari 400 and 800.

The Science of Learning is a trademark of EduWare. EduWare is a registered trademark of EduWare Services Inc., an MSA company. Peachtree Software is a registered trademark of Peachtree Software Incorporated, an MSA company. Hands On BASIC Programming, Compu-Math and Introduction to Counting are trademarks of EduWare Services, Inc. Atari is a trademark of Atari, Inc. Apple is a trademark of Apple Computer Inc. Algebra I is a trademark of EduWare Services, Inc





The smartest way to learn.™

I am interested in the Peachtree Learning Center.™
Please send me more information about the Learning Center program. I am: ☐ a prospective dealer ☐ an end user.

Name_____

Company_____ Telephone_____

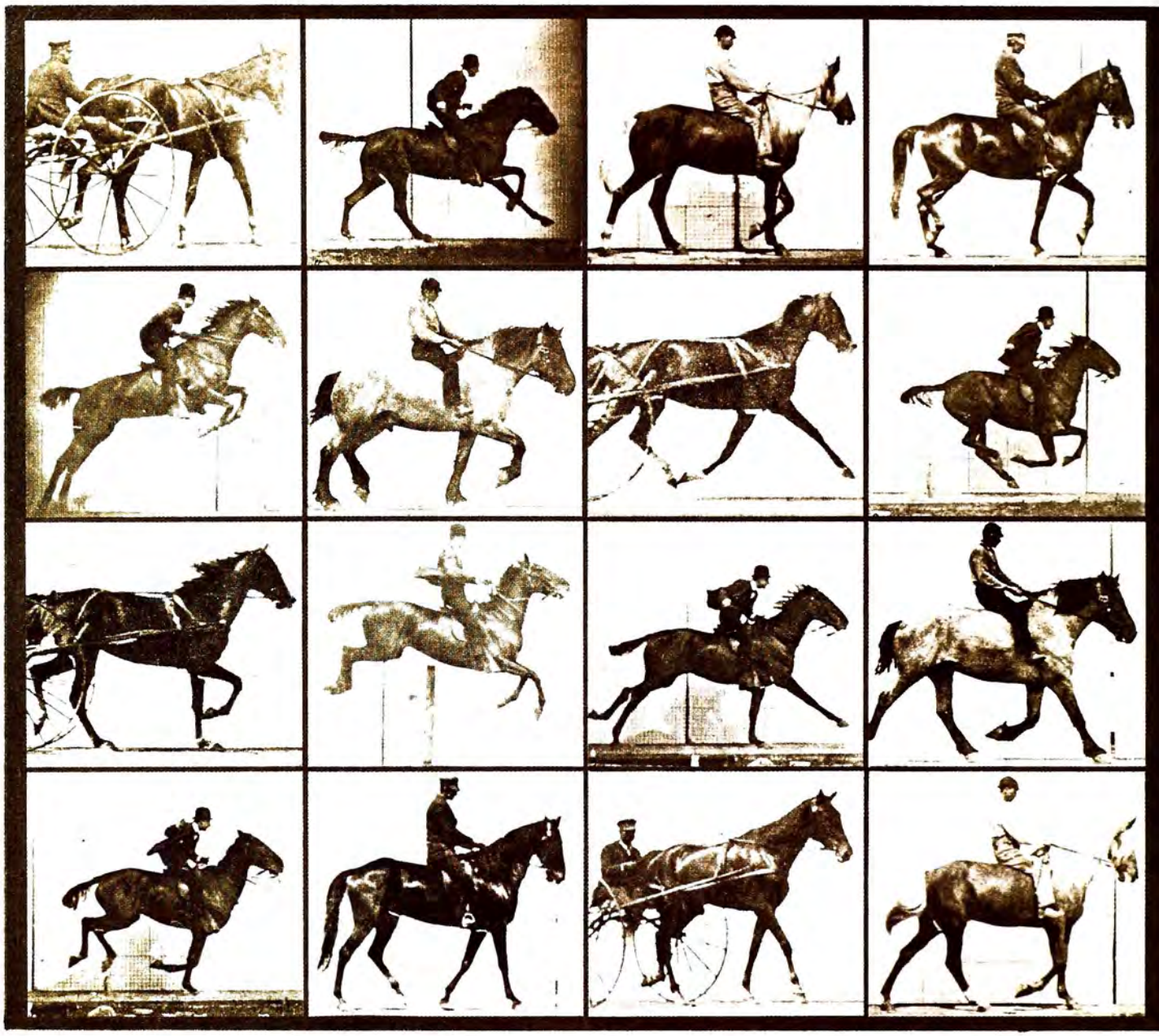
Address_____

City_____ State_____ Zip_____

Personal Computer Products
MANAGEMENT SCIENCE AMERICA, INC

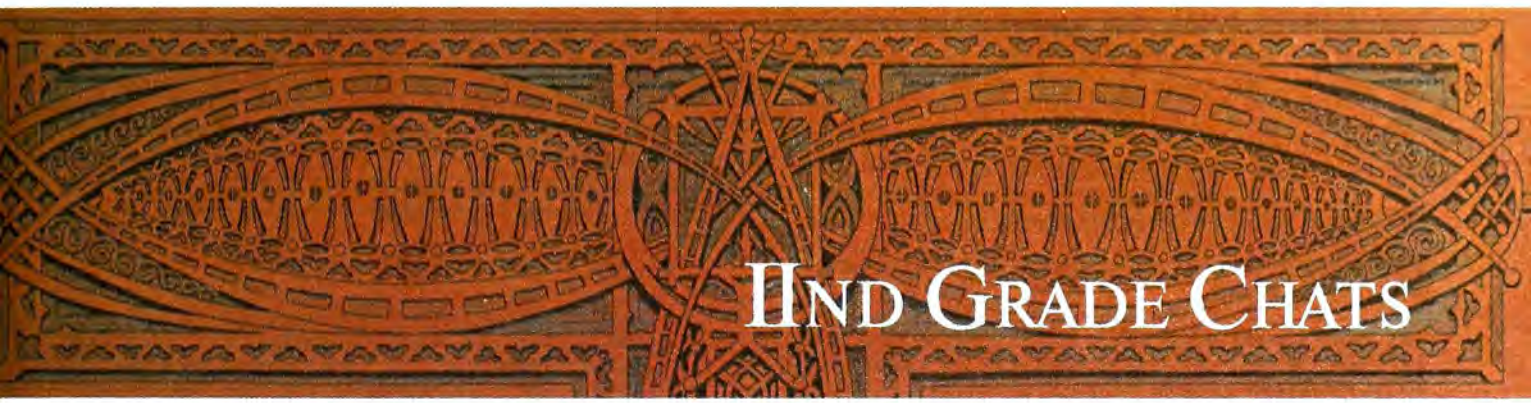
Peachtree Learning Center is a trademark of Peachtree Software Incorporated, an MSA company
© 1983 Peachtree Software Incorporated, an MSA company
3445 Peachtree Road, N.E. /8th Floor/ Atlanta, Georgia 30326/1-800-554-8900

```
DIM A$(4,4)
```




```
DIM B$(4): B$(1)=A$(3,3): B$(2)=A$(1,4): B$(3)=A$(4,2): B$(4)=A$(2,1)
```





Getting to the Track On Time

by Ray Balbes

One of the Apple's many useful features is its ability to save strings in sequential text files for later use. This capability does, however, have two major drawbacks. First, the actual transfer of the file (reading from or writing to disk) is extremely slow. Second, it does not allow us to transfer strings that contain certain characters such as commas and colons.

Methods for getting around the second problem have been in the Apple literature almost since the appearance of the first disk drive; these methods require a call to a machine language subroutine in order to avoid the input command when reading the file. The regular input routine uses commas to separate strings, so a string containing a comma is seen as two strings with a comma between them.

This article is more concerned with the problem of how to speed up the transfer of strings, but it incidentally solves the comma problem as well!

To simplify the transfer of strings, a single array of strings, such as B$(0) through B$(100), must be used. Even if numerical data is to be transferred, it must be done through a string array. The STR$ function can be used to convert numbers into string variables for writing to disk, and the VAL function can be used after reading the file to convert those strings back into real variables.

The technique described herein, which we call *fast string transfer*, works roughly as follows. As a program runs, Applesoft creates a table of pointers, recording the length and starting address of each string. Before a set of strings is saved to disk, the routine we'll present later uses these pointers to locate the strings. Then the routine collects the strings into a single block of memory, which is bsaved to the disk. To recover the strings, the block of strings is first bloaded. Then the string pointers are redefined so that they give the new locations of the strings within the block. The details will be covered later.

Figure 1 shows the increase in speed attained by fast string transfer when compared to the usual reading and writing of text files.

How To Use Fast String Transfer. It is easy to incorporate fast string transfer into Applesoft programs. Although the location of the block of strings can be changed, for the purpose of this article, it starts at $6000 and builds up toward $9400. See figure 2 for a memory map.

Suppose that a program requires that the strings B$(0) through B$(N) be transferred between memory and disk. Assuming that N is less than or

	Text File Transfer	Fast String Transfer
Write to disk:	45 seconds	16 seconds
Read from disk:	40 seconds	14 seconds

The results of timing the transfer of 500 strings of about twenty characters each. Using a nonstandard (fast bload, bsave) DOS, it takes only five seconds for fast string transfer to load these 500 strings.

Figure 1. Speed comparison using two methods of transfer.

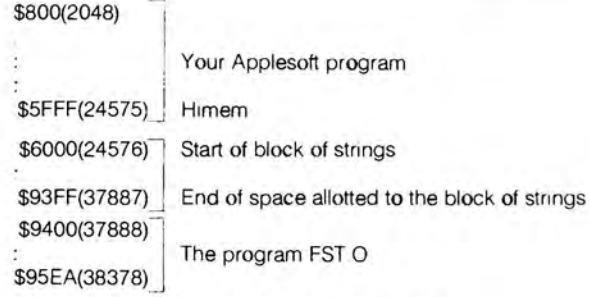


Figure 2. FST.O memory map.

equal to 500, the program could start with:

```
10  HIMEM: 24576 : DIM B$(500) : D$ = CHR$(4)
20  DEF FN HI(X) = INT(X/256) : DEF FN LO(X) = X - 256*FN HI(X)
30  PRINT D$;"BLOAD FST.O, A$9400"
```

The file FST.O is a machine language program that actually performs the transfer of strings. The code for FST.O is in listing 1, which appears at the end of the article. The program was created on the *Merlin* assembler. You may find that label or pseudo-op conventions of other assemblers require minor modifications to the listing.

The routine must have an array named B$ to work with. To have your program save the strings B$(0) through B$(N), proceed as follows. First make sure that the array B$(0) through B$(N), as well as the variable N, has been assigned in the program (for instance, B$(0) = "HI" : B$(1) = "THERE" : B$(2) = B$(0) + B$(1) : N = 2). Then the following sequence of commands will save the strings:

```
400  POKE 8, FN LO(N + 1) : POKE 9, FN HI(N+1)
410  POKE 37908, 1
420  CALL 37910
430  LN = PEEK(37898) + 256*PEEK(37899)-24576 : IF LN>
     13312 THEN PRINT "BFILE TOO LONG" : END
440  PRINT D$;"BSAVE BFILE, A$6000, L";LN
```

To load the strings, along with the value of N, the following commands should be issued:

```
600  PRINT D$;"BLOAD BFILE"
610  POKE 37908,0
620  CALL 37910
630  N = PEEK(37906) + 256*PEEK(37907) - 1
```

The Demo. Listing 2 is a sample program with five options: (1) save strings to a text file, (2) save strings to a binary file, (3) load strings from a text file, (4) load strings from a binary file, (5) end.

Options 1 and 3 transfer strings using a sequential text file (file name: Tfile) in the usual manner. Options 2 and 4 transfer strings using a binary file (file name: Bfile) by means of the fast string transfer method. The demo was used to obtain the data for figure 1. Note that, in running the demo, it takes longer to create 500 strings than it does to save them.

Line 10 sets himem and line 20 bloads FST.O. To prove that there is no trickery involved, line 30 clears all strings after each option. Lines 30 and 40 define some constants and strings. The five options are displayed in lines 50 and 60. The menu selections are processed in lines 70 through 130.

Lines 280 through 320 and 140 through 210 are the standard methods for reading and writing text files, while lines 340 through 370 and 220 through 260 use fast string transfer to load and save the strings.

How It Works. In order to understand the details, let's look at how Applesoft deals with string arrays. A program can create strings in several ways: by input commands, string definitions in the program, concatenation (C$=A$+B$), and so on. Applesoft places these strings in any convenient place, for example, between himem and lomem or even, in the case of direct string assignments (A$="DOG"), right in the program itself. In order to find these strings, Applesoft uses a table (array space) of pointers. When a program needs a string, Applesoft looks for the name of the string in the table. The area of the table corresponding to the name contains the length and starting address of the actual string.

To try this yourself, run the following program:

```
10  A$(0) = "12"
20  A$(1) = "345"
30  B$(0) = "6789"
40  A$(3) = "24"
50  B$(1) = "579"
```

Now, from the immediate mode, enter the Monitor by typing *call -151*. The table of pointers begins at the address given in locations $6B and $6C. So type: *6B.6C* and observe:

```
006B- 53 08
```

This means that $853 is the beginning of the table of pointers. Part of that table is listed in figure 3.

```
853:  41   A$( ) is the name and type of variable (41 is
      80   the ASCII code for A in hex).

      28   Displacement to next variable name—in this
      00   case, it's B$( ), which starts at $853 + $28 = $87B.

      01   A$( ) is a one-dimensional array.

      00   Number of array elements—in this case, we defaulted
      0B   to eleven elements numbered 0 to 10. (Note: High and low
           bytes are reversed.)

      02   Length of A$(0).

      0C   $80C is the address of the beginning of A$(0).
      08

      03   Length of A$(1).

      1B   $81B is the address of the beginning of A$(1).
      08

      00   Length of A$(2).

      00   The length is 0, so no beginning address.
      00

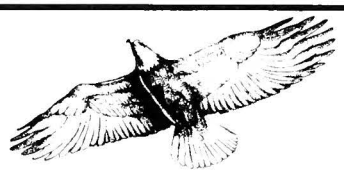
      02   Length of A$(3).

      3C   $83C is the address of the beginning of A$(3).
      08

87B:  42   B$( ) is name and type of variable.
```

Figure 3. Table of strings.

ENHANCEMENTS
for **APPLE**][,/ /e
and **IBM PC**
from
AGUILA



INNOVATORS IN BUSINESS MANAGEMENT SYSTEMS

MAESTRO™: MASTER APPLE WRITER!! Learn at **your convenience** with AGUILA's Economical On Line Training System. Operates **within** Apple Writer. **Interactive** tutorials cover the Basics and Advanced Features for you, your family, or employees. MAESTRO FULLY Explains the Fine Points. Makes EVERYONE an EXPERT user! **$39.95**

EPSON NEC GEMINI — OKIDATA PROWRITER

AE-TYPESET™: SIMPLE Printer Control IN APPLE WRITER !! From LINE Spacings, to EXTRA Characters £,§,à,ß,Ä,Ä,é,ç,ü to PRINT *Styles*, to PAPER-OUT DISABLING * *EVERYTHING* * YOUR PRINTER CAN DO , Now, *YOU Can Too!* Comes with *ON-LINE Help Menu*, SCREEN TUTORIALS, and a THOROUGH MANUAL ON-DISK for EXACT USAGE. **$59.95**

E-SETUP™: PLAIN ENGLISH MENU Allows You to **EASILY PRESET** your PRINTER's QUALITY PRINTING and PAPER HANDLING. Great For Spreadsheets! (IBM PC or APPLE][+,//e) **$39.95**

(Please specify Computer and Printer)
AGUILA CORPORATION
P.O. BOX 330
24 PARK ST.
PEPPERELL, MASS.
01463

MC, Visa, Check,
M. Orders, & COD's
(617)433-9502 or 9840
ALL 3 (Apple ONLY)
$99.95

Apple Writer, Apple,][, & / /E, IBM PC, EPSON, NEC, GEMINI, PROWRITER, and OKIDATA, are registered Trademarks of Apple Computer, Inc. International Business Machines, Corp., Epson Corporation, NEC America, Inc., Star Micronics, Inc., Leading Edge Products, Inc., and the OKIDATA Corp., RESPECTIVELY

```
81B:  33  ASCII code for the number "3" (in hex)
      34  "4"
      35  "5"
```

Figure 4. The string A$(1).

So A$(1) has length 3 and starts at $81B, according to the table. Figure 4 shows the contents of that string.

As stated earlier, the idea of fast string transfer is to use the string pointers to find all of the strings and relocate them in a block, then bsave this block of strings. To recover them, the block is bloaded and then the string pointers are redefined so that they point to the appropriate strings within the block. Specifically, the strings in the B$ array will be moved to a block of memory starting at $6000.

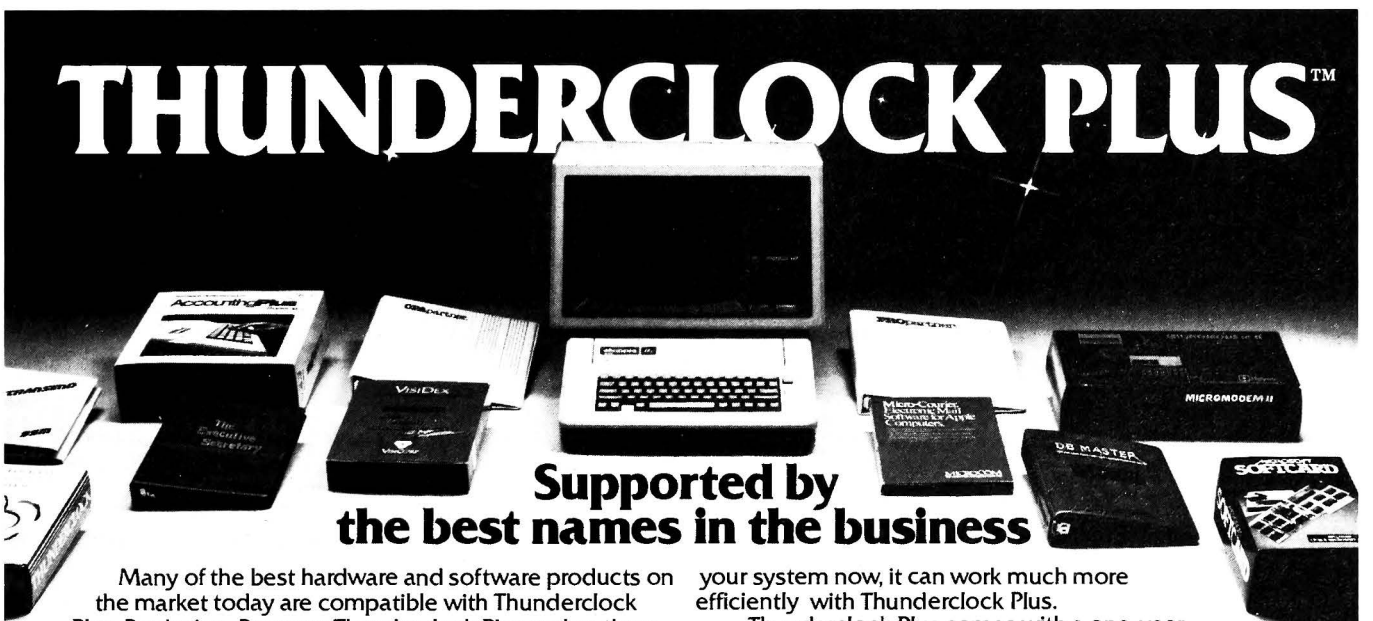
To help in the transition from the idea of fast string transfer to the machine language program (FST.O), let's see what the save and load subroutines look like as separate programs in Applesoft. Here is the save subroutine:

```
10  I = 0:J = 0:AR = 0:K = 0:N = 0:X = 0:I1 = 0:I2 = 0:D$ =
    CHR$ (4): DIM B$(20)
20  A$(0) = "12"
30  A$(1) = "345"
40  B$(0) = "6789"
50  A$(3) = "24"
60  B$(1) = ",:"
70  FOR I = 3 TO 12:B$(I) = CHR$ (64 + I): NEXT
80  INPUT "ENTER B$(13) > ";B$(13)
90  B$(14) = B$(13) + B$(13)
100 J = PEEK (107) + 256 * PEEK (108)
110 IF PEEK (J) = 66 AND PEEK (J + 1) = 128 GOTO 130
120 J = J + PEEK (J + 2) + 256 * PEEK (J + 3): GOTO 110
130 N = 15:J = J + 7
140 I1 = 24576
150 FOR I2 = 1 TO N
160 IF PEEK (J) = 0 GOTO 190
170 X = PEEK (J + 1) + 256 * PEEK (J + 2)
180 FOR I = 1 TO PEEK (J): POKE I1, PEEK (X):X = X + 1:I1 = I1
    + 1: NEXT I
190 POKE I1,34:I1 = I1 + 1
200 J = J + 3
210 NEXT I2
220 PRINT D$;"BSAVE VAR, A$6000,L";I1 - 24576
```

Line 10 defines all of the variables used in the program so that, once we get the pointer for B$( ), it won't be changed by the introduction of new variables. (This is not necessary in the machine language version.) Lines 20 through 90 define some strings to be transferred. Line 100 sets J equal to the address of the beginning of the table of pointers. Lines 110 and 120 find the beginning of the variable name B$( ) by looking for 66 (the ASCII number for B in decimal) followed by 128. Line 130 sets N equal to the number of strings to be saved and moves the pointer, J, to the location of the address of B$(0). Lines 140 through 210 put each of the strings in consecutive order, separated by $22 (34 in decimal), in the memory starting at $6000. Then line 220 bsaves the block under the file name var.

After the program is run, the memory contains the block of strings as shown in figure 5. Here is the load subroutine:

```
10  DEF FN HI(X) = INT (X / 256): DEF FN LO(X) = X - 256 * FN
    HI(X)
20  D$ = CHR$ (4):AR = 0:J = 0:K = 0:VR = 0:I1 = 0:LV = 0
30  DIM B$(20)
40  PRINT D$;"BLOAD VAR"
50  J = PEEK (107) + 256 * PEEK (108)
60  IF PEEK (J) = 66 AND PEEK (J + 1) = 128 GOTO 80
70  J = J + PEEK (J + 2) + 256 * PEEK (J + 3): GOTO 60
80  J = J + 7:VR = 1:I1 = 0:X = 24576
90  LV = 0: POKE J + 1, FN LO(X): POKE J + 2, FN HI(X)
100 IF PEEK (X) < > 34 THEN I1 = I1 + 1:LV = LV + 1:X = X +
    1: GOTO 100
110 POKE J,LV
120 IF I1 > = PEEK (43616) + 256 * PEEK (43617) - 1 GOTO 140
```

Supported by the best names in the business

Many of the best hardware and software products on the market today are compatible with Thunderclock Plus. By design. Because Thunderclock Plus makes them much more versatile.

Just plug Thunderclock Plus into your Apple® II, IIe or III and it can do any number of tasks automatically. In the office, the lab or at home. For instance, with business or communications software, your Apple can access a data base or send electronic mail when the rates are lowest.

Thunderclock Plus can also time and date stamp your disk files to the minute,* time experiments and even water your lawn.** But that's just the start. No matter how you use your system now, it can work much more efficiently with Thunderclock Plus.

Thunderclock Plus comes with a one-year warranty. On-board batteries keep it running accurately for up to four years without battery replacement.

If you want the convenience and versatility of running your system around the clock, get the clock it's designed to run around. Thunderclock Plus. Supported by the best names in the business.

See your dealer for a demonstration or contact us.

THUNDERWARE, INC.
44 Hermosa Ave., Oakland, CA 94618
(415) 652-1737

®Apple is a registered trademark of Apple Computer, Inc.
*Requires Thunderware's Dos Dater™ Software.
**Sprinkler application requires BSR X-10® Home Control System and our Scheduler software.

```
6000:  36  "6"
       37  "7"
       38  "8"
       39  "9"
       22  Marker for the end of B$(0).
       35  ":"
       37  ";"
       39  "<"
       22  Marker for the end of B$(1).
       22  Marker for the end of B$(2).
       43  "C"
       22  Marker for the end of B$(3).
       42  "D"
       22  Marker for the end of B$(4).
```

Figure 5. The block of strings.

```
130  I1 = I1 + 1:VR = VR + 1:J = J + 3:X = X + 1: GOTO 90
140  FOR J = 0 TO 14: PRINT B$(J): NEXT
```

Line 30 sets the dimension for the B$ array so that, even though the values are not defined yet, a place for the pointers within the table has been assigned. The beginning of the table is found in line 50. Lines 60 and 70 find the address of the beginning of the pointers for the array. Lines 80 through 130 poke the lengths and the beginning address of each string into the pointers. As the program runs, J is the pointer within the table and I1 is the pointer within the block of strings. VR is the number of the current string, and LV is its current length. Line 350 prints out the reconstructed variables.

For Assembly Language Programmers Only. The assembly language versions of the save and load subroutines are combined into one machine language program with file name FST.O, in listing 1. The save subroutine actually starts at $9453 and the load subroutine starts at $94FE. Prior to calling the program, a 0 (for save) or 1 (for load) is poked into $9414 to select which of the two subroutines of FST.O is to run.

In order to make FST.O easier to understand, we have tried to follow the corresponding Applesoft subroutines as closely as possible.

How To Relocate the Block of Strings and Transfer Different Variables. The choice of $6000 for the beginning of the block of strings is arbitrary. It can be reset (along with himem) so long as it is below $9400 and leaves enough room for the variables (see figure 2).

To make this change, proceed as follows. After bloading FST.O, poke the low and high bytes of the new starting address into $946B (37995) and $9470 (38000). Also do the same pokes to $950D (38157) and $951F (38175). In the example given earlier, to change the starting place of the block to $5000 (20480), just add the lines:

```
40  POKE 37995, FN LO(20480) : POKE 38000, FN HI(20480)
45  POKE 38157, FN LO(20480) : POKE 38175, FN HI(20480)
```

The choice of the B$ array was also arbitrary. To use some other one-character variable name, just poke the new ASCII code into $9426 (37926) after bloading FST.O. For example, the following line could be added

```
50 POKE 37926,65
```

to use the variable array A$.

Listing 1. FST.O.

```
                        1           ORG   $9400
                        2
                        3  LENFL    =     $AA60
9400: 00 00             4  I        DA    0
9402: 00 00             5  J        DA    0
9404: 00 00             6  N        DA    0
9406: 00 00             7  X        DA    0
9408: 00 00             8  A1       DA    0
940A: 00 00             9  I1       DA    0
940C: 00 00            10  I2       DA    0
940E: 00 00            11  I3       DA    0
9410: 00 00            12  LV       DA    0
9412: 00 00            13  VR       DA    0
9414: 00 00            14  SL       DA    0        0=LOAD 1=SAVE
                       15  ********************************
9416: A5 6B            16  ST       LDA   $6B
9418: 8D 02 94         17           STA   J
941B: A5 6C            18           LDA   $6C
941D: 8D 03 94         19           STA   J+1      (J),(J+1)=POINTER
                       20  ********************************
9420: A0 00            21  ST:2     LDY   #$00     SEARCH FOR
                                                   VARIABLE B$
9422: 20 B2 95         22           JSR   C        (A)=((J),(J+1))
9425: C9 42            23           CMP   #$42
9427: D0 0C            24           BNE   ST:1     BRANCH IF B NOT
                                                   FOUND
9429: A0 01            25           LDY   #$01
942B: 20 B2 95         26           JSR   C        (A)=((J),(J+1)+1)
942E: C9 80            27           CMP   #$80
9430: D0 03            28           BNE   ST:1     BRANCH IF B NOT
                                                   FOUND
9432: 4C 4B 94         29           JMP   ST:3     B FOUND
9435: A0 02            30  ST:1     LDY   #$02     B NOT FOUND
9437: 20 B2 95         31           JSR   C
943A: 8D 08 94         32           STA   A1       (A1)=((J),(J+1)+2)
943D: A0 03            33           LDY   #$03
943F: 20 B2 95         34           JSR   C
9442: 8D 09 94         35           STA   A1+1     (A1+1)=((J),(J+1)+3)
9445: 20 9E 95         36           JSR   ADDJ     NEW J
9448: 4C 20 94         37           JMP   ST:2
                       38  ********************************
944B: AD 14 94         39  ST:3     LDA   SL
944E: D0 03            40           BNE   MOVE
9450: 4C FE 94         41           JMP   SETPTRS
                       42  ********************************
9453: A5 08            43  MOVE     LDA   $08
9455: 8D 04 94         44           STA   N
9458: A5 09            45           LDA   $09
945A: 8D 05 94         46           STA   N+1      (N),(N+1)=# OF
                                                   STRINGS
945D: A9 07            47           LDA   #$07
945F: 8D 08 94         48           STA   A1
9462: A9 00            49           LDA   #$00
9464: 8D 09 94         50           STA   A1+1
9467: 20 9E 95         51           JSR   ADDJ     (J),(J+1)=(J),(J+1)+7
                       52  ********************************
946A: A9 00            53  MOVE1    LDA   #$00
946C: 8D 0A 94         54           STA   I1
946F: A9 60            55           LDA   #$60
9471: 8D 0B 94         56           STA   I1+1     (I1),(I1+1)=$6000
9474: A9 01            57           LDA   #$01
9476: 8D 0C 94         58           STA   I2
9479: A9 00            59           LDA   #$00
947B: 8D 0D 94         60           STA   I2+1     (I2),(I2+1)=1
947E: A0 00            61  LOOPI2    LDY   #$00
9480: 20 B2 95         62           JSR   C
9483: C9 00            63           CMP   #$00
9485: F0 44            64           BEQ   DLTR
9487: A0 01            65           LDY   #$01
9489: 20 B2 95         66           JSR   C
948C: 8D 06 94         67           STA   X
948F: A0 02            68           LDY   #$02
9491: 20 B2 95         69           JSR   C
9494: 8D 07 94         70           STA   X+1      ADDRESS OF 1ST
                                                   LETTER
9497: A0 00            71           LDY   #$00     AFTER MOVE
9499: 20 B2 95         72           JSR   C
949C: 8D 0E 94         73           STA   I3       (I3)=LENGTH OF
                                                   CURRENT
949F: A9 01            74           LDA   #$01     STRING
94A1: 8D 00 94         75           STA   I        0<=(I)<=(I3)
94A4: A0 00            76  LOOPI    LDY   #$00
94A6: AD 06 94         77           LDA   X
94A9: 85 06            78           STA   $06
94AB: AD 07 94         79           LDA   X+1
94AE: 85 07            80           STA   $07
94B0: B1 06            81           LDA   ($06),Y
94B2: 20 DE 95         82           JSR   C1
94B5: EE 06 94         83           INC   X
94B8: D0 03            84           BNE   LOOPI:1
94BA: EE 07 94         85           INC   X+1      (X),(X+1)=(X),(X+1)
                                                   +1
```

THE BUFFER DID IT.

Who Stole The 1500 Letters From The Computer?

Let's just say you've got to send a letter to 1500 different people. Would you like to spend 22.5 hours* or 60 seconds of computer time?

With a garden-variety buffer, the computer has to mix, merge and send 1500 addresses and 1500 letters to the buffer. Trouble is, most buffers only store about 32 letters. So after 32 letters, the computer's down until the printer's done. Altogether, you're talking 22.5 hours.

In the case of our new (not to mention amazing) ShuffleBuffer, computer time is 60 seconds flat. Just give ShuffleBuffer one form letter and your address list, and it takes care of the mixing, the merging, and the printing. But that's not all ShuffleBuffer's stolen from the computer. Oh, no.

Who Changed and Rearranged The Facts?

Again, ShuffleBuffer's the culprit. You want to move paragraph #1 down where #3 is? Want to add a chart or picture? No problem. No mystery, either. Any buffer can give you FIFO, basic first-in, first-out printing. And some buffers offer By-Pass; the ability to interrupt long jobs for short ones. But only ShuffleBuffer has what we call Random Access Printing — the brains to move stored information around on its way to the printer. Something only a computer could do before. Comes in especially handy if you do lots of printing. Or lengthy manuscripts. Or voluminous green and white spread sheets. And by the way, ShuffleBuffer does store up to 128K of information and gives you a By-Pass mode, too.

And Who Spilled The Beans 239 Times?

Most buffers can't tell the printer to duplicate. If they can, they only offer a start/stop switch, which means you're the one who has to count to 239. Turn your back on your buffer, and your printer might shoot out a room full of copies. ShuffleBuffer, however, *does* control quantity. Tell it the amount, and it counts the copies. By itself.

So, What's The Catch?

There isn't any. Sleuth around. You won't find another buffer that's as slick a character as this one. You also won't find one that's friendly with any parallel or serial computer/printer combination. This is the world's only universal buffer.

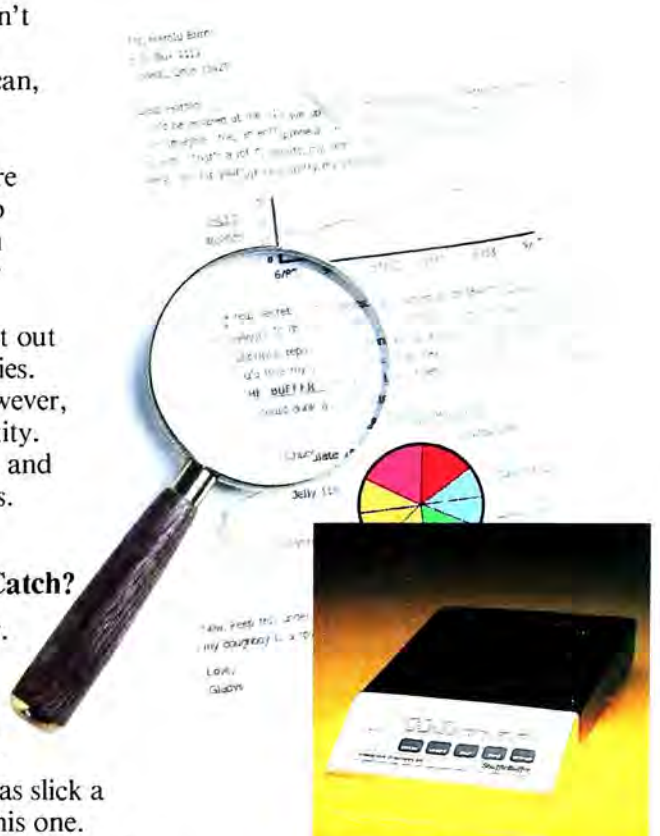
With a brain.

Who Wants You To Catch A ShuffleBuffer In Action?

You guessed it. We do. Just go to your local computer dealer and ask him to show you a ShuffleBuffer at work. Or, you can call us at (215) 667-1713, and we'll clue you in on all the facts directly.



* Based on an average 4000 character letter & 128K buffer.

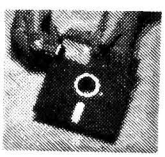


ShuffleBuffer
The Buffer with a Brain

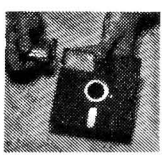
Interactive Structures Inc.
146 Montgomery Avenue
Bala Cynwyd, PA 19004

```
94BD: 20 CC 95 86 LOOPI:1 JSR  INCI1
94C0: EE 00 94 87         INC  I
94C3: AD 0E 94 88         LDA  I3
94C6: CD 00 94 89         CMP  I
94C9: B0 D9    90         BCS  LOOPI    (I)=(I)+1
94CB: A0 00    91 DLTR    LDY  #$00
94CD: A9 22    92         LDA  #$22
94CF: 20 DE 95 93         JSR  C1       NULL STRING,
                                         DELIMITER=$22
94D2: 20 CC 95 94         JSR  INCI1
94D5: A9 03    95 NEWJ    LDA  #$03
94D7: 8D 08 94 96         STA  A1
94DA: A9 00    97         LDA  #$00
94DC: 8D 09 94 98         STA  A1+1
94DF: 20 9E 95 99         JSR  ADDJ     (J),(J+1)=(J),(J+1)+3
94E2: EE 0C 94 100        INC  I2
94E5: D0 03    101        BNE  NEWJ:1
94E7: EE 0D 94 102        INC  I2+1
94EA: AD 0D 94 103 NEWJ:1 LDA  I2+1
94ED: CD 05 94 104        CMP  N+1
94F0: 90 08    105        BCC  NEWJ:2   (I2+1)<(N+1)
94F2: AD 04 94 106        LDA  N        (I2+1)=(N+1)
94F5: CD 0C 94 107        CMP  I2
94F8: 90 03    108        BCC  RET      (I2)>(N)
94FA: 4C 7E 94 109 NEWJ:2 JMP  LOOPI2
               110 ********************************
94FD: 60       111 RET    RTS
               112 ********************************
94FE: A9 00    113 SETPTRS LDA  #$00
9500: 8D 09 94 114        STA  A1+1
9503: 8D 13 94 115        STA  VR+1
9506: 8D 0A 94 116        STA  I1
9509: 8D 0B 94 117        STA  I1+1
950C: A9 00    118        LDA  #$00
950E: 8D 06 94 119        STA  X
9511: A9 07    120        LDA  #$07
9513: 8D 08 94 121        STA  A1
9516: 20 9E 95 122        JSR  ADDJ     (J),(J+1) POINTS TO
9519: A9 01    123        LDA  #$01     FIRST DESCRIPTOR
951B: 8D 12 94 124        STA  VR       (VR),(VR+1)=# OF
                                         STRINGS
951E: A9 60    125        LDA  #$60
9520: 8D 07 94 126        STA  X+1      (X),(X+1)=$6000
9523: 38       127        SEC
9524: AD 60 AA 128        LDA  LENFL
9527: E9 02    129        SBC  #$02
9529: 8D 60 AA 130        STA  LENFL
952C: AD 61 AA 131        LDA  LENFL+1
952F: E9 00    132        SBC  #$00
9531: 8D 61 AA 133        STA  LENFL+1
               134 ********************************
9534: A9 00    135 LOOP1  LDA  #$00
9536: 8D 10 94 136        STA  LV       (LV)=LENGTH OF
                                         CURRENT
9539: AD 06 94 137        LDA  X        STRING
953C: A0 01    138        LDY  #$01
953E: 20 BF 95 139        JSR  D        (J+1)=(X)
9541: AD 07 94 140        LDA  X+1
9544: A0 02    141        LDY  #$02
9546: 20 BF 95 142        JSR  D        (J+2)=(X+1)
               143 ********************************
9549: AD 06 94 144 LOOP2  LDA  X
954C: 85 06    145        STA  $06
954E: AD 07 94 146        LDA  X+1
9551: 85 07    147        STA  $07
9553: A0 00    148        LDY  #$00
9555: B1 06    149        LDA  ($06),Y
9557: C9 22    150        CMP  #$22
9559: F0 0C    151        BEQ  LOOP2:1
955B: 20 CC 95 152        JSR  INCI1
955E: EE 10 94 153        INC  LV
9561: 20 D5 95 154        JSR  INCX
9564: 4C 49 95 155        JMP  LOOP2
9567: A0 00    156 LOOP2:1 LDY  #$00
9569: AD 10 94 157        LDA  LV
956C: 20 BF 95 158        JSR  D
               159 ********************************
956F: AD 0B 94 160        LDA  I1+1
9572: CD 61 AA 161        CMP  LENFL+1
9575: 90 09    162        BCC  INCR     (I1+1)<(LENFL+1)
9577: AD 60 AA 163        LDA  LENFL    (I1+1)=(LENFL+1)
957A: CD 0A 94 164        CMP  I1
957D: B0 01    165        BCS  INCR     (I1)<=(LENFL)
957F: 60       166        RTS
               167 ********************************
9580: 20 CC 95 168 INCR   JSR  INCI1
9583: EE 12 94 169        INC  VR
9586: D0 03    170        BNE  INCR:1
9588: EE 13 94 171        INC  VR+1
958B: 20 D5 95 172 INCR:1 JSR  INCX
958E: A9 03    173        LDA  #$03
9590: 8D 08 94 174        STA  A1
9593: A9 00    175        LDA  #$00
9595: 8D 09 94 176        STA  A1+1
9598: 20 9E 95 177        JSR  ADDJ
959B: 4C 34 95 178        JMP  LOOP1
               179 ********************************
959E: 18       180 ADDJ   CLC           (J),(J+1)=(J),(J+1)
                                        +(A1),(A1+1)
959F: AD 02 94 181        LDA  J
95A2: 6D 08 94 182        ADC  A1
95A5: 8D 02 94 183        STA  J
95A8: AD 03 94 184        LDA  J+1
95AB: 6D 09 94 185        ADC  A1+1
95AE: 8D 03 94 186        STA  J+1
95B1: 60       187        RTS
               188 ********************************
95B2: AD 02 94 189 C      LDA  J
95B5: 85 06    190        STA  $06
95B7: AD 03 94 191        LDA  J+1
95BA: 85 07    192        STA  $07
95BC: B1 06    193        LDA  ($06),Y  (ACC)=((J),(J+1)+Y)
95BE: 60       194        RTS
               195 ********************************
95BF: AE 02 94 196 D      LDX  J        ((J),(J+1)+Y)=(A)
95C2: 86 06    197        STX  $06
95C4: AE 03 94 198        LDX  J+1
95C7: 86 07    199        STX  $07
95C9: 91 06    200        STA  ($06),Y
95CB: 60       201        RTS
```


Turn Your FLOPPIES Into FLIPPIES



5¼" ONE-STEP
For Apples, Franklins, Ataris
$14.95
Special: S & H $1.50



DOUBLES YOUR DISKETTE MEMORY IN SECONDS!

The self-aligning Write-Enable Punch has a special Deep-Grooved and "Case-Hardened" Steel Punch for making a clean write-enable cutout. Just insert into diskette and punch. Flip-it will pay for itself immediately — because every diskette you own or will buy is now like owning or buying two. Order yours today.

TOLL FREE 24 HRS ORDER LINE
1-800-227-3800 ext. 128

a) 5¼" **ONE-STEP:** Just Apple, VIC 20, Commodore 64, Franklin, Atari only $14.95
b) 5¼" **FLIP-IT: Universal Kit.** For All Computers with 5¼" Disk Drives. only $29.95
c) 8" **FLIP-IT: Universal Kit.** For All Computers with 8" Disk Drives. only $34.95
d) **Write Protect/Enable Tabs:** (100 ea.) only $2.65
e) **Hub-Reinforcer Kit:** positioning tool for hub-opening) 5¼" disks $10.99 8" disks $12.99
f) **Hub-Reinforcer Rings:** (50 rings ea.) 5¼" disks $5.85 8" disks $7.20
g) **Disk Sleeves:** (Lint free, 10 ea.) 5¼" disks $2.25 8" disks $3.85
h) **Labels:** (self-sticking, 100 ea.) only $3.00

Add $2.50 for shpg and hdlg. (AK, HI, PR, Canada=add $5, Int'l orders add USD10 50)
— Mass. res. add 5% tax

MasterCard VISA

Flip-It P.O. Box 201, Newton Hlds., MA 02161
Tel: (617) 527-FLIP Telex: 4991009 CHTRI

copyright 1983 D/Punch Corp. We acknowledge all trademarks

The Right Commands At Your Fingertips



... For Your Apple® II+, //e!

Now Available:

- APPLEWRITER™ II +
- QUICKFILE™
- VISICALC®
- WORDSTAR®
- dBASE II®
- APPLEWRITER™ IIe

Only $19.95

$32.95 FOR 2 ON 1 DOUBLE SIDED TEMPLATES WITH A 15-DAY MONEY BACK GUARANTEE

Designed by Training Specialists to help put your program to work, right away!

- Complete commands required to learn and operate your program
- Alphabetized commands to find what you need quickly and easily.
- Organized with key-by-key examples for simplicity.

This Time Saving Aid is Ideal for Training, Invaluable for Beginners, and a welcome convenience for the Comprehensive User. Made of sturdy, non-scratchable, non-glare, color matching plastic.

The right commands... ...the right price!

Also Available:

For Your:

IBM®-PC/XT
COMPAQ™
KAYPRO®
OSBORNE®

Commands For:

- 1-2-3™
- WORDSTAR®
- VISICALC®
- dBASE II®
- MULTIPLAN®
- SUPERCALC²™
- SUPERCALC®
- EASYWRITER®II
- APPLEWRITER™II
- QUICK FILE™
- PIE WRITER®
- WORDSTAR®/SUPERCALC®
- WORDSTAR®/VISICALC®
- EASYWRITER®/VISICALC®
- APPLEWRITER™II/QUICK FILE™
- APPLEWRITER™II/VISICALC®
- WORDSTAR®/VISICALC®
- PERFECT WRITER™/FILER
- PERFECT CALC™
- M BASIC®
- PERSONAL PEARL™
- DO IT YOURSELF BLANKS

Call Toll Free 1-800-231-5413

California 1-800-523-5441

DEALER INQUIRIES INVITED

CREATIVE COMPUTER PRODUCTS™

Or Send Order To:
P.O. Box 85152-MB 134
San Diego, CA 92138

We accept VISA, MC, AMEX or checks.
$1.95 Shipping Fee.

Apple/Quickfile-Apple Computer, Inc. IBM-International Business Machines. Osborne-Osborne Computer Corp. Kaypro-Non Linear Systems. Wordstar/Mailmerge-MicroPro International. Visicalc-Visicorp. Supercalc-Sorcim. Easywriter II-Information Unlimited Software. dBase II-Ashton-Tate. Multiplan-Microsoft. 1-2-3-Lotus Development Corp. Perfect Writer/Perfect Filer/Perfect Calc-Perfect Software. Personal Pearl-Pearlsoft. PieWriter-Hayden Software Co. Compaq-Compaq Computer Corp. © CREATIVE COMPUTERS PRODUCTS 1983.



Predictable.

A flawless future is in sight with 3M diskettes.

At 3M, reliability is built into every diskette. We've been in the computer media business for over 30 years. And we've never settled in. We're constantly improving and perfecting our product line, from computer tape and data cartridges to floppy disks.

3M diskettes are made at 3M. That way, we have complete control over the entire manufacturing process. And you can have complete confidence in the reliability of every 3M diskette you buy.

Apple® Compatible.

3M makes diskettes for use with Apple computers, including specially designed Fileware™ diskettes for the Lisa™ personal office system.

Look in the Yellow Pages under Computer Supplies and Parts for the 3M distributor nearest you. In Canada, write 3M Canada, Inc., London, Ontario. If it's worth remembering, it's worth 3M diskettes.



Apple, Apple logo, Fileware and Lisa are trademarks of Apple Computer Inc.

3M hears you...

3M

```
                    202 ********************************
95CC: EE 0A 94      203 INCI1    INC   I1        (I1),(I1+1)=(I1),(I1+1)
                                                +1
95CF: D0 03         204          BNE   INCI1:1
95D1: EE 0B 94      205          INC   I1+1
95D4: 60            206 INCI1:1  RTS
                    207 ********************************
95D5: EE 06 94      208 INCX     INC   X
95D8: D0 03         209          BNE   INCX:1
95DA: EE 07 94      210          INC   X+1
95DD: 60            211 INCX:1   RTS
                    212 ********************************
95DE: AE 0A 94      213 C1       LDX   I1        ((I1),(I1+1)+Y)=(A)
95E1: 86 06         214          STX   $06
95E3: AE 0B 94      215          LDX   I1+1
95E6: 86 07         216          STX   $07
95E8: 91 06         217          STA   ($06),Y
95EA: 60            218          RTS
```

Listing 2. The demo program.

```
10  HIMEM: 24576
20  PRINT CHR$ (4);"BLOAD FST.O, A$9400"
30  CLEAR : DIM B$(500):D$ = CHR$ (4):G$ = CHR$ (7): DEF FN
    HI(X) = INT (X / 256): DEF FN LO(X) = X - 256 * FN HI(X)
40  T$(0) = "HIT THE  < RETURN >  KEY TO START ":T$(1) =
    "SAVING STRING S TO A TEXT FILE":T$(2) = "SAVING
    STRINGS TO A BINARY FILE":T$(3) = "LOADING STRINGS
    FROM A TEXT FILE":T$(4) = "LOADING STRINGS FROM A
    BINARY FILE"
50  HOME : HTAB 15: INVERSE : PRINT "DEMO MENU": NORMAL :
    PRINT
60  PRINT "1. SAVE STRINGS TO A TEXT FILE": PRINT "2. SAVE
    STRINGS TO A BINARY FILE": PRINT "3. LOAD STRINGS FROM
    A TEXT FILE": PRINT "4. LOAD STRINGS FROM A BINARY
    FILE": PRINT "5. END": PRINT
70  PRINT "ENTER OPTION  > ";: GET Q$: PRINT Q$:Q = VAL
    (Q$): IF Q  < 1 OR Q >  5 THEN PRINT G$;G$: GOTO 50
80  IF Q = 5 THEN HOME : END
90  IF Q  > 2 GOTO 120
100  GOSUB 390
110  HOME : PRINT T$(0): PRINT T$(Q): GET X$: PRINT X$
120  HOME : PRINT T$(Q);"..."
130  ON Q GOSUB 140,220,280,340: GOTO 30
140  PRINT D$;"OPEN TFILE"
150  PRINT D$;"DELETE TFILE"
160  PRINT D$;"OPEN TFILE"
170  PRINT D$;"WRITE TFILE"
180  PRINT N
190  FOR I = 0 TO N: PRINT B$(I): NEXT
200  PRINT D$;"CLOSE TFILE"
210  RETURN
220  POKE 8, FN LO(N + 1): POKE 9, FN HI(N + 1)
230  POKE 37908,1
240  CALL 37910
250  LN = PEEK (37898) + 256 * PEEK (37899) - 24576: IF LN >
     13312 THEN HOME : PRINT G$: PRINT "BFILE TOO LONG":
     GET X$: PRINT X$: GOTO 50
260  PRINT D$;"BSAVE BFILE, A$6000, L";LN
270  RETURN
280  PRINT D$;"OPEN TFILE"
290  PRINT D$;"READ TFILE"
300  INPUT N
310  FOR I = 0 TO N: INPUT B$(I): NEXT
320  PRINT D$;"CLOSE TFILE"
330  GOTO 380
340  PRINT D$;"BLOAD BFILE"
350  POKE 37908,0
360  CALL 37910
370  N = PEEK (37906) + 256 * PEEK (37907) - 1
380  HOME : FOR I = 0 TO N: PRINT B$(I): NEXT : GET X$: PRINT :
     RETURN
390  HOME : PRINT "ENTER THE # OF THE LAST STRING TO":
     INPUT " BE SAVED  > ";N
400  IF N  > 500 THEN PRINT G$;G$: GOTO 50
410  HOME : PRINT "MAKING STRINGS B$(0) - B$(";N;")"
420  S1$ = "THIS IS STRING B$("
430  FOR I = 0 TO N:B$(I) = S1$ + STR$ (I) + ")": NEXT
440  RETURN
```




ALL FOR THE UNBELIEVABLY LOW PRICE OF $660.00!!!

Available at computer stores everywhere.
Or order direct and receive a 10% Introductory Factory Rebate through January 1, 1984.

130 page manual only $20 prepaid.
Dealerships currently available.

Prices and specifications subject to change without notice.

RHINO® ROBOTS

from Rhino®

The Scorpion is a versatile robot designed especially for the serious robot enthusiast. By following the detailed instructions included in the kit, you can build this highly sophisticated and entertaining device. With 32 lines of I/O and complex machine intelligence capability, it is completely software programmable. Among the many talents of the Scorpion are its ability to see and read codes, to learn obstacle locations and avoid them, and to follow a tape on the floor at 99 different speeds.

LOOK AT THESE CHALLENGING AND EXCITING FEATURES:

RS-232 C serial interface allows the Scorpion to obey instructions and answer questions from any host computer with a serial printer interface.

6502 microprocessor on board with 8K of EPROM and 2K of RAM, expandable to a full 64K system.

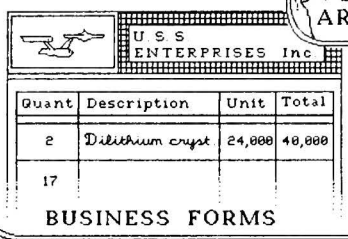
The special Scorpion language with 30 instructions is explained in detail in the 130 page manual (8½ × 11) accompanying the kit.

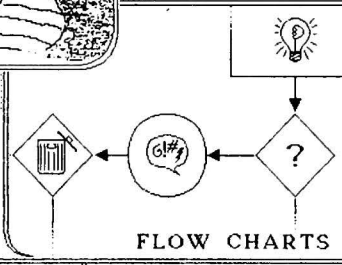
The two axis optical scanner provides data for pattern recognition and camera experiments. Over a 300 degree scan in both vertical and horizontal planes. The visual patterns can be displayed in the computer CRT.

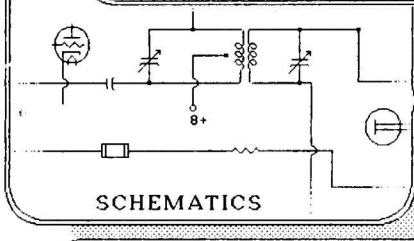
Order today:
Rhino Robots, Inc.
P.O. Box 4010, 2505 S. Neil St.
Champaign, IL 61820
217/352-8485
Telex: 3734731 RHINO ROBOTS C

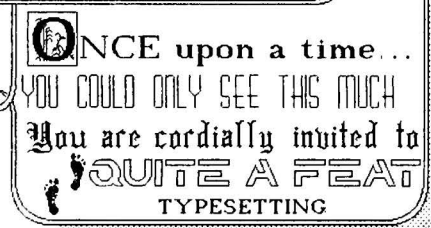
NOW THERE'S MORE TO APPLE GRAPHICS
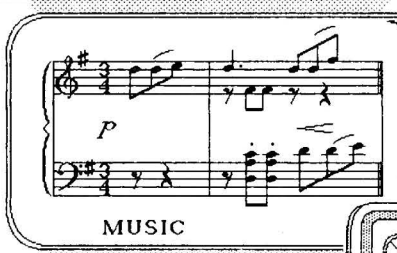


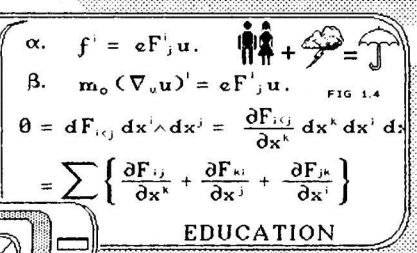




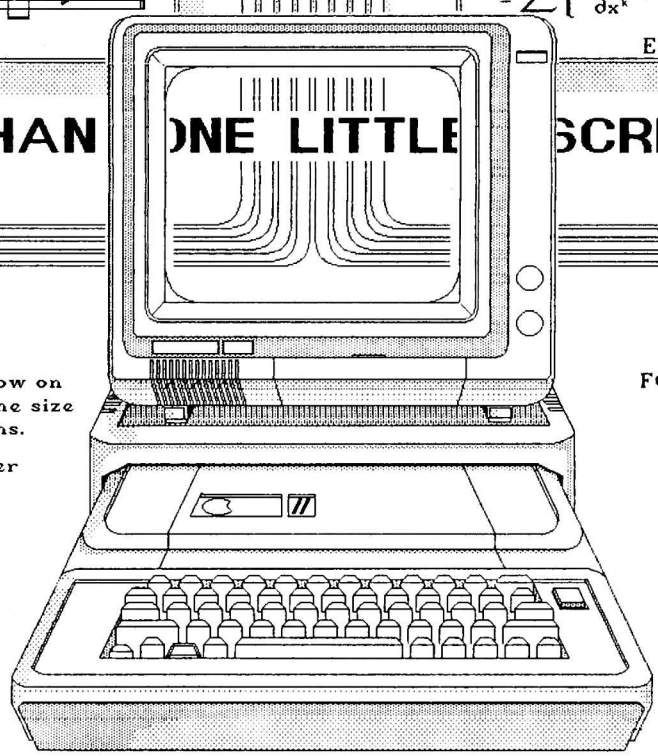








THAN ONE LITTLE SCREEN



FONTRIX.
For the Apple II+/IIe.

Your monitor is a window on a graphic enviroment the size of sixteen Hi-res screens.

User definable character sets type directly onto the graphic screen.

Dumps single-screen and extended graphics to 27 dot matrix printers.

Accepts graphic input from keyboard, paddles, joystick, trackball, tablet and mouse.

FONTRIX comes with eleven ready made fonts, plus an easy Font Editor you can use to create more of your own.

Additional fonts are available in FONTPAK companion volumes. (suggested retail - $20)

APPLE is a trademark of Apple Computer Inc.

FONTRIX and FONTPAK are trademarks of Data Transforms Inc.

THIS PAGE WAS DRAWN, TYPESET AND PRINTED USING

FONTRIX™

EXTENDED-SCREEN GRAPHICS SOFTWARE

$75.00 AT QUALITY SOFTWARE RETAILERS NEAR YOU.

from

data transforms

616 WASHINGTON ST #106 DENVER, CO 80203
(303) 832-1501



De-Wozzing the Apple II

If you own an Apple II computer, you almost certainly know by now that there is something a little weird about the high-resolution graphics. You may have discovered it yourself while programming a video game, or you may have heard it from a friend or read about it in a graphics column. Getting around it is the first thing we must do to begin drawing on our Apple's screen.

This is unfortunate, since the idiosyncrasies of the Apple hi-res screen have little to do with our real topic, which is computer graphics. If only we could skip the weird stuff! Yet every book or column on Apple graphics begins by bombarding its poor reader with long, complicated descriptions of such things as graphics mappings and color conflicts and high bits and color bytes.

In this month's column, we will attempt to pull off something of a coup, by bypassing this seemingly necessary but very dull technical garbage and approaching the Apple II as if we were graphics programmers with years of Apple experience and all of the answers. So instead of trying real hard to discern why given problems were solved in a certain way, we'll just present the solutions. These solutions will constitute the "correct" way to do Apple graphics.

Later on, you may want to go back and try to fully understand hi-res in all its strangeness so that you can come up with your own solutions. We can't stop you if you insist on wallowing in it, but we won't do it here. We want to keep this column clean.

The two sections that follow deal with assembly language issues but are not marked with asterisks as being for assembly programmers because they are basic and, compared with some implementation sections in later columns, quite simple. If you don't know assembly language for the 6502, read on anyway—it's healthy to read about things you hate every once in a while.

Vertical De-Wozzing. Before there were any books or articles on the Apple's hi-res graphics, and when Woz was just a mysterious name on some Monitor ROM listings, the first Apple graphics programmers had to explore the hi-res screen with nothing but peeks and pokes and their own powers of induction. All of these people remember a period of several days, in 1978 or 1979, when they sat before their new computers and tried to discover the correspondence between the hi-res screen memory in their Apples and the dots on their television sets.

The process went something like this. First, poke a number into the screen memory of the Apple (the old red manual at least told you that the screen memory began at address $2000). Second, form a theory about where the neighboring dots are located in memory. Third, poke another number into the memory to test your theory. Fourth, go back and form another theory if you find that your first theory was wrong.

If you had followed this program, one of the first things you would have discovered is that the first row of dots, at the very top of the television screen, corresponds exactly to the forty bytes of screen memory starting at address $2000, the beginning of the hi-res screen memory. We call this first row of forty bytes "scan line" number one. Being a logical person, you then might have theorized that the second row of dots from the top, scan line number two, corresponded to the next forty bytes of screen memory starting at $2028.

You would have been startled to discover that this was not true at all. Scan line two began somewhere else in memory. The rows of dots and their corresponding scan lines in screen memory were all scrambled.

At first this seemed like a bad thing. What could those guys in Cupertino have been thinking of? Stories circulated that Woz had saved four chips by using this scrambled hi-res system. Was this worth all the extra programming effort it appeared to require?

Today, years later, it's clear that it doesn't matter at all how the scan lines are stored in the screen memory. Woz had picked the most convenient system from his point of view, since it did not require a multiplication to find the address of a scan line. The more obvious system, where the scan lines were stored consecutively in memory, did require a multiplication.

All of this is academic, however, since the only sane way to find a scan line in screen memory is to use a table. We now present solution number one—the scan line address table for the Apple II:

```
SOURCE     FILE #01 =>GPAK2
0000:                    1 ;
0000:                    2 ; Scan line address low byte table
0000:                    3 ;
0000:          0000      4 scanline.lo equ *
0000:                    5 ;
0000:00 00  00  00       6     dfb  $00,$00,$00,$00,$00,$00,$00,$00
0008:80 80  80  80       7     dfb  $80,$80,$80,$80,$80,$80,$80,$80
0010:00 00  00  00       8     dfb  $00,$00,$00,$00,$00,$00,$00,$00
0018:80 80  80  80       9     dfb  $80,$80,$80,$80,$80,$80,$80,$80
0020:00 00  00  00      10     dfb  $00,$00,$00,$00,$00,$00,$00,$00
0028:80 80  80  80      11     dfb  $80,$80,$80,$80,$80,$80,$80,$80
0030:00 00  00  00      12     dfb  $00,$00,$00,$00,$00,$00,$00,$00
0038:80 80  80  80      13     dfb  $80,$80,$80,$80,$80,$80,$80,$80
0040:                   14 ;
0040:28 28  28  28      15     dfb  $28,$28,$28,$28,$28,$28,$28,$28
0048:A8 A8  A8  A8      16     dfb  $A8,$A8,$A8,$A8,$A8,$A8,$A8,$A8
0050:28 28  28  28      17     dfb  $28,$28,$28,$28,$28,$28,$28,$28
0058:A8 A8  A8  A8      18     dfb  $A8,$A8,$A8,$A8,$A8,$A8,$A8,$A8
0060:28 28  28  28      19     dfb  $28,$28,$28,$28,$28,$28,$28,$28
0068:A8 A8  A8  A8      20     dfb  $A8,$A8,$A8,$A8,$A8,$A8,$A8,$A8
0070:28 28  28  28      21     dfb  $28,$28,$28,$28,$28,$28,$28,$28
0078:A8 A8  A8  A8      22     dfb  $A8,$A8,$A8,$A8,$A8,$A8,$A8,$A8
0080:                   23 ;
0080:50 50  50  50      24     dfb  $50,$50,$50,$50,$50,$50,$50,$50
0088:D0 D0  D0  D0      25     dfb  $D0,$D0,$D0,$D0,$D0,$D0,$D0,$D0
0090:50 50  50  50      26     dfb  $50,$50,$50,$50,$50,$50,$50,$50
0098:D0 D0  D0  D0      27     dfb  $D0,$D0,$D0,$D0,$D0,$D0,$D0,$D0
00A0:50 50  50  50      28     dfb  $50,$50,$50,$50,$50,$50,$50,$50
00A8:D0 D0  D0  D0      29     dfb  $D0,$D0,$D0,$D0,$D0,$D0,$D0,$D0
00B0:50 50  50  50      30     dfb  $50,$50,$50,$50,$50,$50,$50,$50
```



THE GRAPHIC SOLUTION

Solve your toughest communication problems with the Graphic Solution™, a sophisticated, new graphics package from Accent Software.



With precise, multi-speed ANIMATION create captivating sales presentations and product demonstrations that will both intrigue and inform your clients and customers. Watch their reactions; you'll see your messages getting through.

Develop educational materials and training aids that MIX TEXT AND GRAPHICS on the screen, breathing new life into abstract, hard-to-grasp concepts. Mix programs too. Images can be displayed on backgrounds loaded from any of your other programs. Construct custom TYPEFACES AND TYPESIZES to balance the visual elements.



Tired of run-of-the-mill business graphics? Change standard charts and graphs into colorful THREE DIMENSIONAL PERSPECTIVES. Add text and animate the data to show the relative rates of change for your most important information. Like cash flow projections. Or revenue estimates.



Plot flowcharts, time and motion studies, industrial process flows with COLOR-CODED ELEMENTS highlighting critical paths. Animate the sequences to show how flows actually progress.

Work with live action? Prepare film and videotape storyboards using the unique FRAME-BY-FRAME graphic sequencer that lets you create and animate a video story before shooting.

Whatever your graphic communication demands—in the business world, the arts, industry, education—The Graphic Solution™ at $149.95 has the answer. Take a hard look at The Graphic Solution. You'll like what you see.



The Graphic Solution requires a 64K Apple II with ROM Applesoft and DOS 3.3.

See your local dealer or send $10.00 for a demonstration diskette to:

ACCENT SOFTWARE, INC.

3750 Wright Place, Palo Alto, Calif. 94306 Telephone 415-856-6505

Apple is a registered trademark of Apple Computer, Inc.

```
00B8:D0 D0  D0  D0  31      dfb   $D0,$D0,$D0,$D0,$D0,$D0,$D0,$D0
00C0:               32  ;
00C0:               33  ; Scan line address high byte table
00C0:               34  ;
00C0:         00C0  35  scanline.hi equ *
00C0:               36  ;
00C0:20 24  28  2C  37      dfb   $20,$24,$28,$2C,$30,$34,$38,$3C
00C8:20 24  28  2C  38      dfb   $20,$24,$28,$2C,$30,$34,$38,$3C
00D0:21 25  29  2D  39      dfb   $21,$25,$29,$2D,$31,$35,$39,$3D
00D8:21 25  29  2D  40      dfb   $21,$25,$29,$2D,$31,$35,$39,$3D
00E0:22 26  2A  2E  41      dfb   $22,$26,$2A,$2E,$32,$36,$3A,$3E
00E8:22 26  2A  2E  42      dfb   $22,$26,$2A,$2E,$32,$36,$3A,$3E
00F0:23 27  2B  2F  43      dfb   $23,$27,$2B,$2F,$33,$37,$3B,$3F
00F8:23 27  2B  2F  44      dfb   $23,$27,$2B,$2F,$33,$37,$3B,$3F
0100:               45  ;
0100:20 24  28  2C  46      dfb   $20,$24,$28,$2C,$30,$34,$38,$3C
0108:20 24  28  2C  47      dfb   $20,$24,$28,$2C,$30,$34,$38,$3C
0110:21 25  29  2D  48      dfb   $21,$25,$29,$2D,$31,$35,$39,$3D
0118:21 25  29  2D  49      dfb   $21,$25,$29,$2D,$31,$35,$39,$3D
0120:22 26  2A  2E  50      dfb   $22,$26,$2A,$2E,$32,$36,$3A,$3E
0128:22 26  2A  2E  51      dfb   $22,$26,$2A,$2E,$32,$36,$3A,$3E
0130:23 27  2B  2F  52      dfb   $23,$27,$2B,$2F,$33,$37,$3B,$3F
0138:23 27  2B  2F  53      dfb   $23,$27,$2B,$2F,$33,$37,$3B,$3F
0140:               54  ;
0140:20 24  28  2C  55      dfb   $20,$24,$28,$2C,$30,$34,$38,$3C
0148:20 24  28  2C  56      dfb   $20,$24,$28,$2C,$30,$34,$38,$3C
0150:21 25  29  2D  57      dfb   $21,$25,$29,$2D,$31,$35,$39,$3D
0158:21 25  29  2D  58      dfb   $21,$25,$29,$2D,$31,$35,$39,$3D
0160:22 26  2A  2E  59      dfb   $22,$26,$2A,$2E,$32,$36,$3A,$3E
0168:22 26  2A  2E  60      dfb   $22,$26,$2A,$2E,$32,$36,$3A,$3E
0170:23 27  2B  2F  61      dfb   $23,$27,$2B,$2F,$33,$37,$3B,$3F
0178:23 27  2B  2F  62      dfb   $23,$27,$2B,$2F,$33,$37,$3B,$3F
0180:               63  ;
```

Now see how easy it is to get the address of a scan line. Suppose we have included these tables in our program, and that the Y register contains the row number, from 0 to 191, of the scan line we wish to locate in the screen memory. Then the following two instructions will put the address of the required scan line in the A and X registers:

```
lda scanline.lo,y
ldx scanline.hi,y
```

It couldn't be much easier than that. From now on, all you need to know about the Apple's scan line layout is that, yes, it is a little weird. The scan line address table, like the Force, will always be with you.

Some clarification may still be needed. Let's write a short subroutine that uses the tables. The purpose of this routine is to clear a whole scan line to the color black. On entering the routine, the Y register contains the row number of the scan line to be cleared.

```
clear.row     lda scanline.lo,y
              sta base            ;base is a zero-page location
              lda scanline.hi,y
              sta base+1          ;base now contains the address
                                  ; of scan line Y
;
              ldy #39             ;prepare to clear 40 bytes
              lda #0              ;0 turns off dots
clear.row.1   sta (base),y        ;this is a tight loop
              dey
              bpl clear.row.1
              rts
```

As you can see, getting a scan line address is something we don't even have to think about anymore. Though this routine is just an example and not a part of the actual graphics package we will develop, it also illustrates one important point about assembly language programming style.

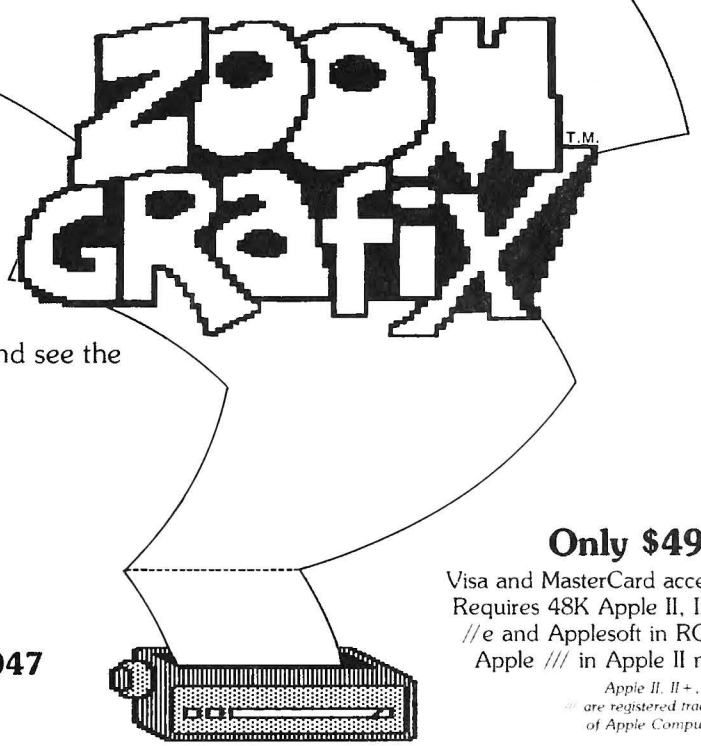
The most important part of this routine is the loop beginning at clear.row.1, because this is where most of the work gets done. In case you didn't notice, we cleared the forty bytes of scan line Y in reverse order, from byte 39 to byte 0. The reason for this is to eliminate the need for a CPY instruction in the loop. Since this CPY instruction would be executed forty times, the time saving is significant.

The style lesson is this: Know which parts of your program are executed most frequently and do what you can to make these routines as ef-

Utilize the **full graphic potential** of your printer with

High-resolution graphics screen printing package with support for a wide range of printers.

- One package works with over 900 combinations of printers and interfaces.
- Print positive/negative, upright/sideways, either Hi-Res screen.
- You control size *and* proportions (over 65,000 combinations).
- "Zoom Window"™ feature allows you to frame and see the specific area of the Hi-Res screen to be printed.
- Automatic centering and selectable margins.
- Keyboard forms control.
- Prints charts, graphs or pictures.
- Menu driven - easily used by anyone.



PHOENIX SOFTWARE, INC.
64 Lake Zurich Dr. / Lake Zurich, IL 60047
(312) 438-4850
© 1982, 1983 Phoenix Software, Inc.

Only $49.95
Visa and MasterCard accepted.
Requires 48K Apple II, II+ or //e and Applesoft in ROM or Apple /// in Apple II mode.
Apple II, II+, e and are registered trademarks of Apple Computer, Inc.

ficient, or, as a programmer would say, as "tight," as you possibly can. This implies knowing how many machine cycles each instruction requires and which condition codes it sets. If you know the 6502 instructions but don't know these details, you aren't as good a programmer as you could be.

Horizontal De-Wozzing. We have solved half of the graphics mapping problem on the Apple II. Given a row number from 0 to 191, we can get the address of the forty bytes making up that row of dots. But once we have that address, which bytes in the line do we modify? This is the second half of the problem: the horizontal mapping.

If, as before, we imagine ourselves an early explorer of Apple hi-res, another of our first observations would have been that changing any one byte in a scan line affected exactly seven dots on the screen. As we continued our poking, we would have found that the first byte on any given scan line controls the leftmost seven dots, the second byte controls the next leftmost seven dots, and so on to the thirty-ninth byte, which controls the rightmost seven dots on the scan line.

"How," we then might have asked, "does a byte in memory control dots on the screen?" We would have quickly found that poking $00 into a byte cleared the seven dots, while poking $7F turned all of them on. After trying a few more values (hopefully not all 256 possible values, which is a lot of poking), we might have arrived at the correct conclusion that we should visualize a hi-res byte in its binary representation—a series of ones and zeros. The ones then tell us which dots are on and the zeros tell us which ones are off.

So far, we have treated the screen as if it were only a black-and-white display. Most of the confusion about Apple hi-res arises because there are at least three distinct but valid ways of thinking about the graphics screen. We want to avoid any confusion, so for now we'll just think of the hi-res screen as a 280-by-192 array of black-and-white dots. This will help keep things simple.

Now that we know the mapping, the problem of getting to a particular dot on a scan line becomes one of division. If we want to modify dot 50 on a given scan line, we must look at byte 8 (the first seven bytes contain dots 0 through 48) and in particular at bit number 2 (bit number 1 corresponds to dot 49). In general, to get the required byte number, we divide the dot number by 7 and take the quotient. To get the bit number, we take the remainder after the division by 7.

Seven is an interesting number, especially when it is our divisor and we are programming on a microcomputer without a divide instruction. If Woz had used all eight bits in each hi-res byte, we would be dividing by 8 and there would be no problem, since the quotient and remainder of a division by 8 are easy to compute. But 7, not being divisible by 2, is the worst case divisor on a binary digital computer.

But we only need to consider 280 different dividends, since this is the width, in dots, of a scan line. This relatively small number of values, together with the high cost of the calculation (division by 7), makes this operation a prime candidate for solution via tables. In fact, that is how we will solve it. We now present solution number two: the quotient and remainder tables for division by 7.

```
SOURCE      FILE #01 =>GPAK1
0000:             1 ;
0000:             2 ; Divide by 7 quotient table
0000:             3 ;
0000:       0000  4 quotient7 equ *
0000:             5 ;
0000:       0007  6     ds   7,0      ;seven zeros
0007:       0007  7     ds   7,1      ;seven ones
000E:       0007  8     ds   7,2      ;and so on. . . .
0015:       0007  9     ds   7,3
001C:       0007 10     ds   7,4
0023:       0007 11     ds   7,5
002A:       0007 12     ds   7,6
0031:       0007 13     ds   7,7
0038:       0007 14     ds   7,8
003F:       0007 15     ds   7,9
0046:       0007 16     ds   7,10
004D:       0007 17     ds   7,11
0054:       0007 18     ds   7,12
005B:       0007 19     ds   7,13
0062:       0007 20     ds   7,14
0069:       0007 21     ds   7,15
0070:       0007 22     ds   7,16
0077:       0007 23     ds   7,17
```


GRAPHICMASTER™

. . . five software-based, stand-alone modules produce the snappiest professional computer graphics seen on any micro.

• **The FONTCASTER** painlessly creates characters as large as 24x24 pixels, caps and lower case in one set. Absolute single-dot control with constantly updated screen display makes font creation into a game rather than a chore.

• **The PATTERNMASTER** presents a vivid display of UNLIMITED patterns and colors, all under absolute keyboard control creating full-screen designs you wouldn't believe possible. Create and edit 32 colors or patterns per set. Cover the entire screen with any word, while learning the intricacies of Apple hires color and its special peculiarities.

• **The BITMAP WIZARD** gives you 5 differently shaped viewports so you may cruise the Hires screen capturing unlimited sequences of pictures and saving them in sets on disc. Were that not enough, those frames can be easily retrieved, edited or completely redrawn using the PAINT routine included in the module. You have at your command the means for instantly viewable, high-quality colored-shape animation plus a sequencer to pre-plan up to 50 cells the way you like.

• **The WINDOW KING** lets you define your windows . . . defining hires areas to be saved to disc for later use in presentations.

• **GR&MPS,** the extremely powerful graphic **Ampersand** control language lets you program all elements prepared with the 4 other modules. Through its commands you may get your text and pictorial message across in not only a highly professional appearing format, including stunning animated movement, yet created with commands that anyone only slightly familiar with Applesoft* basic can easily learn and use effectively.

GRAPHICMASTER was written in assembly language and Applesoft basic and is on a non-copy protected disc so you may see what makes it tick . . .
and now available at **$79.95**
either from your Apple software dealer or direct.

TiD BiT SOFTWARE

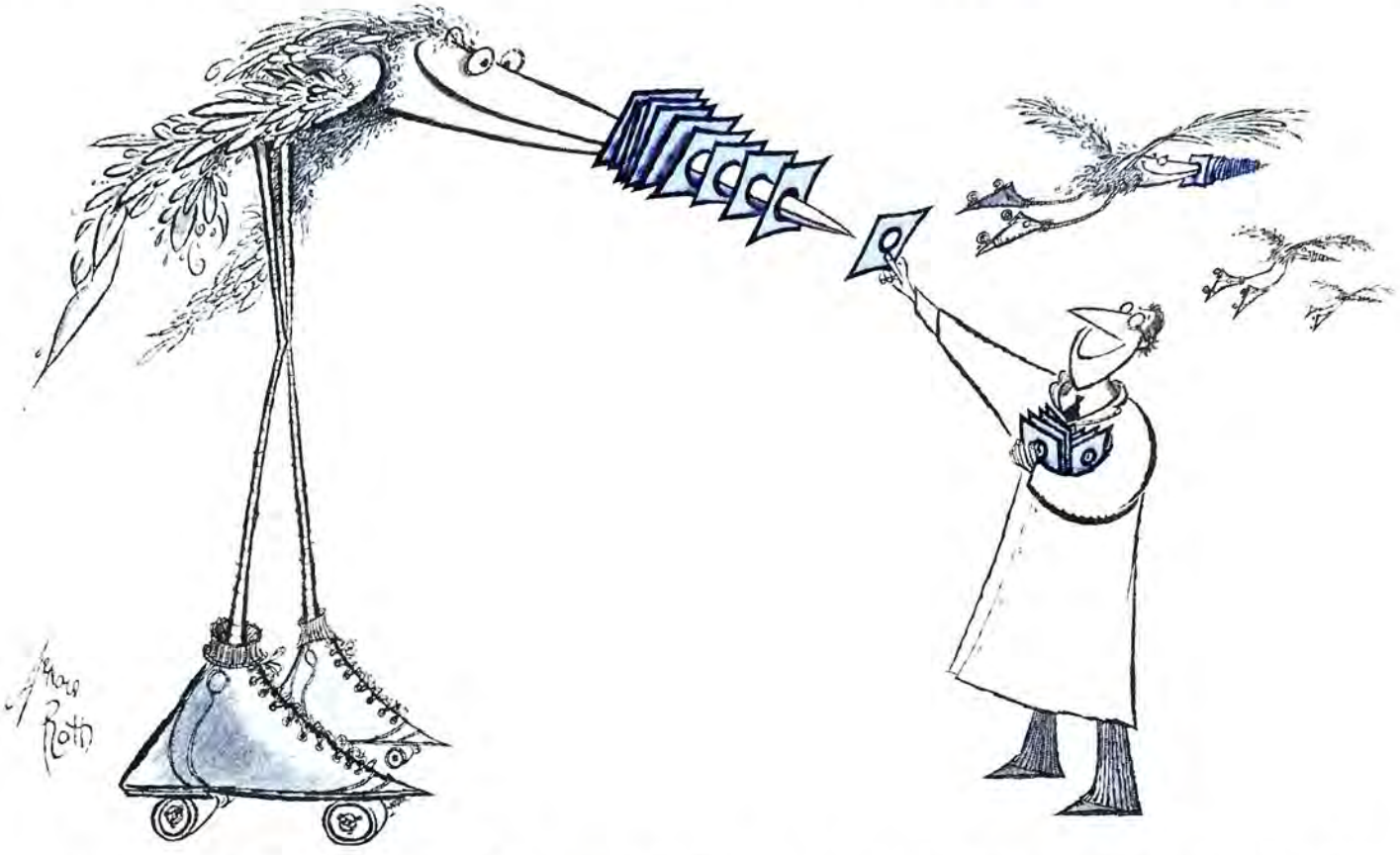
P.O. Box 5579
Santa Barbara, CA 93108
Phone orders: (805) 969-5834

MasterCard and VISA are valid.

In California, add 6% sales tax and be sure to include your name and address and zip with mail orders.

*Apple II and Applesoft are trademarks of Apple Computers Inc.

Smallware™



Our software is making a name for itself.

Smallware. That's what we've named our unique software designed for microcomputers. Smallware offers much more than ordinary software: high quality, customer support and a complete product line. You can buy software anywhere. But for the special features of Smallware, The Small Computer Company is your one and only source.

The Small Computer Company is known to many as the company that developed the filing system software Profile® II, Profile Plus and Profile III Plus for Radio Shack.

For Apple™ II users, there's **filePro**™, our CP/M®-version filing system Smallware.

With *filePro,* the days of searching for records manually are over. Now, any record, any list, any important piece of data is yours at the touch of a button.

Plus, the *filePro* electronic file can be organized alphabetically, numerically, by date—by up to 16 categories in all. And all messages and menu selections are in plain English.

filePro was specifically designed to grow with your needs. And as if all this weren't enough, The Small Computer Company has just made *filePro* an irresistible buy.

CHRISTMAS SPECIAL
filePro™ REG. $300. *NOW ONLY* **$199.**

Offer ends March 30, 1984

The Small Computer Company does more than create award-winning Smallware. Our commitment to the customer extends to custom design as well as system consultation.

filePro requires an Apple II or II Plus and a Microsoft Premium Pack (which includes a 16K RAM card, a Microsoft Z-80 SoftCard™, and a Videx™ Videoterm™ 80-column display card) or equivalent.

For further information, call (800) 847-4740. In New York call (212) 398-9290. To order *filePro,* ask for Ms. Price.

The Small Computer Company, Inc.

230 West 41st Street, Suite 1200, New York, New York 10036

80 readers' choice MICRO 1982

Smallware, Propack, Quikback and filePro are trademarks of The Small Computer Company, Inc.
CP/M is a registered trademark of Digital Research, Inc. Profile is a registered trademark of Radio Shack.

```
007E:          0007 24      ds   7,18
0085:          0007 25      ds   7,19
008C:          0007 26      ds   7,20
0093:          0007 27      ds   7,21
009A:          0007 28      ds   7,22
00A1:          0007 29      ds   7,23
00A8:          0007 30      ds   7,24
00AF:          0007 31      ds   7,25
00B6:          0007 32      ds   7,26
00BD:          0007 33      ds   7,27
00C4:          0007 34      ds   7,28
00CB:          0007 35      ds   7,29
00D2:          0007 36      ds   7,30
00D9:          0007 37      ds   7,31
00E0:          0007 38      ds   7,32
00E7:          0007 39      ds   7,33
00EE:          0007 40      ds   7,34
00F5:          0007 41      ds   7,35
00FC:          0004 42      ds   4,36
0100:               43 ;
0100:               44 ; Divide by 7 remainder table
0100:               45 ;
0100:          0100 46 remainder7 equ *
0100:               47 ;
0100:00 01 02 03    48      dfb  0,1,2,3,4,5,6,7
0108:00 01 02 03    49      dfb  0,1,2,3,4,5,6,7
0110:00 01 02 03    50      dfb  0,1,2,3,4,5,6,7
0118:00 01 02 03    51      dfb  0,1,2,3,4,5,6,7
0120:00 01 02 03    52      dfb  0,1,2,3,4,5,6,7
0128:00 01 02 03    53      dfb  0,1,2,3,4,5,6,7
0130:00 01 02 03    54      dfb  0,1,2,3,4,5,6,7
0138:00 01 02 03    55      dfb  0,1,2,3,4,5,6,7
0140:00 01 02 03    56      dfb  0,1,2,3,4,5,6,7
0148:00 01 02 03    57      dfb  0,1,2,3,4,5,6,7
0150:00 01 02 03    58      dfb  0,1,2,3,4,5,6,7
0158:00 01 02 03    59      dfb  0,1,2,3,4,5,6,7
0160:00 01 02 03    60      dfb  0,1,2,3,4,5,6,7
0168:00 01 02 03    61      dfb  0,1,2,3,4,5,6,7
0170:00 01 02 03    62      dfb  0,1,2,3,4,5,6,7
0178:00 01 02 03    63      dfb  0,1,2,3,4,5,6,7
0180:00 01 02 03    64      dfb  0,1,2,3,4,5,6,7
0188:00 01 02 03    65      dfb  0,1,2,3,4,5,6,7
0190:00 01 02 03    66      dfb  0,1,2,3,4,5,6,7
0198:00 01 02 03    67      dfb  0,1,2,3,4,5,6,7
01A0:00 01 02 03    68      dfb  0,1,2,3,4,5,6,7
01A8:00 01 02 03    69      dfb  0,1,2,3,4,5,6,7
01B0:00 01 02 03    70      dfb  0,1,2,3,4,5,6,7
01B8:00 01 02 03    71      dfb  0,1,2,3,4,5,6,7
01C0:00 01 02 03    72      dfb  0,1,2,3,4,5,6,7
01C8:00 01 02 03    73      dfb  0,1,2,3,4,5,6,7
01D0:00 01 02 03    74      dfb  0,1,2,3,4,5,6,7
01D8:00 01 02 03    75      dfb  0,1,2,3,4,5,6,7
01E0:00 01 02 03    76      dfb  0,1,2,3,4,5,6,7
01E8:00 01 02 03    77      dfb  0,1,2,3,4,5,6,7
01F0:00 01 02 03    78      dfb  0,1,2,3,4,5,6,7
01F8:00 01 02 03    79      dfb  0,1,2,3,4,5,6,7
0200:00 01 02 03    80      dfb  0,1,2,3,4,5,6,7
0208:00 01 02 03    81      dfb  0,1,2,3,4,5,6,7
0210:00 01 02 03    82      dfb  0,1,2,3,4,5,6,7
0218:00 01 02 03    83      dfb  0,1,2,3,4,5,6,7
0220:00 01 02 03    84      dfb  0,1,2,3,
```

As with our scan line address table, the division problem becomes absolutely trivial. To get the quotient and remainder of the X register divided by 7 into the A and Y registers, we need execute only the following instructions.

```
lda quotient7,x
ldy remainder7,x
```

There is a slight problem remaining. We said that there were 280 dots on a scan line, yet we seem to be trying to get away with a table that has only 256 entries. Shouldn't we add twenty-four more entries? The answer is a definite *no*, because of the addressing capabilities of the 6502. Since the X and Y index registers are capable of counting only from 0 to 255, we cannot have tables of more than 256 bytes without suffering a large access time penalty. We can get away with our undersized tables, using the following trick for dots numbered 256 to 279 (X now contains only the least significant byte of the dot number, which is greater than 256):

```
lda quotient7+4,x
clc
adc #36
ldy remainder7+4,x
```

This is just a trick. Think about it for a while; if you don't get it, forget it. All you have to know is that it works.

Let's put a few things together now, in another little routine. This one will turn on any single dot on the hi-res screen, as long as the dot number is less than 256 (we won't derive the more general full-screen version, because this routine, like the last one, isn't in our graphics package). On entry, Y contains the scan line on which the dot lies, and X contains the dot number.

```
draw.dot      lda scanline.lo,y     ;get scanline address
              sta base
              lda scanline.hi,y
              sta base+1
;
              ldy quotient7,x       ;get byte, bit # for dots < 256
              lda remainder7,x
              tax                   ;we're all set now. . . .
;
draw.dot.1    lda dot.table,x       ;get a single dot byte value
              ora (base),y          ;add it to the screen byte
              sta (base),y          ;modify the screen
              rts
;
dot.table     dfb $01,$02,$04,$08,$10,$20,$40
```

Counting machine cycles up to draw.dot.1, we find that we need only twenty-four microseconds to get to most of the dots on the hi-res screen. This is equivalent to over forty thousand dots per second. This is close to optimal on an Apple II.

Now that we know how to home in on any dot on the hi-res screen, a natural question arises. What do we do when we get there?

Next month: drawing on the hi-res graphics screen. ■

Under new management.

Now you can run Castle Wolfenstein™ the way you want. Introducing TGEU. The powerful, machine-language utility that remodels every feature of the game. Stop startup delays, crashes and chest waiting. Get any item, in any quantity. Start in any room, at any rank. Handicap your aim. Even add items. And lots more. Includes disk, 5-page guide, strategies and a *free* map. Only $15, plus $2 postage and handling. From Moxie, 2049 Century Park East, Suite 5264, Los Angeles, CA 90067. For Apple® and compatible computers. Each disk numbered and guaranteed. Dealer inquiries invited.

The Great Escape Utility
Wolfenstein made better.



© 1983 by Moxie. Castle Wolfenstein is a trademark of Muse Software.
Apple is a trademark of Apple Computer, Inc.

Picture it!

Graphics processing that's easy, flexible and fun!

Let PIXIT do the difficult work for you. You don't have to be an artist or programmer, just select predrawn shapes from the "PIXIT" shape library - or create your own! The possibilities are infinite.

Create A Shape
Create or modify pre-colored or standard HI-RES shapes using simple keystroke commands.

Shape Table Editor
Combine up to 128 shapes in one table. Add or delete shapes anywhere in table.

Font Library
A variety of sizes and styles of upper and lower case text fonts.

PIXIT Shape Library
A convenient selection of pre-drawn shapes, including: Education, business, family fun, arcade, communication, space, safety, 3-D geometrics, cartoon characters, electronic symbols, music and textures.

User Shape Library
Build your own library of shapes.

Picture Editor
Create a picture using mixed text and graphics, circles and lines, colorfill, and shape tables. Print the picture, save it to disk for use in other programs or for future editing.



Applications
Animation, charts and graphs, program development, slide shows, program titles, education, games

No programming skills needed.

Works like a word processor for Applesoft shape tables.

No additional hardware required.

PIXIT *requires a 48K Apple II, Apple II + or Apple //e with ROM Applesoft and DOS 3.3*

So whether you've just started, or you're a seasoned HI-RES hacker, you'll appreciate the unmatched power and simplicity of PIXIT... and its price.

But that's not all. PIXIT was designed with the classroom in mind. Which means extensive product testing and a professionally developed users guide. Simple menus, a help screen, and friendly documentation make this a productive tool for home, education, business and the arts.

Apple is a registered trademark of Apple Computer, Inc.

Pictured at left, Mike Darooge, Author.

$49.95 at your local software store or direct from BAUDVILLE.
Visa and Master Charge accepted, Michigan residents add 4% sales tax.

BAUDVILLE, 1001 Medical Park Dr. S.E.
Grand Rapids, Michigan 49506 Phone (616) 957-3036

BAUDVILLE T.M.


THE PUBLIC
OF CPIM

DOMAIN SOFTWARE

BY C. J. THOMPSON

It all started with the Microsoft SoftCard. This Z-80-based card was the first of what has since become an avalanche of coprocessors for the Apple II. You can now buy 6809 coprocessors, 68000 coprocessors, and 8088 coprocessors. All are lots of fun, but it's reasonable to argue that none will add more capability to your Apple than one of the Z-80 boards.

Why does the Z-80 coprocessor have so much to offer Apple owners? Because there is now an enormous collection of Z-80- and 8080-based CP/M software that can run on your versatile Apple. Because the world was well populated with Z-80 and 8080 microcomputers running with the CP/M operating system years before the Apple, Pet, and TRS-80 came along, CP/M (read CP/M-80, not CP/M-86) software has had that much more time to accumulate and mature.

The availability of excellent commercial CP/M software is well known, as are the high prices this software commands. What's less well known is that a lot of high-quality public-domain CP/M software is also available, at

Photography by Bill Fitzgerald



Microsoft SoftCard systems introduce your Apple to thousands of new programs.

More powerful Apples. When you plug a SoftCard™ system into the Apple® II, II Plus, or IIe, you're adding the ability to run thousands of CP/M®-80-based programs. Word processing, data-base management, analysis and forecasting programs—SoftCard gives your Apple access to thousands of software tools for use in your business or home.

Premium capabilities. Apple II or II Plus owners who want even more can add the Premium System. In addition to CP/M-80, it provides an 80-column upper-and-lower case video card and a 16K RAMCard™. Apple IIe owners can have CP/M-80, 80-column video, and 64K of RAM on a single card—the Premium SoftCard IIe.

Two computers in one. Any of these systems turn your Apple into two computers. One that runs Apple software and another that runs CP/M-80. Which means you'll double the utility of your computer.

Complete solutions. The SoftCard, Premium System, and Premium SoftCard IIe have everything you need. Easy-to-install circuit boards. The CP/M-80 operating system. Microsoft® BASIC. And the utilities you need to manage CP/M-80 files.

Why Microsoft? Microsoft was the first microcomputer software manufacturer. The very first. Today, Microsoft software is running on several million computers, worldwide. With a reputation for dependability and consistent product enhancement.

Ask your dealer. Ask about the superior application programs the SoftCard and Premium System make available to your Apple—high quality programs for almost every area of home, business and professional use. Then ask for a demonstration of the complete SoftCard, Premium System, or SoftCard IIe. And introduce your system to some of those thousands of new programs.

BETTER TOOLS FOR MICROCOMPUTERS

MICROSOFT™

MICROSOFT CORPORATION
10700 NORTHUP WAY
BELLEVUE, WASHINGTON 98004

Microsoft and the Microsoft logo are registered trademarks, and SoftCard and RAMCard are trademarks of Microsoft Corporation.

nominal cost. You aren't going to uncover a *WordStar* or *dBase* equivalent in the public domain, but you will find some less sophisticated but still reliable text processors and some excellent utility programs to augment the few that are provided with the SoftCard.

Distributed nationally by two CP/M user groups, the CP/MUG and SIG/M, this public-domain software is supplied to other clubs and user groups around the country; these organizations in turn distribute the software to their members. The bad news for Apple users is that national distribution is made only on 8-inch disks and NorthStar-formatted 5¼-inch floppy disks. The good news is that several local clubs have transferred some of the better programs to Apple-formatted disks. In addition, some have placed public-domain files on remote bulletin board systems (RBBSs) so that anyone who has a modem and appropriate software may download them.

Description of the Utilities. To get a flavor of some of the tasty treats in the CP/M public domain, let's run through the capabilities of a dozen or so utilities that have proven useful and reliable. The majority of these utilities can be used on an Apple equipped with any of the Z-80 cards, not just the SoftCard. But some of these utilities have been modified to deal specifically with the Apple/SoftCard environment. Consequently, they expect to find certain data or routines in certain locations, as they are on the SoftCard. But since the software used with other Z-80 boards is different, when the utility goes to access this information or code, it won't be there. This can mean anything from erroneous output to wiping out your system, so it's important to copy any disk you're going to be working with. That way, you won't run the risk of damaging anything you can't replace.

Table 1 contains a list of some of the best utilities for use in the Apple II/Z-80 computer. The one ASM file shown in table 1 must be customized to your needs, which requires your reassembling this source file. Utilities that do not require customization are shown in COM file form only.

CAT.COM/FMAP.COM/UCAT.COM. The first file in table 1, CAT.COM, along with FMAP.COM and UCAT.COM, comprises a master disk cataloguing system that enables you to catalog the files on all your CP/M disks. It's then possible to search that master catalog by ambiguous or unambiguous file name, or by ambiguous or unambiguous disk name. This system was created by Ward Christensen, who also originated the DU disk utility system that we'll look at a little later.

This disk cataloguing system requires that you assign each disk a label, not unlike a CP/M file name, consisting of an eight-character name plus a three-character extension. This disk-name system allows you to retrieve such file catalogs as, for instance, all directly executable game files, through the use of an ambiguous file reference such as:

```
CAT *.COM GAMES.*
```

Or, you could find all of your assembler source files on utility programs using a catalog reference such as:

```
CAT *.ASM UTILITY.*
```

Name	Function
CAT.COM	Part of disk cataloguing system
CLEANUP.COM	Selective erase of disk files
COMPARE.COM	Compare two files
DISPLAY.COM	Page through text files
DU.COM	Disk utility with sequential sectoring
DUPUSR.COM	Duplicate directory entry under any user
FINDBAD.COM	Find and lock out bad disk sectors
FMAP.COM	File map and part of cataloguing system
GOTO.ASM	Hop to any drive/user area by
GOTO.COM	area labels of your choice
SAP.COM	Sort and pack directory (does work)
SD.COM	Improved super directory with
SD.DOC	all drive, all user options
TED.COM	Line-oriented text editor
TURNKEY.COM	Executes commands upon cold boot
UCAT.COM	Part of disk cataloguing system
UNERA.COM	Unerase a file (if it's still there)
ZCPR.COM	New CCP or CP/M with several new
ZCPR.DOC	built-in commands and four-level
ZCPR.HLP	hierarchy command-file search

Table 1. CP/M utilities for the Apple/Z-80 system.

If you take the time to work out an appropriate disk-labeling convention to suit your needs, it's a very handy system.

CLEANUP.COM. CLEANUP.COM is a simple utility for deleting disk files without having to enter any file names. This utility presents one file name at a time from a designated disk and offers you the option to delete that file with a single keystroke or to skip to the next file name. Besides providing a quick way to expunge unwanted files from a disk, CLEANUP.COM can also be used to delete directory entries that include nonprinting characters. There are several programs (SAP, described presently, is one) that create unwanted directory entries consisting, in part or totally, of nonprinting characters. It's impossible to delete these files with the ERA command unless you examine a hex dump of the directory to identify the embedded control characters. And then sometimes it's still impossible.

COMPARE.COM. This utility compares any two disk files to determine whether they are identical. If the files differ, COMPARE.COM informs you of the first nonidentical byte pair in the two files. This utility helps determine whether your local sources of public-domain software contain identical files under different file names.

DISPLAY.COM. DISPLAY.COM is basically a replacement for the built-in CP/M command, TYPE. When this utility is applied to a text file, that file scrolls onto the monitor one twenty-two-line page at a time. Pressing return displays the next twenty-two-line page. At the end of any page, you can enter a command like 5L or −3P to display text forward five lines or back three pages from the currently displayed page.

DU.COM (Current Version Is v77). There are many versions of Ward Christensen's disk access utility, DU.COM, among the various public-domain libraries, but only v75 and later versions seem to operate correctly in the Z-80 Apple environment. With DU.COM, you can locate disk sectors associated with any file, review the contents of any sector in hex and/or ASCII, and modify the file, byte by byte, if you wish. These are capabilities common to all decent disk access utilities. But DU goes a little farther than most in total capability and flexibility. First you can access the disk by specifying the group (or block) number, or by using a track/sector number combination. And there is an ASCII string search command with which you can find a file name in the directory or any other character string of interest.

Another aid to finding a sector of interest is a command that dumps a map of all the group allocations for each file. The same command, when executed with a group number as a parameter, quickly returns the name of the file that occupies that group.

Once having located a sector of interest, you may display the sector contents in hex, ASCII, or both. The plus and minus keys allow you to advance to the next logical sector or retreat to the previous logical sector. Commands can be concatenated and set to be repeated a specified number of times (or until interrupted). A single command line, then, can do such things as display the current sector, pause, access the next sector, and then repeat these three actions until you stop it. This is very handy for scanning through a disk when you are not quite sure what it is that you are seeking (we all do that—don't we?).

Finally, while this utility is command-driven, a handy command reminder menu can be displayed at any time via a single keystroke. All in all, DU.COM is a very compact, flexible, and useful utility.

DUPUSR.COM. DUPUSR.COM duplicates a directory entry under a different user number on the same disk or hard disk volume. Why is this useful? Well, if you're running standard density 5¼-inch floppies, it probably isn't. If, however, you ever go to high-capacity floppy drives or to a hard disk, you'll discover that directories can get very large if you keep all of your files in a single user area. If you do organize your files into multiple-user areas, you'll have some files you'll want to be able to run from any user area (your text editor, or your special directory utility, for example). Since you cannot (under garden-variety CP/M, but see ZCPR discussion later) execute a command file that resides in one user area while you are logged into another user area, without DUPUSR you'd have to store your multiple-use files in each user area in which you might want to use them. DUPUSR allows you to replicate the directory entry in each of those user areas without taking up additional disk space for the file itself. Be aware, though, that modifying the directory can cause disk problems.

FINDBAD.COM. FINDBAD.COM performs a nondestructive test of your disk media and locks out any sectors that are found to be bad.

GOTO.ASM/GOTO.COM. The next utility, GOTO.COM, is a

neat way to find your way among the various user areas that you may have defined on your disk system. For example, if you've assigned the label RBBS to user area 6 on drive C:, then the command

```
GOTO RBBS
```

will log you on to drive C:, user 6. GOTO saves you from having to remember each user area assignment in your disk organization structure. Table 2 shows some example responses to the three forms of the GOTO command. Naturally, you'll need the ASM file so that you can reassemble it to your own user assignments and labels.

GOTO.COM can be a very useful utility, especially if several users are sharing one computer. With it, you can label areas for individual users so that they'll be able to find their files easily and not stumble into yours by mistake.

SAP.COM. SAP is an acronym for "sort and purge," and that accurately describes what this utility does. By invoking a command like SAP B:, you can purge the drive B: disk directory of any zero-length files and sort the remaining file names alphabetically. Alphabetization makes directories easier to read when the CP/M intrinsic command DIR is being used. If you switch from DIR to SD (see the next utility description), then an alphabetized disk directory isn't necessary.

SAP has one unfortunate side effect. It creates a false directory entry consisting of nonprinting control characters on your disk. You may not notice it with the DIR command, but it will be quite evident if you execute a STAT *.* command. The nonprinting file name can be deleted with CLEANUP.COM.

SD.ASM/SD.COM. This utility is a replacement for the built-in function DIR. SD.COM displays the directory file names to the screen four across alphabetically, with each file size shown in kilobytes. The number of directory entries and the used and unused file space are summarized at the bottom of the directory listing.

Using SD.COM, you can "find" particular files or directory categories by means of standard CP/M ambiguous file name conventions. For example, SD d*.COM finds only COM files that begin with D. Options are provided to write the directory to a disk file or to the LST: device (that's CP/M talk for printer), rather than to the screen.

The more recent versions of SD.COM also have "all-drives" and "all-user" options. That means if you lose track of some file (or files), you can invoke the command *SD [afn] $A D* and SD will search all drives (or all on-line hard disk volumes), as well as all user areas, for the

```
D1>GOTO
Available sections are:

SYS       ASM   C     DBASE   DOC   FLOP1   FLOP2
FORTRAN   MP    QC    RBBS    SC    WP      WS_HOME

Type "GOTO [section-name]" or
     "GOTO ?" for definition of sections.
D1>GOTO ?

Available sections are:

SYS . . . . . * * System disk * *
ASM . . . . . Assembler system area
C . . . . . "C" system area
DBASE . . . . . dBase II system area
DOC . . . . . Documentation file area
FLOP1 . . . . . Floppy drive E:
FLOP2 . . . . . Floppy Drive F:
FORTRAN . . . . . Fortran system area
MP . . . . . Multiplan system area
QC . . . . . QuickCode system area
RBBS . . . . . Remote bulletin board area
SC . . . . . SuperCalc system area
WP . . . . . Word processing system area
WS-HOME . . . . . WordStar home file area

D1 >GOTO RBBS
C6 >
```

Table 2. Sample operation of GOTO.COM.

PROFESSIONAL COMPUTER STORE

THE ANSWER



Winchester Disk Systems for the APPLE III COMPUTER



MEDICAL BILLING
DENTAL BILLING
BUSINESS SOFTWARE

AUTHORIZED DEALER FOR

apple computer

CORVUS SYSTEMS

VISA & MASTERCARD ORDERS ACCEPTED

213-790-9052

650 FOOTHILL BLVD.
LA CANADA, CA 91011

specified ambiguous file name. By using the A (all-user) and D (all-drives) options separately, you can catalog all user areas on one drive or one user area on all drives. A useful directory program even in the standard 5¼ floppy environment, SD.COM is almost indispensable in the large-capacity disk environment.

TED.COM. What a lousy text editor ED.COM is. Unless you've already moved on to *WordStar*, you'll welcome TED.COM to replace ED.COM. For a freebie text editor, TED.COM is very good. It's a line-oriented editor, with a nice, direct substitution command of the form:

```
s/old string/new string/[g]
```

where [g] is the global replacement indicator. Other commands include APPEND (to current line), DELETE (lines), INSERT (line), COPY, LOCATE, MOVE, and PRINT line. One of the nicest and most unexpected features is the instruction request command, which brings command reminders up on-screen. This feature is invoked by entering a question mark as the first character on a line, followed by the first letter of the command in question.

TURNKEY.COM. TURNKEY, which has been placed in the public domain by Microsoft, enables you to execute intrinsic CP/M commands or programs automatically upon cold boot. This is analogous to the hello program capability in Apple DOS. With TURNKEY, you can even run a program on another disk, as long as that disk is present in the drive you specify in the TURNKEY command.

Here are some example commands showing how TURNKEY is used:

```
TURNKEY STAT B:*.*
TURNKEY MBASIC CONFIGIO
TURNKEY DIR
```

Setting up a turnkey disk requires that you have TURNKEY.COM on the disk. You then must issue any logical TURNKEY command of the nature defined above. After the command has successfully been executed, that disk will perform your TURNKEY command the next time you use that disk to boot your system.

The TURNKEY.COM program dump is shown here:

TURNKEY.COM

```
0100  2A 01 00 2E 1E 11 39 01   01 0F 00 ED B0 CD 39 01
0110  0E 1A CD 3C 01 01 48 01   CD 3F 01 CD 42 01 06 00
0120  11 4F 01 21 80 00 7E B7   12 28 0B 4F 3D 12 FE 78
0130  D0 13 23 23 ED B0 0C 18   0C E5 E5 E5 E5 E5 E5 E5
```

To enter the TURNKEY program, execute the DDT utility that came with your SoftCard. When you see DDT's prompt (a minus sign), enter *S100*. When DDT returns the address 100, enter all the hex byte values from the program dump above, following each byte with a carriage return. After entering the final value (and the return), enter a period, followed by a return, to get the DDT prompt back. Then hit control-C to get back to the CP/M command mode where you can issue a save command to store your TURNKEY program to disk. That command should look like this:

```
SAVE 1 TURNKEY.COM
```

(Note: TURNKEY.COM does not work with CP/M versions prior to 2.20B.)

UNERA.COM. Here's a little utility you'll probably never need. It can be used to unerase a file you just erased inadvertently. It's unlikely that you'd ever do such a thing, but it could happen (it has already happened to everyone else but you!). And, of course, it only works if you haven't saved new files since the unfortunate ERA occurred.

ZCPR.COM. The last program file mentioned in table 1 is ZCPR.COM. This is not really a utility but, rather, a modification to your CP/M Console Command Processor, better known as the CCP. After running ZCPR on your CP/M boot disk (or the boot volume on your hard disk), you have an improved and extended set of CCP commands. For instance, there's an improved TYPE command that can be used to display text files one screen at a time, an improved ERA command that shows you on-screen exactly which files you just erased with your ERA command, and several new commands, including LIST, which sends a text file out to your printer.

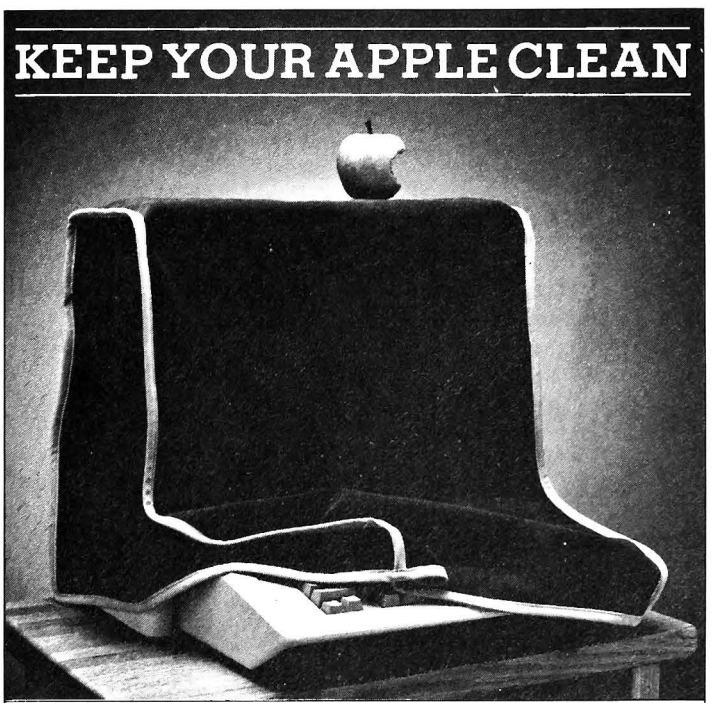
If you're working in a large-capacity disk environment (floppies or hard disk), the most important feature of ZCPR is its command search hierarchy. This feature allows you to execute command files on drives and from user areas *other* than the one onto which you are logged, and *without* specifying the drive/user area containing the file. Now that's handy in the big disk world. It means that you can put all of your system utilities (SD.COM, STAT.COM, GBASIC.COM, and so on) in one disk/user area and invoke those commands from any user area on any drive or hard disk volume. In the standard versions of ZCPR, a command is checked against potential sources according to the following command hierarchy:

(1) resident ZCPR/CCP commands
(2) COM file on a current user number on the current drive
(3) COM file on a default user number on the current drive
(4) COM file on current user on drive A:
(5) COM file on the default user number on drive A:

This modification adds one more place to look for the command file, drive A:, on the current user number. This allows you to log on to your data disk (or hard-disk data volume) and invoke command files from the same user area on drive A: without specifying the drive letter.

Program Availability. These are not the only good programs to be found in the wonderful world of public domain, but they are a good beginning in the Apple/SoftCard arena. You may be able to find copies of them through your local CP/M computer club or on your local RBBS. If you can handle 8-inch format, you can deal directly with the CP/MUG or SIG/M libraries at the addresses that follow. ■

CP/M Public Domain Libraries. *Information regarding the CP/MUG library is available from the CP/M Users Group, 1651 Third Avenue, New York, NY 10028. Information regarding the SIG/M library is available from SIG/M, Box 97, Iselin, NJ 08830.*



DUST IS 90% OF ALL MAINTENANCE PROBLEMS.

Washable covers to fit the Apple II, IIe and Apple III. Attractive chocolate brown suede cloth with beige trim or soft beige with brown trim. Monitor and keyboard cover $25.00, single disc drive cover $8.00 and dual disc drive cover $10.00. California residents add sales tax. Please allow 6 weeks for delivery.

Covers by Babette, 42 Caledonia St., Sausalito, CA 94965
(415) 332-6232

☐ MasterCard ☐ Bank of America ☐ Check ☐ Money Order

Card # _____ exp. date _____ Signature _____

Print Name _____

Address _____ City _____ State _____ Zip _____

Teach yourself software in minutes. Not hours.

Insert an ATI training disk, and presto! Three minutes later, you're practicing usable skills. Within an hour, you're proficient.

Even if you've never touched a computer before.

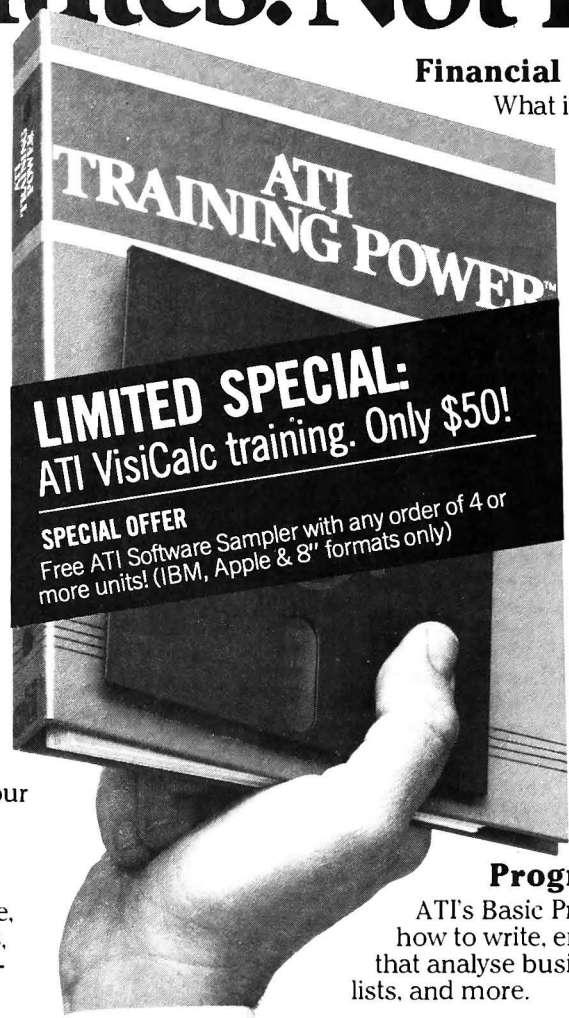
ATI's self-prompting disk simulates the actual software on the screen of your personal computer. If you have a question later, the helpful handbook is set up to give you the answer in 15 seconds.

ATI Training Power is faster because it's Performance Based. Instead of taking time teaching you how a program works, ATI shows you how to put it to work. Right away.

ATI's unique Performance-Based Training is widely used by many Fortune 500 companies, such as IBM, DEC, Xerox, NEC, and Toshiba. Not to mention thousands of small businesses.

ATI's training programs operate in virtually every business oriented microcomputer.

Match ATI's selections with your software library, and order today.



Word Processing

ATI's Word Processing Series teaches you how to create, edit, move, and print text with popular programs, fast! A must for executives and secretaries alike.

Financial Planning

What if you could learn to do a complete "what if" spreadsheet analysis in less than an hour? ATI's Financial Planning Series teaches you this and more. Turn software packages into powerful management tools, quickly.

Database Management

To get the most out of your data base, learn to use these programs fast, with ATI's Database Management Series.

Operating Systems

Learn to prepare, monitor, maintain, and trouble-shoot your own system like a pro, with ATI's Operating Systems Series.

Accounting

Now it's easy to put your accounting on computer, with an outstanding software package and ATI Training Power to get you (and your bookkeeper) up to speed, rapidly and cost-effectively.

Programming

ATI's Basic Programming Series teaches you how to write, enter, debug, and use programs that analyse business expenses, organize mailing lists, and more.

Take this ad to your dealer. Ask if you qualify for your FREE ATI SOFTWARE SAMPLER (IBM, Apple & 8" formats).

Please rush me ATI Training Power™ programs, at $75 each, for this software:

Integrated Software
- ☐ **Lotus 1-2-3 (NEW!) (Available August 15th)**

Database Management
- ☐ **dBASE II-vol 1&2**
- ☐ **EasyFiler**

Word Processing
- ☐ **WordStar-vol 1&2**
- ☐ **EasyWriter II**
- ☐ **Perfect Writer**
- ☐ **Spellbinder**
- ☐ **Benchmark**

Financial Planning
- ☐ **Multiplan**
- ☐ **SuperCalc**
- ☐ **VisiCalc ($50) Limited offer**
- ☐ **Perfect Calc**
- ☐ **EasyPlanner**
- ☐ **Microplan**

Operating Systems
- ☐ **PC DOS**
- ☐ **MS DOS**
- ☐ **CP/M**

Programming
- ☐ **BASIC**
- ☐ **APPLESOFT BASIC (Available August 15th)**

Accounting
- ☐ **BPI Gen. Acct.**
- ☐ **Peachtree General Ledger***
- ☐ **Peachtree Accounts Receivable***
- ☐ **Peachtree Accounts Payable***

*PC(MS) DOS formats only

Enclosed is $75 each plus $2.50 shipping, VisiCalc Trng $50 (CA add 6.5%)

Name _____ Phone ( ) _____

Street _____

City _____ State _____ Zip _____

My computer uses:
- ☐ **PC DOS** ☐ **CP/M-86** ☐ **XENIX**
- ☐ **MS DOS** ☐ **APPLE II CP/M**
- ☐ **CP/M** ☐ **APPLE IIe 80 col.**

My computer brand is _____

Mail order form to:
Software Training Company
A Division of ATI
3770 Highland Avenue, Suite 202C,
Manhattan Beach, CA 90266

Dealers: call for sales kit (213) 546-4725

FOR RUSH ORDERS CALL: (213) 546-5579

VISA MASTERCARD

ATI Money Back Guarantee
If you're not completely satisfied with how fast you learn with ATI Interactive Training Programs, simply return it within 3 days for full purchase refund.

ATI Training Power™

The following names are trademarks of the following companies: ATI Training Power, of American Training International; CP/M, of Digital Research; PC-DOS, of IBM; WordStar, of Micropro; Benchmark, of Metasoft; EasyWriter, EasyFiler, and EasyPlanner, of Information Unlimited Software; MS-DOS and Multiplan, of Microsoft; dBASE II, of Ashton-Tate; SuperCalc, of Sorcim; VisiCalc, of VisiCorp; Microplan, of Chang Laboratories; Peach Calc, of Peachtree Software; ATI Training Power, Software Sampler of American Training International; Spellbinder of Lexisoft; Perfect Writer and Perfect Calc of Perfect Software; Lotus of Lotus. ©1983 American Training International



Kids have it rough with moms always screaming at them to clean up their rooms. Dads are a little more diplomatic about it; they say things like, "A place for everything, and everything in its place." Unfortunately, that's not always true. Some things just don't have a place; magazines you haven't finished reading, clothes you wore yesterday that aren't dirty yet, purses, and everything that doesn't belong on the desk all belong on the bed.

Ideally—parents often seem to live in an ideal world when you're a kid—there should be a place for everything, and each thing should be there. The reasons for such an unfollowable rule are because it supposedly makes things easier to find when you need them (never the case), and it looks nice. The boss at work will never tell his underlings to clean up their desks. Instead, he'll say, "Simpson, a cluttered desk represents a cluttered mind" (what does an empty desk represent?).

A Clean Disk Is a Happy Disk. In the world of microcomputers, most of us are free from our haranguing parents and iron-fisted bosses, but it's still recommended that we keep our things nice and tidy—not just to keep someone else happy, but because it really is a good idea.

By tidiness, we're not talking about scrubbing the outer case of the Apple or dusting off the keyboard. One of the most important places to keep a neat house is on your disks. The first and most obvious way to take care of disks is to make sure they don't become physically damaged.

When the great disk gods put floppy disks in the hands of humans, they said, "Always remember and never disobey rule number zero:

"0. Thou shalt always keep disks away from magnetic fields like magnets, color television sets, and electric motors."

And then they said, "Always remember and never disobey rule number one:

"1. If thou blow it on rule number zero, don't come crying to us."

In other words, if you mess up a disk by leaving it by the television set or the electric fan, it's your own fault, and you've probably learned a valuable lesson.

The disk gods knew what they were talking about. Remember that the disks the Apple records data on are made of Mylar (a material similar to plastic), but they're coated with a substance that is highly sensitive to magnetic fields. If it were possible to see that substance, it would look like a whole bunch of tiny bar magnets. When the computer saves information to disk, it turns all those magnets in various directions to represent the information you want to save.

Thus, when magnetic fields come along and start messing with those little bar magnets, all the data you spent hours creating is destroyed. To illustrate, suppose you keep your financial records in a ledger book. To have a magnet in close proximity to your floppy disk would be like pouring water over the pages of your book. All the ink runs (scream here), making everything unintelligible. Back to square one.

Another good rule to keep in mind is never to touch the exposed oval area of a disk. Since that's where the disk drive actually reads and writes information, it's a very sensitive area. The back (under) side of a disk is the side where the Apple disk drive records information, so it's extremely important to take care of that side.

Though your hands may look clean, they can still have enough dirt, oil, and other gunk on them to mess up a disk. A well-placed fingerprint on a floppy is like spilling an ink bottle across your ledger book. Even if it covers up just one number on the page, it's enough to throw your whole ledger sheet off, making you a prime target for the Internal Revenue Service. Back to square one, again.

Finally, let's try to keep disks out of places that are hot (in the sun, on top of the monitor, in the oven). Mylar is a very durable synthetic, but like plastic it's also very sensitive to heat. If your disk happens to warp, melt, or otherwise change shape, that's like setting your ledger book on fire.

In short, disks are delicate little creatures and should be treated as such. Now that we have acquired such good habits in handling disks, let's look a little closer and learn how to keep things orderly on the disk, where things aren't so visible.

Son of Init Hello. A few months ago, we learned the bare bones about how to initialize a disk. All that was required was to boot a disk that has DOS on it, take the disk out, insert a new disk, and type *init Hello*. In many cases, that is indeed all you need to do. But sometimes this isn't the best way to do it.

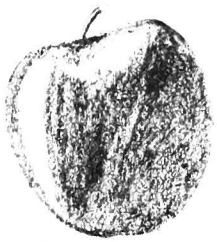
If you booted the Apple System Master disk to load DOS into the Apple and then initialized a

*DOUBLES DISKETTE STORAGE SPACE!!
REDUCE YOUR DISKETTE COSTS BY 50%



*The back of your 5¼" single sided diskette has recording medium. All you need is an ACCURATELY placed *"write enable notch"* to use it, on many systems. NIBBLE NOTCH™ is a precision engineered tool designed for this purpose.

IT'S A MONEY SAVER!
IMMEDIATE SHIPMENT!
ONLY $14.95
Add $1.50 Postage Handling
($4.50 Foreign)
— Florida Residents Add 5% Sales Tax —
ORDER TODAY!
SEND CHECK OR MONEY ORDER TO
NIBBLE NOTCH™
Division of Cortran International
4211 N.W. 75th Terrace, Dept. 107
Lauderhill, Florida 33319
PAT PEND



A is for ANY

B is for BEGINNER

C is for CAN

...PROGRAM THEIR APPLE® MICROCOMPUTER

Yes, even if you are a beginner, you can learn how to program your Apple®. The **ABC's of Programming Your Apple®** is now available, and it is the **first interactive self instruction system** that respects the novice.

How to write your own programs is explained, step-by-step, in simple language. Each chapter in the book has clearly stated goals built upon the previous chapter. You learn precisely what you need to learn. And, you control the pace.

PLUS two interactive video **Diskette Tutors** function as your personal electronic blackboard. They assist you with Features like:

Orientations
Helpful Hints
Explanations
Answer Keys

EXTRA — Special appendices tell you how you can use your Apple® for business applications, word processing, communications, home education and graphics. Reviews of available software are also included.

The complete beginner's programming package is available for:

$69.95

from
ABC Software, Inc.
4894 Tahiti Lane
Naples, Florida 33962
(813) 793-1980

Please specify Apple II® or Apple IIe®

MasterCard, Visa, COD (add $5.00)
Dealer inquiries are welcome.

Apple® is a trademark of Apple Computer, Inc.
ABC Software® is a trademark of ABC Software, Inc.

disk, you'll get the same hello program on your new disk as that on the System Master. When you boot your new disk, the drive will spin around for a few seconds while it loads DOS. If you have an Apple IIe or a 64K Apple II, you'll then receive a nasty beep and a *file not found* message.

An explanation is in order. Type *list 210* (IIe people, type *list 60,70*) to see what's going on. If your Apple has at least 64K, those lines in the program tell it to load *Intbasic*, an assembly language program that interprets Integer Basic.

If you followed the simple initialization process we just described, you shouldn't have *Intbasic* on your newly initialized disk. That's why you get the file not found message; the Apple looks at line 210 (or 60 and 70), which tells it to load a file, but it can't find a file by that name on the disk. There are two solutions to this problem. The first would be to change the program so it doesn't try to load a file that's not on the disk. The second way would be to put *Intbasic* on your new disk so it can be loaded into memory. Let's take a look at each possibility.

Integer—Who Needs It, Anyway? If you're formatting a disk for the sole purpose of storing data on it, you probably won't need a hello program as complex as the one on the System Master. That one looks to see if you have 64K; if you do, it tries to load Integer Basic into machines that have Applesoft built in, or it tries to load Applesoft if you have Integer built in. In fact, most data disks don't need a hello program at all. It's just that when you load DOS into memory, the only way to do it is with a disk that already has DOS on it, and many times those disks have a hello program of some sort on them.

Two reasons for getting rid of a big hello program if you're formatting a data disk are that you don't need one and that it gives you more space on the disk to use for storage. Here's an alternate way of initializing a data disk.

Boot the System Master as before. Now, type *fp*, which clears memory of any Basic program. Next, type in the following very short program:

```
10
```

When you're done with all that typing, take a rest and then type *Init Hello*. This initializes the disk with that little one-line program. After it's finished formatting, catalog the disk, and you'll see a two-sector program called *Hello* on the disk. If you're dabbling in Basic, you can initialize disks with customized programs to do whatever suits your fancy. If you want, instead of initializing a disk with a program, just load DOS from a disk, type *fp*, and then initialize your disk with no program at all. The choice is yours.

Integer—I Need It! Sometimes you want your hello program to load the dialect of Basic you don't have. If your machine has Applesoft built into it and you want to program in Integer, or vice versa, you'll want that version of Basic to load into memory when your disk boots. In this case, we need to do a bit of file moving.

In order to please most of the people most of the time, we'll assume that Applesoft is the resident language in our machines. Only early vintage Apple IIs have Integer as the built-in tongue.

To prepare a disk that loads Integer (or Applesoft) when it boots is quite simple. First, just boot the System Master disk as usual and then type *init Hello*. This puts the System Master's hello program on your new disk. Then all you need to do is copy the appropriate file that gives you the desired Basic from the System Master to your new disk.

For the Apple II and II Plus, we just need to transfer the file, *Intbasic* (*Fpbasic*, if you want Applesoft); in other words, the only two files needed are *Intbasic* and *Hello*.

For the Apple IIe, we need to transfer *Intbasic* plus a file called *Loader.obj0*. The hello program on the IIe System Master will not load Integer unless both of these files are present. The same goes for Applesoft; *Fpbasic* and *Loader.obj0* are required. So for a IIe disk, three files are needed—*Hello*, *Loader.obj0*, and *Intbasic* (or *Fpbasic*). Got it?

You might have noticed that *Loader.obj0*, *Intbasic*, and *Fpbasic* are all binary files. To copy these files from one disk to another without too much perspiration, it's advisable to use the *Fid* program. Initialized disks aren't of much use unless we put things on them. And once you start putting things on disks, the chances are almost 100 percent that things will occasionally go wrong. Be prepared.

Excuses, Excuses. The Boy Scouts' motto, "Be prepared," means "Have the right equipment." Among other things, that means you should always have some answers ready in case you flub up.

Typical is the scene in which little Billy is running through the house with his arms outstretched playing Air Force Ace or something of the sort. Before long, he gets carried away and accidentally knocks over the family vase. Crash! When Mom comes home, the real fun begins.

Furious, she confronts Billy. "Who knocked over the vase Grandma gave us?" she demands, knowing well that it could have only been Billy.

Desperate to save his bottom side and television privileges, Billy searches for an answer. "An elf came in through the window and broke it."

"There aren't any windows in this room, Billy," Mom responds.

"He brought it with him."

It's not hard to see how kids can exercise their imaginations when the situation is desperate, but it's not only kids who do so. What was the last excuse you used when one of your data files became garbled or disappeared for no apparent reason? Some favorites include: There are hoodoos messing around with the disks, a gigantic magnetic force must have passed through the house, it was poltergeists, this stupid machine must have a mind of its own, and the moon must be out of line with Jupiter and Mars.

Thanks to computer hobbyists turned capitalists, there are plenty of programs on the market that can help you fix disks and files that have been damaged. What we're going to get into, though, is preventive care. That is, how to take care of things so they don't get screwed up in the first place.

If you never believed in the supernatural, you might start when you see some of the things that happen on disks. The solution isn't to hire yourself a witch doctor or exorcist but to find out why things happen and what to do in order, to prevent them from happening again. One frustrating haunting is having the computer tell you the disk is full when you're trying to save a file.

The most obvious solution is to keep track of how many sectors you have left before trying to cram more stuff on a disk. A DOS 3.3 disk has 560 sectors on it. DOS takes up three tracks (3 × 16 = 48 sectors) and the catalog takes up one track (1 × 16 = 16 sectors), so we have only 496 sectors available (560 − (48 + 16) = 496). That's a lot of sectors, but if your word processing files average about fifty sectors in length (about ten double-spaced pages), you can fit only nine or ten files on the disk.

Add 'Em Up. One way to keep track of how much of a disk is empty is to add up the number of sectors that are used and subtract that from 496. When you catalog a disk, the number that precedes the file name shows you how many sectors it occupies. Adding up the numbers in the column will give you a rough idea of how many sectors are taken, from which you can figure out how much space you have available. What it doesn't always tell you is how much space you *should* have available.

Here's what we mean. Load *Phone List* from the Sample Programs disk (System Master for non-IIe fans). Once it finishes loading, remove the disk and save *Phone List* to your freshly initialized disk. Save it as *Phone* for short. When you catalog the new disk, you'll see *Phone* taking up fifty-one sectors. Now it's play time.

To get an idea how huge the program is, list it, and you'll see that it takes about thirty seconds to list. Now type *del 200,30000*. This command deletes all the program lines from 200 to 30000. When you list the program now, you'll see that it's only a few lines long—much shorter than before. Why, it probably shouldn't take up more than a few sectors. Save this shorter version as *Phone* again.

What we've just simulated is the editing of a large file to a small one. But when you catalog the disk, you'll see that *Phone* still takes up fifty-one sectors on the disk, even though it's much smaller. This is one of those things the Apple does because it doesn't know any better. Once it marks off a certain number of sectors on the disk for a file, it keeps those sectors off limits to any other file, even if you shorten the file so that it no longer needs them.

The Disk Is Lying. This means that if you have a disk with nine fifty-sector files on it, and you edit them all down to three sectors apiece, the catalog still shows each file occupying fifty sectors, even though they really use only three. In other words, if you try to put another fifty-sector file on the disk, the computer will tell you the disk is full, even though it shouldn't be.

The solution to this is simple; we have to treat the short version of a file as a completely new file. With the small version of *Phone* still in memory, type *delete Phone*, and then *save Phone*. When we use the delete command, we're telling the Apple to remove the off-limits sign from the area where the long *Phone* used to be. Now it's legal to put stuff there. Then when we type *save Phone*, we're putting the short version on disk in its place.

When you update or change files, some programs simply save the new versions of your data right where the previous version was. In this case, if you ever shorten a data file, you'll end up with the catalog showing that the file takes up more room than it actually does, as we just finished illustrating here. To rectify this, you might want to delete the old file and save the new one on your own in order to conserve disk space. On the other hand, some programs delete your existing file before saving an updated one, taking care of this tedious process for you.

Double Security. One of the safest ways to make sure you don't lose data into oblivion is to make duplicates of your disks. This won't help in recovering data that you lose before you have a chance to save it, but it will help in case an elf comes in through the window (which he brings with him) and destroys your disks in their entirety.

Saving everything on two disks while you're working can become a hassle, so luckily there are easier ways of copying disks. A popular way of backing up disks is with the *CopyA* program on the System Master. This program takes a look at your original disk and puts all the information on the duplicate exactly as it appears on the original. Let's walk through it.

To run this program, you have to have the Applesoft program *CopyA* and the binary program *Copy.obj0* on the same disk. All you have

Imaginator.™
The word that's worth a thousand pictures.



Unlock a whole new world of three dimensional graphic imagery with Imaginator.

Now you can create, edit and manipulate 3D objects faster and easier than you ever thought possible. Without programming skills. That's what makes Imaginator software unique.

Professional applications for scientists, educators and designers are virtually without limit. Personal applications are amazing.

Travel inside a molecule. Enter rooms, pass through walls. Jet over cities. Define a new universe. All at the down-to-earth price of $129.00. See your software dealer first. Or call us direct at the number listed below. Put yourself in the picture today, with Imaginator.

Imaginator

Professional 3D Graphics Software

TOWNSEND MICROWARE
A Division of Shelter Research Institute, Inc.
P.O. Box 1200-CPort Townsend, WA 98368
(206) 385-4080

Imaginator runs on the Apple® II, II+, IIe computers
Imaginator is a Trademark of Shelter Research Institute, Inc.
Apple is a registered Trademark of Apple Computer, Inc.

Everything You Ever Wanted From Personal Computing

Faster Easier

SOLVING PROBLEMS vs READING MANUALS

The real benefits of personal computing come from putting the hardware and software to work solving your business problems and not spending hours reading through boring and tedious operating manuals.

PERSONAL COMPUTER BECOMES PERSONAL TUTOR

With Cdex Training programs you simply insert a Cdex diskette in your computer disk drive, turn on your computer, and in an instant your personal computer becomes your personal tutor.

TRAINING FOR PERSONAL COMPUTERS:

- How to use your IBM® personal computer with PC DOS — PC or XT
- How to use your IBM® personal computer with CPM86 or Concurrent CPM 86 — PC or XT
- IBM® PC communications using the IBM® PC Asynchronous Communications Program
- IBM® PC DOS 2.0
- How to use your Apple® IIe personal computer

TRAINING FOR PERSONAL COMPUTER SOFTWARE:

- Advanced Training for the Lotus™ 1-2-3 Program
- The Lotus™ 1-2-3 Program
- The MULTIPLAN™ Program
- The VisiWord™ Program
- The VisiTrend™ and VisiPlot™ Program
- The TK ! Solver Program
- The MultiMate™ Program
- The VisiCalc® Program
- The WordStar™ Program
- The SuperCalc™ and SuperCalc²™ Program
- The EasyWriter™ II Program
- The dBase II® Program
- The GS Master™ Program — Version 4

TRAINING FOR PERSONAL COMPUTER ACCOUNTING SOFTWARE:

- The ESP™ General Accounting Program
- The State of the Art® General Ledger System
- The Peachtree General Ledger System

TRAINING FOR BUSINESS PRODUCTIVITY USING PERSONAL COMPUTER SOFTWARE:

- "Managing Your Business Using Electronic Spreadsheets"
- "Making Business Decisions Using Electronic Spreadsheets"

These programs are for users of the Lotus™ 1-2-3 Program, MULTIPLAN™ Program, VisiCalc®, VisiCalc IV® or VisiCalc® Advanced version Programs or SuperCalc™ or SuperCalc²™ Programs.

COMPREHENSIVE TRAINING PROGRAMS

Each Cdex program contains at least three disks and many contain four disks. That's because Cdex Training programs are graphical, interactive, and comprehensive. They not only tell you how hardware and software work, but they allow you to operate it through simulations and hands-on exercises with the actual hardware and software.

REFERENCE GUIDE INCLUDED

In addition, each Cdex program comes with a Reference Guide that contains keyboard and/or command references for the pertinent hardware or software so that you can use it later to refresh your memory.



COMPETITIVELY PRICED

Surprisingly, given the above comprehensiveness of design and content, Cdex Training Programs are priced competitively with other computer-based training products that claim to provide training but only provide an introduction to training.

USABLE TODAY AND TOMORROW

With Cdex Training Programs you can use them today to train yourself on those features you need today and use them tomorrow to train yourself on the advanced features you need to implement sophisticated applications.

You get everything you ever wanted from personal computing. Faster and easier.

Cdex Training Programs are available for the IBM® PC or XT and IBM compatible personal computers, and the Apple II® Plus, Apple IIe and Apple III personal computers. See how effective a Cdex Training Program can be. Ask your computer dealer for a demonstration or call

(800) 982-1213

In California call (415) 964-7600.

cdex™

Cdex Corporation
5050 El Camino Real, Los Altos, CA 94022

to do is type *run CopyA*; *Copy.obj0* is loaded by *CopyA*. When the program comes on the screen, take the System Master disk out of the drive and insert the disk you want to copy. If you have two disk drives, insert the blank disk into the other drive.

At this point, you'll be asked the slot number of the drive that holds the original disk. All you have to do is type in the slot number your drive is plugged into. The default slot is 6, which means, if you just hit the return key, the program will assume that the disk is in slot 6.

Next, you're asked which drive number the original disk is in. One disk controller card can accommodate two drives (go ahead and look at it inside the Apple. There are two sets of pins marked *drive 1* and *drive 2*), so it needs to know which drive has the original in it. Here, the default is drive 1; if you hit the return key, it assumes the original to be in drive 1.

Now that it knows where your original disk is, it asks you the same slot and drive questions about the duplicate you're going to make. If you have just one disk drive, enter the same slot and drive numbers as you did for the original. If not, enter the appropriate ones. For instance, if your duplicate's drive is plugged into the same controller card, enter the same slot number as the original, and 2 for the drive number if your original is in drive 1.

Rich people who have separate controller cards for each drive will have to enter the slot number for the duplicate, which is usually in slot 5.

Now We're Ready To Rip. Once you've entered the slot and drive numbers for each disk, just follow the instructions that appear on the screen. For two-drive aristocrats, just hit the return key; the program will take care of the rest for you. It's a different story for the one-drive proletariat.

Once the copy process has begun, the two-drive people can go have a cup of tea, or eat some crumpets, or do whatever it is they do in their spare time. One-drive people, however, must sit and monitor the computer at work. Because the drive can hold only one disk at a time, the program will ask you to remove the original and insert the duplicate several times during the copy process.

The first thing *CopyA* does is read DOS from the original and initialize the duplicate. This is comparable to booting a disk, removing it, inserting a blank disk, and typing *Init Hello*. For the folks with one drive, the program stops and asks you to insert the duplicate and hit the return key. Once you do so, it begins initializing the disk.

You'll be asked to remove the duplicate and insert the original and vice versa a few times. What the computer's doing is reading a few sectors of the original, writing them on the duplicate, reading a few more sectors, writing them on the duplicate, and so on. It's sort of like siphoning the gasoline from your neighbor's car one mouthful at a time.

The two-drive copy system is faster because it doesn't have to wait for you to switch disks. It reads a few sectors and writes them immediately to the duplicate. This method is like using an electric pump to siphon your neighbor's gasoline. It's quicker, and it doesn't leave a funny aftertaste.

The whole copy procedure takes no more than a few minutes. Switching disks can get confusing, so make sure you're putting the right disk in at the right time, or the data you're attempting to copy might be lost forever. And it won't be the elves' fault. (A good precaution is to put a write-protection tab on the disk you're copying from.)

A Final Measure. With backup disks in hand, put them in a safe place away from hazards like magnetic fields and hot temperatures. If little Billy knocks them off the shelf, they won't be damaged, but if he happens to spill Bosco or drop his Wrigley's Spearmint on them, put *him* in a place with lots of magnetic fields and hot temperatures. Like inside a nuclear reactor.

Before you forget, be sure to put labels on the duplicates so you know what they're duplicates of. Do *not* write on the disk with ballpoint pen; it's better to use a felt-tip pen. Ballpoints are useful for forms in triplicate that require you to press hard when writing. That's exactly why they're not good for disks. But if some outside force compels you to use a ballpoint pen, write on the label before sticking it on the disk.

This has been just a small part of taking care of disks. Next time, we'll do a little more and start looking at the hows and whys of DOS commands and all their relatives, with lots of time left over for holiday shopping. ◨

How To Expand Your Apple®

Only Titan's Neptune™ provides Apple®IIe users with an 80-column video display and up to 192K memory —all in just one slot.

Now, Titan's exclusive Neptune Extended 80-Column Card gives you increased video display and up to 192K memory using just one slot in your Apple IIe. Designed expressly for the auxiliary slot of the IIe, the Neptune is available with 64K, 128K or 192K of RAM memory. The RAM memory can be utilized as a solid state RAM disk. Additionally, Titan's VC-EXPAND/80™ software supplied with each Neptune expands VisiCalc® up to 220K of workspace memory and provides many other VisiCalc enhancements. DOS, PASCAL and CP/M® Pseudo-Disk patches and a DOS relocation program are also included with each Neptune card.



Let us help you expand your Apple's productivity. For information on the Neptune and other Titan microcomputer products, see your computer dealer or contact: Titan Technologies, Inc., P.O. Box 8050, 3990 Varsity Dr., Ann Arbor, MI 48107; Telephone (313) 973-8422.

Sales and Marketing by The MARKETING RESOURCE GROUP, Costa Mesa, CA.

Apple is a registered trademark of Apple Computer, Inc.
VisiCalc is a registered trademark of VisiCorp, Inc.
CP/M is a registered trademark of Digital Research, Inc.
VC-EXPAND software is written by Micro Solutions, Inc.
Neptune is a trademark of Titan Technologies, Inc.

Titan TECHNOLOGIES, INC. FORMERLY SATURN SYSTEMS OF MICHIGAN



Datamost President out of mind.

At Datamost, we've got a president who knows the difference between "out of your mind" and having an "open mind."

So he's building a computer software company that knows how to get the most out of any mind.

Two years ago, when we began to publish the industry's first universally acclaimed system of computer software training books, we were told, "Datamost, you're crazy!"

So we published anyway.

Today, the hottest new software category is the computer Bookware market.

And guess whose books are the #1 best-sellers?

Yes, "crazy" Datamost.

Somehow, our craziness made good book sense. And good business sense. Because our book language is language that everyday people use when they talk everyday talk.

And Datamost talks Apple.* And we talk Atari.* And IBM.* And Commodore.* And Timex/Sinclair.* And T.I.* and more.

For every level of computer literacy. From people who know nothing. To people who know everything.

But our president wasn't satisfied. "Who says there's a limit to our craziness?" he demanded.

"I want to see the Datamost name on the freshest, brightest, most mind-stretching arcade quality home computer games the industry has ever seen."

And once again, we were told, "Datamost, you're crazy!"

But this time, we said "you're right."

So get ready. For games with original music for Apple, Atari, Commodore and IBM home computers.

Coming to you. From Datamost.

Where the most open mind is alive. And well.

And crazy. Like a fox.

DATAMOST™

The most out of our minds.™

*Apple is a trademark of Apple Computers. *Atari is a trademark of Atari Computers. *Commodore is a trademark of Commodore Business Machines, Inc. *Timex/Sinclair is a trademark of Timex, Inc. *IBM is a trademark of International Business Machines, Corp. *T.I. is a trademark of Texas Instruments.

Datamost, Inc. 8943 Fullbright Ave., Chatsworth, CA 91311. (213) 709-1202

CUT TAXES • CONTROL EXPENSES • SAVE ON ACCOUNTING

Money Street™

CHECKBOOK FINANCIAL SYSTEM

For Apple® II, II+, IIe, III emulation, and Apple look-alikes - 48K DOS 3.3

TAX WHACKER!

The picture below shows my 1983 medical expenses exactly as printed by Money Street. Before year end, I'll use this report to plan tax strategy. Maybe I'll save on income taxes; maybe I won't. At least I get the chance to plan before the year is out.

I'm Bob Payne, co-creator of Money Street, a new checkbook financial system for the Apple. This program saves me money because it doesn't miss a single deduction or tax credit.

But Money Street does more than cut taxes. Look at the picture again. Notice emphasized type face Money Street can coax from my Epson (and many other dot matrix printers). After I'm done with Money Street, I leave my printer "on" and use this type face with my word processor. It's a small extra, but very handy.

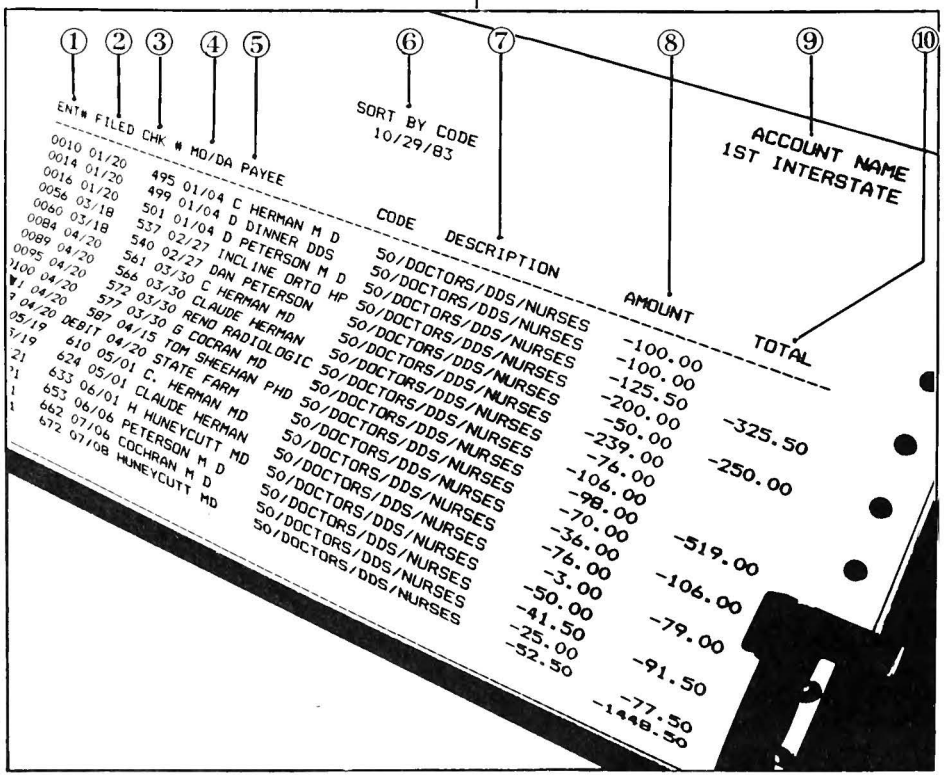
Show us a picture. People often ask to see Money Street's reports. They say, "Before I buy, I want to see what it does." We agree, so we've numbered the photo to explain things.

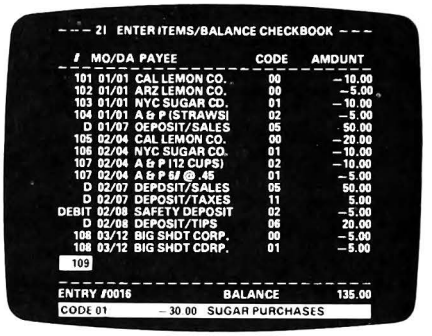
Money Street prints 15 different reports. No set-up is required, just go to the report menu and select which report you want. See it on-screen or print it. Money Street's start-up-to-print-time is less than 20 seconds. Shown below is the "Sort by Code" report:

1. Each check, debit, and deposit gets its own entry number, an automatic feature of the program. You can get a printed record of all checkbook entires any time: a chronological history of your checkbook including your running balance each step of the way. A supurb audit tool!
2. Use the "Filed Field" to locate cancelled checks because it shows the statement date each check cleared. This feature lets you keep all cancelled checks with their original bank statement just as most CPAs advise.
3. Sort and print by check number to create a check register.
4. You can sort by date to see monthly income, expenses, or net amounts. Print totals or details; just press one key.
5. Not only can you sort by payee, you can sort on a "wildcard" option too. Many Money Street owners use this option to sort tax flag items.
6. All print-outs show the report title plus today's Date. Not shown in photo, but included on all reports, is a spot for your name.
7. You get 100 user-defined codes. To set up codes, just type them in. Add, Delete, or change codes any time without affecting data.

   You can code income items, expenses, or mix both for net amounts, for example, to see profits by categories.

   Sort by individual codes, groups of codes, or entire file. Year-to-date totals are always available with the press of a single key.
8. Yes, you can even sort by amount. It's great for tracking down errors or seeing income or spending patterns.
9. Every Money Street report includes your checking account name.
10. Many reports also include detailed sub-totals, in this case the monthly sub-totals for code 50. Thus you get most of the details needed for budgeting, posting, or financial analysis.





How it works. On your computer screen, you create a facsimile of your checkbook. You see 17 items per screen, and can scroll for more. As the computer balances your checking account, you give each check or deposit its own category code.

PROGRAM FEATURES

• 100 user-defined accounts • On screen chart of accounts • Account sub totals, grand totals • Handles unlimited checking accounts • Three minute year-end rollover • Credit card accounting • Full editing, even after entry • Check search and scan screen • Help screen • Wildcard searches

PROGRAM LIMITS

• 2400 Checks per data disk • 200 uncleared items • Scan speed: 6 per second • Amount limit: $999,999.99 • 100 account categories

DOES MANY JOBS

• Finds tax deductions • Single entry accounting • Job costing • Budgets and estimates • Mini accounts receivable • Mini inventory • Trecks personel loans • Real estate rentals • Stock purchases/sales • Increases "float"

CHECKING ACCOUNT MANAGER

• Prints trial reconciliation • Balances checkbook and statement • Creates cancelled check file • Prints detailed audit trail • Includes check register • Prints checkbook "history" • Captures monthly income • Easy to use

15 Ready-to-print reports!

• Monthly code totals • To-date code totals • Sort by amount • List code dictionery • Sort by payee • List deposits • List uncleared checks • List uncleared deposits • List all entries • Sort by date cleared • Print check registry • Print selected month • Print selected code • List code totals • List monthly totals

Money back no matter what. Why not give us a try? If you aren't delighted, we'll give you a full refund on any mail order purchase from us.

Includes tutorial and program map. Money Street includes Program Map, complete documentation, on-screen demo, plus tutorial. For Apple® II, II+, IIe, III emulation, and Apple look-alikes. Requires 3.3 DOS, 48K. Money Street works with one drive, but two are preferred. It's also okay without a printer, but you'll miss a few reports. Master Charge, Visa, COD okay. Add $2.50 on all orders for postage and packing. To order or get additional information: call 24 hours and leave your name with our answering machine.

The program is copy protected. We sell back-up disks for $10. We also offer a special utility disk that makes two back-up copies, makes quick copies of data disks, and allows fast sorts of selected months or code categories. Price is $25.

Computer Tax Service
P.O. Box 7915
Incline Village, NV 89450
(702) 832-1001

$99.95

Money Street is a Trade Mark of Bullseye Software. Apple is a registered trade mark of Apple computers, Inc.

Dealers: Write or call for price list.

EVERYONE'S GUIDE TO ASSEMBLY LANGUAGE



BY JOCK ROOT

The Magnificent Ampersands

You have probably heard of the & command in Applesoft (also called the "ampersand vector" or the "and hook"), but you may not know what it is; the Apple reference manuals don't explain it very clearly. That's unfortunate, because it can be a very handy feature of the system if you know how to use it. It's a kind of "back door" entrance into assembly language: a way of connecting assembly language routines into a Basic program without using call statements.

It works like this: Whenever the Applesoft interpreter finds an & character in a line of Basic, it jumps to a certain address in memory. That address normally contains an instruction that causes a return to the calling program, so nothing seems to happen, but that only means that the & hook is not connected to anything. You can change that and connect the & hook to a routine of your own. That way, whenever the & character (known as an ampersand) is used as a command in an Applesoft program, the program will execute your assembly language routine.

This does not apply within strings, of course: If the ampersand is part of a string, it will be treated just as a character, not as an Applesoft command.

You can use this trick to connect an assembly language subroutine into your program wherever you need it. It's similar to a call statement but easier to use (once it's been set up). And that's not all: With a little extra work, you can include a selector function with your ampersand routine, so you can add a number to your & statement that will select a specific routine out of several. In fact, several commercial software packages using this idea have been published, with names like "Ampersand Utility Pack" or the like.

This article will show you how to create your own ampersand package. This will not be a set of utilities (maybe we'll do that some other time), but a "message center"—a routine to print a selected message from a small library. You can use it for prompts or hints in a game, help messages for a complex program, or similar applications. For more details on the utility package approach, see "The Handy & Hook" (*Softalk*, July 1983).

The & Mailbox. In the Apple's memory, three successive locations have been reserved for the exclusive use of the ampersand hook. One memory location can store one byte of machine code—that is, one assembly language instruction, one byte of data, or half of a two-byte address. Three memory locations in a row can store a whole assembly language statement: "Jump to So-and-So" or "4C YY XX."

In computerese, the fancy word for something that tells the program where to go next is *vector*; so these three bytes of memory are sometimes called the ampersand vector locations. Their addresses are 1013, 1014, and 1015 (decimal), or $3F5, $3F6, and $3F7 (hexadecimal—in case you're new to this, the dollar sign indicates a hexadecimal, or base 16, number).

When the Apple is turned on, an initializing routine stores the bytes "4C 58 FF" in the & mailbox. $4C is the machine code form of the JMP instruction (jump: similar to goto in Basic), and the other two bytes make up the target address, $FF58 (in machine code, two-byte addresses are usually given low byte first—that is, backward). The address $FF58 contains a one-byte machine code instruction, $60: That's RTS in assembly language (return from subroutine), which is the same as return in Basic.

This is the default configuration of the & vector—the setup for when it's not being used. It's a simple empty loop: "Do nothing, and then return." If the Applesoft interpreter finds an & command, the program will jump to the ampersand mailbox. There it will be told to jump to $FF58, where it will find the RTS instruction, which will send it back to the calling program to resume execution with the statement following the & command.

To activate the & hook, all you have to do is change its vector address. If you change the address in locations 1014 and 1015 to point to a routine of your own, then the & command will cause a jump to your routine, instead of the RTS at $FF58 (don't forget to put an RTS at the end of your routine).

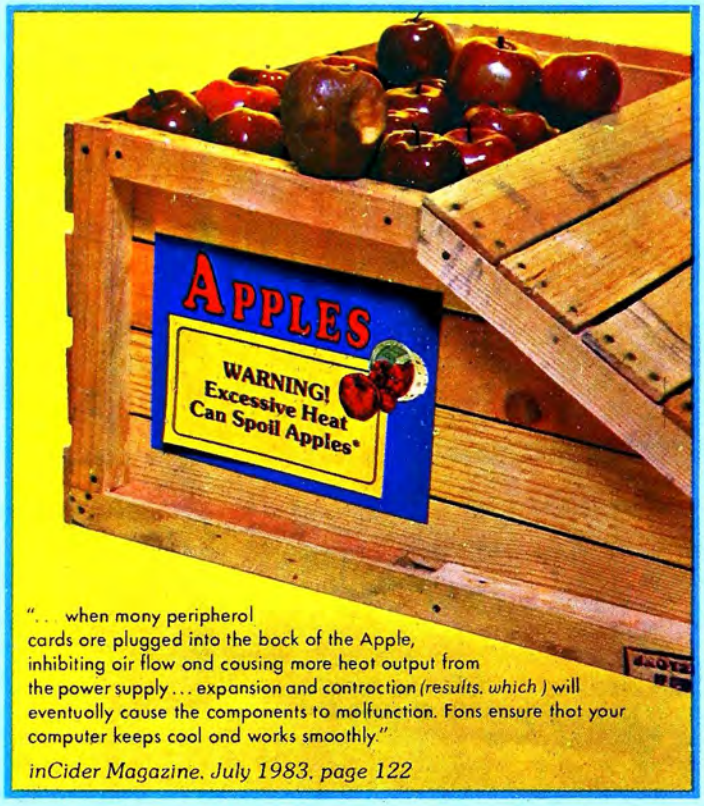
Beep-Beep, for Example. To show you how it works, we can use a simple subroutine that will make the speaker beep twice. The Apple Monitor routine that beeps the speaker begins at address $FF3A, so the assembly language call to that routine would be JSR $FF3A—JSR stands for jump to subroutine, which is similar to the Basic gosub instruction. The machine code for JSR is $20, so the machine language form of our call is "20 3A FF" (remember, the address is backward: low byte first). To do it twice, for two beeps, we simply repeat the call. Thus our complete two-beep subroutine is "20 3A FF 20 3A FF 60" (the $60 is the RTS instruction mentioned above).

Now that we have written our test program, we have to decide where to put it. Fortunately, the memory usage design of the Apple leaves us a convenient working area, over two hundred bytes long, starting at $300 (decimal 768). We need only seven bytes of that, so we'll use $300 to $306 inclusive.

The next step is loading the program. The easiest way to do that is through the Monitor (a sort of "general manager" program that is a permanent part of the Apple); so first we need to get out of Applesoft and into the Monitor. To do that, type *call-151*: This will give you an asterisk for a prompt, instead of the familiar right square bracket of Applesoft.

Now that you have the Monitor up, you can start to enter the test program. First, tell the Monitor where you want it stored—type 300, a

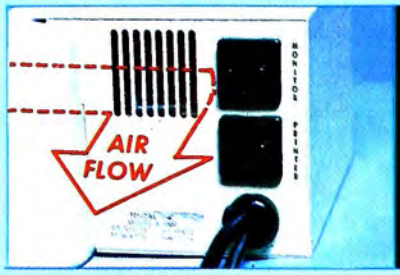
COOL+TIME™, the most advanced cooling ~~fan~~ system on the market can extend the life of your Apple II or IIe*!



"... when many peripherol cards ore plugged into the back of the Apple, inhibiting oir flow ond causing more heot output from the power supply ... expansion and controction *(results, which)* will eventuolly cause the components to molfunction. Fons ensure thot your computer keeps cool ond works smoothly."

inCider Magazine, July 1983, page 122





Highly Efficient, Ultra Quiet Blower

COOL + TIME™ removes heated air from inside your Apple* and exhausts it **at the rear** of the system, not across your workspace. Because of its unique blower design, COOL + TIME™ is the quietest, most efficient cooling system on the market.



Real Time/ Elapsed Time Clock

In **Real Time Mode** it's a time-of-day clock.

In **Elapsed Time Mode** it accurately times functions from a few seconds to 24 hours. This provides a method of accurately budgeting/tracking time when using costly data bases, programming or other time-sensitive tasks.

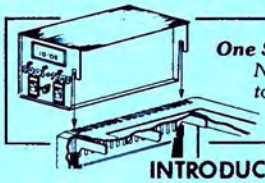


Illuminated Power Switches

COOL + TIME's™ illuminated switches **separately control** two rear power outlets. This allows front panel control of your Apple*, monitor and printer or other peripheral, and allows convenient monitoring of on/off status of your system.

COOL+TIME™ offers additional outstanding features:

- ***Line Surge Suppression*** *at a safe 130 Volts RMS.*
- *Compatible with the* ***Apple Stand****.*



One Step Installation
No mounting hardware or tools required.

INTRODUCTORY PRICE—$89.95

One Year Warranty

Another quality product from

TENCAL, INC.
9525 DeSoto Avenue
Chatsworth, California 91311
(213) 998-4850

Value Engineering for Over a Decade

SEE YOUR LOCAL COMPUTER DEALER TODAY, OR CALL 1-800-423-6326 FOR NEAREST DEALER.

Distributed by
CALIFORNIA MICRO-INC.
Marina del Rey, California 90292
(213) 827-1851

* Apple is o registered Trademark of Apple Computers, Inc.

colon, and a space, like this: "300: " (you don't need a dollar sign here, even though the 300 is a hexadecimal number; the Monitor always interprets numbers as hexadecimal). Then enter the seven bytes of machine code, separated by spaces. Type a carriage return after the 60 and the program will be entered into memory. Your screen should look something like this (with the asterisks having been provided by the Monitor):

```
*300: 20 3A FF 20 3A FF 60
*
```

To be sure everything is right so far, we can test the program by running it once. The Monitor command for goto is simply a capital G, but it comes after the target address, not before (as in Basic), and there should not be any spaces between. Type *300G* and you should hear two short beeps from the speaker. If not, you probably made a typo somewhere: You will need to check your work to see what you actually entered. Fortunately, now that you're in the Monitor, there's an easy way to do that.

The Monitor has a list command, which will let you look at an assembly language program in memory. The command is the letter L, and the syntax for it is similar to the G command. Type the starting address of the program followed by L (as before, with no spaces between) and then a carriage return: *300L*. This will display twenty lines of assembly language, starting at address $300.

The listing will be in four vertical columns. The first, leftmost column is made up of four-digit numbers, which are the starting addresses of each line of code. The code itself is in the second column, with one to three bytes on each line. The third column is made up of assembly language commands (JSR, RTS, and the like), and the column on the right is the operand (if any): an address (one or two bytes) or a number. Note that all the numbers in the listing are in hexadecimal, even though dollar signs are given only in the fourth column.

The program you entered should be the first three lines of the listing. Although twenty lines will appear on your screen, we've only shown five, since everything after the third is irrelevant.

```
0300-  20 3A FF   JSR   $FF3A
0303-  20 3A FF   JSR   $FF3A
0306-  60         RTS
0307-  00         BRK
0308-  00         BRK
```

That should show you where the error is. Of course, in this short program, any errors would be easy to find; in a longer program it wouldn't be so simple. However, the Monitor list command is still a very useful debugging tool. For further information on Monitor capabilities, see the Apple reference manual.

In case you should want to save this program to disk, the command is:

```
BSAVE BEEPBEEP, A$300, L$7
```

This command will work from the Monitor just as it does from Basic. When you reload it later with:

```
BLOAD BEEPBEEP
```

it will be put back into the same memory locations (addresses) it was saved from.

Now that the test program works properly in the Monitor, let's see if it works from Basic. First you need to get back into Basic, which is done by typing control-C (press and hold the control key [CTRL on the II Plus], press C, then release control). This will replace the Monitor's asterisk prompt with the familiar square bracket of Applesoft. Now you must use a call statement to reach the test program, since it's in assembly language and the Apple is now in Basic mode. Also, you have to translate the starting address into decimal, since Applesoft doesn't understand hexadecimal inputs (just as the Monitor doesn't understand decimal inputs). The command you want to type is thus *call 768*. This should get you a double beep, just as before.

Hooking It Up to &. Now that our test program is written, entered into memory, and debugged, we can hang it from the & hook and see how that works. The way to do that, remember, is to change the address in the ampersand vector locations from the default address, which does nothing, to the address of our test routine. This can be done from Basic with a couple of poke commands, but we have to do a little figuring first.

16 Colorful reasons to get doublestuff™


HI-RES


DOUBLE HI-RES


actual doublestuff™ reproduction


LO-RES


DOUBLE LO-RES CONDENSED


DOUBLE LO-RES

Software Development Inc. now offers you something that Apple never told you was possible in the IIe. It's called DOUBLESTUFF.™

Using standard Applesoft BASIC commands, in combination with your existing programs, you can expand your color graphics from 16 color Lo-Res (40 x 48) to double Lo-Res (80 x 48).

Unheard of before! Available NOW! With BASIC commands. Double Hi-Res 16 colors (560 x 192 pixels) is *all* yours on your Apple IIe. It literally doubles the width on your standard color TV or monitor.

Requirements: Apple IIe—either 80 column card for double Lo-Resolution. Extended 80 column card for double Hi-Resolution.

NEW Products available November '83:
doublestuff designer,™ my first coloring book.™

Software DEVELOPMENT INC.

Apple and Apple logo are trademarks of Apple Computer Inc. Doublestuff™ is a trademark of Software Development Inc.

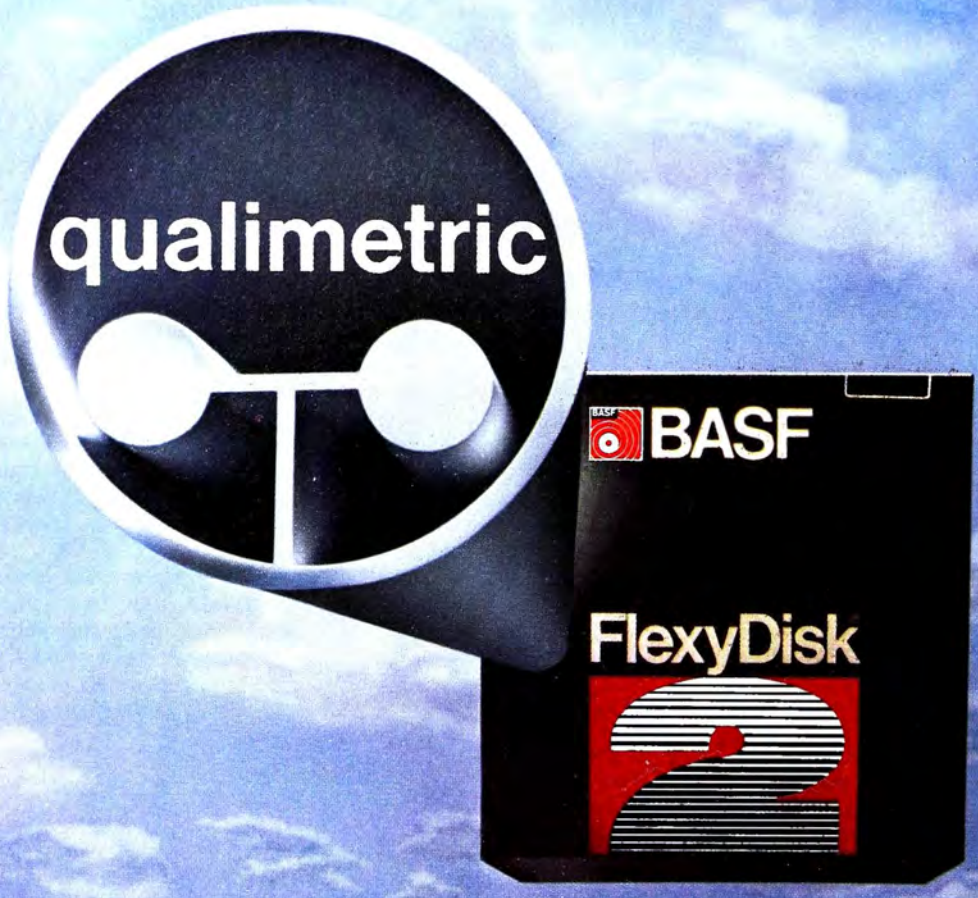
doublestuff™

designed by:
Louis Bonfiglio and Peter Joselow

To order, send check or money order in the amount of $39.95
New York State residents, add sales tax to

Software Development Inc.
2053 West 11th Street
Brooklyn, NY 11223 Tel. (212) 449-6300
Dealer inquiries invited.

BASF QUALIMETRIC™
A TOTALLY NEW DIMENSION OF QUALITY.



From BASF comes a totally new level of excellence in magnetic media – the Qualimetric standard, a standard so advanced that BASF FlexyDisks® are confidently backed by an extraordinary new lifetime warranty. The Qualimetric standard is maintained without compromise through every step of BASF design, production, inspection, and testing...reflecting an unwavering BASF commitment to media fidelity and durability.*

*Our FlexyDisk jacket incorporates a unique two-piece liner that not only traps damaging debris away from the media surface, but also ensures precise media-to-head alignment. The result – certified 100% error-free performance, backed by BASF's exclusive lifetime warranty.**

For information security, tomorrow and beyond, look for the distinctive BASF package with the Qualimetric seal. Call 800-343-4600 for the name of your nearest supplier.

ENTER TOMORROW ON BASF TODAY

BASF

*Contact BASF for warranty details. © 1982, BASF Systems Corporation, Bedford, MA

The problem is that the starting address, $300 or 768, will not fit in one byte of memory (one byte will hold any number up to 255, but nothing larger). Thus we have to break the number up into two bytes, and the way to do that is not obvious. We start with the hexadecimal form of the address and add a leading zero to make it $0300. This gives us a two-byte address, in which the bytes are $03 and $00.

The order of these bytes is very important—so much so that each byte has a different name, so we can tell which is which. The $03 byte is called the *high byte*, because it represents $03xx: in this case, $0300. Another term for it is the *most significant byte* (MSB), because in mathematics the *significance* of any digit depends on its position in the number: The further to the left it is, the greater its significance. The $00 byte, which is on the right-hand side of $0300, is called the *least significant byte* (LSB), or simply the *low byte*, because it represents only itself, $00 (unlike the high byte, which represents $03xx).

That's the way we humans do it. The Apple does it differently, at least where machine code is concerned. For reasons we may explain some other day, the computer needs to get the low byte first, then the high byte; so you have to enter the bytes into memory in the following manner: LSB first, then MSB. In this case, that means the low byte must go into the first address location of the ampersand vector (that's decimal address 1014), and the high byte must go into the second (address 1015).

Now that we've gone through the hassle of figuring it out, the process of doing it turns out to be quite simple. The low byte, $00, is zero in either number system, and the high byte, $03, is three, so the command that will set the ampersand vector to point to $300 is:

```
POKE 1014, 0: POKE 1015, 3
```

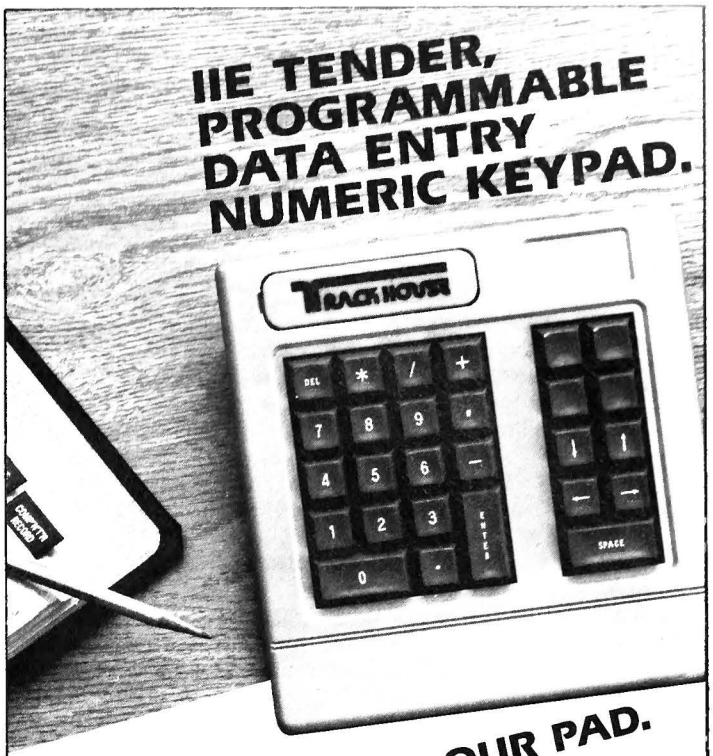
After you've entered that, try typing an ampersand followed by return. You should get that good old double beep again. That's how the & hook works. Needless to say, you can use this technique for other routines; you probably don't need a special routine just to make a double beep. If you use the same memory area for your routine as we did here, starting at $300, you can use the pokes given above to connect it; if you use a different area, you will have to poke the corresponding values into the ampersand vector locations. For example, if you load your routine starting at $350, the high byte value will be the same, 3, but the low byte will be the decimal equivalent of $50, which is 80 (5 times 16, plus 0). Thus the "hooking up" commands would be poke 1014, 50 for the low byte and poke 1015, 3 for the high byte.

& Several Strings. Last month, we described a routine that would output one of several strings, but you had to specify which string by calling one of several different addresses. In other words, you had to remember (or keep a list of) several different addresses and which string corresponded to which address. Not very convenient and prone to mistakes. This time, we will use a simple selector function: &1 will print string number one, &2 will print number two, and so on.

The strings will be laid out in memory after the program itself. As before, each string will be identified by its starting address (in this case technically an *offset*, not an address, as explained below), and the end of each string will be indicated by a terminating character: a carriage return character, ASCII 13. In this version, however, the string offsets will be listed in a table within the program itself, and the program (not you) will be responsible for finding the right starting point for each string.

The table lookup routine uses a technique called *indexed addressing*. The microprocessor in the Apple (a large and complex integrated circuit, which you can think of as the brain of the system, since it tells the rest of the system what to do) contains two special registers, called *index registers*, which are used for indexed addressing (among other things). You can store a number in one of these registers and then (under certain conditions) have that number automatically added to the address you specify for a particular instruction. The number in the index register is sometimes called an *offset*, since it offsets the address in the instruction by that amount.

The selector routine in our program uses this capability twice, in two different ways. First, when the program arrives at $300 (that is, when an ampersand command occurs in an Applesoft program and causes a jump to the address in the vector locations), the number following the ampersand is put into the X register. Then we use an indexed address instruction in which the address given is the beginning of a table of offsets—specifically, the address of the first item in the table (item 0). This is the item that will be selected by the command &0—the item at base address



THE KEYS TO OUR PAD.

Trackhouse is proud to introduce the IIE TENDER; compatible with your Apple IIe* and loaded with features that make sense. ■ **PROGRAMMABILITY** . . . That's our key feature! We left you with four blank keys which you can define as you wish and redefine as often as you need to. ■ **EFFICIENCY** . . . Our TENDER is equipped with four cursor directional arrows, four mathematical operation keys, a decimal point and DELete key . . . you've got everything you need right at your fingertips! ■ **ADAPTABILITY** . . . Coupler-calc software is available to use your TENDER as a four function accounting calculator.

■ **GOOD LOOKS** . Sleek, low profile and ergonomically designed for less user fatigue. Tactile feel keys, Apple IIe* colors and a rugged housing . . . You'll just love our pad.

■ **PORTABILITY** . . . After a quick five minute installation you can connect or disconnect your TENDER from your computer by just pulling a plug. It all adds up to a perfect solution at a perfect price.

Our STANDARD MODEL IIE TENDER which replaces the four programmable keys with assigned keys: ESC, ?, (,). Now available for only . . **$149.**

Our STANDARD MODEL TENDER for your Apple II+* replaces your DELete key with ESC and assigns ", ? (,), to the programmable keys. Your up and down arrow keys become REPT. and ! . . **$149.**

*Apple IIe and Apple II+ are registered trademarks of Apple Computer Inc

ASK ABOUT IIE TENDER AT YOUR LOCAL DEALER'S OR CALL OR WRITE US AT . . .

TRACK HOUSE

625 TRAILWOOD CT., GARLAND, TEXAS 75043
214-270-0922
Dealer Inquiries Welcome.

plus 0. The command &1 will select the next item in the table (base address plus 1), &2 will select the item after that (base address plus 2), and so on.

This is only the first step. The item that is selected—the table entry at base plus X—is also an offset. The table contains the starting address of each string, expressed as a distance from the base of the table. Thus if there are eight entries in the table (numbered from 0 to 7), and if the strings are stored starting right after the table, then the starting address of the first string will be at base plus 8, and the first table entry will be 8. If the first string is five bytes long (including the terminating character), then the next table entry will be 8 plus 5, or 13, and so on.

In short, the pattern is this: First, the number following the & is put in the X register and used as an offset to select one of the items in the table; then the selected item is put into the X register and used as an offset (from the same base) to find the beginning of the string itself.

The number following the &, in a call to this routine, is obviously very important. What would happen if you used a "bad" number—that is, one that is out of range: a number that does not match any of the strings stored in memory? The program would probably go off the rails and start outputting gibberish—or just hang up and not do anything. It would be nice if we could ensure that the input number would not be out of range, no matter what.

As it turns out, it's possible to do that. There is a way to convert any ASCII character to a number from 0 to 7—so all we have to do is provide a string to correspond to each of those numbers. We cannot explain all the details here, because it depends on an understanding of binary numbers, but the principle is simple enough. It uses the assembly language AND command (which is different from the & command).

The AND command performs a *bitwise AND* on two numbers. The numbers are in binary form in the computer. Each number is made up of eight bits (short for binary digits), and each bit is either a 1 or a 0. In a bitwise AND, each bit position is checked in both numbers, and if both positions hold a 1 bit, then a 1 bit is put into the corresponding position in the result. If either of the input numbers has a 0 in a given bit position, then the result will have a 0 in that position.

To make a long story short, if you AND two numbers, in binary form, the result will be no larger than the smaller of the two input numbers. For instance, if you AND 7 and 15, the result will be 7; in the same way, 3 AND 31 is 3, 5 AND 127 is 5, and so on. The important point, for our purposes, is that this works on ASCII values, too: Any ASCII value AND 7 (in binary, of course) will give a number from 0 to 7.

PROTECT YOUR APPLE* KEYBOARD
WITH
PLEXA-LOK

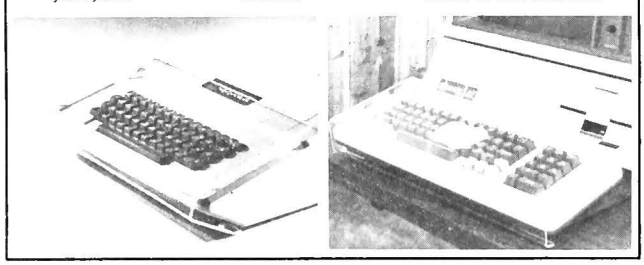
PROTECT YOUR EXPENSIVE INVESTMENT

OFFERED FOR THE FIRST TIME *PLEXA-LOK* COMES WITH A 30-DAY MONEY BACK GUARANTEE IF NOT SATISFIED!

PLEXA-LOK slips up and over the keyboard – then gently snaps into position.

- Your valuable computer is protected from objects and spills directly on top of keyboard which could cost hundreds of dollars to repair!
- *PLEXA-LOK* allows your secretary to go on break without having to worry about visitors accidentally destroying their hours (and your $) of work.

• **ENHANCES** looks of your system • **PROTECTS** keyboard from dust • **ALLOWS** computer to remain on while unattended



* TM APPLE COMPUTER Inc.

MON - FRI 9:00-5:00

MasterCard and Visa Accepted

Allow 4-6 Weeks Delivery

Dealer Inquiries Welcome

LAST ELECTRONICS
P.O. BOX 1300S
SAN ANDREAS, CA 95249
(209) 754-1800

INTRODUCTORY SPECIAL

APPLE II	$19.95
APPLE III	$24.95
FROSTY APPLE	1.50 extra

Prepaid UPS Continental USA

CA Residents Add 6% Tax

The Program. This month's listing is the complete program (for a detailed explanation of the format, see last month's column). The first significant lines are lines 19 and 20. These identify a couple of routines in the Apple Monitor, which are used by our program. Line 22 specifies the starting point of the program (ORG stands for origin, or beginning): This is the address at which the first byte will be placed when the program is assembled. It is also the address that will have to be poked into the & vector locations to connect the program to the & hook.

Line 24 is the first line of code, the beginning of the program itself. The number at the left end of this line is 0300, the origin specified above. This is where we "normalize" the input—that is, reduce it to a number between 0 and 7 by means of the AND operation.

In line 25, the command TAX means transfer A to X, or copy the number in the accumulator into the X register. When the program arrives here after an & command, the number following the & will be in the accumulator (the main working register of the microprocessor chip). We need to put that number into the X register so it can be used as an offset—hence, TAX.

Line 26 is a bit of what computer people call housekeeping: one of those necessary, but not obvious, details of programming that have to be done to keep the system happy. In effect, this lets the Apple convince itself that you have dealt with all the information in the line of Basic that included the & command; if you don't have this line in the program, you will get a syntax error whenever you use an & command.

Line 27 is the first indexed-address instruction. MARK is the label we have used to indicate the beginning of the table of addresses (see line 41); this line gets the byte at MARK plus X (that is, the value placed in the X register by line 25), which is table entry number X, and puts it in the accumulator. Table entry number X, as you remember, is the offset from MARK to the beginning of string number X.

The next line transfers that value to the X register, just as line 25 did, and now the X register holds the offset to the beginning of the desired string.

Line 31 loads the character at MARK plus X—the first character of the desired string. Line 32 checks for the terminating character ("Are we done yet?"), and if a match is found the next line jumps to the exit line, 38 (remember, your program must end with an RTS command—this is it). If no match is found, then the character is part of the string to be output; so line 34 calls the Apple Monitor routine for single-character output, COUT (short for character out, of course).

After that's done, line 35 adds 1 to the X register (INX is short for increment X) to point to the next character in the string. Line 36 takes us back to line 31, to do it all again.

Line 41, labeled MARK, is the table of offsets. Note that on the left side of the listing, between lines 40 and 41, there is a clump of bytes in hexadecimal: These are the offsets themselves translated into hexadecimal (these numbers are in machine code, and machine code is almost always in hexadecimal notation).

Finally, string storage begins at line 42. Once again, note the cluster of bytes between lines 41 and 42: These represent the ASCII codes for the word *zero*, in *high-bit ASCII*: normal ASCII values plus 128 (decimal) or $80 (hexadecimal). We'll go into the reason for that format some other time, but for now you should note the difference so you can put your own strings into the same format (unless you have an assembler program, which will probably do that for you). If you enter your strings in normal ASCII form (hexadecimal, of course), they will appear in flashing format, not normal white on black. In fact, that's partly what high-bit ASCII is for: to discriminate between normal display and inverse or flashing display.

By the way, your strings can be of any length (as long as the whole program does not exceed 208 bytes), but each string must end with a carriage return (in normal, not high-bit, ASCII: decimal 13). However, if you use different lengths from those given here, don't forget to recalculate the starting points and put the corrected offsets in line 41.

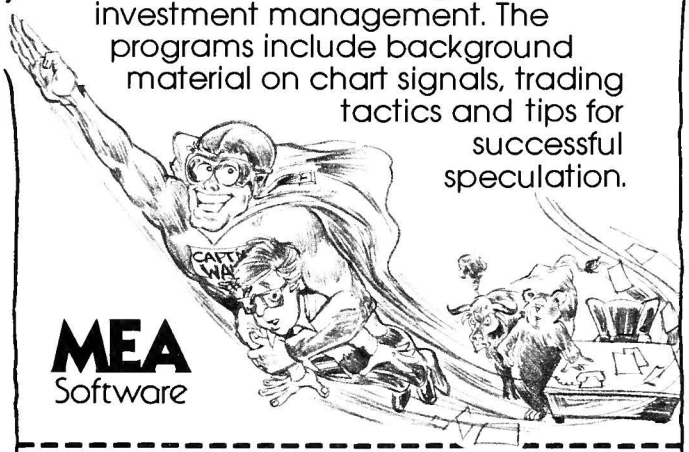
And that's all there is to it. Now you can have your Apple display all kinds of weird (or useful) messages, even though the messages themselves are not (visibly) part of the program that is running.

```
                        1 **********************
                        2 *                    *
                        3 *                    *
                        4 *     AMPERSAND      *
                        5 *                    *
                        6 *       STRING       *
                        7 *                    *
                        8 *      SELECTOR      *
                        9 *                    *
                       10 *                    *
                       11 *       < 6 >        *
                       12 *                    *
                       13 *                    *
                       14 *       9/12/83      *
                       15 *                    *
                       16 **********************
                       17
                       18
                       19 CHRGET  EQU  $B1      GET NEXT CHAR
                                                 OF INPUT LINE
                       20 COUT    EQU  $FDED    MONITOR CHAR
                                                 OUTPUT ROUTINE
                       21
                       22         ORG  $300     $300 EQUALS 768
                                                 DECIMAL
                       23
0300: 29 07            24         AND  #$07     STRIP HI BITS FROM
                                                 INPUT
0302: AA               25         TAX  .        GET INPUT NUM-
                                                 BER INTO X REG
0303: 20 B1 00         26         JSR  CHRGET   MOVE TXTPTR TO
                                                 EOL
0306: BD 19 03         27         LDA  MARK,X   GET X'TH ITEM
                                                 FROM LIST
0309: AA               28         TAX  .        PUT IN X REG FOR
                                                 OFFSET
                       29
                       30
030A: BD 19 03         31 LOOP    LDA  MARK,X   GET NEXT CHAR OF
                                                 MESSAGE
030D: C9 0D            32         CMP  #13      IS IT THE END?
030F: F0 07            33         BEQ  EXIT     IF SO, FINISHED:
                                                 LEAVE
0311: 20 ED FD         34         JSR  COUT     OUTPUT CHAR IN
                                                 ACC
0314: E8               35         INX  .        INCREMENT INDEX
0315: 4C 0A 03         36         JMP  LOOP     DO ANOTHER
                                                 CHARACTER
                       37
0318: 60               38 EXIT    RTS  .        RETURN TO CALL-
                                                 ING PROGRAM
                       39
                       40
0319: 08 0D 11
031C: 15 1B 2C
031F: 2C 2C            41 MARK    DFB  8,13,17,21,27,44,44,44
0321: DA C5 D2
0324: CF               42         ASC  "ZERO"
0325: 0D               43         DFB  13
0326: CF CE C5         44         ASC  "ONE"
0329: 0D               45         DFB  13
032A: D4 D7 CF         46         ASC  "TWO"
032D: 0D               47         DFB  13
032E: D4 C8 D2
0331: C5 C5            48         ASC  "THREE"
0333: 0D               49         DFB  13
0334: C6 CF D5
0337: D2 A0 E1
033A: EE E4 A0
033D: EE EF A0
0340: CD CF D2
0343: C5               50         ASC  "FOUR and no MORE"
0344: 0D               51         DFB  13
0345: D4 D2 D9
0348: A0 C1 C7
034B: C1 C9 CE         52         ASC  "TRY AGAIN"
034E: 0D               53         DFB  13
                       54
```


Captain Wallstreet to the rescue!

Investing in the stock market is no game. Not when you can lose your shirt. Now, learn how to play **before** you put your money down. **Beat the Street™** is an exciting, practical investment simulator based on the actual price histories of over 175 stocks on the Big Board. Learn point-and-figure-charting, then decide when to buy, sell, sell short, stop losses and so on. The program figures commissions and keeps track of realized and unrealized gains and losses as the chart is drawn on the screen. Sharpen your trading skills and have fun without taking a market risk. Beginning or experienced investors can practice without penalty.

Beat the Street was written by a Chartered Financial Analyst with over 15 years experience in successful stock charting and investment management. The programs include background material on chart signals, trading tactics and tips for successful speculation.



MEA Software

From MEA Software
P.O. Box 2385, Dept. B, Littleton, CO 80161, (303) 796-7100.

Please send me ____ copies of Beat The Street at $49.95 each.

Name _____

Address _____

City _____ State _____ Zip _____

☐ Check or Money Order Enclosed ☐ Master Card ☐ VISA

Card # _____ Expiration Date ____ / ____ / ____

For Apple II® one and two disk drives. IBM® available soon.
Additional disks for NASDAQ, technoloy stocks,
ASE stocks available November 83.

And Now a Word from our Printer...

EX__ON K_D_K _EEP Z___DAX

What's in a name? Only what it MEANS to people!

So what does ZARDAX[tm] mean?

"just the best Apple[*] word processor I've ever used."

ZARDAX means EASY:

a screen display that's easy to understand ... editing commands that are easy to remember ... typewriter-like shift and lock on the][+ ... two menus for disk operations and printing

ZARDAX means POWERFUL:

built-in form letter capability ... a glossary function for quick entry of commonly-used phrases ... multi-file chaining for long documents ... standard text files that link to spelling checkers and databases ...

(NEW) printer spooling in the background -- print one chapter while you write the next -- using disk, RAM card, or //e Auxiliary Memory card as a "spooler"

ZARDAX means VERSATILE:

Apple][+, //e[*], Franklin Ace[**] ... 40 or 80 columns, with //e or][+ 80 column cards (12 of them!) ... full support for 30 some odd (and some are) printers -- double width, bold, super and sub scripts, etc. WITHOUT having to embed control characters in your text (that's why we did this ad this way, to show you ZARDAX at work on a Prowriter[***])

and now ZARDAX means SAVINGS:

now U.S.-packaged, letting us reduce the price to just $210.

It all means, "call your dealer or call us today."

[*](c) Apple Computer, Inc. [**](c) Franklin Computer Corp. [***](c) Leading Edge.
ZARDAX[tm] Computer Solutions, Pty., Brisbane, Australia

Action-Research Northwest
11442 Marine View Drive, SW.
Seattle, WA 98146
(206) 241-1645 Source: CL2542



TRADETALK

☐ **Bruce Zweig**, founder of **Lightning Software** (Palo Alto, CA), has sold Lightning to **Scarborough Systems** (Tarrytown, NY) for cash and royalties equaling seven figures, said **Sanford Bain**, vice president of marketing at Scarborough. "This was a personal decision about whether I ever wanted to write something again or not. With Lightning I was just too bogged down," Zweig said. In the future, Zweig plans to work on several software ideas and may start a new company. He will also serve as a consultant to Scarborough. **Russ Jones**, formerly general manager of Lightning, has become director of West Coast operations for Scarborough and will oversee Lightning's operations in California. Scarborough is a new publisher of educational and productivity software. Authors presently under contract to the company include the group from Intentional Educations that co-wrote *Bank Street Writer*, Tom (*Snooper Troops*) Snyder and Elizabeth (*Police Artist*) Levin.

☐ **Sorcim** (San Jose, CA) has named **James Pelkey** president and chief executive officer. Pelkey served as a management consultant to Sorcim before becoming president and was previously a marketing consultant with U.S. Leasing Corporation. "Our industry turns out too much software that's understandable and usable only by technicians or computer jockeys," Pelkey said. "The real customer is the man or woman in business who uses a computer only a few hours a week."



The Golden State League soccer team tries out a new Ashton-Tate program.

☐ **Ultrasoft** (Issaquah, WA) is leaving software publishing in order to concentrate on software development, according to the company's general manager **Larry Franks**. Ultrasoft's best-selling adventures, *Mask of the Sun* and *Serpent's Star*, will be published by other companies; deals are still pending. Ultrasoft also has a new address: 24001 South East 103rd Street, Issaquah, WA 98027. The company's new phone number is (206) 392-2317.

☐ **Vincent O'Reilly** has joined **ComputerLand** (Hayward, CA) as vice president of development, said **William Millard**, chairman of ComputerLand. O'Reilly was previously marketing manager of IBM's general systems division.

ComputerLand and **American Training International** (Manhattan Beach, CA) have signed a colabeling agreement. Under the terms of the agreement, training software produced by ATI and sold through ComputerLand stores will carry the labels of both companies on the outer packaging.

☐ **Sirius** (Sacramento, CA) has announced the appointment of **Dale Rose** as national sales manager. Rose assumes responsibility for management of Sirius's national distribution network and will report directly to president **Jerry Jewell**. Prior to joining Sirius, Rose was the sales and distribution manager for Control Data's computer products division.

☐ As part of The Great American Software Contest, **Microsoft** (Bellevue, WA) is offering five $500 gift certificates good for Microsoft products. The awards will be given to the contestant with the best new software concept in each of five categories: business/professional, entertainment, education, home utilities, and programming/development aids. The five Microsoft awards are additions to the twenty-one other prizes worth $30,000 to be awarded early this month in Boston. Judges for the show will include **Chris Crawford** of Atari, **Tom Snyder** of Tom Snyder Productions, **Ken Williams** of Sierra On-Line, **Mark Pelczarski** of Penguin Software, **Marc Blank** of Infocom, **Daniel Oehlsen** of Children's Computer Workshop, and **Stan Goldberg** of MicroLab. The Great American Software Contest is part of a three-day event designed to bring together talented software authors and more than two hundred fifty software publishers.

☐ When **Ashton-Tate** (Culver City, CA) decided to play-test its new program *Friday!* on novice computer users, it called upon a whole team of soccer players. The company recruited the **Golden State League** team to compete in relay races in which players had to search the program for key features and build files. In ap-

NEW
COLOR SLIDES FROM YOUR APPLE*
COMPUTER SLIDE EXPRESS™
Turns your Apple II* Hi Res Graphics into 35mm Color Slides
Have slides made from:
• Apple Business Graphics*
• Executive Briefing System**
• PFS Graph†
• Visiplot‡
• Other 33 or 34 Sector Binary Picture Files
Slides for
•Meetings•Conferences
•Lectures•Trade Shows
for only $6.00 per slide
($30.00 minimum)
For information call or write:
VISUAL HORIZONS
180 Metro Park, Rochester, NY 14623
(716) 424-5300
*Trademarks of Apple Computer Corp **Trademark of Lotus Corp †Trademark of Software Publishing Group ‡Trademark of VisiCorp Computer Slide Express is a trademark of Visual Horizons Inc.

preciation for the effort, Ashton-Tate contributed funds for the team's upcoming European tour.

☐ **MicroPro International** (San Rafael, CA) has named **H. Glen Haney** president and chief executive officer and **Seymour Rubinstein** chairman of the board. Haney was formerly vice president of business strategy and new markets at Sperry Computer Systems, and Rubinstein, the founder of MicroPro, previously served as MicroPro's president and chief executive officer. **Frank Adler**, who had been chairman of the board, will continue as director and chairman of the board's executive committee.

☐ **Softsmith** (Union City, CA), the distribution arm of the Software Guild, has announced that nineteen Waldenbooks stores in the San Francisco area will be carrying its software for a six-month trial run. If successful, the program may be extended to most of the country's eight hundred Waldenbooks stores. "We've always felt that bookstores, both independents and those of major national chains, are natural outlets for the sales of personal computer software. Waldenbooks will give us an excellent chance to prove it," said **Rob Lundgren**, vice president and general manager of Softsmith.

☐ **American Airlines** (Dallas, TX) has begun a joint venture with **Micro D** (Fountain Valley, CA) to provide computer hardware and software buyers with free airline flights. The promotion awards points to buyers based on the dollar volume of their orders and awards a free flight anywhere in the continental United States to buyers who maintain high purchasing levels between September 1 and January 15. The eight buyers with the highest point totals can choose a trip to Hawaii, Puerto Rico, or the Virgin Islands.

☐ Apple is alive and well down under. **CED Distributors**, the only Apple agents in New Zealand, have signed an $800,000 contract with **Apple Computer Australia** to supply low-cost boards for the Apple Dot Matrix Printer. The boards, which were designed by CED, have graphics capabilities not available on the boards supplied with the printer. CED currently markets most of its products in New Zealand, Australia, and the United Kingdom but is looking forward to moving into the American market. Apples are also making a strong impact on New Zealand high schools. Last year, CED Distributors scored a marketing coup when they offered one half-priced Apple to each high school and achieved an 89 percent penetration of the school market. Schools that had one system soon wanted more, and now 35 percent of New Zealand's high schools have three or more Apples. Soon schools will be able to go on-line with **New Zealand Beginning**, a national educational database and bulletin board.

☐ **Robert C. Schneider** has joined **Sierra On-Line** (Coarsegold, CA) as vice president and general consul. Previously a founding partner of the corporate law firm Urland, Morello, and Schneider, Robert Schneider is also a law instructor at Coastline Community College in California.



H. Glen Haney, president and chief executive officer of MicroPro.

☐ According to a survey conducted by **Dun & Bradstreet** (New York, NY), microcomputers now play a significant role in many small- and medium-size businesses. The Dun's 5,000 Survey of American Businesses revealed that 33 percent of all companies surveyed use microcomputers. Large firms with five thousand or more employees were predictably the most avid users, with more than 70 percent claiming microcomputer use. Of small firms with less than twenty employees, 14.5 percent used computers. The survey also revealed that the primary computer users in small companies are the owners and managers, while the primary users in large companies are professional and technical personnel. The use of microcomputers in business showed up in the survey as a recent phenomenon. Many respondents reported that their firms had only acquired a micro within the last few months. ■

New Zealand news provided by John MacGibbon.

SATORI SOFTWARE presents

SPECIALIZED DATA-BASE PROGRAMS

BULK MAILER

A profesional mailing list program that includes a sophisticated duplication search and an incredible 32,000 name capacity with hard disk (2400 names with a dual drive, 1200 names with a single drive). Very straight forward and easy-to-use.

- Duplication Elimination
- Broad Coding Capability
- Can upgrade to hard disk
- Zip and Alpha sorts
- 1-UP,2-UP,3-UP & 4-UP labels
- Default Options
- Remarks line
- Plus other marketing features

Apple II & //e diskette version -2400 names (dual drive) or 1200 names (single drive) **$125. Hard Disk version** -32,000 names **$350.**
IBM PC diskette version -Up to 5400 names, depending upon configuration. **$125. Hard Disk version** -32,000 names **$350.**

INVENTORY MANAGER

Perfect for retailers, distributers or any business involved with sales. Can track 2700 items (1200 items on a single drive system), and provides numerous information reports.

- Stores up to 2700 items
- Up to 99 vendors
- Prints purchase orders
- Easy stock up-dates
- Lists stock sold & gross profits
- Prints suggested orders
- Sorts by vendor, department, profit
- Many more features

"Inventory Manager is among the most complete programs of its type on the market today" SOFTALK, Dec. 1982

APPLE II & //e version - 2700 items (dual drive) or 1200 items (single drive) **$150. IBM PC version** - up to 10,000 items, depending upon configuration **$150.**

LEGAL BILLING

Very friendly and complete legal billing system. Allows a great deal of user control.

- Prints customized statements
- Prints aging reports
- Up to 200 clients
- Up to 4000 transactions
- Includes Trust Accounts
- User designated codes
- Automatic interest added

Apple II or IBM PC version - $350.

Available at your dealer or order directly from:

SATORI SOFTWARE
5507 Woodlawn N.
Seattle, WA 98103
(206) 633-1469

Software reproduction. Endless, perfect, accurately-repetitive software reproduction.

Concentrating our creative energies in that direction, Logic General has become synonymous with software duplication for software authors, publishers and distributors; equipment manufacturers; and companies in both the public and private sectors.

Combining years of experience as a leading distributor and duplicator of magnetic media with the latest automated high-speed production equipment, Logic General can satisfy software duplication orders of literally any size and complexity.

We can tailor your order to cost, performance and system parameters with precision and flexibility. Most importantly, the accuracy, reliability and quality of each Logic General-duplicated diskette is guaranteed, 100%.

High capacity. Prompt service. 100% verified duplication. All at a most competitive cost. For complete information, call Logic General. Where all software is re-created equal.

LOGIC™

LOGIC GENERAL CORPORATION
31999 Aurora Road
Cleveland, OH 44139

THE ONLY THING ON OUR MINDS IS REPRODUCTION.



Call toll-free: (800) 321-8908. In Ohio, (216) 349-2800.



Illustrations by Craig Calsbeek

ADVENTURES IN WPL

A Schoolhouse Apple Feature

by Thomas R. Mimlitch

The wood-paneled room is quiet, but there's a richness to the atmosphere that suggests something creative, or at least absorbing, going on. Six people work in the room, and one computer. One of the people sits at the computer typing, intermittently referring to a dictionary, and typing some more. As soon as that one gets up, someone else uses the computer the same way. A couple of the people confer in quiet tones, but their faces are animated with excitement.

Lining the workspace, often referred to, taken and altered, and returned, are hundreds of index cards filled with notes. Once in a while, one of the people exclaims about some achievement or discovery and all the others stop what they're doing to listen as the first one reads, their faces rapt and glowing as only twelve-year-old faces can be.

The room is no publishing office or literary research lab but an ordinary room in an ordinary home. The workers are a group of the neighborhood's twelve-year-olds in the process of designing, developing, and writing an interactive adventure story for the computer. They've already plotted and planned; now they're writing the actual script on *Apple Writer*. When they're finished, their script will be incorporated into an *Apple Writer* Word Processing Language program that puts pictures on-screen to illustrate the story and allows readers to interact.

What provides these youngsters with the motivation to put in long periods of concentrated effort on a project that's so darned good for them? They love what they're doing. Nobody's bothered to point out that they're learning to use a major computer tool (a word processor) and getting plenty of typing practice, or that they're picking up some programming and developing their creativity. They think all they're doing is having a whole lot of fun.

The project came about because of today's youngsters' demonstrated interest in computers on the one hand and in branching, or interactive, stories in paperback book form on the other. And because someone who did recognize all those useful, educational benefits knew how to program in WPL.

The great appeal of these interactive adventure stories seems to lie in the fact that they let readers participate in choosing the direction of the story line. The plot of an interactive story unfolds in small segments called frames. Usually, the reader must make a decision—based on logic, intuition, or pure guesswork—at the end of each frame, and how he responds directs him to another page or story frame.

A paragraph in a story frame may outline possible options, give clues to a mystery, or provide other pertinent information. The story form itself demands reading for comprehension—after all, who wants to make a critical decision without understanding the situation fully?

Through each frame and decision, the story flows toward a conclusion. It isn't one single story, however, but many stories diverging or converging at the end of each frame. Rereading a story and changing even one decision at some point can take the reader off on another tangent, perhaps a completely different adventure.

But is it possible—kids typing (yes, typing!), writing, editing, and retyping interactive adventure stories of their own? Of course it is. The key is motivation.

Children find creating interactive stories on the computer an involving and exciting experience. Carried along by this excitement, they learn to organize their thoughts, outline story frames, and create imaginative story plots.

Making computers part of the experience promotes children's natural creativity, and it makes the writing and editing processes easier. Soon, they're expanding on outlined ideas and expressing themselves in sentences—writing, editing, and rewriting story frames. And the thought that peers will be reading their stories encourages youngsters to strive for correct grammar and spelling and clear meaning. In short, they get so

caught up in writing a story that they don't always realize how much they're learning.

How It All Started. To understand how the interactive storytelling system works, let's begin at the beginning with the story of the six neighborhood children to whom the idea was presented.

Once upon a time, there was no system, only the idea that it would be a good idea for the kids to learn to use a word processing program—the typing practice alone would be valuable. Perhaps there was some schoolwork they could do?

Then the proverbial light bulb lit. Why not suggest that they write their own interactive adventure stories, like the ones they're always reading?

The kids loved the idea. It was agreed—they would write a story outline on their own, and the work on a program to display the story in frames to the reader would take place at the same time.

The kids' story outline contained about seventy frames and took two



months to complete. They wrote each story frame outline on a three-by-five index card with a frame number, frame title, major topics, and the frames to go next for each possible answer. As the outline was being created, the cards were taped to the wall in a treelike manner so that the story flow could be studied and corrected if necessary. One problem that had to be dealt with was the overabundance of story branches. The children soon learned how to recombine paths or bring them to a conclusion.

When the outline was complete, the children were introduced to *Apple Writer 1.0*. It wasn't long before they were using this simple word processor to type in their story outline in a special form devised to allow a separate program to display the story frames and control the story flow.

Next, the children entered the complete seventy-frame outline into the computer and saved it on disk. Now they started expanding the thoughts and ideas they'd outlined, using *Apple Writer 1.0* to replace the outline portions with the actual story frames. They were continually coached to use complete sentences and paragraphs, and to be careful to state the questions accurately and clearly. After an editing session or two, they were finished.

Working about one hour a week, the children had devoted a total of five months to their sixteen-thousand-character creation. Now it was ready. Was the display program ready? Well, not completely. A crude beginning—a functional storyteller—was done, and it allowed the story to take its first clumsy steps to life. Even with a few bugs in the story flow, this was an exciting event. Actually, the story was in better shape than the program designed to tell it. There are many minor problems inherent in making a sophisticated storyteller program that is also easy to use, and the first try was very clumsy.

About this time, Apple Computer started delivering a new version of the *Apple Writer II* word processor. It turned out to have excellent editing capabilities. It also had WPL, otherwise known as Word Processing Language. The samples included in the documentation gave an indication of WPL's power. And so another idea began to take shape: Perhaps the storytelling program could be written completely in WPL. But was it powerful enough?

Do tell.

The "Tell" Program in WPL. WPL is a powerful language that's part of the *Apple Writer II* word processing software. This language allows you to automate routine editing processes. For example, you can use WPL to print personalized form letters with names and addresses from a mailing list. WPL can also be used in creating formatted reports or in automating the writing of wills from appropriate boiler-plate paragraphs.

In WPL, standard editing commands and special program and input commands are combined with decision and branching statements into small programs. A WPL program can perform operations on data contained in memory or can call on files stored on disk; it can then output such data to the screen or to a printer. In essence, a WPL program is just another text file containing a sequence of editing commands. A WPL text file is similar to an exec file in Apple DOS, but WPL also has decision and branching capabilities that make it an extremely useful programming language.

Let's take a look at the first program portion of this storytelling system. The program is titled *Tell*. It is invoked from *Apple Writer II* with a control-P and the command *DO TELL*. The *Tell* program's function is merely to display a menu of stories available on a disk and allow readers to select a story they want to read.

Explaining the Explanation. The following explanation of the *Tell* program is intended for those interested in how the WPL language works. If this is not your cup of tea, skip ahead to the section, "How To Write Stories." Complete listings of the necessary programs are provided at the end of the article, but vital portions are also included here to help you understand how everything works.

```
TELL    P ------------------------------------------------------------
        P --- TELL WPL PROGRAM                                     ---
        P ------------------------------------------------------------
        P
        P ------------------------------------------------------------
        P --- PUT MENU ON SCREEN                                   ---
        P ------------------------------------------------------------
MENU    PLM 0
        PRM 39
        PTM 0
        PBM 0
        PPL 66
        PPD 0
        PND
        PPR     (Type control-V, control-L, control-V)
```

The beginning statements in the *Tell* program are comments. The statement labeled MENU really starts the program. All statements start with the letter P, which stands for *program*.

WPL automatically makes the first character of each command into a control character. Thus, PLM 0 in WPL is the same as typing control-P LM 0 in standard *Apple Writer*. This program command sets the left margin to zero. Similarly, the next five commands set various other display parameters.

The PND command stands for *program no display*: this turns off the display of the file in memory so we can put a menu on the screen.

The next program command, PPR, which stands for *program print*, should be followed immediately by a control-V, a control-L, and a control-V. Do not type the comment as shown in the listing; instead, enter the control characters indicated. (The line had to be shown like this because the actual control characters cannot be directly printed.) This magical incantation clears the screen:

```
        PSZ 15
BOTTOM  PPR
        PSZ -1
        PGO BOTTOM
```

Look, Ma, no hands!



If you don't type, you've probably longed for the day when you could simply talk to your computer. It's here.

Your voice can set you free.
With the Voice Input Module from VMC, you can "train" your Apple II, IIe,® or Franklin® to perform as many as 80 different spoken commands, in unlimited subsets, with near-perfect recognition.

So where you used to type "/P return — " /\ CO return N39 return" you can just **say** "print."

Command performance.
The Voice Input Module works parallel to the keyboard with all existing applications software. So you can type if you need to, or do anything from electronic spread sheets to word processing to games with voice control alone. Either way, you'll increase your productivity and have fun doing it.

Demand a demonstration.
You won't believe it until you see it. So see the Voice Input Module at your nearby computer store today.

And find out how little you'll miss typing.

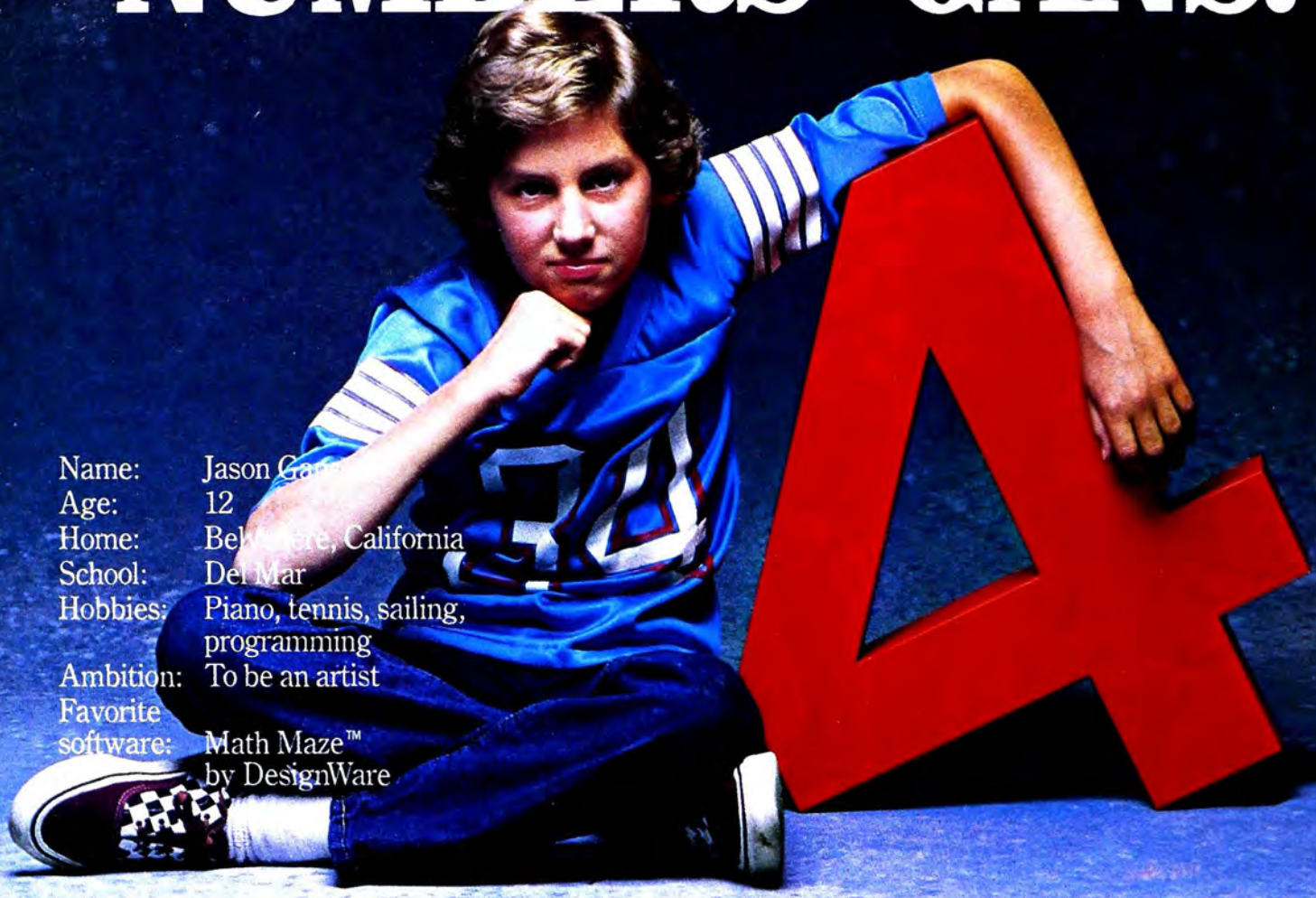
Apple II and IIe are registered trademarks of Apple Computer, Inc. ■ Franklin is a registered trademark of Franklin Computer, Inc.

VIM **YOUR VOICE CAN SET YOU FREE.**

VOICE MACHINE COMMUNICATIONS

1000 South Grand Avenue ■ Santa Ana, California 92705 ■ Telephone (714) 541-0454 for the dealer nearest you.

THEY CALL HIM "NUMBERS" GANS.



Name: Jason Ga
Age: 12
Home: Bel re, California
School: Del Mar
Hobbies: Piano, tennis, sailing, programming
Ambition: To be an artist
Favorite software: Math Maze™ by DesignWare

"Math Maze is neat because you do more than just add and subtract numbers all the time. You've got to find them first. And then get there before you get caught.

"It's got real good graphics. I can even change the background color. And make the math as challenging as I want.

"There's lots of mazes, too. But the best thing is, I can make up my own. So when my friends come over, I've always got something new."

DESIGNWARE ON CREATIVITY. Children learn the most through creative problem solving. That's why *Math Maze,* like so many DesignWare games, is an open-ended exercise that challenges and nourishes young minds. In a way that's a lot of fun.

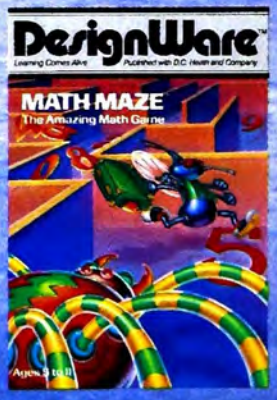
DesignWare programs encourage kids to draw on something they just happen to have an unlimited supply of—imagination!

SPELLING, MATH, OR LANGUAGE Games like *Math Maze, Spellicopter*™ and *Creature Creator*™ inspire youngsters to tap into that fertile idea-field. To actively become part of the program, in effect creating "new" games as they go along. And all the while building up solid skills in the basics. And all the while having a lot of plain old fun.

DesignWare. We make learning come alive. On Apple II,® IBM® and Atari® computers.

Ask for DesignWare products at your local software retailer. Or call us at 800-572-7767 (in California, 415-546-1866) and ask for our free catalog.

As Jason Gans says, "Hey—they don't call me 'Numbers' for nothing, you know!"



DesignWare™
LEARNING COMES ALIVE

Apple II is a registered trademark of Apple Computer, Inc.
IBM is a registered trademark of International Business Machines.
Atari is a registered trademark of Atari, Inc.

```
PPR                STORY TIME
PPR
PPR
PPR Here are some fine stories for you:
PPR
PPRSELECT   TITLE              PAGES
PPR
```

The next four commands form a small loop to print fifteen blank lines and position the output of the printed heading that follows near the bottom of the screen. The PPR command stands for *program print* and displays on the screen any information that comes after it.

```
NY
LMENU
PNP
```

The NY is the standard *Apple Writer* control-N command to clear memory to make room for new data. The Y in NY is merely the "yes" you would normally reply to say that you do want to clear memory.

The LMENU command loads a text file named Menu. The L stands for load, and Menu is the name of the file to be loaded. And the PNP, *program new print*, command finally prints to the screen the menu file just loaded. Here's a sample menu file:

```
1    LOST IN A CORN FIELD.    15
2    THE BIG BET.             75
```

Look at the sample Menu file. It is created using *Apple Writer II* and it contains lines showing a selection number, story title, and an approximate number of frames. Note that for this program to function properly, each title must end with a period. In addition, a blank line with at least one space character on it must precede and follow each menu entry.

```
PPR Which would you like to read?
PPR
PIN Enter your selection. =$A
```

Next we input the reader's selection by number using the PIN, or *program input*, command. This puts the reader's response into one of the four available string variables, namely $A.

```
PLS#*,$a *.*n=$d
PGO LOAD
PPR
PPR I'm sorry, but I can't find that
PPR story selection on the list.
PIN Press return to try again. =$A
PGO MENU
```

Now we have come to the real backbone of the menu program, the PLS, or *load string* statement. This statement searches the Menu file for the selected line, by line number, and puts the story title from that line into another string variable, $d. Let us break down this command to see how it operates.

Immediately following the command is a number sign (#) character, which tells the program to search memory. After that are two search strings surrounded by delimiters, in this case, asterisks. These search strings tell the program where the desired data begins and ends.

The first search string, ",$a", searches for a carriage return, the data entered by the reader, and a space. Note that the asterisk is a special delimiter that lets us denote a carriage return with a comma. If you recall, the $A is the variable that holds the reader's selection. Thus, if the reader entered a 1, this string would search for a return followed by a 1 and a space, which it would find on the first menu line.

The second search string tells the load function where to stop loading—that is, at the period following the story's title. The *n* following the two strings is an option that tells WPL not to load the search strings into the string variable, but to load only the information between the strings. Finally, the =$d just indicates which string variable receives the data.

Finally, WPL has a special built-in error-trapping mechanism. When any error (such as "string not found") occurs, WPL skips over the next statement. In this case, if the selected number is not found during the load string command, the PGO (*go to*) command will be skipped and the error message following it will be printed. At that point another PGO command goes to the statement labeled MENU and redisplays the Menu.

To summarize, this load string statement finds the line in the Menu file that has the same number as the one selected by the reader. Then it picks out the title of the selected story and puts it in the $d variable. If the selected line is found in the menu, we continue with the LOAD routine; otherwise, an error message is printed and the program is restarted.

```
LOAD P ------------------------------------------------------------
     P --- LOAD THE STORY                                        ---
     P ------------------------------------------------------------
     NY
     L$D
```

The load function begins with a standard *Apple Writer II* command, NY (new, yes), which clears memory. Then, the command *L$D* loads the story file, the name of which is in the $d variable, into memory. The name that is extracted from the menu file must be the actual story file name and title.

```
B
F**.ep0,*
Y?
B
PSX 1
PPR   (Type control-V, control-L, control-V)
PDO DISPLAY
```

The final series of commands prepare for the actual storytelling. The cursor is moved to the beginning of the file, ".ep0" is inserted to turn off the printing, and the numeric variable X is set to 1, which indicates the frame number to begin displaying. The second half of this pair, the *Display* program, is invoked with a PDO DISPLAY command.

How To Write Stories for DO TELL. Before we discuss the display program, let's step back and talk about how the story itself is entered into the system and about how control from frame to frame is handled. To make story creation as easy as possible, this is done completely in *Apple Writer II*. You can teach your story writers just the minimal set of editing commands or the complete power of *Apple Writer II*, as you wish.

The outline or story is structured into frames. A frame starts with a frame identifier, is followed by the text of the outline or story, and concludes with a series of control statements that determine the story flow.

In all, there are six different control statements: *frame*, *get*, *lose*, *have*, *question*, and *choose*. A control statement must be on a line by itself and the first character must be a slash. The second character on the line identifies the type of control statement and must be an F, G, L, H, Q, or C. The frame number immediately follows this code and must be the same on every control statement for any one frame. This is usually followed by a space and whatever information the particular statement requires.

Every frame must begin with a frame control statement in the format */Fn title*. Here the *n* stands for the frame number (no leading zeros, please), and *title* is usually the outline heading for this frame. Follow the frame command or identifier with the text of the story. This text portion may first be entered as an outline of the frame and later replaced with the actual story frame.

The next two control statements are optional, and only one of each is allowed in a frame. The */Gn item* lets the storytelling program know that the reader has acquired some object (*item*) by traveling through this frame. The item may be any word you like. The control statement */Ln item* means that the reader has given up the object, *item*. The G stands for *get*, the L for *lose*.

The next two control statements are also optional. They describe the conditions under which story branching will be done. The */Hn item* statement checks to see if the reader has an item in his or her possession. Either a Y or an N is generated accordingly. The command */Qn question* states a short question to the reader and obtains the response. The reader may answer with any letter or word he wishes, but the choices that follow must state all possibilities; therefore, it's easier to ask questions that can be answered with a Y or an N for yes or no.

Finally, every story frame must have at least one choice-control statement. Statements of this kind inform the storytelling program what frame to display next.

The command format, */Cnah g*, needs some explanation. As usual, the *n* is the frame number of the current frame being read. This is followed by an optional answer, *a*, from the reader and an optional Y or N indication from a *have* check, *h*. Then comes the normal space, and the *g* stands for the *go to* frame number. You may substitute the word *end* for the *go to* frame number to end the story.

This must seem cryptic at first, but after we look at a few examples it will become clearer. To save space, we'll display the examples in outline form.

Example 1. A frame without branching.

```
/F1 TITLE PAGE
LOST IN A CORN FIELD

BY M.S.
/C1 2
```



This frame is displayed until the reader presses return. Then the computer performs the only choice-command available, which merely tells the program to go to frame 2.

Example 2. A frame with a question and branching.

```
/f2 Visiting Aunt Linda
You go to Aunt Linda's farm to play
There may be cats in the barn
/q2 do you want to go to the barn?
/c2y 3
/c2n 4
```

Here the frame text is displayed, followed by the question to the reader. The reader is expected to type in a Y or an N. If the reader answers Y, then the */C2Y3* directs the story to frame 3. If the reader answers N, then the */C2N 4* directs the story to frame 4. You now have two complete story paths to bring to a conclusion.

Example 3. Branch if reader has an object.

```
/f3 Finding a cat
You go into barn
You hear a cat in there somewhere
You try to coax it out
/h3 fish
/c3y 5
/c3n 6
```

After the frame is displayed, no question is asked of the reader. Instead, the storyteller looks to see if the reader has acquired a FISH somewhere in the reading of the story. The have command always returns a Y or an N for the choice command to use. So, if the reader does have a fish, the story continues with frame 5, in which the cat will obviously be coaxed out by the prospect of food. If no FISH is on hand, the cat will probably run away in frame 6.

Example 4. Getting an object.

```
/f4 lunch
Aunt Linda makes lunch for you
You help her with the dishes
She gives you some fish for the cats
/g4 fish
/c4 3
```

In this frame, no questions are asked, and from here the story always goes to frame 3. However, merely reading through this frame sets the */G4 FISH* command in motion and adds FISH to the list of objects the reader has.

That should give you a good understanding of how to create your own stories. Keep in mind that each frame must begin with */F* and end with a */C* control statement. Each frame may have one each of the */G*, */L*, */H*, and */Q* identifiers. More than one */C* command will usually be used, one for each possible answer or combination of answers and the have command's Y or N.

The "Display" Program in WPL. Now back to the ranch, uh . . . program. The second half of DO TELL is the *Display* program, the workhorse of the system. This program follows a simple iterative process consisting of three major steps: displaying a frame, scanning for control statements, and choosing the next frame. (Again, if you are not interested in the programming aspects, please skip to the section, "Stories To Read.")

```
        P ------------------------------------------------------------
FRAME   P --- DISPLAY NEXT FRAME                                    ---
        P ------------------------------------------------------------
        B
        F*/f(X) */f(X) ,.ep1,*
        Y?
        F*,/*,.ep0,/*
        Y?
        PPR     (Type control-V, control-L, control-V)
        PSZ 20
BOTTOM  PPR
        PSZ -1
        PGO BOTTOM
        PNP
        PPR
        F*/f(X) ,.ep1,*/f(X) *
        Y?
        F*,.ep0,/*,/*
        Y?
        PSZ 0
```

The "display frame" routine must find the frame numbered *X* and mark it for printing. This is done with the first *find* command, F, which looks for */f* followed by the frame number and inserts *.ep1* after it. It's also necessary to mark the end of the frame to stop printing, as is done with the second find command. After clearing the screen and positioning just as before, the desired frame is printed to the screen by the PNP, the *new print* command. The first time through, this statement displays everything between the */f1* and the next slash—that is, the text or outline of the story. Now that the frame has been displayed, the start and stop printing marks are removed by means of two more find statements.

The scan routine is the most complex of the routines. It also takes the most time to execute. The function of the scan routine is to look for get, lose, have, and question controls for the current frame. When a control statement is found, the appropriate subroutine is invoked to handle it.

Three variables are used in the scan section:

```
$A contains the reader's answer or a null string.
$B contains the item or question.
$C contains Y, N, or a null string from a have check.

SCAN    P ------------------------------------------------------------
        P --- SCAN FOR FUNCTIONS                                    ---
        P ------------------------------------------------------------
        PAS=$A
```



We provoke, amuse, stimulate, spur, delight, awaken, intrigue, challenge...



Programs for Apple II+/IIe, Commodore 64, Atari 400/800/1200XL, and IBM-PC.

We tickle the mind.

If you're looking for computer programs that can satisfy you in special ways, take a look at CBS Software.

We've got programs that tickle the mind.

SUCCESS WITH MATH SERIES™ (Apple, Atari, Commodore)—Students who want to get ahead in math—or, students who want to catch up—will find these classroom-tested programs add up to positive results! ADDITION/SUBTRACTION and MULTIPLICATION/DIVISION, are for elementary level and up. LINEAR EQUATIONS is for grades 7-10, and QUADRATIC EQUATIONS is for grades 8-11.

MASTERING THE SAT™ (Apple, IBM)—It's a private tutor that helps college-bound students score better on the Scholastic Aptitude Test! Developed with the National Association of Secondary School Principals.

MASTERING THE COLLEGE BOARD ACHIEVEMENT TESTS: ENGLISH COMPOSITION™ (Apple, IBM)—This comprehensive, self-paced preparation program covers the four categories of questions found in the ECAT—helps students analyze their need for further study.

CHARLES GOREN: LEARNING BRIDGE MADE EASY™ (Apple, IBM)—You'll play better bridge by actually learning from the world's foremost bridge authority, Charles Goren.

© 1983 CBS Inc. A Unit of CBS Inc., One Fawcett Place, Greenwich, CT 06836. (203) 622-2503. "Apple" is a trademark of Apple Computer, Inc. "Atari" is a trademark of Atari, Inc. "CCW" is a trademark of Children's Computer Workshop, Inc. "Commodore" is a trademark of Commodore Business Machines, Inc. "IBM" is a trademark of International Business Machines Corp.

MYSTERY MASTER™: MURDER BY THE DOZEN™ (Apple, Commodore, IBM)—Mystery buffs can sharpen their deductive reasoning skills on this exciting and entertaining concept in crimebreaking: the compudunit! Twelve crimes can be investigated by up to four players in a race to unmask the perpetrator.

MATCH-WITS™ (Apple, IBM)—Here's a challenge to your knowledge and powers of concentration and memory. Play it solo—better yet, in competition—and if that's not enough, program in your own challenges!

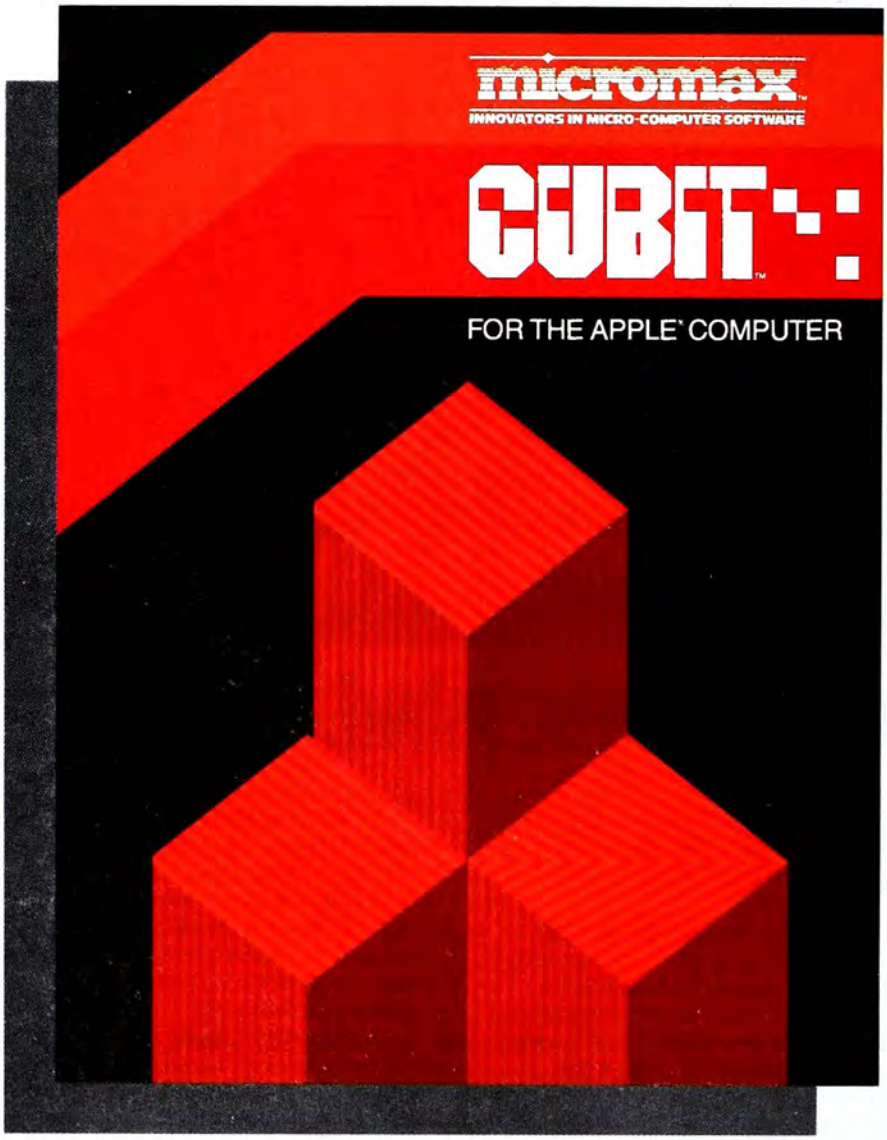
We know you're itching for software that can do more for you.

Discover CBS Software.

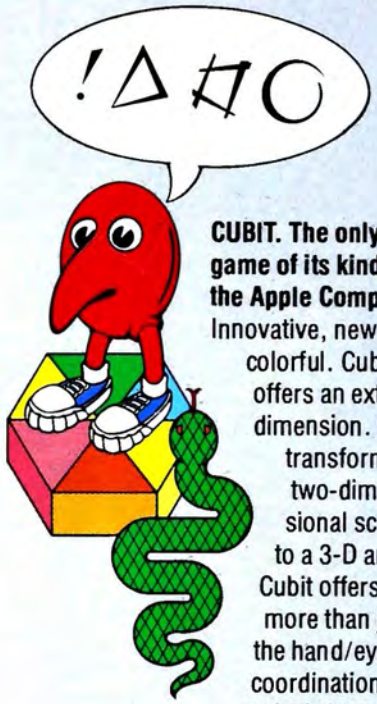
And let us tickle your mind.

CBS SOFTWARE

INTRODUCING CUBIT™ FROM MICROMAX.



Apple is a registered trademark of Apple Computers, Inc.



CUBIT. The only game of its kind for the Apple Computer. Innovative, new and colorful. Cubit offers an extra dimension. It transforms a two-dimensional screen to a 3-D arena. Cubit offers more than just the hand/eye coordination of typical shoot'em-up games. It offers fast-moving, action filled, strategy based entertainment. And you don't have to be a concert pianist to handle the controls. Simple to learn, yet enormously challenging to master. Playable with both joystick and keyboard.

For 48K Apple Computers with 3.3 DOS. Enjoyable in black and white, but a whole lot more fun on color monitor.

Look for our next game, to be released soon.

Dealer/Distributors — Please contact us for details on Cubit and our Apple and IBM PC line of products.

Micromax Systems, Inc.
6868 Nancy Ridge Drive
San Diego, California 92121
(619) 457-3131

See us at forthcoming Applefest and Comdex shows.

micromax™
INNOVATORS IN MICRO-COMPUTER SOFTWARE

```
        PAS=$C
        PLS#*/G(X) *,*N=$B
        PSR GET
        PLS#*/L(X) *,*N=$B
        PSR LOSE
        PLS#*/H(X) *,*N=$B
        PSR HAVE?
        PLS#*/Q(X) *,*N=$B
        PSR QUEST
        PLS#*/C(X)$A$C *,*N=$B
        PGO CHOICE
```

The scan routine begins with two PAS statements, which assign nulls to the string variables $A and $C. Each of the following PLS statements searches for a specific control code (for example, the get code, G) in the current frame number (X) and puts any object or question it finds into variable $B.

Now for a really clever portion of WPL—what happens if a specific control code isn't found? The next WPL command is skipped and another PLS is executed. If a specific code is found, /G1 for example, the PSR command following it is executed. PSR stands for *program subroutine* and is followed by the name of a small routine to be executed next. Each of these control statements has its own subroutines, which are placed near the beginning of the program in order to help speed execution.

The last search in the scan routine looks up the appropriate choice-controller and puts the resulting next-frame number into $B.

```
CHOICE  P ------------------------------------------------------------
        P --- CHOOSE NEXT FRAME ---
        P ------------------------------------------------------------
        PSZ -1
        PIN Press return to continue. =$A
        PCS /$B/end/
        PDO TELL
        PSX $B
        PGO FRAME
```

Now, assuming that the appropriate *C* statement was found, the *Choice* routine checks for the word *end* and returns to the menu if the story has ended. Otherwise, the new frame number is put into X and the whole display process is repeated for the new frame.

Let's examine the subroutines used to get or lose items, check for have, and question the reader:

```
GET     P ------------------------------------------------------------
        P --- GET SUBROUTINE ---
        P ------------------------------------------------------------
        B
        F**/H/$B,*
        Y?
        PRT
LOSE    P ------------------------------------------------------------
        P --- LOSE SUBROUTINE ---
        P ------------------------------------------------------------
        B
        F*/H/$B,**
        Y?
        P
        PRT
```

The GET routine goes to the beginning of the story file in memory and simply inserts the name of the item gotten, prefaced with a */H/* and followed by a carriage return. The LOSE routine does just the opposite. It searches for the item and deletes it. The find command used in both these routines uses the special delimiter *. The data between the first and second asterisks is the search string. The data between the second and third asterisks is the replacement string. The GET routine searches for nothing (which it finds immediately) and replaces it with */H/Object* and a carriage return character.

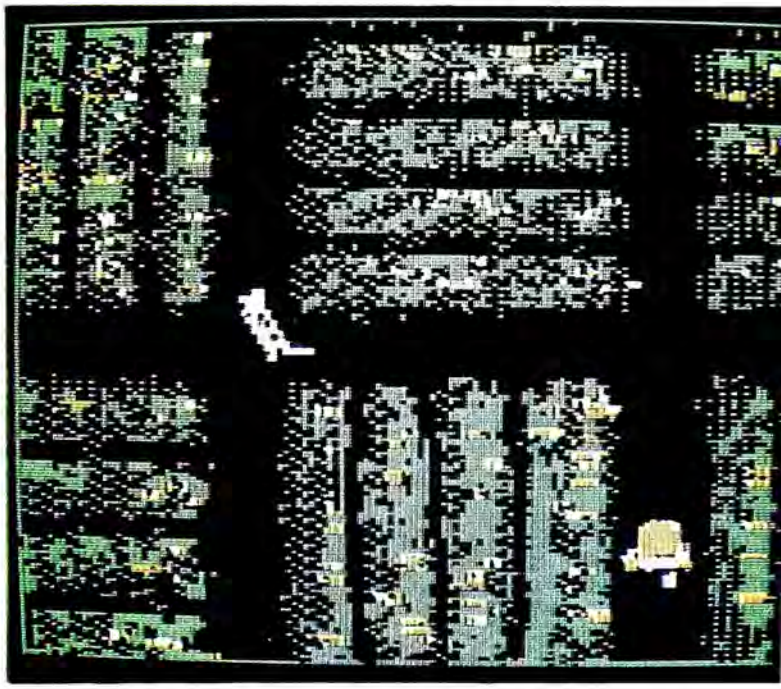
```
HAVE?   P ------------------------------------------------------------
        P --- HAVE ITEM CHECK ---
        P ------------------------------------------------------------
        PASN=$C
        B
        F*/H/$B*
        PASY=$C
        PRT
```

```
QUEST   P ------------------------------------------------------------
        P --- ASK QUESTION ---
        P ------------------------------------------------------------
        PPR
        PPR $B
        PPR
        PIN ENTER ANSWER =$A
        PRT
```

The HAVE routine searches for an item and then leaves a Y or N in the $C variable indicating whether or not the item was found. The QUESTION routine displays the question that is in the variable $B and accepts the reader's response into $A. What could be easier? Each of these subroutines is ended with a PRT command; this stands for *program return*. PRT signals subroutine completion, and the scan routine is resumed at the statement after the PSR command.

That's it! If you understand most of this material, consider yourself a Word Processing Language expert.

Hindsight Objectives. This section was placed near the end of this article on purpose. Many programmers and analysts pride themselves on



knowing exactly where they are going at all times, and some even write lists of goals before they start. Others, however, get in their idea canoes and paddle down the stream of thoughts, enjoying the sights of progress. The hope is always that you'll manage to bail out before going over any falls and that you'll have the chance to take some snapshots along the way. You can recount your adventures and say, "Look how far I've come."

Here, then, are some hindsight objectives for the storytelling system DO TELL. The system was designed to do the following:

1. Get children involved in creative writing and give them practice in language skills.
2. Computerize the interactive or branched story, which allows the reader choice in the direction of the story line.
3. Use a word processor program through which children can easily enter the outline and story themselves (and also get typing practice).
4. Use simple syntax for the commands embedded in the story that control the plot flow.
5. Allow the story to be entered in outline form and developed frame by frame into its completed form.
6. Have easy menu selection for multiple stories on disk.
7. Control the whole storytelling process automatically.

Stories To Read (and Write). Now it's time to get out those three-by-five index cards and start plotting your own adventure story or whatever else you choose. Follow the frame format and see to what limits your ideas flow. When you've finished making your story outline, fire

up your 48K Apple II and *Apple Writer II* and enter your outline with the appropriate identifier commands.

Before you can actually read your story, you must add its file name (its title) to the menu file. Check out the story flow with the DO TELL system. Then go back and start replacing each outlined frame with expanded thoughts expressed in complete sentences and paragraphs. Don't be afraid to change or modify the story flow as new ideas come to you. Of course, you'll want to save your story frequently to minimize the effects of other potential problems. Follow all of the paths of your story to a conclusion and make whatever corrections are necessary.

Congratulations. You are now the author of your own interactive story.

The first and largest story written for this system is called "The Big Bet." It was written by a group of twelve-year-olds over a period of five months. The story is about a Girl Scout campout that could end in disas-



ter for the whole world, a heroine's parade, or in a number of other ways. The authors are Regina Frederick, Cynthia Mimlitch, Joy Moore, Amanda Peirano, Jennifer Turner, and Naomi Walker.

For your reading pleasure and as an example of a small interactive story, a tale written by ten-year-old Michelle Schmidt with help from Holly Mimlitch is included in this article. The story is titled "Lost in a Corn Field." This story has only fifteen frames and was outlined in about one hour. It is a story of adventure and suspense.

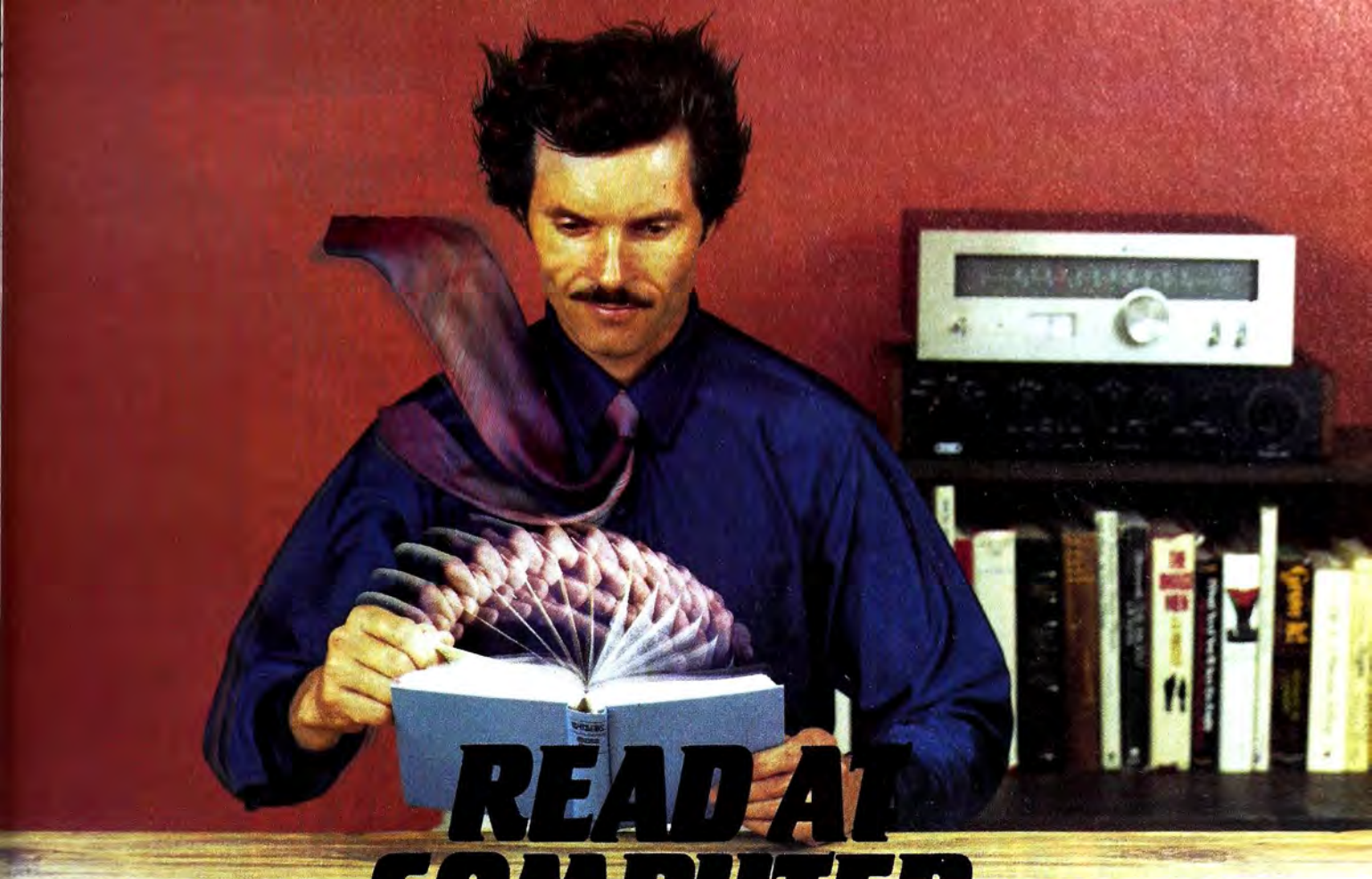
Some Problems and Solutions Identified. A few short notes about the DO TELL system are called for. First, the speed of framing (going from one frame to another) starts to degrade as a story gets longer. A short story frames in about one second, but a sixteen-thousand-character story takes about eight seconds to frame. This results from the method of searching for every identifier through the whole story. Since the programs are written completely in WPL, the system cannot be made turnkey for the youngest readers to use. And, finally, at present there are only a few stories to be read with the DO TELL system.

These problems can all be solved. First, DO TELL is great for use during story development; it allows the author to try out a story while still creating it. And a version of the program written in assembly language eliminates all the speed problems and also allows a complete turnkey system to be created.

All in All. The DO TELL program has built-in motivation factors that encourage students to organize their thoughts and outline their stories; expand their ideas and express them in complete sentences and paragraphs; and to write, edit, and rewrite the story frames for correctness of grammar, spelling, and meaning. School systems might want to have kids in upper grades write stories for students in the lower grades to read. While enjoying reading the stories, the younger children would also be building their reading comprehension.

This interactive storytelling method may also be used to teach other subjects, such as Roman history or scientific experimentation. Imagine a student researching and writing a fictional autobiography of Nero or Caesar, or perhaps writing a story on a biologist doing genetic engineering experiments. This program has a great many possible uses. Let your imagination loose and see if you can't find a unique one.

```
TELL    P ----------------------------------------------------------
        P --- TELL WPL PROGRAM                                    ---
        P ----------------------------------------------------------
        P
        P ----------------------------------------------------------
        P --- PUT MENU ON SCREEN                                  ---
        P ----------------------------------------------------------
MENU    PLM  0
        PRM  39
        PTM  0
        PBM  0
        PPL  66
        PPD  0
        PND
        PPR   (Type control-V, control-L, control-V)
        PSZ  15
BOTTOM  PPR
        PSZ  -1
        PGO  BOTTOM
        PPR                          STORY TIME
        PPR
        PPR
        PPR  Here are some fine stories for you:
        PPR
        PPRSELECT    TITLE                                  PAGES
        PPR
        NY
        LMENU
        PNP
        PPR
        PPR  Which would you like to read?
        PPR
        PIN  Enter your selection. =$A
        PLS#*,$a *.*n=$d
        PGO  LOAD
        PPR
        PPR  I'm sorry, but I can't find that
        PPR  story selection on the list.
        PIN  Press return to try again. =$A
        PGO  MENU
LOAD    P ----------------------------------------------------------
        P --- LOAD THE STORY                                     ---
        P ----------------------------------------------------------
        NY
        L$D
        B
        F**.ep0,*
        Y?
        B
        PSX  1
        PPR   (Type control-V, control-L, control-V)
        PDO  DISPLAY
DISPLAY P ----------------------------------------------------------
        P --- DISPLAY THE STORY                                  ---
        P ----------------------------------------------------------
        PGO  FRAME
GET     P ----------------------------------------------------------
        P --- GET SUBROUTINE                                     ---
        P ----------------------------------------------------------
        B
        F**/h/$B,*
        Y?
        PRT
LOSE    P ----------------------------------------------------------
        P --- LOSE SUBROUTINE                                    ---
        P ----------------------------------------------------------
        B
        F*/h/$B,**
        Y?
        P
        PRT
```



READ AT COMPUTER SPEED!

Super Speed Reading™

teaches you to read up to 10 times faster

The more you want to read, or the more you have to read, the more you need Super Speed Reading. The program's so clear, so graphically presented that you'll quickly learn to read 2 to 10 times faster!

The program works so well because it was developed by...

The Expert

J. Carson Kovar is the leading reading authority who taught speed reading to the Eisenhower & Kennedy White House staffs, thousands of men, women, children and businesspeople. Now she has improved her successful classroom methods and used the full power of the computer to make the course more personal, more responsive and amazingly easy.

What it does

Super Speed Reading teaches you to read at incredible speeds, with improved comprehension! Everything from light novels, heavy books, newspapers, reports, trade magazines, memos, school books to computer code.



How it does it

You learn in easy to follow steps. You go from one speed plateau to the next - until you reach



the high speeds you want. Perhaps 800, 1500 or 3000 words per minute.

The on-screen directions include dramatic graphics which make every example crystal clear, even for a youngster. The screen text is in upper & lower case (in your choice of 3 type styles)...all without extra hardware!

You'll find 120 on-disk story pages for reading practice. Plus sections devoted to business, school and computerist use. There are places to keep everybody's records with charts to show your progress. And, a special Flash Section displays hundreds of phrases at speeds from 100 to 10,000 words per minute. While the Flash Section has an important teaching function, we must admit it's also as much fun to use as a game!

The instruction manual is uncomplicated and very reader friendly. It's loaded with extra information (if you're curious) and many reading and comprehension exercises as well.

Reading at high speeds is not only useful for pleasure, for business, and for school, it's also more rewarding. Start today in the privacy of your own home, at your own pace—at a third the cost of class sessions. It's a wonderful skill the entire family will use for a lifetime.



SUPER SPEED READING

Introductory price: $149.

2 disks + reader friendly manual

For any 48K Apple II,II+,IIe* with Applesoft in ROM or language card. Requires DOS 3.3 & 1 disk drive.

Available now, at your computer store, or from:

Magnum SOFTWARE

21115 Devonshire St., Suite 337
Chatsworth, Ca 91311 **(213) 700-0510**

VISA, Mastercard, COD, Check accepted. Add $3.00 shipping / handling.

*Apple II, II+, IIe are trademarks of Apple Computer, Inc.

STELLAR 7

by Damon Slye ™



RAVEN, an experimental Agrav Unit, is Earth's only defense against the Imperial Arcturan Armada. Commanding RAVEN, you will face Arcturan laser tanks, pulsars, sandsleds, assault batteries, prowlers, skimmers, seekers, guise mines, and the rest of the rampaging Arcturan assault. Your wits and RAVEN's biphasal thunder cannon are all that stand between a helpless Earth and the wrath of the Arcturan Armada.



Sandsled and Skimmer

SOFTWARE ENTERTAINMENT COMPANY introduces ***STELLAR* 7**, the ultimate 3-D strategy arcade game by Damon Slye. ***STELLAR* 7** features smooth HI-RES animation, a colorful instrument panel, and 7 unique levels, each more challenging than the last.

For ordering send $34.95 plus $2.00 shipping and handling to: SEC, P.O. Box 10854, Eugene, Oregon 97440. 1-503-342-3495
Dealer inquiries invited.



Stalker Agrav Unit

Requires Apple II, II plus, or IIe • Apple II is a trademark of Apple Computer, Inc. • copyright 1983 SOFTWARE ENTERTAINMENT COMPANY

```
HAVE?   P ------------------------------------------------------------------
        P --- HAVE ITEM CHECK                                          ---
        P ------------------------------------------------------------------
        PASn=$C
        B
        F*/h/$B*
        PASy=$C
        PRT
QUEST   P ------------------------------------------------------------------
        P --- ASK QUESTION                                             ---
        P ------------------------------------------------------------------
        PPR   $B
        PPR
        PIN   Enter answer. =$A
        PSZ   1
        PRT
        P ------------------------------------------------------------------
FRAME   P --- DISPLAY NEXT FRAME                                       ---
        P ------------------------------------------------------------------
        B
        F*/f(X) */f(X) ,.ep1,*
        Y?
        F*,/*,.ep0,/*
        Y?
        PPR   (Type control-V, control-L, control-V)
        PSZ   20
BOTTOM  PPR
        PSZ   -1
        PGO   BOTTOM
        PNP
        PPR
        F*/f(X) ,.ep1,*/f(X) *
        Y?
        F*,.ep0,/*,/*
        Y?
        PSZ   0
SCAN    P ------------------------------------------------------------------
        P --- SCAN FOR FUNCTIONS                                       ---
        P ------------------------------------------------------------------
        PAS=$A
        PAS=$C
        PLS#*/g(X) *,*N=$B
        PSR   GET
        PLS#*/1(X) *,*N=$B
        PSR   LOSE
        PLS#*/h(X) *,*N=$B
        PSR   HAVE?
TRYAGN  PLS#*/q(X) *,*N=$B
        PSR   QUEST
        PLS#*/c(X)$A$C *,*N=$B
        PGO   CHOICE
        PPR   That choice not available!
        PPR   Please try again.
        PPR
        PGO   TRYAGN
CHOICE  P ------------------------------------------------------------------
        P --- CHOOSE NEXT FRAME                                        ---
        P ------------------------------------------------------------------
        PSZ   -1
        PIN   Press return to continue. =$A
        PCS   /$B/end/
        PDO   TELL
        PSX   $B
        PGO   FRAME
```

/f1

Lost in a Corn Field

Written by Michelle Schmidt

Edited by Holly Mimlitch
and Tom Mimlitch

Copyright 1982

/c1 2
/f2 Arriving at Aunt Linda's.

Early this morning you got up, and Mom and Dad had already packed the car for a weekend visit to Aunt Linda's. You have always enjoyed Aunt Linda's farm because there are so many things to do and places to explore. Now it is almost lunchtime as you drive up to the farmhouse. The large field behind the house is green with tall ripening corn stalks. Down a small gravel road is a large red barn and you remember finding some kittens there last year. After the hugs and hellos are over, Aunt Linda says that lunch will be in just a few minutes.

/q2 Do you want to go to the barn and look for cats?
/c2y 3
/c2n 16
/f3 Finding the cats.

As you run quickly down to the barn, your mother calls out, "Don't stay very long." The door on the barn is hard to open and it creaks as you manage to squeeze in past it. Inside it is cool and only a little light shines in from the door. As you look around you hear a cat's meow coming from a dark corner. As you walk toward the sound, the cat becomes frightened and scampers out of the barn.

/q3 Do you chase that cat?
/c3y 4
/c3n 15
/f4 Chasing the cat.

You run out of the barn, squeezing past the door. The bright August sun makes you stop and squint to see. The cat has just run into the corn field. Without thinking you chase after the black and white cat as it runs first one way and then another. Now you feel the hot sun and bugs are bothering you. A grasshopper jumps onto your arm but quickly hops off when it realizes its mistake. The cat is no longer in sight and you stop to rest a minute. Should you continue to look for the cat, or go back to the farm? You must make up your mind.

/q4 Have you decided to go back?
/c4y 5
/c4n 14
/f5 Trying to go back.

You finally decide to turn around and go back to the farmhouse. Suddenly, you are very frightened! You can't see over the corn because it is so tall. Which way is the house? A lump is in your throat and you fight back tears. Now that you have stopped running, you can hear cars on a highway.

/q5 Do you follow the sound of the cars?
/c5y 11
/c5n 6
/f6 Going away from cars.

The thought of cars on a freeway scared you more than the corn field so you decided to walk away from the noises of the cars. After walking a while, you hear the cat again. Then you see the cute furry cat and run to it. But again, the cat is scared and she runs too. Now you are more lost than ever and there are dogs barking and growling somewhere nearby.

/q6 Do you run away?
/c6y 7
/c6n 8
/f7 Running away again.

You are really frightened by the dogs' growling and run faster and faster. All of a sudden you are out of the corn field near some railroad tracks. Uncle Bill has been waiting for you near the train tracks, and gives you a big hug. He takes you back to the farmhouse and everyone is happy that you are back and safe again. Aunt Linda gives you a popsicle and you are happy again also.

The End

/c7 end
/f8 The dogs catch up to you.

The dogs' barking keeps getting louder and you don't know what to do. Three light brown and large dogs have caught up to you. They are barking and snapping, trying to bite you. Are they really wolves? You see some sticks and also a few rocks on the ground.

/q8 Do you use the sticks?
/c8y 9

/c8n 10
/f9 Mad dogs.

You quickly grab some of the sticks on the ground and hit the dogs with them. This makes the dogs even madder and they leap at you all at once, knocking you over. You scream! You sit straight up in the back seat of the car as you are just pulling in to Aunt Linda's farm. You realize it was just a bad dream.

The End

/c9 end
/f10 You scare the dogs away.

Instead of the small sticks you pick up a few big rocks and throw them at the wild dogs. The largest dog is hit on the nose and yelps loudly. He runs away and the others follow him. Because of all the noise, your Uncle Bill finds you and takes you back to the farm. You are saved!

The End

/c10 end
/f11 Come to a road.

You are at last out of the corn field and near a road. There are no cars going by now. Nothing looks familiar as you look both left and right.

/q11 Do you go left?
/c11y 13
/c11n 12
/f12 Home!

You went the right way and soon come to Aunt Linda's farm. Everyone is very happy that you are back; they had been looking for you everywhere.

The End

/c12 end

/f13 Neighbor's home.

You find another farmhouse and decide to knock on the door. A nice lady answers the door and you start crying and tell her you are lost. She knows your Aunt Linda well and calls her right away. Soon Aunt Linda is there and she is very happy that you are all right. A week later you tell your story to a neighbor and he writes it down and publishes it for you. You go on to become a famous author yourself.

The End

/c13 end
/f14 You find cat.

You see the cat again and follow it slowly for a while. Maybe it will lead you home. But you trip on a corn stalk and that scares the cat. It runs away.

/c14 5
/f15 Tell Uncle Bill.

You tell Uncle Bill that a cat ran away into the corn field. He says, "Don't worry, it can find its own way back home." You have a nice weekend playing on the farm and even the cat likes to play with you when you don't scare it.

The End

/c15 end
/f16 Go to hollow log.

You hear about a hollow log behind the barn and decide to see it. There happens to be a wasp nest in the log and you get stung. This hurts a lot and you run back to Aunt Linda's. She has something that takes the sting away.

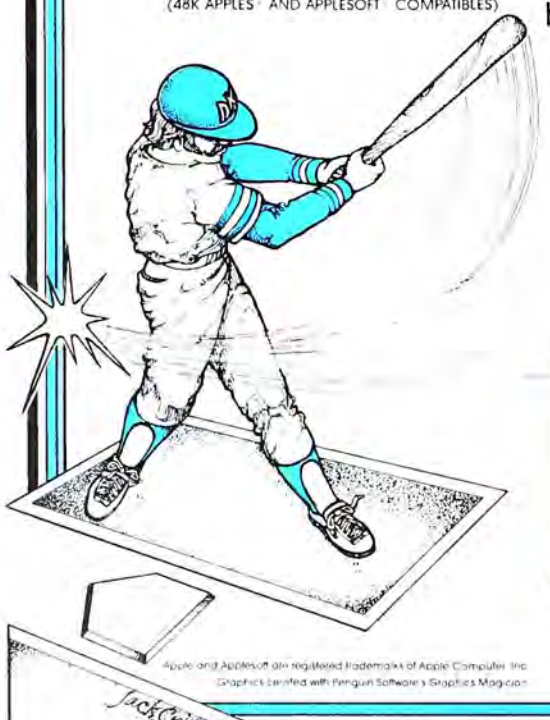
The End

/c16 end

GRAND SLAM TRIVIA™

A QUESTION AND ANSWER GAME LOVINGLY CRAFTED BY BASEBALL EXPERTS TO BRING YOU THE REALISM OF MAJOR LEAGUE COMPETITION WITH YOUR FRIENDS OR COMPUTER
(48K APPLES® AND APPLESOFT® COMPATIBLES)

by DATAKNIGHT™ YOUR SOFTWARE QUEST HAS ENDED



IT'S A HIT!

GRAND SLAM TRIVIA	$34.95
ADDITIONAL QUESTION DISKS	$19.95
(WATCH FOR FUTURE ADS)	

GRAND SLAM TRIVIA™	THE COMPETITION
• OFFENSIVE AND DEFENSIVE STRATEGY	NO STRATEGY
• 6 DIFFICULTY LEVELS FOR HANDICAPPING	2 LEVELS/NO HANDICAPPING
• MORE THAN 650 QUESTIONS WITH HINTS	300 QUESTIONS/NO HINTS
• QUALITY BLOCK GRAPHIC ANIMATION	STILTED SHAPES
• MULTIPLE CHOICE OR SPELLING-CHECKED ANSWERS	MULTIPLE CHOICE ONLY
• NO ANNOYING RANDOM OCCURRENCES	MANY SUCH
• BOX SCORE SUMMARIES	NONE

Apple and Applesoft are registered trademarks of Apple Computer Inc.
Graphics created with Penguin Software's Graphics Magician

Jack Crimmins

CREDIT CARD ORDERS: 215-431-8900
CHECK OR MONEY ORDER TO: DATAKNIGHT, NORMANDY CIRCLE, GLENMOORE, PA 19343

Raise your Apple's IQ Twelve Times A Year!



A One Year Subscription Brings You 12 Issues With:

Over $500 of Programs for your Home, Business, Education and Entertainment. Complete Program Listings with Instructions.

Comprehensive Articles that show what each program does, how to use it and how to type it into your Apple, Franklin ACE or other Applesoft-compatible computer.

Regular Features for the Beginner and Expert.

On The Scene
The Latest New Software/Hardware Releases.

Products! Inside and Out
Comprehensive Product Reviews.

Education Corner
Programs that help make Learning Fun.

Tips 'N Techniques
Little known programming Tricks you can Use.

Disassembly Lines
An Expert reveals the mysteries of Applesoft.

Utilities
Superchargers for Basic, DOS, Printing, and More.

Games
Arcade Fun you can Type and Run.

Note
- ☐ Domestic U.S. First Class subscription rate is $51.95
- ☐ Canada Air Mail subscripton rate is $59.95
- ☐ Outside the U.S. and Canada Air Mail subscription rate is $89.95

All payments must be in U.S. funds drawn on a U.S. bank.

©1983 by MicroSPARC Inc. All Rights Reserved.

Apple® is a registered trademark of Apple Computer, Inc.
ACE® is a registered trademark of Franklin Computer, Inc.

Try a NIBBLE!

Here's what some of our Readers say:

- ☐ *"Certainly the best magazine on the Apple!"*
- ☐ *"Impressed with the quality and content."*
- ☐ *"Programs remarkably easy to enter."*
- ☐ *"I'll be a subscriber for life!"*
- ☐ *"Your service is fantastic . . . as a matter of fact, I'm amazed!"*

Try a NIBBLE!

NIBBLE is focused completely on the Apple and Applesoft-compatible computers.

Buy NIBBLE through your local Apple Dealer or subscribe now with the Coupon or Order Card in this issue.

You'll want Back Issues Too!

Here are some examples of programs you can get:

The Investor—Stock Tracking, Reporting, and Graphing.

Recipe Box—Kitchen/Menu Management made Fun.

The Librarian—Auto Logging and Retrieval of your Disks.

Designer/Illustrator—Art/Design Creation and Composition with Graphics.

Machine Language Editor—Quick and Easy Aid for Typing and Changing M/L Programs.

And Much . . . Much More!

NIBBLE will become a permanent part of your Reference Library. Discover why 95% of NIBBLE Readers save every issue!

Join more than 120,000 Apple/Ace users who say:
"NIBBLE IS TERRIFIC!"

SUBSCRIBE NOW AND SAVE $12.00 OFF THE COVER PRICE!

nibble

MasterCard VISA
We accept Master Charge & Visa

Box 325, Lincoln, MA 01773 (617) 259-9710

I'll try nibble!
Enclosed is my $26.95 (for 12 issues)
(Outside U.S., see special note on this page.)

☐ **check** ☐ **money order** ☐ **bill me (U.S. only)**

Your subscription will begin with the next issue published after receipt of your check/money order.

Card # _____ Expires _____
PLEASE PRINT CLEARLY

Signature _____

Name _____

Address _____

City _____

State _____ Zip _____

Introducing the first computer games that pay you to own them.

Virtually all computer games provide entertainment value.

These new games from Blue Chip also give you practical value—of the most rewarding kind.

They put you in high-powered, real-world environments. Where you create strategies. React to constantly changing conditions. And learn solid skills in competing for extraordinary payoffs:

Millionaire™ You build a portfolio of actual NYSE companies, whose fortunes are tied to a universe of plausible events and variables to consider. Over 300,000 possible combinations of events mean you can play a lifetime without a repeat.

Baron™ Buy and sell all manner of real estate nationwide as you strive to amass a personal empire. Factors include realistic property values, overall economy and local idiosyncrasies.

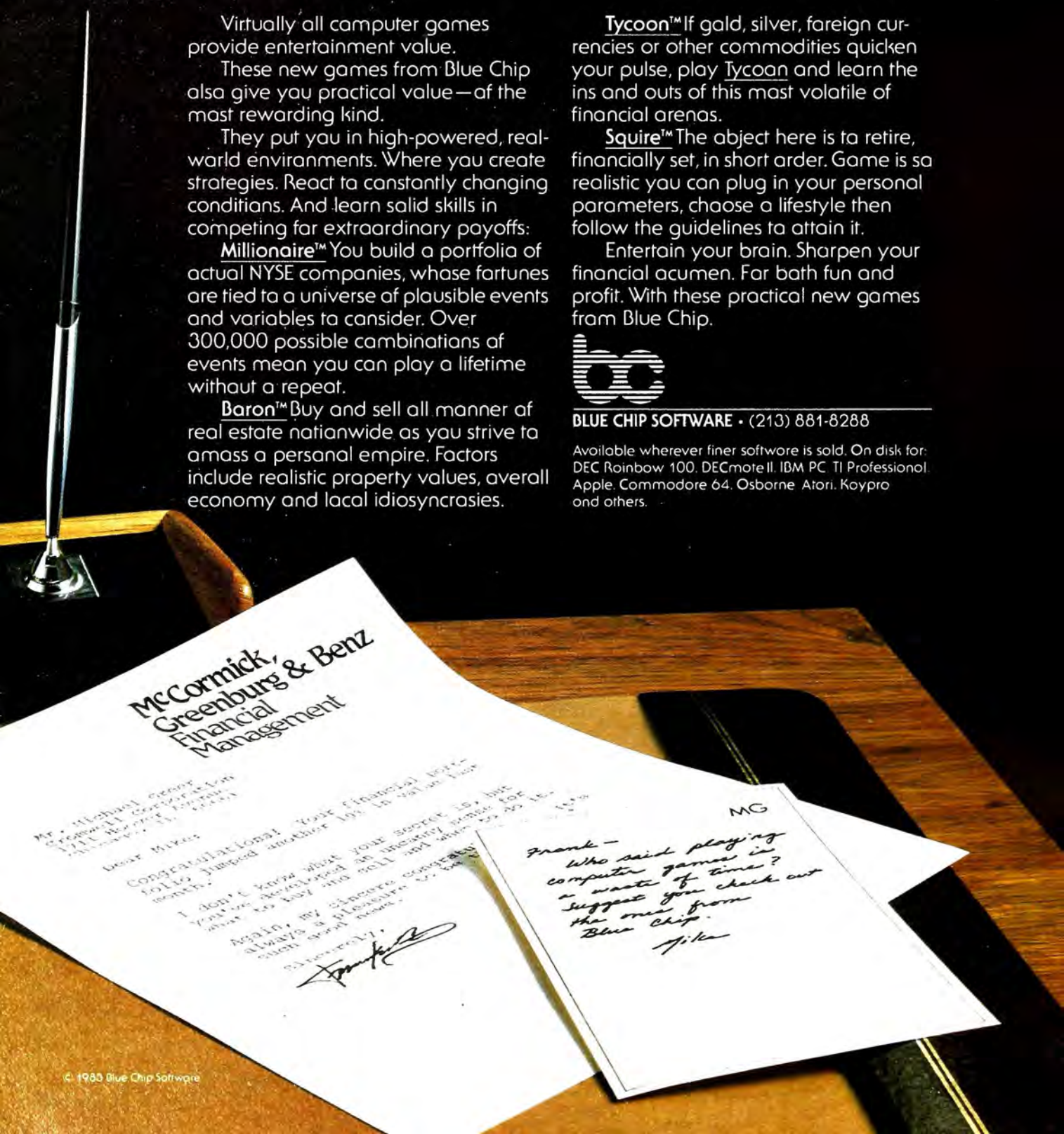
Tycoon™ If gold, silver, foreign currencies or other commodities quicken your pulse, play Tycoon and learn the ins and outs of this most volatile of financial arenas.

Squire™ The object here is to retire, financially set, in short order. Game is so realistic you can plug in your personal parameters, choose a lifestyle then follow the guidelines to attain it.

Entertain your brain. Sharpen your financial acumen. For both fun and profit. With these practical new games from Blue Chip.

BLUE CHIP SOFTWARE • (213) 881-8288

Available wherever finer software is sold. On disk for: DEC Rainbow 100, DECmate II, IBM PC, TI Professional, Apple, Commodore 64, Osborne, Atari, Kaypro and others.



© 1983 Blue Chip Software

Buttonwood Apples

BY KEN LANDIS



Last month we did a quick and dirty fundamental analysis of the common stock of Apple Computer. Using the Standard & Poor's report enabled us to get a feel for the stock, its history, and its future.

In this issue, we'll begin to learn about technical analysis. Why begin? Because if one installment of this column could teach you one-tenth of what you need to know to analyze stocks, *Softalk*'s cover price might change from $3 to $300. But we all need to start somewhere, and this seems as good a place as any.

Technical analysis is the science, black art, or cult (depending on your orientation) of forecasting future stock prices based on historical information. The difference between fundamental analysis and technical analysis is similar to the difference between matter and antimatter. And the end result of combining the two is probably the same: *kaboom!*

As we saw last month, fundamentalists look at a company's strengths and weaknesses. They also examine its past prices, future outlooks, earnings, dividends, and so on. Technicians, by contrast, take this information, along with such other indicators as volume, and run it through sophisticated mathematical formulas to forecast future stock prices or movements.

In this issue, we'll learn to read and use some of the technical indicators available in *Barron's* Market Laboratory. Other sources of technical data are the MicroQuote database on CompuServe and, to a lesser degree, the Dow Jones News/Retrieval Service.

Figure 1 shows the Dow Jones industrial average, the best-known stock index in the world. There are three other Dow Jones indexes: the transportations (commonly called "transports"), the utilities, and a sixty-five-stock average that combines the industrials, transportations, and utilities.

Technicians use the Dow Jones averages as a benchmark by which to measure the performance of other indicators or securities. These averages can be used straight, as they appear in the Market Laboratory, or they can be analyzed using moving averages, oscillators, or a host of other techniques. We'll cover these techniques in detail in later installments; the daily and weekly data contained in Market Laboratory is more than enough to concern ourselves with at this point. So for now, here's a good market rule of thumb to remember: The higher the Dow averages go, the better.

The Dow Jones industrial average has been maintained since 1897. At the beginning, it took twelve large industrial corporations into account. In 1916, the average was expanded to cover twenty stocks, and in 1928 it reached its present size of thirty industrials.

Back in 1897 the industrial average was computed by adding up the prices of the twelve stock issues contained in it and then dividing by 12; in 1920 the divisor was 20, and in 1928 it was 30. Because of stock splits, replacements, additions, and deletions among the thirty over the years, the divisor is no longer simply 30. The current divisor is always shown in the text under each average. The majority of investors won't need to work with this divisor, but it is important to understand what it is and what can happen to the various averages when it changes. If the overall market is steady, and a stock in the average splits, the divisor will change, and that could change the overall average.

Dow-Jones Weekly Averages

Dow Jones Stock Averages

	First	High	Low	Last		Chg.
Indus	1194.11	1216.16	1194.11	1215.45	+	23.38
Trans	532.85	558.94	532.85	558.94	+	26.44
Utils	130.59	130.59	129.53	130.11	–	0.96
Comp	470.72	479.29	470.72	482.11	+	11.71

Figure 1.

Figure 2 shows the Market Laboratory chart that gives the hourly averages for the Dow. Many technicians use these figures to get a short-term picture of the market. This level of detail lets us see what impact outside events may have had on the market during the week. We can also use it to identify patterns in the market; for example, a strong market close usually means that investors can expect a strong open the next trading day.

The number 20 before transportation and the number 15 before utilities tell us how many stocks those indexes encompass. Often, the industrial average is referred to as the "30 industrials," and the transportations and utilities are also often referred to with their respective numbers. The major value that the transportation and utilities indexes hold for a technician is that they can be used as guides to their respective industries. The utilities index is sometimes also used by technicians as a proxy for investors' feelings about interest rates. Utilities are high-dividend-paying, bond-issuing concerns. and this structure makes them very susceptible to interest-rate fluctuations. When rates go up, the prices of utilities go down; the reverse is also true.

Figure 3 shows the Dow Jones 20 bond average. This average is figured on ten utility bonds and ten industrial bonds. The bond average gives you an easy way to monitor the performance of the bond market, which is often a leading indicator of how the stock market will perform. If the 30 industrials are rising and the bond average is falling, it's usually a signal of trouble ahead in the stock market. If the 15 utilities, which we know already are interest-sensitive, are also falling, run for cover! If, on the other hand, bonds and utilities are firm but the industrials are not performing, this usually indicates that the market is near, or at, a bottom point.

(By now you're probably starting to realize that forecasting the market is (a) not easy, (b) complicated, (c) an activity in which the Apple can really help a lot, or (d) all of the above. The answer, of course, is (d).)

Figure 4 shows the Dow Jones Price-Earnings Ratio. Last month we described the concept of price-earnings ratio in detail. However, the figure known as the Dow Jones price-earnings ratio is not the P-E for Dow Jones but for the Dow Jones averages. This ratio is calculated by adding up the earnings of all the stocks in an average, dividing by the number of stocks, and then dividing the result into the average itself.

This indicator is normally used to test whether a stock is under- or overpriced according to the current state of the market. For example, if the industrials' P-E is 12.5, and Apple's is 20, then an analyst will say that according to the market Apple is overpriced. Overpriced P-Es indicate that the market feels a stock has good growth potential or is very low-risk. Underpriced P-Es usually mean either that a company is in a mature industry or that there's something the matter with it. The Dow

Jones stock P-E is a good indicator against which to test a security before you buy.

All the market performance indicators we've looked at so far are price-based. But price is only one aspect of the information needed to solve the technical equation. The next area we'll consider is volume; to many technicians, volume is the most important information to have and evaluate.

Figure 5 shows New York Stock Exchange odd-lot trading. Odd-lot units are units that have been traded in batches of fewer than 100 shares.

Odd lots are normally traded by the smaller-time, more conservative investors. Historically, these "odd-lotters" have been right about the future of the market more often than they've been wrong. In fact, compared to those of the large institutional traders, the records of these investors are enviable. As prices fall, odd-lotters normally tend to buy more and sell less, so near the bottom of the price range they are net buyers (they're buying more than they sell); if these folks increase their buying and also decrease their selling, be careful! They're saying that they think the market might fall. To analyze odd-lot activity, you can construct a ratio of odd-lot purchases to sales and watch it over time.

Another key indicator of investor smarts (or the lack of them) is short selling. Selling short consists of contracting for the sale of a stock you don't own in the hope that the price of the stock will go down. If it does, you'll be able to go into the market and buy the stock at a lower price than the contracted price. (This form of investing, by the way, is for those of you who speculate, sky-dive, or have a death wish.)

The short-sales indicator lets us know what the small, highly speculative investor is thinking. Statistically speaking, short sellers are contra-right—they do exactly the wrong thing. So if you want to make money, consider doing exactly the opposite of what short sellers do.

Stock exchange volume trends (see figure 6) are another important group of statistics for the technician. *Up volume* equals the aggregate data volume of buying and selling for all issues that rose in price on the New York Stock Exchange. Conversely, *down volume* equals the aggregate total for all stocks that fell in price. The chart does not show unchanged volume.

By analyzing this data we can see, technically speaking, whether the market is overbought or undersold. If the up-down volume has increased dramatically over a short time period, a technician will read this as a signal that the market is overbought. Overbought means that it's time to

MICRO PROGRAM DESIGNS

EDU-CAVE™

— THE ULTIMATE QUEST —

• ARITHMETIC
• GEOGRAPHY
• SPELLING
• CUSTOM TOPICS

2 DISKETTES • ONLY $29.50

FREE LITERATURE • CALL /WRITE

MICRO PROGRAM DESIGNS
5440 CRESTLINE RD. □ WILMINGTON, DE 19808
Phone: (302) 738-3798

Dow-Jones Hourly Averages

30 Industrials

	Aug. 29	30	31	Sept 1	2
Open	1183.54	1194.72	1195.53	1215.96	1207.72
11:00	1187.30	1196.34	1198.07	1209.65	1209.55
12:00	1186.89	1196.65	1202.74	1214.02	1213.01
1:00	1188.11	1198.68	1206.91	1209.15	1214.02
2:00	1187.50	1199.49	1205.79	1208.84	1213.31
3:00	1186.69	1197.46	1209.65	1207.01	1216.06
Close	1194.11	1196.04	1216.16	1206.81	1215.45
High	1198.37	1204.37	1219.82	1221.24	1221.34
Low	1178.15	1187.20	1191.16	1197.36	1204.17
Change	+2.04	+1.93	+20.12	−9.35	+8.64
Advances	13	17	24	7	24
Declines	11	8	4	21	4
Unchanged	6	5	2	2	2

Intra-day range: High 1221.34 Low 1178.15

20 Transportation Cos.

Open	530.31	534.96	538.30	548.75	553.76
11:00	530.22	537.68	540.76	547.79	554.46
12:00	530.92	538.30	542.25	552.18	556.04
1:00	531.18	539.53	543.57	552.44	557.19
2:00	531.45	540.67	542.96	552.71	557.36
3:00	530.92	539.79	544.27	552.71	557.89
Close	532.85	538.21	548.58	553.32	558.94
High	535.05	543.31	549.98	557.10	561.23
Low	526.97	532.15	536.72	545.24	551.65
Change	+0.35	+5.36	+10.37	+4.74	+5.62
Advances	8	13	19	12	10
Declines	7	4	0	5	5
Unchanged	5	3	1	3	5

Intra-day range: High 561.23 Low 526.97

15 Utilities

Open	130.68	130.59	129.53	129.53	129.67
11:00	130.54	130.30	129.58	129.72	129.67
12:00	130.25	130.25	129.43	129.53	129.62
1:00	130.30	130.15	129.48	129.58	129.82
2:00	130.30	130.01	129.34	129.58	129.72
3:00	130.35	130.06	129.58	129.67	129.91
Close	130.59	130.06	129.53	129.87	130.11
High	131.36	130.92	130.25	130.25	130.49
Low	129.77	129.62	128.61	129.00	129.05
Change	−0.48	−0.53	−0.53	+0.34	+0.24
Advances	2	0	7	7	6
Declines	5	8	5	3	2
Unchanged	8	7	3	5	7

Intra-day range: High 131.36 Low 128.61

65 Stocks Composite

Open	467.71	471.40	471.95	479.29	478.81
11:00	468.47	472.34	473.19	477.71	479.41
12:00	468.42	472.55	474.57	479.75	480.58
1:00	468.79	473.28	475.88	478.74	481.20
2:00	468.72	473.70	475.39	478.74	481.04
3:00	468.42	473.03	476.72	478.38	481.88
Close	470.72	472.30	479.29	478.58	482.11
High	472.62	475.92	480.83	483.01	484.22
Low	465.19	468.51	470.12	473.93	477.16
Change	+0.32	+1.58	+6.99	−0.71	+3.53
Advances	23	30	50	26	40
Declines	23	20	9	29	11
Unchanged	19	15	6	10	14

Intra-day range: High 484.22 Low 465.19

Figure 2

Dow-Jones Bond Averages

	Aug. 29	30	31	Sept. 1	2
20 Bonds	70.96	70.73	70.83	70.85	70.73
10 Util	69.23	69.02	69.05	69.06	68.81
10 Ind	72.70	72.45	72.62	72.65	72.65
10 U.S. Govts.	87.88	87.86	87.61	87.52	87.42

Figure 3

The Stock Portfolio System gets you out of the office and onto the golf course.

The Stock Portfolio System means more leisure time, less worry time.

Use the STOCK PORTFOLIO SYSTEM and your IBM PC or Apple II or III to track stocks, bonds, CD's, options, cash accounts and your other investments.

Also, tap into the Dow Jones News Retrieval service (optional).

The STOCK PORTFOLIO SYSTEM generates complete recordkeeping reports. Such as Current Portfolio Status, Profit and Loss Statements, Individual Security Status, Dividend Income, Interest Income/Expense reports. And more.

Use it to store quotes for historical recall. Or calculate your return on investment before and after tax.

The STOCK PORTFOLIO SYSTEM provides advance notice of stocks going long term, dividends coming due, options expiring.

Computer or investment expertise is not necessary. A complete monitoring system at your fingertips.

See your dealer. Or send a check for $185 + $2 shipping (California residents add $11.10).



SMITH MICRO SOFTWARE
PO Box 604,
Sunset Beach, Ca. 90742
(213) 592-1032

IBM PC is a Trademark of International Business Machines
Apple Trademark of Apple Computers Inc.
Dow Jones News Retrieval is a registered Trademark of Dow Jones & Co., Inc.

Dow-Jones Price-Earnings Ratio

	Sept. 2 1983	Aug. 2 1983	Sept. 2 1982	Sept. 2 1981
Industrials	104.9	102.5	11.4	6.9
Trnsprt Cos	18.0	17.6	10.2	8.2
Utilities	7.8	7.7	6.0	6.7

Per share earnings for 12 months ended June 30.
The latest indicated P/E for the Dow Industrials correctly reflect deficit/negative earnings for the September and December quarters of 1982.

Figure 4.

NYSE Odd-Lot Trading

	Aug. 26	29	30	31	Sept. 1
Purch th shs	153.4	156.3	156.6	159.8	165.0
Sales, th shs	284.9	309.5	302.7	325.1	321.4
Short sales, sh	660	1,011	1,007	569	1,272

Figure 5.

sell, before the market turns down. When the ratio goes to the opposite end of the spectrum (very low), it's an indicator that the market is oversold. In a bull (or rising) market, this is the time to buy. But in a bear (or falling) market, an oversold condition can be considered part of life itself. It is the market's manifestation of a common human malady: depression.

QCHA is computed by QUOTRON, the people who supply the modern-day equivalent of ticker tape machines to the financial services industry. This calculation gives the average percentage movement for all New York Exchange listed stocks each day, and it is used by technicians to track deviations, or differences, between percentage changes on the NYSE and other indexes, such as the Dow 30 industrials. (If, for example, the QCHA is .24, it means that the average stock on the NYSE rose .24 percent.) Such analysis can reveal weaknesses or strengths in the market. If the QCHA index is running stronger than the Dow, it may signal rising stock prices ahead; if the Dow is running ahead of the QCHA, the technical interpretation is that the market will probably fall.

The key thing to remember about the QCHA is that it measures the price changes for all issues listed on the New York Stock Exchange. Many of the stocks listed on the NYSE are small and volatile compared to the stocks used for the Dow Jones 30 industrials, so the QCHA moves more, and faster, than the Dow. If you're not careful, you may be easily misled by it.

STOCK EXCHANGE VOLUME TRENDS

		NYSE Up	NYSE Down	NYSE (%) QCHA	Amex Up	Amex Down	Amex (%) QCHA	NASDAQ Up	NASDAQ Down
Aug.	29	21,439,600	24,704,700	− 0.18	1,911,100	2,497,100	− 0.38	10,589,300	17,871,300
	30	34,748,500	20,938,500	+ 0.25	2,056,300	1,861,900	+ 0.20	19,183,400	14,215,200
	31	57,363,200	15,589,400	+ 0.80	4,461,500	2,209,400	+ 0.56	23,951,900	14,104,100
Sept.	1	33,017,200	35,630,400	− 0.15	2,079,600	2,807,500	− 0.08	25,099,800	11,615,600
	2	38,492,200	13,989,400	+ 0.55	3,197,100	1,509,400	+ 0.61	25,117,700	4,929,900

Supplied by QUOTRON.

Figure 6.



Which Came First?

QUOTEMINDER and TELEMINDER are the revolutionary software packages that access quotes and news faster and cheaper than ever before.

Fast Quotes

- Fast quotes means spending little or no time in front of your computer; and best of all, money in your pocket.
- How fast? QUOTEMINDER can get you up to 40 quotes in as little as 60 seconds!*
- How cheap? As little as a penny and a half per quote!*
- How versatile? *QUOTEMINDER automatically interfaces with Dow Jones Software,™ VisiCalc,® Lotus 1*2*3*™ and more.*
- How much? QUOTEMINDER costs only $99.
- Get all the quotes you want and get them fast.

QUOTEMINDER
Quote Retrieval Software

*1200 Baud, non-prime time, Warner Computer

Better Decisions

- Better decisions require up-to-the-minute, comprehensive news information.
- Dow Jones News/Retrieval® is the finest source for business and financial news.
- *Now you can tap into Dow Jones for less money and less time than ever before with TELEMINDER.*
- Less time—TELEMINDER runs all by itself.
- Less money—TELEMINDER's speed and efficiency save up to 50% of your on-line charges.
- Get all the business and financial news you want...when you want it. And it's only $195.

TELEMINDER
News and Quotes Retrieval Software

QUOTEMINDER and TELEMINDER. Which came first? It really doesn't matter. The fact is with either one you save money; you waste no time and you can almost count your chickens before they hatch.

TELEWARE

Creators of the Dow Jones Market Manager™

For further information call **1-800-225-0076** (in N.J. 201-882-0466) Dealer inquiries invited.
Teleware, Inc. • P.O. Box 729 • 28 Bloomfield Ave. • Pine Brook, NJ 07058

© Copyright, 1983, Teleware, Inc., Pine Brook NJ Dow Jones News/Retrieval is a registered trademark of Dow Jones Co., Inc.
Dow Jones Software and Dow Jones Market Manager are trademarks of Dow Jones Co., Inc. Lotus 1*2*3 is a trademark of Lotus Development Corp.



INTRODUCING SARGON III. THE FIRST CHESS GAME THAT'S TOUGH ENOUGH FOR BORIS AND EASY ENOUGH FOR BOBBIE.

Sargon III™ from Hayden Software. It's the ultimate microcomputer chess game. Whether you're a master like Boris Spasky looking for a real challenge. Or a novice like little Bobbie Adams who wants to learn the finer points of the game.



Sargon III is the best way to learn chess.

Sargon III gives you the greatest instructional value of any chess game. It allows two players to play each other while it monitors moves for consistency with rules of play. You can also query Sargon for move suggestions. If you're playing alone, you can ask Sargon for alternate moves after it makes its best move.

Sargon III also shows you 107 of the greatest chess games in history so you can see how the masters did it.

Sargon III provides the most complete and informative user manual, making it easier for the novice to learn. It includes diagrams from the U.S. Chess Federation, suggestions for better play, and descriptions of the 107 historical games.

Sargon III challenges the masters.

Sargon III can be the toughest opponent you'll ever play.

It's more difficult and moves faster than our famous Sargon II. Played at its highest level, Sargon III is the Grand Master of chess games.

If you want to see classic situations and problems, Sargon III will show you. If you want to replay sequences, Sargon III lets you. You can even stop your game in progress and save it to disk or print it out if you want.

Sargon III is compatible with the Apple personal computers, the IBM Personal Computer and other popular compatibles.

So visit your local retailer and ask for Sargon III by name.

It's simply the best move you can make.

SARGON III™

HAYDEN SOFTWARE

Sargon III is a registered trademark of Hayden Software. Apple is a registered trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corp.

New Apple Portfolio Management System!

How to Invest for Better Returns.

Turn your Apple into a powerful investing tool.

Now you can improve your stock investments and make more money. . . with Micro PMS.

Share virtually the same vast information, analysis and expert advice enjoyed by major corporate investors right on your Apple II+ or IIe at a fraction of the cost.

Here's how simple and comprehensive Micro PMS is . . .

ADVANTAGE #1: Accurate, Timely Portfolio Records.

"How am I doing?"

First, you can set up your portfolio, enter transactions and print current appraisals. Then track and analyze your stocks. Even graph trends. Stocks are updated monthly or daily (optional).

ADVANTAGE #2: 50 Ways to Evaluate Stocks.

"How good is this stock?"

You can display and graphically compare any of 50 characteristics of your portfolio stocks, including price histories, growth projections, earnings data and even risk measurement and quality ratings.

ADVANTAGE #3: Rate your stocks against your objectives.

"Should I own these stocks?"

Give Micro PMS your investment objectives—income, growth or an aggressive portfolio. Micro PMS then tells you which of your holdings actually match those goals.

ADVANTAGE #4: Discover every stock that suits you.

"Where else can I invest?"

Next, Micro PMS will find every stock from its 1500-stock database which matches your investment criteria. For example, locate every stock with high yield, low P/E, fast growth *and* low risk.

ADVANTAGE #5: Solid Buy and Sell Advice.

"Now, what to buy? Sell?"

You're even told specific stocks to buy and sell to most closely match your objectives. That way you can make better, more profitable choices which align with your goals.

ADVANTAGE #6: Project Decision Implications.

"What if...?"

Finally, project results of potential investment decisions BEFORE you make them. Using sample portfolios, you can evaluate the potential impact of any transaction you're considering.

SEND FOR INFORMATION TODAY

For complete details, and the very low cost, return the coupon today. **Or, call 800-468-8324.** (In Mass. 617-722-7939.)

☐ **YES! Please tell me more about turning my Apple into a powerful investment tool with Micro PMS.**

Mail today to: Boston Safe Deposit and Trust Company
The Boston Company Micro PMS Group Dept. S
One Boston Place, Boston, MA 02106

Name _____ Phone _____
Address _____
City _____ State _____ Zip _____

The Boston Company
A subsidiary of Shearson/American Express, Inc

Apple is a registered trademark of Apple Computer Inc. © 1983 The Boston Company

The next section of *Barron's* Market Laboratory we'll look at contains the weekly market statistics. Weekly statistics are put to very heavy use by technical analysts. When a technician builds charts that use months or even years of data, including daily information can make a chart difficult to read. The same patterns can be seen, and more information can be included, by using weekly information instead. Trends that develop over time can still be easily isolated and analyzed.

The week's market statistics (illustrated in figure 7) show the current week's information, the previous week's data, and the numbers for a year ago. Volume information is given for the New York, American and over-the counter exchanges, and for the Dow Jones groups. Many technicians use this information in interpreting buyers' preferences—and thus the condition and future of the market. If trading on AMEX is advancing on a percentage basis over the NYSE, a technician will probably interpret that to mean increased speculation in "lower grade" issues. This, in turn, can be interpreted as a signal that a market high has been reached and that an overall downturn in the market is just ahead.

The twenty most active stocks (see figure 8) act as indicators of investor preference. Taking composition of the group into account can give

Week's Market Statistics

	Last week	Prev. week	Last year
Sales NYSE, th sh	331,699	347,226	434,406
Sales AMEX, th sh	29,840	30,540	30,540
Sales OTC, th sh-a	278,619	257,811	172,167
Sales Dow Indus, th sh	37,123	39,054	43,018
Sales Dow Transp, th sh	12,464	13,522	10,383
Sales Dow Utils, th sh	4,774	6,189	7,981
Sales Dow Comp, th sh	54,361	58,765	61,382
Bond offerings, th $	2,600,200	2,590,300	1,489,000
Stock offerings, th $	115,260	719,770	223,708
Low Price Stk. Index-v	261.75	263.06	r174.63
Volume, th sh	1,251.9	1,557.0	r2,295.0
%vol to DJI vol	3.30	4.06	r3.28
20 Most Active Stocks:			
Average price	46.68	42.08	43.72
% vol to total vol	15.12	14.93	14.02
NYSE volume report, Aug. 19, 1983:			
Buy/sell, th sh-w	387,787	380,781	456,347
Total shorts, th sh	38,538.2	30,256.7	55,149.0
Public shorts, th sh	6,083.6	4,833.3	11,984.9
Member trading, Aug. 19, 1983:			
Member shrt, th sh-x	32,454.6	25,423.4	43,164.1
Specist shrt, th sh	14,081.7	12,869.3	21,791.3
Purchases, th sh	106,614.8	112,546.0	115,111.3
Sales,th sh-z	121,044.7	112,983.1	133,664.4
Net buy/sell, th sh	−14,429.9	−437.1	−18,553.1
% vol to NYSE vol	29.35	29.61	27.26
Odd-lot trading, Aug. 19, 1983:			
Purchases, th sh	1,548	1,478	1,408
Purchases, th $	63,679	60,671	38,195
Sales, th sh-z	2,647	2,707	3,030
Sales, th $	101,880	107,506	90,422
Short sales, actual	4,458	8,105	10,866
Bond vol, NYSE, th $	101,604	109,640	160,312
Best Grade Bonds %-y	11.44	11.32	12.66
Intrm Grade Bonds %-y	12.72	12.64	14.14
Confidence Index-c	89.9	89.6	89.5
Stock/Bond Yield Gap-s	−6.87	−6.66	−6.77
Yield Returns on Dow-Jones Averages:			
30 Industrials, %	4.57	4.66	5.89
20 Transports, %	2.59	2.72	3.89
15 Utilities, %	9.80	9.72	10.64
20 Bonds, %-y	12.18	12.16	13.66
10 Utils, %-y	12.93	12.82	13.94
10 Indus, %-y	11.43	11.50	13.38
Bond Buyers' 20 Muni Bond Index, %-y	9.75	9.59	10.74

a-NASDAQ. c-Ratio best grade to intermediate grade bonds. s-Spread between dividend yield on DJI and yield to maturity on best grade bonds. v-Week ended Thursday. w-Shares and warrants. x-Includes specialists short sales. y-Yield to maturity week ended Thursday. z-Includes short sales.

Figure 7.

GLOBAL THERMONUCLEAR WAR!™



THE GAME

Match your wits against the computer and prevent World War III. If you fail, be prepared to fight with a complete arsenal of state-of-the-art tactical and strategic weapons. Features include:

- **Full color graphics and exciting animation**
- **HAL™ speech synthesis (without special hardware!)**
- **Realistic sound and special effects**
- **Options to play as enemy or defender**
- **Top 10 score display**

Available for IBM-PC, APPLE II, and COMMODORE 64 computers. IBM-PC version requires 64K, one disk drive, and color graphics adapter. APPLE versions require 48K, and one disk drive, and DOS 3.3. COMMODORE 64 version requires cassette.

STARFIRE GAMES, Division of Omnisoft Corp.
Dept. ST2, 9960 Owensmouth Avenue, Suite 32
Chatsworth, California 91311

Please rush me GLOBAL THERMONUCLEAR WAR™ for the
☐ IBM ☐ APPLE ☐ COMMODORE 64
Enclosed is a ☐ check ☐ money order for $34.95
(California residents please add 6½% sales tax.)

Name _____
Address _____
City _____ State _____ Zip _____

IBM-PC is a registered trademark of IBM Corp.
Apple II is a registered trademark of Apple Computers.
Commodore 64 is a registered trademark of Digital Research.

NYSE Most Active Stocks

52-Weeks High	Low		Sales	High	Low	Last	Chg
26⅜	18⅜	DiamS	6,560,900	24⅜	22⅝	23¾	+ ¾
35⅝	8	Chrysler	4,337,800	29⅜	25	29⅜	+ 3⅜
70¼	54¼	ATT	3,506,400	66	64	66	+ 1¼
26⅛	14⅞	BethStl	3,099,400	24¼	22⅛	23⅝	+ 1⅜
77½	46⅛	GMot	3,062,500	72¼	67⅝	72⅛	+ 3½
127	68⅜	IBM	2,976,000	119¾	116⅞	119¾	+ 1⅞
41¾	24⅜	SuprOil	2,963,600	39⅜	34¾	35¼	— 3
60	15⅞	NSemi	2,933,600	55¼	48⅝	52¼	+ 3
132⅛	77⅝	Digital	2,640,000	105⅝	95½	103⅜	+ 7½
63¾	25½	FordM	2,571,300	60¼	53¾	60¼	+ 5½
47¼	25¼	Alcoa	2,553,200	47¼	43	46⅞	+ 3½
57¾	35⅝	GenEl s	2,504,200	51¼	47¾	50¾	+ 2½
39⅜	27⅛	Exxon	2,489,300	38¼	37⅛	37½	— ⅛
8⅞	2½	PanAm	2,462,700	7¾	7½	7⅝	— ⅛
37¼	22⅜	DowCh	2,402,300	37¼	34	36⅜	+ 1¾
47¼	23⅜	Halbtn	2,289,400	45⅛	43⅜	45	
46⅛	23¼	Citicrp	2,281,000	36¾	34⅝	35¼	— 1¾
25⅞	14½	ElPaso	2,262,100	23¾	23¼	23½	— ¼
28⅜	17⅜	USSteel	2,221,100	27¾	26¾	27⅛	+ ⅛
45⅛	21⅜	Sears	2,180,300	38⅛	36	37¾	+ 1¼

Figure 8.

you incisive insights into the current "mind set" of the market.

The index for the twenty low-priced stocks is a very good speculative indicator: The higher the activity in these stocks, the more bearish the market (speculators go against these indicators and try to beat the market). The lower the index, the more bullish the market.

Member trading information is used extensively by the various market newsletter writers to analyze the preferences of the market specialists, or traders, who by general proclamation are considered "experts." We'll leave the analysis of this section to the newsletter writers; personal experience has been known to suggest, however, that this is the least effective indicator of future market performance.

Adding together the daily odd-lot figures for the week gives you the weekly odd-lot total, right? Wrong. Many brokerage houses handle odd-lot transactions off the exchange floor. These trades are not counted in the daily totals, but they are included in Market Laboratory. Even though these trades may not represent a large percentage of market volume, they're important, and your daily analysis should be adjusted to reflect them.

The bond offering and stock offering numbers show the total dollar amount of new issues, or offerings, during the previous week. By analyzing these numbers, we can see whether pressure is being placed either on interest rates or on market liquidity. For example, a rapid increase in bond volume will probably force interest rates up (issuers will have to pay more to attract funds), and this will in turn force stock prices down. (The higher interest rates go, the lower stock prices go. This relationship is demonstrated in the Gordon model, an explanation of which can be found in any basic finance text.) Another good example: If the dollar volume of stock offerings drops below average, it may signal a market high—underwriters may be holding issues back because they feel that the market won't respond to a new offering.

Getting Specific. Well, that's enough for this month. Now that we've talked about technical analysis, why don't we look at a technical analysis package, *The Market Technician* from Datamost.

The Market Technician, by Steven King, Datamost (8943 Fullbright Avenue, Chatsworth, CA 91311; 213-709-1202). $195.

Backup policy: copyable.

System requirements: Apple II, II Plus, or IIe; Applesoft; one disk drive. Optional (and recommended): second disk drive, printer with graphics, D.C. Hayes Micromodem or Apple-Cat.

Market Technician is Datamost's first investment program. Like any first try, it has some weak spots and problems, but the program does provide the technical investor with some interesting tools. Let's take a look.

Market Technician comes with its own database so the technician can get started right away. This database contains daily stock market data from January 1979 to the present. (It's safe to assume that "the present" is approximately the day the disks were duplicated by Datamost.) The information contained in the database provides most, if not all, of the aggregate market statistics you'd want to have in order to get started. Included on the database are the Dow Jones industrial, transportation, and utility averages, the Standard & Poor's 500 average, the number of composite New York Stock Exchange issues advancing and declining, the New York Stock Exchange volume, the number of shares traded on the NYSE on an uptick (called advancing shares), the number of new highs on the NYSE, and the number of new lows on the NYSE. Without a doubt, a very complete statistical base.

From these statistics, the program automatically constructs two other measures of market activity. The first is called an advance-decline line. This line displays the net cumulative advances and declines for each trading day, beginning on January 2, 1979. The second measure constructed is the net cumulative volume, which begins on January 1, 1979.

When you buy a technical analysis program, you have the right to expect that historical market information will be included. Datamost and the author showed foresight and understanding when they included this database in *Market Technician*. As we've already learned, technical analysis involves analyzing a great deal of data that has been collected over time. And while neither the publisher nor the author could possibly guess what stocks an investor who buys their program will be tracking, they can easily and accurately guess what aggregate market statistics program purchasers will be using in their analyses.

Market Technician is menu-driven. The menus themselves are easy to use but visually distracting and thus unprofessional. The program uses the left and right arrow keys to move a flashing inverse bar over the menu choices. In many menus, the left and right arrow keys can be used to move the cursor bar up and down. In other menus, however, only the right arrow works; this inconsistency should have been taken care of.

Menu-screen choices are numbered, which adds to the confusion; if a cursor bar is used, numbers are unnecessary. To select a menu item, you position the bar over it and press return. The blinking cursor tires the eyes and is, quite frankly, very annoying. A plain inverse bar would have been a better choice.

The program contains six major modules. The first module is the data entry section, which is used to input raw stock market data into the *Market Technician* database. Information must be entered into the program sequentially by date. *Market Technician* does some very rudimentary error-checking on date entries—for example, it won't accept a month number greater than 12 or a date greater than 31—but once you've

Guaranteed Error-Free Performance with Scotch® Diskettes by 3M



SPECIAL $22.00
per box of 10

Scotch double density diskettes with reinforced hub ring. Packed in 3M two piece storage box. Add $1.50 for plastic library case with 10 diskettes. Larger quantity prices available.

Add $1.50 per order for continental U.S. UPS surface shipping.

A B Computers
252 Bethlehem Pike
Colmar, PA 18915
215-822-7727





To err is human. To forgive is SAVVY.™

With SAVVY™ you can misspell, mistype or rephrase and still command your computer.

If you're tired of inflexible personal software, it's time to get SAVVY.

SAVVY teaches your computer to adapt to you. It's part hardware, part software, and part remarkable. It lets your computer see things as you see them. Do things the way you like to do them. It even allows for those unavoidable entry errors that we all sometimes make.

What's the secret? SAVVY can recognize patterns (other software products can only recognize exact duplicates) and you can teach it to recognize your language. That means it will carry out your commands instead of flashing "error" messages.

Whether you want SAVVY to teach yourself programming, to run your business applications or to develop drills for students, there's a version of SAVVY to suit your needs and your budget. It's a database system, file manager, natural language programmer, and an operating system, all in one. SAVVY operates on Apple II Plus® and IIe® computers as well as Apple-compatibles.

Call 800-551-5199 to arrange for a demonstration at your local dealer.

SAVVY is a product of Excalibur Technologies Corporation, 800 Rio Grande Boulevard N.W., Mercado 21, Albuquerque, New Mexico 87104.



SAVVY™

A product of Excalibur TECHNOLOGIES CORPORATION

SAVVY™ is a trademark of Excalibur Technologies Corp
Apple II Plus & IIe are registered trademarks of Apple Computer Inc.

entered the date, the error-checking stops.

As you input information, the program automatically increments the date counter for you. This is a nice feature, because it means you don't have to enter the date each time. The problem is that the program doesn't know when to stop. At the end of a month's worth of data you must enter the starting date of the new month. Otherwise, if you're entering a long list of data that spans a long time period, you'll likely run past the end of the month and not realize it until it's too late and you have a date like November 31 or February 30 muddling up your records.

The data entry module features a useful status counter that tells the investor how many days of information are on file and gives an estimate of how many more can fit in the database. *Market Technician* can hold approximately 1,265 days' worth of data in its database.

Updates to the *Market Technician* database must be done by hand. Most of the information required is not available from the electronic services, but it can be gathered from *Barron's* or from the financial pages of any major newspaper.

The second module is the data compiler. If you're a computer technician, you probably know what a compiler is, but if you're reading this because you're a market technician, you may have just gotten lost. The compiler in *Market Technician* is used to transform the database files that come with the program into a form that its other modules can use. It's hard to understand why this is not handled automatically. Setting things up that way might make the program run a bit more slowly, but it would eliminate the confusion this module introduces.

The data compiler can be used to create a data file that has composite, or analyzed, information in it. A user-defined option allows the investor to perform mathematical operations on as many as five data files in a row. You can then save the resulting information to disk under file names you supply. This feature is useful in creating benchmarks or indexes to use in your analysis.

Some major problems in the program first surface in this module. To begin with, the program dictates where your data files are to be stored and retrieved. First, for this and many of the other forms of analysis, the data files have to be on the disk in drive 1. Most of the time you can't access programs stored on drive 2. The question, then, becomes what's the use of having two drives? In addition, although the data compiler documentation says that it's only necessary to compile the information stored in the *Market Technician* database and that stock information we load in ourselves doesn't have to be compiled, this doesn't seem to be the case. In reviewing this program, we could not manage to make use of the information we had entered ourselves. An attempt to compile it produced no better results; it would not compile. To quote classic data processing terminology, there's a bug here, one that should have been caught before the program was released.

Balance volume analysis and price volume analysis are the other forms of analysis available from the data compiler module. Balance volume is figured by adding the current day's volume of a stock or average to that of the previous day (or subtracting it, depending upon the closing price of the stock). If the price has increased, the volume will be subtracted; and if the price has remained unchanged, the file will be unchanged. As many of you probably recognize, this balance calculation is similar to the OBV (on balance volume) calculation made famous by Joe Granville.

Price volume analysis resembles the balance volume analysis, except that it is related to the change in the current day's volume, which is in turn related to the percentage change in the current day's price. The calculation goes something like this: ". . . for each percentage point change in price, a similar multiple of the daily volume is added to or subtracted from the previous day's cumulative adjusted volume." The end result is an index that's acutely sensitive to coupled price/volume changes.

The third menu option is the graphics section. Graphing is the heart of any technical analysis program, and thus the most important. But for some reason *Market Technician* assumes that all you want to graph is information from the database that came with the program, not the stock information you've entered in. And, in fact, though the graphic analysis of the program's database went without a hitch, we could not get *Market Technician* to graph the Dow Jones stock price data we'd retrieved. This means one of two things: Either the documentation is wrong, or the program is. It really doesn't matter; *Market Technician* did not perform.

As just mentioned, *Market Technician*'s graphics module can chart the database that comes with the program. The graphics module is not hard to work with, and using it can give you some valuable information. Once you've selected the data you want to graph, the *Market Technician* retrieves it from disk and plots the graph. After the graph has been displayed, a command bar appears at the bottom of the screen. It is through this command bar that any additional analysis on the chart is performed. From here, you can overlay another data set over the existing chart for a comparison, find a particular date on the graph and display the value of the data on that day and the change from the previous day, draw a least-squares trend line on-screen, overlay a logarithmic chart of the active data file on-screen, print out the data that's displayed on-screen on a printer, and save the graphic representation to disk (or send it to a graphic printer or interface).

One note: The date feature can be used only on daily files. Remember, these features are useful for analyzing the thirteen indexes that come with *Market Technician*, but they don't seem to work with user-supplied data. The same holds true for the other available forms of analysis: moving average, relative strength, and momentum. Let's consider each one briefly.

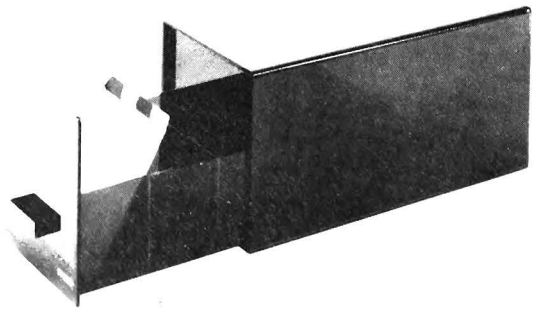
The moving average function lets you graph one or two moving averages on the same plot. You may choose a front-weighted moving average, a back-weighted one, or a simple moving average. In a front-weighted moving average, more emphasis is given to the most recent data points; in a back-weighted moving average, more weight is given to the oldest data; and in a simple moving average, all points are weighted the same. For any of the three analyses, you can choose a moving average value between 1 and 119. By choosing a value of 1, you can get the program to plot the actual data without adjustment. Why do this? So you can plot actual data against an average on the same screen.

Relative strength charts show the relationship between two specified indexes. The plotted data is the result of dividing one security or index into the other. Many technicians refer to this technique as ratio analysis.

Market Technician can analyze and chart momentum studies for periods of from one to one-hundred-twenty days. Momentum studies show the percentage change of an index from one point in time to another. For example, if Apple stock is trading at $30 today and was at

FINALLY...
Space Efficient Disk Storage

Up to 125+ Disk Capacity



DISKFILES by DISKUS™
in three sizes

The Original DISKFILES
Available at your computer store or from
DISKUS ™ PRODUCTS
6003 Bandini Blvd.
Los Angeles, CA 90040
VISA or M/C call
(213) 726-3088
Patents Pending
©1983 DISKUS PRODUCTS

Stackable, Sturdy, With color coded index tab dividers
DISKFILE 125+ $59.95
DISKUS JR. 75+ $39.95
DISKUS 8" 115+ $79.95
extra set of dividers
5¼" $2.49, 8" $2.99
Shipping & Handling $3.75 ea. unit; CA residents add 6.5% sales tax.

$27 yesterday, a two-day momentum study would tell us that the stock is ((30/27)−1)*11% higher today. Specifying a value of one day here gives you actual unadjusted data against which to plot other data.

One very good feature: *Market Technician* automatically asks you if you want to smooth your momentum values with a five-day moving average. Momentum studies sometimes look like paint thrown on the wall—a moving average transformation makes them easier to analyze. But here's the really upsetting part: The fact that the author has included this feature shows that he has a real understanding of the technique. And yet, parts of the program appear to have been randomly thrown together. It's obvious that a great deal of effort went into creating this program, and it can be cleaned up, but unfortunately the current version of *Market Technician* does not meet commercial standards. In any event, let's finish our look at it and hope that the comments made here are taken to heart.

The edit/search module is next. Edits of stock file data are done through this section and additional analysis can also be performed in it. Putting all of the analysis sections in one place would have made the program easier to work with.

The analysis done in this module is a statistical correlation. A correlation study shows the investor if there is a significant statistical relationship between two securities, indexes, or a combination thereof. With the correlation, the program also calculates the standard error of the estimate and allows you to predict the value of one data set based on the value of the other. (Again, this form of analysis requires that the data files be on drive 1. Why? This setup is cumbersome, time-consuming, and dumb.) By the way, correlation analysis is deeply rooted in statistical theory. If you don't understand how it works, getting a basic statistics text and studying up would be a good idea.

The search function is a unique and interesting feature, but unfortunately it works only on the program database, not on your stock files. (Again, why?) The search feature lets you scan the database to find the number of occurrences of a given event. For example, let's assume that we wanted to find out on what days the average of the Dow Jones 30 industrials was between 980 and 1,020. We'd instruct *Market Technician* to search its database for all Dow Jones 30 industrial averages of 1,000, plus or minus 20. After telling us approximately how long the search would take, the software would go to work.

When the search was complete, *Market Technician* would give us the dates and values for all days that fit within the search parameters. We could then view each day, with all its accompanying information, on-screen, or we could print the information out. What a great feature this would be if it worked on our own files. It could help us to identify patterns, to relate nonmarket events to market activity, or whatever. In its present form, though, it reaches only 50 percent of its potential.

The last module contains all the edit utilities needed to run *Market Technician*. Up to forty stocks, with 120 days of information, can be stored on disk. In essence, then, each disk is a portfolio. When you reach the program's 120-day limit, the oldest data drops off first during the update; thus, you're limited to 120-day studies of stock information.

Market Technician can use either the Dow Jones News/Retrieval Service or a manual update to bring the stock and volume prices in your portfolio up to date. Updates are classified as historic or daily. One potential problem is that the program allows you to use Tymnet to log on to Dow Jones but not Telenet; perhaps you prefer Telenet. Another problem is that the program has no form of data error-checking—if it receives garbage, it leaves it to you to stop the transmission and start again. This is not the ideal arrangement; you may not feel that sitting and staring at the screen while the program updates your files is the most productive use of your time.

This module also offers an automatic stock-split feature. The investor is prompted to supply the split information, such as 3 for 2, and the program then automatically goes through the stock file and adjusts the past prices.

The Summing Up. Datamost has rapidly gained a reputation in the industry for publishing quality entertainment software, but it would seem that the company has a long way to go with investment applications. The best approach to this situation would be to recall the product, correct the errors, inconsistencies, and problems, and then rerelease it. As should be clear from this review, *Market Technician* has the foundations of a solid, useful investment tool. In its present form, however, its value is very limited. ◨



"Your Portfolio, Sir."

The DOW JONES INVESTMENT EVALUATOR™ is computer software that serves your personal investment needs at home—accurately and efficiently.

A Personalized System

With the INVESTMENT EVALUATOR, your home computer and a telephone modem, you have a personalized system for managing your portfolio. A system that automatically updates and tracks only those stocks you want to follow—allowing you to evaluate your position at a glance.

Easy Access to News/Retrieval

This software automatically dials and connects you with Dow Jones News/Retrieval®, the world's leading supplier of computerized information on demand. It allows you and your family access to current quotes, financial and business news, general news, movie reviews, sports, weather and even the Academic American Encyclopedia.

The Right Amount of Software for the Job

The INVESTMENT EVALUATOR gives you the capabilities you need without making you pay for a lot of complex functions you may never use. Menu screens lead you to what you want with one-touch commands. The program is completely reliable, comes with an easy-to-follow manual and is fully supported by the Dow Jones Customer Service hotline.

From Dow Jones, Publishers of The Wall Street Journal

Dow Jones has been serving the business and financial communities for 100 years. Now Dow Jones Software™ serves you at home.



For a free brochure call:
1-800-345-8500 ext. 262
(Alaska, Hawaii and foreign call 1-215-789-7008 ext 262)

DOW JONES SOFTWARE

Dow Jones Investment Evaluator™

...Bank on it.

Available for Apple II, Apple IIe, IBM PC and TI Professional. Compatibility with Atari and Commodore to follow.

Copyright © Dow Jones & Co., Inc, 1983 All Rights reserved

Inside Apple

Vol. 1, No. 3

Apple's new Monitor II. A sight for sore eyes.

If you've been using a TV as a monitor, perhaps you can get a friend to read this for you:

Apple's brand new Monitor II will improve your vision.

It features all the latest ergonomic improvements in monitor technology.

For example:

Studies have shown that the leading cause of eye fatigue for computer users is lack of contrast between the displayed characters and their background.

So we designed the Monitor II around a high contrast green phosphor CRT that provides an extremely dark background. That means you can read text at a lower brightness. And that means you can be more productive — working longer and more comfortably.

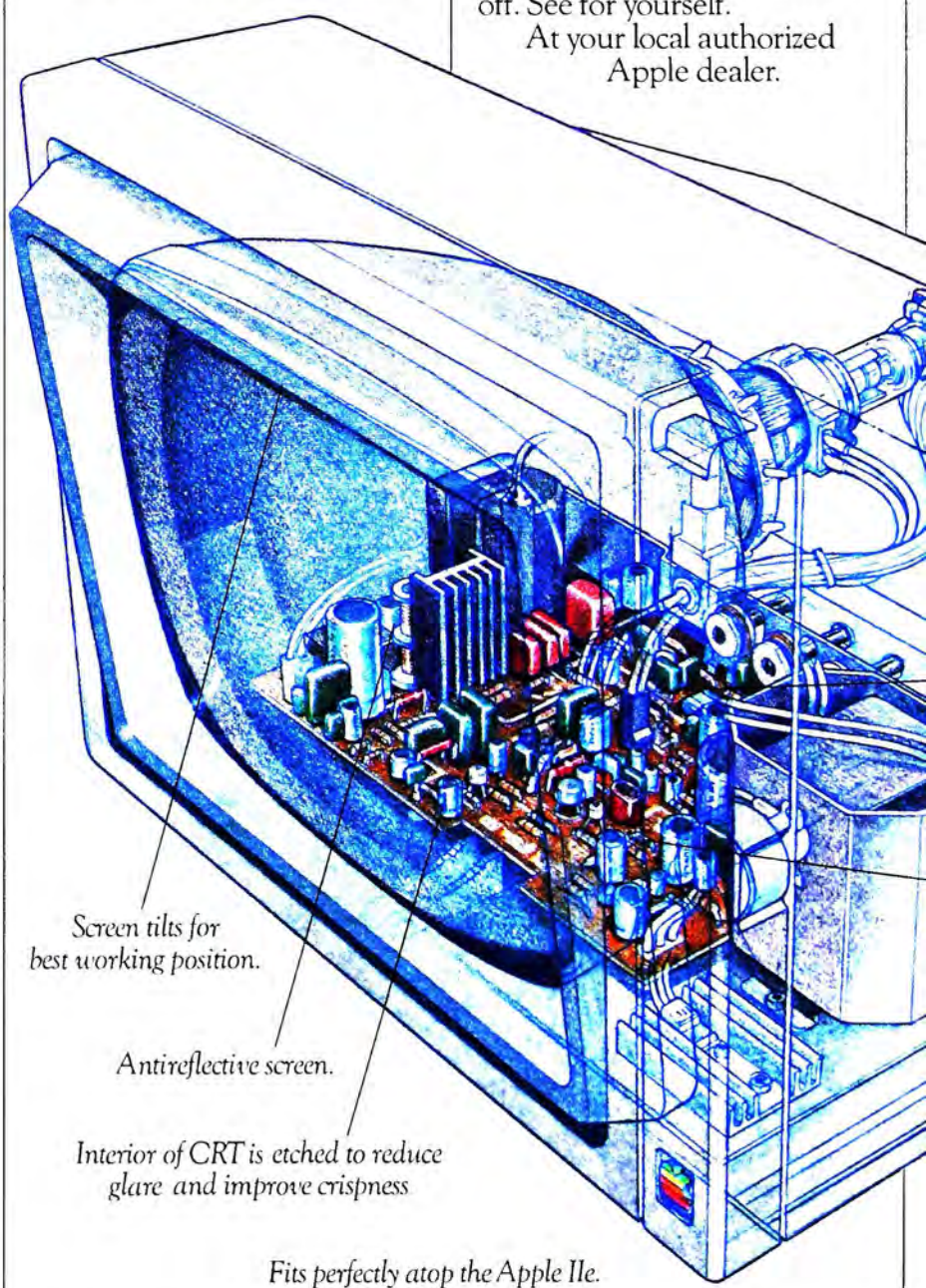
Toward that same end, we also gave Monitor II a tilt screen. So you can angle it perfectly for your working position, without scooting your chair around or sitting on phone books.

And we made that screen antireflective to reduce glare from ambient light.

Monitor II also features a high bandwidth video amplifier and a high tolerance linearity circuit. The former keeps characters from smearing on the screen and eliminates the annoying "ghosts" left by a fast moving cursor. The latter keeps characters crisp, legible and prevents "keystoning" right up to the edges of the display. Both add up to superior display of 80-column text and extremely accurate graphics.

Designed as the perfect system partner for the Apple® IIe Personal Computer, Monitor II requires no monitor stand. It's a perfect fit, aesthetically as well as technically. So it's pleasing to the eye even when it's turned off. See for yourself.

At your local authorized Apple dealer.



Now Apple plots color.

Since color graphics are becoming ever more important in business, we've been hearing more and more calls for a color plotter as reliable as an Apple.

Here it is:

Apple's new Color Plotter can generate all kinds of presentation graphics, engineering drawings or anything else you have to illustrate in up to eight brilliant colors.

And it can perform its art on any size paper up to 11" x 17". Or, with optional transparency pens, it can draw right on transparent film for overhead projection.

Measuring just 4.8"H x 16"W x 12"D, it's the smallest four-color, wide bed color plotter you can buy — about half the size of conventional flatbed plotters. So it takes up less space on your desk and can easily be moved to someone else's desk.

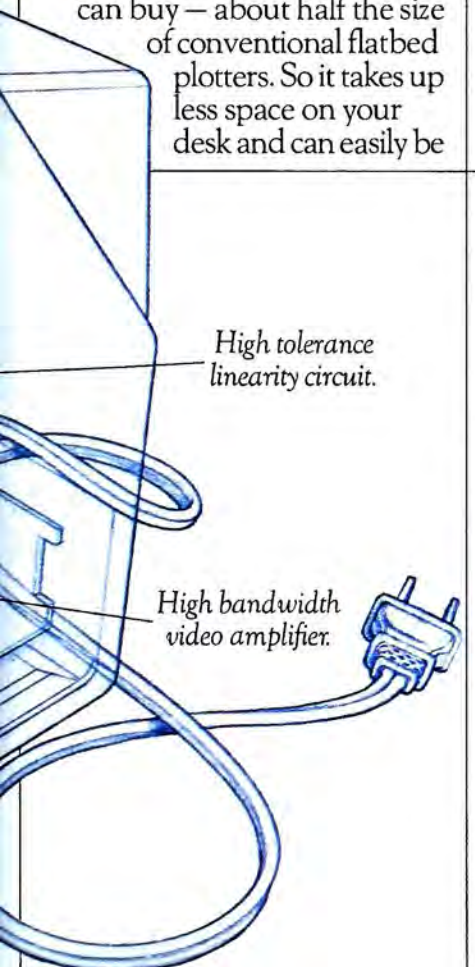


There are two color plotter accessory kits to choose from to assure a perfect marriage with your Apple II or IIe, or Apple III.

Each kit comes with eight color pens — red, blue, green, black, burnt orange, gold, violet and brown. Plus a starter package of plotter paper. Plus all the manuals, documentation and cables appropriate to your particular kind of Apple. So you can get up and coloring right away.

Apple also offers a complete selection of 24 different pen packages — so you can choose whatever colors you need in a variety of widths for a variety of applications and media types.

As you might expect, all of the above is available at many of our authorized Apple dealers.



Carry on with AppleCare℠ Carry-In Service.

No matter how long you've owned your Apple system, you can now get a long term service contract at a very reasonable cost.

AppleCare Carry-In Service is a service plan that will cover most Apple-branded components in your system for one full year.

It covers an unlimited number of repairs and is honored by over 1500 authorized Apple dealers nationwide.

Apple-trained technicians assure you of the highest quality service, fast — in most cases less than 24 hours.



AppleCare Carry-In Service is ideal for anyone who needs to know ahead of time the cost of maintenance for their system.

So check out the details — you'll find it's the lowest cost health plan an Apple can have.

Apple Computer Inc., 20525 Mariani Ave., Cupertino, Calif 95014 For the authorized dealer nearest you, call (800) 538-9696. *©1983 Apple Computer Inc.*

AppleCare is a service mark of Apple Computer Inc.

Count thy Blessings
Two New Books from Softalk

We're giving thanks for our readership in a very special way this holiday. If you've enjoyed our publications in the past, you're sure to find these texts stuffed full of delicious information; destined to find a happy home right next to your recipe books. The deal is this: If you order now, you will get a cornucopia of savings on these two offerings. Sit yourself down to this literary feast with all the disk trimmings.

Applesoft Isn't Hard

Basic Programming for the Apple II By Doug Carlston

This book will teach you how to program your Apple II, II Plus, or IIe in Applesoft Basic—a couple of words at a time with lots of examples. Carlston takes you step-by-step through the many commands available in the language, addressing hi- and lo-res graphics, and creating useful programs such as flash cards and a Basic word processor. He covers nearly every aspect of Applesoft so that when you've worked through all 17 chapters you will have acquired the knowledge necessary to create your own programs.

Program disk available with book. This book is an updated and expanded version of the author's All About Applesoft tutorial column which appeared in *Softalk* magazine.

ISBN 0-88701-002-4 192 pages

Retail $19.95 book / $9.95 disk / $27.96 both

Holiday Special $25.95 both

GRAPHICALLY SPEAKING

Portrait of the Artist as a Young Apple By Mark Pelczarski

If you are interested in creating graphics on an Apple, this book gives all the needed details. Pelczarski explains the graphics functions, adding to one's knowledge bank until there's enough know-how in the vault to create amazing hi-res color pictures. This book covers lo-res, hi-res, 3-D illusions, color, binary files, picture-packing, shape tables, and more. The program listings alone are worth the investment. Learn from the man behind *Penguin Software*: learn the right way with the best damn graphics book on the market.

Program disk available with book. This book is based on the series of the same name (appearing in *Softalk* magazine), with additional appendices and illustrations.

ISBN 0-88701-007-5 160 pages

Retail $19.95 book / $9.95 disk / $27.95 both

Holiday Special $25.95 both

Assembly Lines The Book

By Roger Wagner

So many ads have been written about this book, we're not going to tell you again how great it is. Buy it and see.

ISBN 0-88701-000-8 272 pages

Send order with payment to:
Softalk Holiday Apples
P.O. Box 60-BD/B
North Hollywood, CA 91603

Applesoft Isn't Hard	Holiday Special $25.95 (book and disk)
Graphically Speaking	Holiday Special $25.95 (book and disk)
Assembly Lines: The Book	Same as Always $19.95

Please enclose $1.50 handling for each book ordered. California residents add 6½ percent sales tax. PAYMENT MUST ACCOMPANY ORDER. This special offer expires November 30, 1983. Books to be shipped first week of December 1983. Be sure to specify which book(s) you want or we'll send you a copy of Apple Compote. Apple and Applesoft are registered trademarks of Apple Computer, Inc.

MARKETALK News



Unless otherwise noted, all products can be assumed to run on either Apple II, with 48K, ROM Applesoft, and one disk drive. The requirement for ROM Applesoft can be met by RAM Applesoft in a language card. Many Apple II programs will run on the Apple III in the emulator mode.

☐ The Dumpling-64 from **Microtek** (4750 Viewridge Avenue, San Diego, CA 92123; 619-569-0900) has been upgraded to interface with more printers. The printers include the Mannesmann Talley MT-160, the Data South DS-160, the Gemini 10 and 15, the GX-100, the Epson FX-80 and 100, the Okidata 92 and 93, and the Okidata 84 Step 2. Prices start at $159.

☐ **Double-Gold Software** (4010 Moorpark Avenue, Suite 207, San Jose, CA 95117; 408-554-9133) makes *Lock-It-Up*, a copy-protection system that allows you to make and duplicate as many different protected disks as needed. The systems are menu-driven, making it simple to copy-protect your disks. DOS version, $225; Pascal, $225; CP/M, $695.

☐ **T.H.E.S.I.S.** (Box 147, Garden City, MI 48135; 313-595-4722) has released an English program designed to teach the parts of speech to students of any age or grade level. *English Grammar* is a two-disk program with which you can create student disks for use in various educational settings. The student disk has drills for all parts of speech and combinations of them. The disk can also be set to use a specified number of sentences in each session. $45.

☐ Only authorized persons can have access to your CP/M files when you encrypt them with *Secure*, from **Wordmovers** (15818 Hawthorne Boulevard, Lawndale, CA 90260; 213-542-7351). The program lets you transform files into garbled characters that can be unscrambled only by using the same keys that scrambled them in the first place. For extra security, it's possible to encrypt a file more than once. $49.95.

☐ *Knowing Numbers*, *Letters and Words*, and *Body Awareness* are the three latest releases from **Learning Well** (200 South Service Road, Roslyn Heights, NY 11577; 516-621-1540, 800-645-6564). Designed to be a fun, colorful, rewarding, and comprehensive learning experience, each of the three titles is packed with game activities. Each program is played by using only the space bar to promote independent and easy learning. $49.95 each.

☐ The ADS-8212 Data Exchange/64 is a computer interface converter and a print spooler designed by **Antex Data Systems** (1630 California Street, Mountain View, CA 94043; 415-941-7914). It's for use in an automated office, where a variety of computers and peripherals are used in a single location. Input data comes into the box in one form and is stored in the print spooler's 64K memory. The data then goes out to the peripheral in any one of a number of forms. Serial port baud rates range from 50 to 19200, and input and output can be configured as serial or parallel. $329. The ADS-8211 Grafax Spooler/64 is designed to let your Apple compute while data is going to the printer. The board's 64K buffer stores approximately twenty pages of text. All buffering is compatible with DOS, CP/M, and Pascal operating systems. $229.

☐ **Micro-Vac** (Box 3981, Glendale, CA 91201; 213-244-6777) manufactures a lightweight vacuum cleaner designed to remove minute particles of dust and debris from hidden or hard-to-reach areas, such as between keyboard keys. The Mini-Vac is equipped with two interchangeable wands, two fine-bristle brushes, and a cloth vacuum bag. It runs on ac or dc power sources. $29.95.

☐ *The Pitts* (preinterpreter text translation system) turns your word processor into a full-screen editor for Basic programs. There are no editor commands to learn, and the system generates all line numbers. *The Pitts* lets you replace line numbers with labels for easier editing. It's available from **Electronic Software Products** (482 Wilson Avenue, Staten Island, NY 10312; 212-948-3114). $50.

☐ Diskstand is a computer accessory that stands and separates up to ten disks. Diskstand will hold envelopes while disks are in use, preventing loss of envelopes. The stand comes in five colors: white, sand, steel gray, brown, and black. Available from **Damomics** (Box 132, Corning, NY 14830; 607-524-6328), the stand is available in horizontal and hanging models. $12.95.

☐ A low-cost ribbon cartridge that is compatible with the Apple Dot Matrix Printer, the NEC PC 8023A-01, and the C-Itoh 8510 Prowriter is now available from **Data Systems** (Box 99, Fern Park, FL 32730; 305-788-2145). $5.50. Quantity discounts available.

☐ *The Loan Handler* is a package specifically for the mortgage loan industry and is designed to let mortgage bankers analyze, compute, and print various loan forms. With a Hayes Micromodem II, the system may be used as a terminal to accept information from other service companies. Included in the package are interfacing capabilities with popular word processing and spreadsheet programs. It's available from **Contour** (4980 Hamilton Avenue, Suite 215, San Jose, CA 95130; 408-370-1700). $1,150.

☐ For astronomy buffs, *The Astronomy Pac* from **Celestial Software** (3010 Warrington Avenue, Lakeland, FL 33803; 813-686-3311) generates its own almanac data and contains information on fifty-seven of the most prominent stars. This lets you print the location of these stars for any time from 1983 to the year 2000, from any location on Earth. Also included is a star identification program. After you input the appropriate information on a star's location, the program determines which star you've observed and displays its name and constellation. The pack comes with a compass and the book, *The Stars*. $59.95.

☐ *Connections*, a series of Logo-based activities, has been developed by **Martin-Bearden** (1908 Sandy Lane, Irving, TX 75060; 214-253-6579). Each volume in the series will help teachers with or without computer backgrounds to teach important mathematical concepts to students. The first volume, *The Rule of 360*, uses puzzles, protractors, kaleidoscopes, and card tricks to present mathematical patterns and how they are related to the rule of 360 degrees or the total turtle trip theorem. $7.95 per booklet; a Logo-specific disk may be ordered for $4.95.

☐ If you write programs that plot lines, sort, search, sample, or shuffle, you can now get these algorithms instantly from a single plastic reference sheet. The Basic Algorithms Micro Chart from **Micro Logic** (Box 174, Hackensack, NJ 07602; 201-342-6518) is two-sided, made of thick plastic, and has useful algorithms written in Basic. Each algorithm is accompanied by its function, advantages, speed, and method. $5.95.

☐ Visually impaired people, including the legally blind, can now use Apples with the help of a large print display processor by **Visualtek** (1610 Twenty-sixth Street, Santa Monica, CA 90404; 213-829-6841). The product, named the Model DP-10, plugs into the Apple and automatically enlarges the displayed letters up to sixteen times their original size. No extra software is needed. Since only a portion of the screen can be seen at any time, a special control panel provides joystick control over the screen image. $2,495.

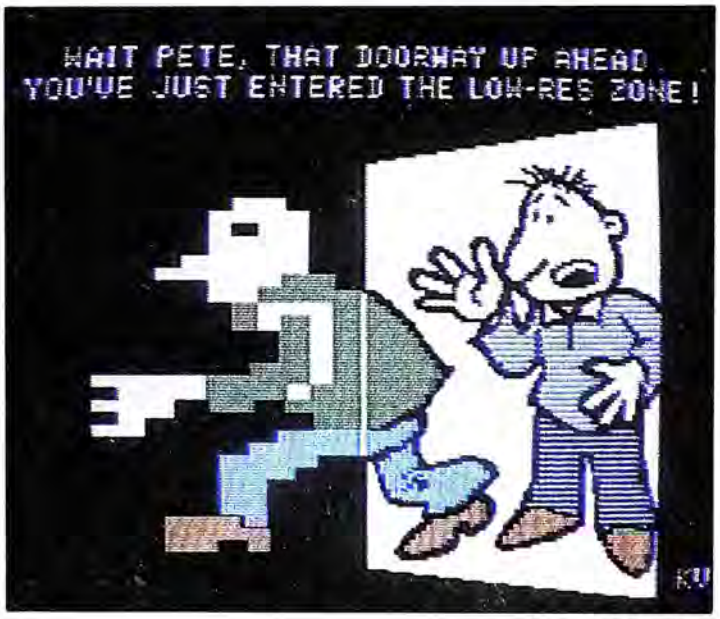
☐ A hard disk system for the Apple III capable of running Apple III and II software has been put on the market by **Mountain Computer** (300 El Pueblo Road, Scotts Valley, CA 95066; 408-438-6650). The system permits you to enter files in II or III modes without additional patching; it also accepts SOS and CP/M software. It's available in four storage capacities: 5Mb, $1,995; 10Mb, $2,495; 15Mb, $2,995; and 20Mb, $3,495.

☐ From **Compulit** (Box 254, Sherborn, MA 01770; 617-653-4772) come two educational games. *Logo Locomotion* contains six fun games that teach the graphics commands of Logo. Grids displayed let students develop intuition in estimating distances and angles. Extensive error checking and feedback provide an environment in which students correct mistakes. The game is recommended for grades two through twelve. Re-

quires Terrapin or Krell Logo. $23.95. *Ticktock* is an adventure in learning to tell time. Two characters lead children through a collection of sixteen programs that introduce clocks and time, using hours in numeric and spelling formats and hours and minutes in digital format. In addition to color graphics, sound, and on-screen instructions, the package includes a story, classroom demonstration, and forty pages of reproducible worksheets. This one is suggested for grades one through four. Requires Terrapin Logo but not knowledge of the language. $55.50.

☐ Joggers can keep track of their training status with *Jogger* from **Parsons Software** (1920 Briar Meadow, Arlington, TX 76014; 817-467-1915). The program doesn't suggest any training schedules or goals; it only provides you with a means to record your goals and progress as you would in a normal jogging log. $25.

☐ **Applied Software Technology** (170 Knowles Drive, Los Gatos, CA 95030; 408-370-2662) has made available three templates to be used with *VersaForm*. The *Mailing List* template provides a database design for storing, retrieving, and printing mailing labels. Labels can be selected by a variety of criteria and can be printed in a sorted order. Master lists can be generated, and data is easy to update. The program prints on various label sizes and prints up to nine lines per label. $39.95. The *Expense Journal* and *Cash Receipts Journal* templates function as a journal of entry for expenses and cash receipts by categories. *VersaForm*'s checking and automatic filling features ensure consistent and accurate entries. The *Expense Journal* template has a check register report that



Cartoon by Robert Cavey

can be used to reconcile checks issued with bank statements. The *Cash Receipts Journal* template can print bank deposit slips for each cash account. $39.95 each.

☐ *Disk Fix* is a disk editor and recover utility from **The Software Store** (706 Chippewa Square, Marquette, MI 49855; 906-228-7622) that can be used to reconstruct files with bad sectors, recover files from disks with bad directories, restore erased files, and do general disk editing. *Disk Fix* automatically configures itself to work with either floppy or hard disks. Requires CP/M. $150.

☐ **Hardram** is a nonvolatile memory board from **Tinker-Tron** (Box 53128, Lubbock, TX 79453; 806-745-2228). Using EEPROMs (electrically erasable programmable read-only memory), the board reprograms in milliseconds instead of hours. Any memory location in Hardram can be read or written to at random, and no batteries are required. The board is addressed in the same way as a standard Apple 16K RAM card. The 2K version of Hardram can be increased to 16K. 2K version, $169.95; 26K version, $29.95; additional 2K EEPROMs, $29.95 each; three or more EEPROMs, $24.95 each.

☐ **Orange Micro** (1400 North Lakeview Avenue, Anaheim, CA 92807; 714-779-2772) has unveiled a new firmware revision for the Grappler+ and Buffered Grappler+ printer interfaces. For Apple IIe users, the new features include an eighty-column text screen dump and a screen dump that supports the IIe's double-hi-res graphics. The new Grappler+ also offers printer support features for the Epson and Star Gemini. A screen dump command will access any of the Epson FX or RX aspect ratios, offering a wide variety of graphic resolutions. Grappler+, $175; Buffered Grappler+, $239.

☐ *Look 'n Hook* is a reading skills game for kids ages four through eight. Published by **The Learning Line** (Box 577, Palo Alto, CA 94302; 415-854-4400), the game includes ten crossword-style puzzles that teach alphabet recognition and the reading and spelling of twenty-four words. With minimal adult assistance, youngsters can quickly learn to play the game without help. A burst of musical notes rewards each correct move, and the child is serenaded with a complete melody after each puzzle. $39.95.

☐ Rest 'n Roll is an ergodynamically designed, adjustable footrest and massager that reduces fatigue and stress for people who sit for extended periods. The platform is biomechanically designed to interact with the feet of a user by moving when the user moves. Thirty-five polyurethane-coated birch massager balls to soothe tired feet are on the reverse side. Constructed of solid oak or walnut, the footrest and massager weighs seven pounds. It's available from **R and R Concepts** (241 Conejo Road, Santa Barbara, CA 93103; 805-966-0101). $198.

☐ **Duosoft** (1803 Woodfield Drive, Savoy, IL 61874; 217-356-3111) has announced its *Business Planner* business modeling package for the Apple III. Designed primarily for entrepreneurs, *Business Planner* provides a simulated model for projection of monthly income and expense figures, budget allocations, and sales forecasts. Unlike a standard spreadsheet, however, the program lets you combine projects into alternative models to arrive at predictions about future growth. $395.

☐ **The Boston Company** (One Boston Place, Boston, MA 02106; 800-468-8324) has released a new feature of *Micro PMS*. The new feature, Cross-Reference Report, generates a listing that reflects your total position in any or all holdings across all portfolios. Additional enhancements have been made, allowing *Micro PMS* to store twenty portfolios on a single disk and maintain up to ten individual tax lots per holding. *Micro PMS* requires two disk drives and 64K. $595.

☐ Here are several new releases from **Krell Software** (1320 Stony Brook Road, Stony Brook, NY 11790; 516-751-5139). *Alexander the Great* is a game for developing word and arithmetic skills. Available for the Apple and in a board version, the game permits equal competition between players at different skill levels. $39.95. *Connections* offers children of all ages an entertaining and intellectual challenge. The game is accompanied by an initial set of databases that deal with geography, chemistry, mammals, mathematics, tools, and everyday objects. The program helps users to build their own databases and to use databases created by others via the Connections User Group Exchange Program. $99.95. *Adventures in Flesh* reveals the human body in an adventure game. This program informs players, ages twelve and over, about the details of human anatomy and physiology. $49.95. A game of combat and intrigue, *War of the Samurai* is a combination of the board games go and chess. Options include mobility and probability of capture. The game gives players the opportunities for negotiation, alliance building, and double-crossing. $39.95. In *Black Death*, players fight the spread of the deadly plague by choosing strategies for inoculation and therapy. The game accommodates one or more players and teaches the basic principles of epidemiology and public health decision making. $49.95. Krell's *Competency/Proficiency Assessment Mathematics Diagnostic and Exam Simulator* package covers the following areas in Krell's *Basic Educational Skills Tutor (BEST)*: math, numbers, operations and processes, geometry, graphs and charts, description and measurement, word problems, and equations. Documentation provides full instruction for teachers and students. $269.95. In *Operations and Processes*, a magician introduces children to arithmetic skills. Designed for self-teaching, at home or in school, this program series is a blend of instruction and entertainment combined with extensive practice. The multidisk series covers addition, subtraction, multiplication, division, and exponents and roots. Part of Krell's *BEST* set. $169.95. *Language of Math Part II* is a multidisk series that teaches basic concepts and ideas of mathematics. The series includes measurement, rate and ratio, descriptive terms, and various key terms. Part of Krell's *BEST* set. $169.95. *Electoral College* illustrates the workings of the United States Electoral College system. Users simulate presidential elections, selecting candidates and estimating their likelihood of winning on a state-by-state basis. $39.95. As a related game, *Primary Fight* teaches the concept of prime numbers and aids in

the development of factoring skills. It's a political math game in which up to six players compete. The results depend upon individual campaign strategies and math skills. $39.95. A scientific game, *Galileo*, lets players explore the world of optics. It's a classic adventure game requiring users to search for treasure (optical components) and to build a variety of scientific tools essential to their quest. The game is suggested for players twelve and older. $34.95. In *Linear Equations*, Detective Ranch Holmes explains elementary concepts about equations—what they are and how to use, build, and solve them. $119.95. *Plato's Cave* is an introduction to the relation between evidence and inference. The game offers various levels of difficulty to players who must confront the problem of trying to understand reality by seeking and analyzing information. It requires active probing for data and synthesizing models of reality as data is collected and hypotheses are tested. Suggested for players eight years or older. $49.95. *Galactic Magellan—Worlds of Exploration and Discovery* is a cosmic adventure. Players create and explore unknown galaxies, using the stars they discover to help them complete expeditions. $34.95.

☐ **Agricultural Software Consultants** (1706 Santa Fe, Kingsville, TX 78363; 512-595-1937) is now offering a Z-80 card for $100 with the purchase of any of the following programs. *Mixit-2* is a least-cost feed-blending program. $595. *Mixit-3* is a multiple-ration least-cost feed-blending program. $795. *Price-It* is a pricing and inventory program. $395. *Mini-Max* is a linear programming program. $395.

☐ While the focus of *VisiSeries—How You Can Work Smarter with Personal Computers* is on VisiCorp software, the book begins with an informative presentation of what personal computers are and how they work. The book then leads the reader through the applications areas of word processing, financial planning, business graphics, data management, project and time management, and communications. It's published by **VisiCorp** (2895 Zanker Road, San Jose, CA 95134; 408-946-9000). $12.95.

☐ *Monte Carlo Simulations* is a statistical analysis program. Fully functional with *VisiCalc* or by itself, the program uses the chi-square test in its analysis process and the Monte Carlo method, based on your choice of assumed probability of distribution. It's available from **Actuarial Micro Software** (3915-A Valley Court, Winston-Salem, NC 27106; 919-765-5588). $60.

☐ **Dekotek** (2248 Broadway, New York, NY 10024; 212-799-6602) has completed its second annual survey of more than ten thousand companies in the microcomputer industry and has published the second edition of *The Microcomputer Market Place*. Included are in-depth company profiles for more than two thousand software publishers, three hundred magazines, one hundred database publishers, and four hundred specialty listings. Also included is a calendar of one hundred sixty-five industry meetings. $75.

☐ **Brinker Computing** (2775 Tessmer Road, Ann Arbor, MI 48103; 313-662-6386) publishes *The Fourth Leg of the Apple: A Tutorial*. Where the Apple manual stops, this tutorial picks up to take the user over the next hump. It begins with a clear explanation of hexadecimal and then proceeds to the 6502, DOS, the memory map, internal input and output, the monitor program, utilities, and interface cards. $49.95.

☐ **Sentry Safe** has introduced its Model 5750 computer software safe, designed to protect disks from fire and theft. It holds up to forty disks. The safe has a four-inch steel locking bolt, two steel deadbolts, a three-number combination lock, and storage space for documentation. Compatible with disks of any operating system, the safe is distributed by **Value-tique** (Box B, Leonia, NJ 07608; 201-461-6500). $549.

☐ *The Minute Manual for Apple Writer IIe* is a guide for users of the word processor, containing simple instructions for basic and advanced procedures. The manual unravels the mysteries of the dot-matrix printer by explaining how to include printing commands for most printers. *The Minute Manual* is published by **MinuteWare** (Box 2392, Columbia, MD 21045; 301-995-1166). $7.95. Optional glossary disk containing commands for dot-matrix printers and a desktop reference chart, $9.95. MinuteWare also publishes *The Minute Manual for DB Master*, which includes practical explanations, informative tutorials, and advice for creating and using a database. Tutorials instruct you in tasks ranging from designing a database to the features of searching, sorting, and report generating. $12.95. Optional data and utility disk, $9.95.

☐ **Microcomputer Applications** (827 Missouri Street, Fairfield, CA 94533; 707-422-1622, 707-422-1465) has announced two publications. *High-Tech Consulting: A Guide to Making Money as a Computer Consultant* discusses finding work, setting up a consulting business, interacting with clients, setting rates, and collecting payments. $18.95. *Consultant's Log* is a monthly record-keeping log book. Each log contains space to record mileage, time spent on each project, and entertainment expenses for each month. $3.

☐ **VideoSoft** (2101 South Broadway, Little Rock, AR 72206; 501-376-2083) has completed a product called the *VideoSoft Instructional Programming Series*. It consists of a library of sixteen color videotapes and supporting printed materials that teach computer programming by using a step-by-step approach. The series is available in VHS ($2,378), Beta ($2,378), and U-Matic ($2,538).

☐ *Mail Order Reporter* (*MORE*) consists of two reports—one on hardware and one on software—designed to assist consumers in purchasing computer products by mail. Each report provides comprehensive price-comparison information on computer products available by mail. Also available is the *Guide to Trouble-Free Mail Order Buying*. The guide shows buyers how to protect their money and avoid trouble when ordering by mail. Available from **MORE** (Box 880953, San Francisco, CA 94188; 800-227-3800, ext. 43). $9.95 each; $17.50 for both.

☐ *Weather Command* is an educational game in which youngsters manipulate weather machines to create hospitable climates for ambassadors arriving from other planets. The game challenges players to create fair skies, steady rain, dense fog, or other conditions by using forecasting techniques, information about cloud types, and other tools. Hi-res color graphics and five levels of difficulty are included in this game from **Educational Audio Visual** (Pleasantville, NY 10570; 914-769-6332). $40.

☐ You can learn about all sorts of new technologies that are changing our lives with the *New Technology Coloring Book* from **Bantam Books** (666 Fifth Avenue, New York, NY 10103; 212-765-6500). A tool for unlocking the mysteries of science and the universe, the coloring book uses a simple color-by-number system and explanatory text to explore thirty-five current topics of the technological revolution, from lasers and computers to genetics and astronomy. $6.95.

☐ *Circascript*, a word processor from **Circadian Software** (Box 1208, Melbourne, FL 32901; 305-723-5717), now includes an eighty-column editor program for the Apple IIe. This program is loaded automatically if the eighty-column card is present. All features of the forty-column version are still available. Another addition to the word processor is the embedded printer command, a feature that lets the user initiate special printer features within lines of text. The price of *Circascript* remains $39.95.

☐ **Infoscribe** (2720 South Croddy Way, Santa Ana, CA 92704; 714-641-8595) has reduced prices on three of its most popular dot-matrix printers. The model 500 has been reduced from $1,530 to $1,345; the Infoscribe 1000 has been reduced from $1,895 to $1,645; and the model 1100 has been lowered from $2,295 to $1,795.

☐ Certified public accountants might be interested in attending some of the following shows. The 1983 Fall CPA Computer Show, which will be held November 21–23 at the New York Hilton Hotel, focuses on computer hardware and software, data and word processing systems, on-line and on-site accounting services, management information systems, and a full spectrum of electronic accounting systems for public and private practice. The focus of the 1984 Accounting Show—which takes place May 7–9 at the Sheraton Centre New York Hotel—will be accounting and auditing systems, practice management systems, taxation services, tax advantage and investment services, real estate services, business equipment, and service bureaus for public accounting practices and client operations. For information, contact **Flagg Management** (Box 4440, Grand Central Station, New York, NY 10163; 212-286-0333).

☐ **MicroPro International** (33 San Pablo Avenue, San Rafael, CA 94903; 415-499-1200) has reduced the prices of updates of several of its products. Updates are as follows: $85 for *WordStar*; $25 each for *MailMerge* and *SpellStar* (formerly $85 each); and $60 for *CalcStar* (formerly $85).

☐ A new cooling system for your Apple is available from **W.T.I.** (1530 South Sinclair, Anaheim, CA 92806; 714-978-9820). The Half Track cooling fan comes with a front-panel illuminated switch and two three-wire grounded auxiliary outlets mounted on the rear. The system comes with ac surge suppression circuitry, and the fan is rated at sixteen cubic feet of air per minute for cooling. $79.95.

☐ A software product designed to cut down paperwork in the school

office is available from **Software Publishing** (1901 Landings Drive, Mountain View, CA 94043; 415-962-8910). *PFS:School Recordkeeper* works with *PFS:File* and *PFS:Report* programs to produce more than thirty reports for student record management, budget and requisition control, property management, and room and event scheduling. $150. It can be purchased with *PFS:File* and *PFS:Report* for $400.

☐ An information utility is offering an interactive computer program to help families deal with issues ranging from child nutrition to the tension between family and work. The service, known as dataFamiliae, enables families to communicate via computer with the database, groups who share family concerns, or professional counselors. More information on dataFamiliae is available from **American Family** (Cardinal Station, Washington, DC 20064; 202-635-5487).

☐ Two printers can be run from the same computer with Le Switch from **Renaissance Technology** (1070 Shary Circle, Concord, CA 94518; 415-676-5757). Le Switch I is for parallel interface printers, $155; Le Switch II is for serial interface printers, $125.

☐ The Digital ESP-1 Port Expander creates four RS-232C serial ports from one port and allows instant switching, under software control, to different printers, plotters, and other peripheral devices. Manufactured by **Digital Laboratories** (600 Pleasant Street, Watertown, MA 02172; 617-924-1680). $395.

☐ **Teleware** (Box 729, 28 Bloomfield Avenue, Pine Brook, NJ 07058; 201-882-0466) has announced *Teleminder*, a software package for those with access to the Dow Jones News/Retrieval database. One-key commands retrieve news and quotes on up to three hundred sixty companies. *Teleminder* connects with Dow Jones News/Retrieval, remembers when you last got news, retrieves news since that time, loads it onto a data disk, and hangs up the phone. It will also print the news and stock quotes for review. $195.

☐ **RB Robot** (18301 West Tenth Avenue, Suite 310, Golden, CO 80401; 303-279-5525) has released *Robot Control Language with Savvy* for its RB5X robot. The language is a software development system that lets you program the RB5X by using common English words and phrases. Two versions are available. *RCL I* is for use on a one-disk drive system. $395. *RCL II* works on systems with more than one disk drive or with a hard disk system. $545. Users who have previously purchased *Savvy* may buy an *RCL* upgrade for $125.

☐ More news from **Hayden Book** (50 Essex Street, Rochelle Park, NJ 07662; 201-368-2202): *Computer Bridge* is an instructive guide, for the novice or master, to writing bridge software. The book explores the development of bridge programming and its implementation for popular microcomputers. The book critiques popular computer bridge programs for their strengths, weaknesses, quality in bidding, playing, and defending algorithms. The author gives some advice and tips for potential bridge programmers. $9.95. *Data Base Management for the Apple* presents the basics of storing and organizing information on the Apple. The book is easy for a novice and includes programs for advanced students and hobbyists. $12.95.

☐ **Soft-Life** (2950 Los Feliz Boulevard, Suite 103, Los Angeles, CA 90039; 213-660-7940) has introduced its *Attach.Driver* for the Apple III. The printer driver allows you to dump a screenful of text from any program to any printer with a single keystroke and no additional hardware; the user can also toggle a dot-matrix printer between normal and condensed print with another keystroke. $29.95.

☐ And now, two unveilings by **Strategic Simulations** (883 Stierlin Road, Building A-200, Mountain View, CA 94043; 415-964-1353). *Fortress* is a strategy game of power and conquest. The game's concept is simple: Occupy a place, fortify it, and dominate the surrounding countryside. Seize your opponent's fortresses and outflank them. Two players can compete against each other or one person can play against any of five opponents, each with a unique style of play. Computer opponents not only play but learn and improve. $34.95. *Professional Tour Golf* brings together twenty of the greatest golfers on some of the most challenging golf courses in the world. You can play against the game's preprogrammed players or against friends. You choose your club, determine the angle and amount of spin for each drive, and measure your putts. Wind, trees, traps, and water are obstacles you must deal with. $39.95.

☐ The last company you'd expect an adventure game from is **Broderbund Software** (17 Paul Drive, San Rafael, CA 94903; 415-479-1170), but here it is. *Blood Quest* marks the company's debut in adventure games. The novice will fare as equally as the experienced adventurer in this game of puzzling logic. Not a difficult adventure, *Blood Quest* is by no means an easy one either. Survival in the game sometimes depends on your use of magic, especially when you encounter the giant chicken with purple feet. Price is negotiable.

☐ **Softronics** (6626 Prince Edward Place, Memphis, TN 38119; 901-683-6850) has released enhanced versions of *Softerm 1* and *Softerm 2*, terminal communication software for Apples with DOS, CP/M, and Pascal file compatibility. Local file transfer allows DOS, CP/M, or Pascal files to be displayed, printed, or copied to another disk in a different format providing a complete format conversion capability. Numerous editing options allow you to reformat data easily. *Softerm 1* and *2* offer file transfer methods flexible enough to match any host computer's requirement, including character protocol and xmodem protocol. *Softerm 1*, $135; *Softerm 2*, $195.

☐ *The Home Controller* is a software package from **Infeld Software** (2422 Alvin Street, Mountain View, CA 94043; 415-967-3850) that enables the Apple to control various electrical devices in the home or office through the BSR X-10 Ultrasonic Command Console. It lets you create schedules to turn on or off anything plugged into a BSR module. Additionally, lights can be dimmed or brightened to various intensities. You can set the system to control each device at regular intervals, at preset times, randomly within a time interval, periodically, or at variable times such as sunrise or sunset. Clock card, BSR Ultrasonic Command Console (or comparable models), and BSR interface are required. $190.

☐ *The Intimate Machine: Close Encounters with Computers and Robots* is an exploration of the concept of artificial intelligence and the possibility of producing lifelike robots. Published by **New American Library** (1633 Broadway, New York, NY 10019; 212-397-8000), the book avoids technical data on computers and focuses on the psychological and social changes that will occur as robots are introduced into our lives. $15.50.

☐ **CompuSource** (3112 Hennepin Avenue South, Minneapolis, MN 55408; 612-827-2951) can't make your Apple portable, but they will sell you a portable computer that runs Apple software. The Abacus includes a nine-inch amber monitor, a detachable keyboard, 6502 and Z-80B microprocessors, two disk drives, and 64K. It weighs twenty-eight pounds. Included are spreadsheet, word processing, database, and game software programs. $1,995.

☐ **BPI Systems** (3423 Guadalupe, Austin, TX 78705; 512-454-2801) has announced *Accounts Receivable* as an addition to its line of software for the Apple IIe. This version lets you choose several reports at one time for printing, and you can print reports in upper- and lower-case type. Screens are designed for an eighty-column display. Requires two disk drives and an eighty-column card. $395.

☐ A real estate overlay program from **RealData** (Box 691, Southport, CT 06490; 203-255-2732) designed to be used with *Multiplan* lets you generate a ten-year analysis of cash flows and sales proceeds. It helps you compute depreciation, annual debt service, annual interest and payoff amounts for three mortgages, capitalization rates, and many other variables. In addition, it produces complete loan amortization schedules and creates annual income and expense statements. The set consists of five templates. $120.

☐ The Computer Roll Top Desk from **Highland Three** (Box 795003, Dallas, TX 75379; 214-867-4577) is functional as a computer desk and a regular desk. It has four security locks to discourage tampering and theft, and the wiring harness includes an automatic power shut-off switch and a four-plug power strip with power surge protection. The desk has high-pressure laminate working surfaces and a printer cradle designed to hold a 132-column dot-matrix printer. The desk is ventilated for heat dissipation, and eight adjustable glides are mounted on the desk bottom to make movement easy. Oak finish, $1,634; pecan finish, $1,495.

☐ **Information System Resources** (1444 Balsam Street, Saint Paul, MN 55122; 612-452-7913) offers *Sound Training*, audio cassette instruction in the use of software packages such as *WordStar*, *MailMerge*, *Multiplan*, *dBase II*, and *Apple Writer*. $69.95 each.

☐ Practically everything you want to know about DIF files—files used by popular software programs—is included in *The DIF File* from **Reston Publishing** (11480 Sunset Hills Road, Reston, VA 22090; 703-437-8900). In this book, you'll find general information about the DIF format, case studies of interchanging data between programs that use DIF files, guidelines for using DIF files, and a tutorial on the DIF

format. $15.95.

☐ **Real Comp** (Box 1263, Cupertino, CA 95015; 408-996-1160) is pleased to announce *Real Analyzer*, a real estate program for analyzing income property and the home. The program helps you decide when to buy, sell, exchange, or refinance any property by projecting cash flow and profitability before and after taxes for a period of five years. $195.

☐ **Data Trek** (121 West E Street, Encinitas, CA 92024; 619-436-5055) has developed a computer literacy game that blends the challenge of video games with the usefulness of educational software. *Willy Byte in the Digital Dimension* takes the player on a journey inside the computer's components including the keyboard, RAM, CPU, disk drive, and other parts. The player attempts to debug computer problems created by the game's archvillain, Hex Luther. It's a race against time to repair each component and ultimately defeat Luther's sabotaging tendencies. $39.95.

☐ The newest product from **Ashton-Tate** (10150 West Jefferson Boulevard, Culver City, CA 90230; 213-204-5570) is *Friday!*, a program designed to facilitate the learning experience of a computer novice. Within minutes, the database product's menu-driven format allows first-time users to enter and use information. With a few keystrokes, users can easily change data and file structure. Retrieving and sorting information is done quickly and easily. *Friday!* is compatible with *dBase II* files and can be used with *WordStar*. $295. Ashton-Tate has also announced *dBase II 2.4*. In addition to an on-disk tutorial, the new version contains a help command that gives users screen assistance without their having to consult the *dBase II* reference guide. Version 2.4 also uses format files so users can avoid multiple replace commands. A diagnostic error trace feature lets users debug their own programs. $700.

☐ Seven software programs for children have been announced by **Xerox Education Publications** (245 Long Hill Road, Middletown, CT 06457; 203-347-7251). In *Stickybear Basketbounce* players win points by catching colorful bouncing bricks, donuts, or stars before running out of baskets. $39.95. *Stickybear Opposites* teaches opposites to three- to six-year-olds. $39.95. *Stickybear Shapes* helps youngsters learn to recognize shapes of common objects. Correct answers are rewarded with brightly animated pictures. $39.95. *Fat City* is a family game that has the player operating a wrecker to flatten buildings while trying to escape garbage cans hurled by irate tenants. $39.95. *Chivalry* combines a board-game with software. Designed for the whole family, this one includes twenty different games based on the days of chivalry. $49.95. *Exploring Tables & Graphs, Grades 3 to 4* introduces the way graphs work and how they're used. Games focus on topics such as endangered species, world languages, and populations. $34.95. *Exploring Tables & Graphs, Grades 5 to 6* lets students experiment with tables and bar, line, and area graphs. Game topics range from trees to satellites. $34.95.

☐ A printing buffer that performs mix and merge printout operations is available from **Interactive Structures** (146 Montgomery Avenue, Bala Cynwyd, PA 19004; 215-667-1713). It's called ShuffleBuffer, and it can organize text, graphics, spreadsheet information, and computer-generated material into any combination for printing, plotting, or telephone transmission. 32K, $299; 64K, $345; 128K, $445.

☐ You can get your programs to run more than three times faster by using the Accelerator II from **Titan Technologies** (3990 Varsity Drive, Ann Arbor, MI 48107; 313-973-8422). The card allows you to speed up some of the most well-known business, word processing, database, and game programs. The addition of Accelerator II creates parallel processor operation; the Apple's main board handles only the video display while the Accelerator II duplicates the 48K of the Apple and adds a built-in language card, for a total of 64K. When desired, the Accelerator II will function at normal speeds. $599.

☐ Even experienced word processor users who want to improve their knowledge of *WordStar* will find *Practical WordStar Uses* an informative guide. The book gives examples of common word processing problems, their solutions, and detailed instructions on how to create word processing documents and forms. Also included are guidelines for developing numerous new *WordStar* applications, information about computer operating systems, and hints and techniques on developing and storing large documents. Published by **Sybex** (2344 Sixth Street, Berkeley, CA 94710; 415-848-8233). $13.95.

☐ *Data Capture IIe* has been released by **Southeastern Software** (7743 Briarwood Drive, New Orleans, LA 70128; 504-246-8438). In this version of the popular communications program, baud rates from 110 to 1200 are supported in forty- or eighty-column mode. One-key commands are selected from a menu for easy use. $90.

☐ **Edu*Comp** (35 Bretton Road, Manchester, CT 06040; 203-643-6223) offers a review service for parents and educators. It reviews any educational software program a family or school is planning to purchase. Reviews are based on the specific needs of the individuals or schools involved. After you let Edu*Comp know the name of the program and its publisher, what type of child the program is for, how it is to be used, and what sort of hardware is available, the company will review the package and send you, within a month, an in-depth statement of the product's possible value to you. The service is offered at the price of 20 percent of the retail cost of the package, with a minimum fee of $25.

☐ **Source Telecomputing** (1616 Anderson Road, McLean, VA 22102; 703-734-7500) markets a telecommunications software product that simplifies the use of the Source. *Sourcelink* includes an automatic dialing and sign-on procedure, direct access to various services on the Source, and simplified transfer of data from disk to files on the Source and vice versa. $49.95.

☐ Apple III programs can be enhanced with custom characters, symbols, and fonts created with *CustomFont*, available from **Swenson Associates** (45 Newbury Street, Boston, MA 02116; 617-267-3632). *CustomFont* includes built-in file utilities and a file of symbols for technical writing, screen and report formatting, and games. Character design and font-file customization are done through an interactive graphic interface. Special features for developers include commands to create flashing characters and listings of routines to download character sets. Requires 256K. $149.

☐ **Educational Computing Network** (Box 8236, Riverside, CA 92515; 714-687-3333) has released a set of more than one hundred programs in the areas of high school chemistry and biology. The programs are an assortment of problem solving, review, tutorial, and practice types, and they complement lectures in any standard high school chemistry and biology course. Topics include acids, Boyle's and Charles's laws, chemical formulas, viruses, anatomy, genetics, gases, mass problems, stoichiometry, and more. The programs come on four disk sides with indexes and documentation. $125.

☐ **Premier Software Services** (1700 K Street, Bakersfield, CA 93301; 805-327-0495) has unveiled the *BSC* (business systems consulting) *Contractor's Payroll System*—software designed specifically for the small to medium-sized contractor. The system provides job item cost reporting for up to one hundred jobs or job items. Costs are broken down into gross wages, federal and state unemployment taxes, employer's FICA, workmen's compensation, liability insurance, union dues, and subsistence pay for each job. $695.

☐ No more stray disks. **Micro Format** (1271 West Dundee, Buffalo Grove, IL 60090; 312-537-2426) has disk envelopes in stock. The envelopes, made of Tyvek, are almost impossible to tear or wear out. Each package contains twenty-five envelopes. Five packages, $25.

☐ EasyCom/1 is an interconnect device to be used with direct connect modems and multiple-line telephone systems. The product can be installed quickly between phone handset and phone base via a modular connector. It operates at any baud rate. **Computer Business Solutions** (2262 Northwest Parkway, Suite G, Atlanta, GA 30067; 404-952-9930). $89.95.

☐ The latest from **Cygnus Software** (8002 East Culver, Mesa, AZ 85207) is *The Scientific Method*, a tutorial that introduces the student to the scientific method by showing how to define a problem, collect information, make a hypothesis, check the hypothesis, and reach a conclusion. Students are also given the opportunity to act as scientists and put all the steps together as they solve a problem on their own. The importance of the use of control factors is emphasized throughout the program. *The Scientific Method* is designed for students in junior high through high school. $39.

☐ The new version of *TermExec* (version 1.2), from **Exec Software** (201 Waltham Street, Lexington, MA 02173; 617-862-3170, voice; 617-863-0282, modem), offers eighty-column support with backscrolling to review work that has previously appeared on the screen. The ability to capture and send long files has been extended to support an optional error-checking protocol. *TermExec* now offers an auto-answer mode that lets you operate the computer from a remote terminal. The full-screen editor has been enhanced to perform global string search and replacement, and the list of supported modems now includes the Novation

Apple-Cat II. The price is still $79.95.

☐ The Scorpion is a small robot designed for the computer hobbyist. An optical receiver is mounted on a small carriage, surrounded by obstacle-sensing bumpers. From **Rhino Robots** (Box 4010, Champaign, IL 61820; 217-352-8485). The Scorpion can see, make sounds, and move at ninety-nine different speeds. Programmable by any host computer with an RS-232C interface, the Scorpion's on-board computer contains a 6502 microprocessor, 8K of EPROM, and 2K of RAM; the system is expandable to 64K. $660.

☐ Here are a few from **Applied Professional Software** (300 East Huntland Drive, Suite 111, Austin, TX 78752). *Multiple Labels* lets you type in frequently used addresses and then run off one to ten thousand labels at a time. $24.95. *Payroll Data Worksheet* is a tool for organizing data on hourly workers for the *BPI Payroll* program. The program scans your payroll data disk, and a data worksheet is produced for recording information needed in payroll processing. For each employee on the data disk, the program produces a form with employee information. The list of employees may be sorted according to employee number or by last name. Requires two disk drives. $39.95. *Personal Financial Statement* is designed to give you full control of a personal balance sheet. The program lets you enter all data pertaining to your personal assets and liabilities. $39.95.

☐ **Versa Computing** (3541 Old Conejo Road, Suite 104, Newbury Park, CA 91320; 805-498-1956) has released *Color Me*, the second package in its *Little Kids Stuff* series. *Color Me* is a computer coloring book on disk with twenty-five hi-res pictures of various degrees of difficulty, including familiar objects and animals. Each picture is titled in large capital letters for word and subject recognition. Kids can use paddles or joystick to select from thirty-two color pots. Designed for kids three to twelve years old, *Color Me* introduces children to the world of computer colors, textures, and graphic combinations. Unlike regular coloring books, this one can be used over and over again. $29.95.

☐ Now you can compare the leading word processors, feature by feature. and choose the one best suited for your applications. Word Processor Comparison Tables provides comparisons of more than one hundred fifty features of forty of the leading word processors. The table is published by **Information Research** (10367 Paw Paw Lake Drive, Mattawan, MI 49071; 616-668-2049). $39.95.

☐ *New Profits in Word Processing* is a one-hundred-ten-page publication that explores ways of earning income via a word processing service. Published by **J. Norman Goode** (4121 Buckthorn Court, Lewisville, TX 75028; 214-539-1115). $19.95.

☐ Soundmaster II from **Kearsarge** (12310 Pinecrest Road, Reston, VA 22091; 703-620-5760) gives the Apple sophisticated arcade-level stereo sound capabilities. The package includes an interface card and demo disk containing sample sounds and routines. Programmed in Basic or assembly language, Soundmaster II reproduces the sounds of gunshots, lasers, explosions, whistles, race cars, and video games. $119.95.

☐ **Data Frontiers** (Box 92423, Rochester, NY 14692; 716-227-7772) has enhanced its El Cid computer-to-CompuWriter interface. The first improvement is an LED that indicates when the El Cid is receiving data from an on-line computer. A reset switch has been built into the RS-232 cable boot so that the El Cid can be deactivated by the press of a button. The third addition is two toggle switches for baud rate selection. The El Cid is also available in a Centronics parallel version for those who don't have the RS-232 port. Price of the El Cid is still $599. A manual covering these changes is available for $10, which is applicable to the purchase of the interface.

☐ **The Educational Computing Network** (12680 Hollyglen, Riverside, CA 92503; 714-687-3333) is an educational forum where ideas and applications regarding the use of microcomputers in education are shared. Available free are Apple programs in the area of computer science. There are about fifteen different programs included on a disk. For more information, contact ECN.

☐ **Control Data** (Box 261127, San Diego, CA 92126; 800-233-3784, 800-233-3785) has introduced seven new Plato courses. *Computer Concepts* consists of four courses—*The Computer Keyboard*, *Storage and Memory*, *Files and Editing*, and *Databases*. The courses are designed to provide students with the fundamental concepts of computers as a base for building more advanced computer skills. $60 each. Junior and senior high school students can expand their foreign language vocabulary with Plato's French, German, and Spanish *Create-a-Vocabulary* lessons. Each language course consists of two hundred fifty basic words, including nouns, verbs, and articles for nouns. Instructors can customize word lists to coincide with individual lesson plans. $60 each.

☐ **Howard W. Sams** (4300 West Sixty-second Street, Indianapolis, IN 46268; 317-298-5400) has released an expanded edition of *Basic Programming Primer*. The self-instructional format of the 368-page guide includes self-tests and answers. Included are working examples of programs like a loan amortization program and a metric conversion program. $17.95. *Microcomputers on the Farm* is a hardware and software buying guide for farm businesses that describes how microcomputers can be used in farm operations such as financial analysis, accounting, record-keeping, structured decision making, and more. The book also discusses farm software vendors and dial-up information services. $14.95. *User's Guide to Microcomputer Buzzwords* is written for people who don't necessarily care what happens inside a microcomputer but who want to be able to communicate with people who do. The guide gives the origins and meanings of hundreds of computer terms in concise language, illustrated with photos, drawings, and charts. $9.95.

☐ Prices of Winchester storage systems from **Corvus Systems** (2029 O'Toole Avenue, San Jose, CA 95131; 408-946-7700) have been reduced. Model 6 (5.9 megabyte) is now $2,195; Model 11 (12.1 megabyte) is now $2,995; Model 20 (18.4 megabyte) is now $4,495. Prices of add-on disk drives, Omninet disk systems, and Omninet disk systems with built-in Corvus backup storage have also been reduced.

☐ Here are some books to look out for from **Creative Computing Press** (One Park Avenue, New York, NY 10016; 212-725-7892). *Write Your Own Apple Games*, $12.95; *The Computer Controller Cookbook*, $11.95; *The Creative Apple*, $15.95; *Computers for Sea and Sky*, $9.95; *Computers in Science and Social Studies*, $14.95; *Computers in Mathematics: A Sourcebook of Ideas*, $15.95; *Logo: An Introduction*, $7.95; *Computers for Kids*, $5.95; *Be Computer Literate*, $6.95.

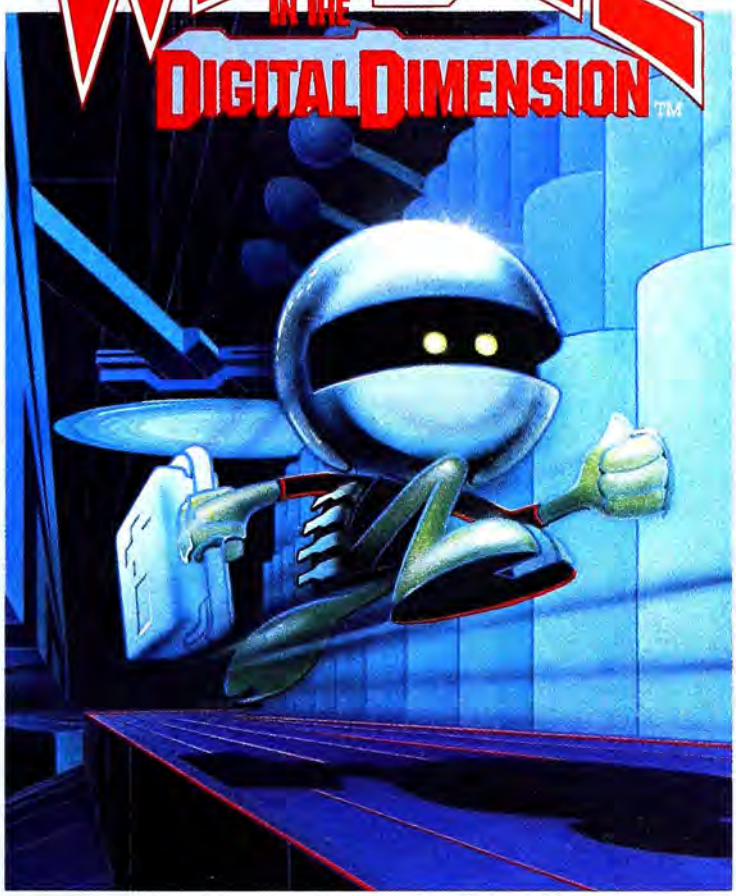
☐ **Associated Technology** (Route 2, Box 448, Estill Springs, TN 37330; 615-967-9159, ext. 331) has created a Cobol coding guide to help software departments formulate their own standards. The guide is recommended to software managers, designers, and quality assurance teams. It provides a methodology consisting of a set of company standards and examples. $22.

☐ **Hayes Microcomputer Products** (5923 Peachtree Industrial Boulevard, Norcross, GA 30092; 404-449-8791) has announced the Micromodem IIe and *Smartcom I* as its latest modem and communications software package for the Apple. The package is an enhanced version of the Micromodem II and *Hayes Terminal Program*. The Micromodem IIe is completely housed on a circuit board that fits into any slot and connects directly to the telephone line. The modem provides Touch-Tone and pulse dialing, a speaker, and support for single and multiline telephone connections. *Smartcom I* offers stop/start, send lines, and verification protocols, and it can route data to a printer, store three telephone numbers for convenient dialing, and work with DOS 3.3, Pascal, and CP/M operating systems. The program accommodates up to six disk drives, several printer interface cards, forty- and eighty-column displays, and lower-case characters. Micromodem II/*Smartcom I* package, $329. Current owners of the Micromodem II may purchase *Smartcom I* for $119.

☐ **Dataknight** (Normandy Circle, Glenmoore, PA 19343; 215-431-8900) presents *Grand Slam Trivia*, a baseball question-and-answer game for the family or for trivia experts. Offering three levels of questions, and multiple choice or direct keyboard entry answers, the game is suited to players of different skills. Keyboard entries are matched with answers even if spelled incorrectly. Included are options to select offensive and defensive strategies like hit and run, steal a base, sacrifice, pick off a runner, double plays, and more. More than six hundred fifty questions—each having three hints and eight multiple-choice answers—are available per disk. $34.95. Additional disks, $19.95.

☐ *Winning on Wall Street* is a stock market decision support software system by **Summa Software** (Box 2046, Beaverton, OR 97075; 503-644-3212) designed for stock market investors and traders. The system comes in three modules. *Trader's Data Manager* is a stock market database. $200. *Trader's Forecaster* is a forecasting and technical analysis tool kit that is meant to be used with *Trader's Data Manager*. $250. *Trader's Accountant* is the system's portfolio management module. $350. *Winning on Wall Street—The Complete System* includes all three modules on one disk. $700. ◨

WILLY BYTE IN THE DIGITAL DIMENSION™



CHARACTERS

Willy Byte: electronic hero
Hex Luthor: digital archvillian
Cybil Nibble: 13 year-old player of Willy Byte in the Digital Dimension
Sidney Nibble: 16 year-old brother

Scene – A suburban home in the 1980's on a late Sunday evening. A teenager, Cybil Nibble, has been playing (for the umpteenth time) Willy Byte in the Digital Dimension, the newest creation in computer software from Data Trek, Inc. She decides to go to bed and quickly enters into a deep sleep that plunges her into the Digital Dimension. She finds herself on the ground gazing at eight towering electronic circuit poles, each emitting an orange glow that consumes the entire sky. Fascinated and perplexed by the sudden change in



environments, Cybil notices an animated object, high in the heavens, swinging from pole to pole.

Cybil (whispering to herself): The lightning speed, the energetic response, the total commitment, it must be Willy Byte!

(At that moment the game's charismatic electronic hero, Willy, sees Cybil and slides gracefully down the pole to meet his newest acquaintance.)

Willy Byte (cheerfully): Greetings, Cybil! Welcome to the Digital Dimension.

Cybil: The Digital what?

Willy: You know my home, the inside of your computer. Watch this!

(Off he scampers about the keyboard room, pulling and tugging on each bit while dodging the stinging sensation of static charges. As soon as Willy completes his task and the byte has safely left the keyboard room, a pale expression comes over Willy's face.)

Cybil: Are you alright?

Willy Byte (concerned): Problems in the Power Room.

Cybil (confused): What problems?

Willy Byte (assertive): Follow me!

(As Willy and Cybil sprint toward the I/O port, a sinister laugh is heard from above – the laughter of Hex Luthor. Suddenly a bolt of static charge is seen thundering its way toward Willy Byte.)

Cybil: Watch out, Willy!

(Cybil awakens from her dream to find her brother Sidney standing in her doorway.)

Sidney (concerned): Cybil, are you alright?

Cybil: I guess I was dreaming.

Sidney: As I was walking to the kitchen I noticed that the computer was left on. The screen's got a picture of a new game on it, but I can't find the disk.



Cybil (animatedly): Yeah, it's Willy Byte in the Digital Dimension. Mom and Dad bought it for us. I'll show you.

Sidney (sarcastically): They did what!?

Cybil *(on a sudden upsurge of emotion)*: Dad says that when I play Willy Byte I **learn** all kinds of stuff about computers.

Sidney: Like what?

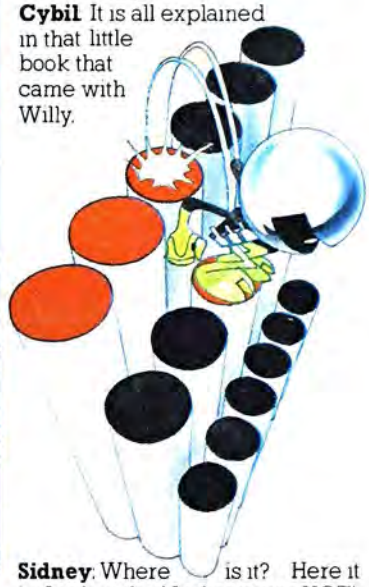
Cybil: First you jump into the CPU room. And then there are lots of other game rooms to explore, and each is a part of the computer.

Sidney: Oh really?

Cybil: Yeah! And in **this** game you guide Willy on his wild adventures while he skydives into the Power room, operates a crane in the RAM room, bounces in and out of the CPU, and zips around the Disk Drive room. I got extra points for flowcharting Willy's . . .

Sidney (perplexed): Flowcharting? What's flowcharting?

Cybil: It is all explained in that little book that came with Willy.



Sidney: Where is it? Here it is. Look at that! Is that cover HOT! It looks like an album cover. From the looks of all these pictures, . . . This looks great . . . Got to Play! Where's the disk? . . . Cybil!

Cybil (dashing to the computer): Mom and Dad will let us play as long as we want and I'm first.

Sidney (impatiently): Go for it!

Look for Willy Byte in the Digital Dimension at your nearest dealer or call DTI Data Trek toll-free at **(800) 654-SOFT.** In California, call toll-free **(800) 652-DATA.**

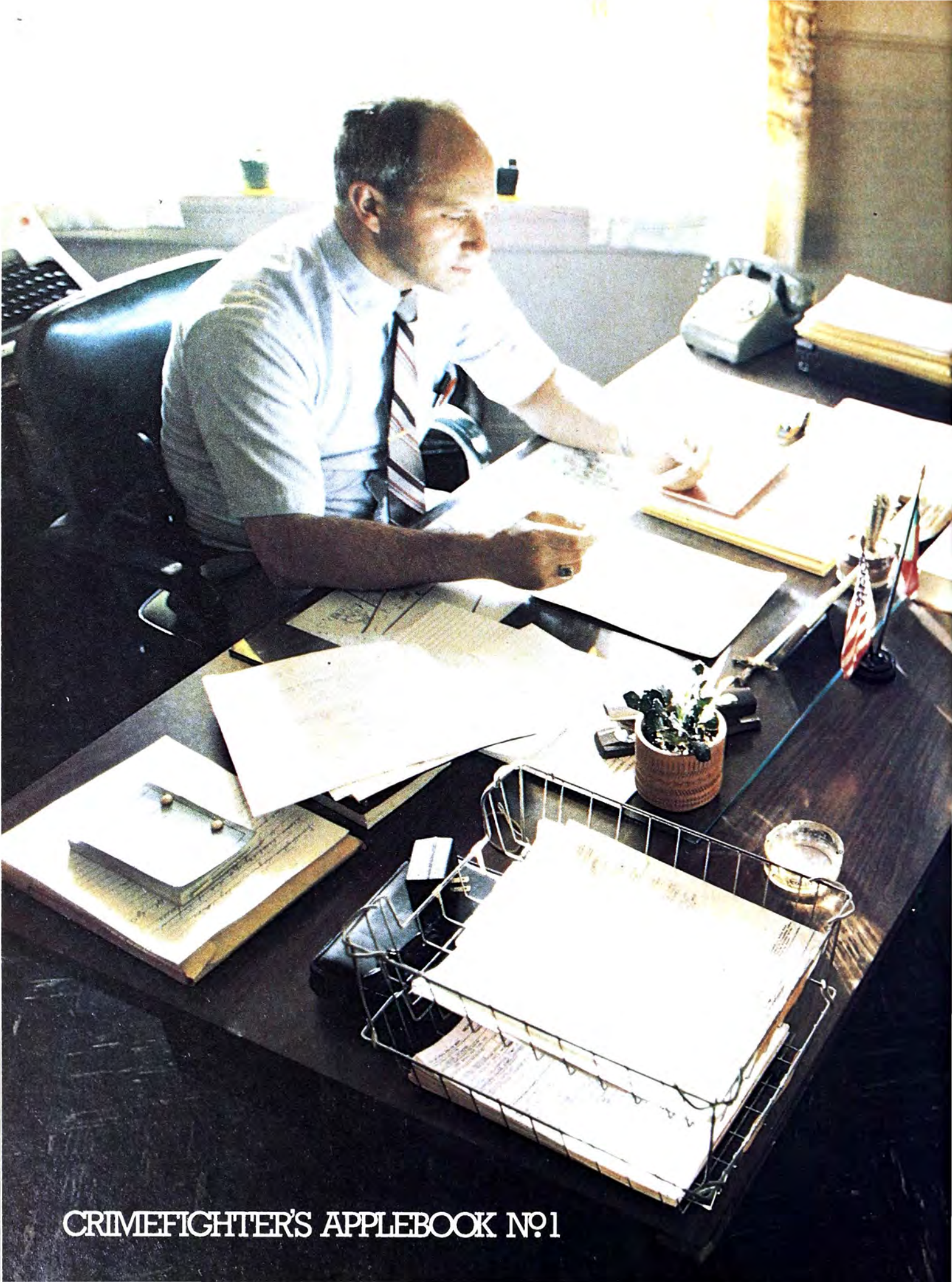
Suggested Retail: **$39.95**

dti data trek

121 West E Street
Encinitas, California 92024
(619) 436-5055

Available for the Apple II, Atari 400, 800, and 1200

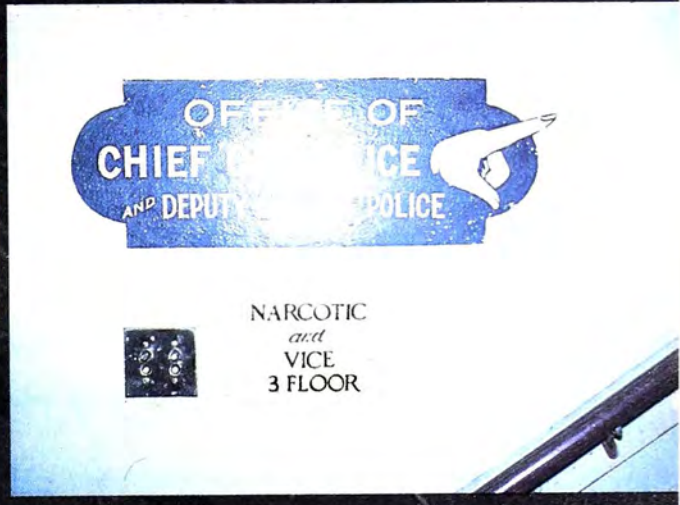
Apple is a trademark of Apple Computer, Inc.
Atari is a registered trademark of Atari, Inc.



CRIMEFIGHTER'S APPLEBOOK Nº1

The Electronic Gumshoe

by Greg Stone



The police station sits right on the edge of the New Bedford, Massachusetts, historic district, an old brick building, dark, square, and a little rough around the edges. Immediately inside the entrance is a sign that says "Stop Here." Behind the sign a few men in blue uniforms are talking with one another in a relaxed way. It is Friday afternoon—the end of the shift.

"Detective Division? . . . Down that corridor to the left, up the stairs, take a left."

The corridor is poorly lit, the floor tiles a dingy red. The stairs are metal, once painted black, but the paint has worn and



Some of New Bedford's finest (from left to right): Detective Sergeant John Dextradeur, Detective Lieutenant Carl Moniz, Detective Kenneth Gormley, and Detective Sergeant Gilbert Larson. These men, along with an Apple IIe and *PFS:File*, are creating a computerized crime information tracking system that is easy for them to use, low in cost, and, most important, effective.

the bare metal edges glow in the late-afternoon light.

The Detective Division is in a comfortable room. A large desk stands like a sentry near the door. Its bulk doesn't actually block access to the room, but its commanding presence makes it difficult not to stop there.

"Lieutenant Moniz? . . . Take a chair. He'll be here in a minute."

Green, brown, and gray metal desks, obviously purchased at different times, fill the room. Most of them are covered with papers and personal effects—pictures of wives and kids, a small American flag. The typewriters, too, are of mixed vintage, a few Royals, an Olympia, an Olivetti—all manual. The room might have served as a set for the 1930s shooting of *The Front Page*.

This is not Tomorrowland. It is not some public relations man's dream of twenty-first-century law enforcement. It is a working detective division, in a working police station, in a working city of one hundred thousand persons. This is a scene that is undoubtedly repeated all over the country in hundreds of small cities. In short, it is ordinary.

But it is also extraordinary. For in a small office at the end of the room, a CRT screen glows a familiar Apple green. A program thousands of Apple users throughout the country are familiar with is up and running—*PFS:File*.

They're not using this software to keep a mailing list for the Policemen's Ball, however. They've made the Apple IIe a member of the team, working break-ins, robbery, fraud, and, yes, even homicide. And with less than two months' time on the force, the Apple already has its first "collars," a couple of persons police believe were responsible for a burglary in a housing complex for the elderly and a break-in at a handbag company. Not bad police work for a rookie!

"Hey, we haven't pinned a badge on it yet," jokes Detective Lieutenant Carl Moniz. His tone becomes more serious: "It's only a tool, you know. You still need the guy on the street." He could have added that you also need the guy smart enough to take advantage of the tool—and that's Moniz.

An unassuming veteran of fifteen years on the New Bedford force, Lieutenant Moniz should not be confused with television's Lieutenant Columbo. He doesn't smoke cigars, he's not coy, and the case load in his division doesn't consist of an intriguing series of crimes among society high-steppers. This is New Bedford. This is Every City, USA, where the detective caseload is largely burglaries, frustrating invasions of houses when no one was home, no one saw anything, and no one was even sure when the crime occurred—maybe last night, maybe the night before.

The uniformed men on patrol make the first report. A pink copy comes to the detective division. It's a page, rarely two, of raw data—addresses, dates, owners' names, a few notes. The report gets a case number and is added to a detective's stack to be reviewed. The detective goes over some of the same ground. Maybe he gets a chance to talk to a neighbor who wasn't available when the uniformed officer was investigating. Maybe he shakes loose another fact or two. In any event, another report is generated. A few more details. No, no one saw anything unusual. No, no one heard anything extraordinary. When did it happen? Well, Sergeant, we were away all weekend. A shrug . . . frustration. The report goes into the file.

Hopefully some of the details stick in the detective's memory. Most get forced out by fresher details from more recent breaks. The television detective may have a photographic memory, but these aren't television detectives. They play with their kids on days off, worry about how to pay bills, take the family dog to the vet, and come in the next day to face more cases.

Last winter they decided to try a new tactic, explains Lieutenant Moniz. A map of the city dominates one wall of his office. In it he places pins. They represent two months' worth of crimes—mostly burglaries of houses and commercial establishments. It's a quick and simple visual aid.

In July, shortly after the Apple arrived on the scene, a concentration of pins began to appear in a single South End neighborhood of tenements and small businesses. The pins were mostly white, indicating housebreaks, but a few were black, representing burglaries at commercial buildings. The geographical pattern was obvious. But were there other patterns?

When Lieutenant Moniz had asked a similar question a couple of months before, it had taken Detective Sergeant John Dextradeur about two weeks to wade through all the reports by hand, looking for meaningful patterns. Granted, explains Lieutenant Moniz, Sergeant Dextradeur did other work during those weeks, but it still was a lot of effort.

However, this time they had been entering the information in the Apple. It wasn't hard to design a form. What shows on the *PFS:File* screen looks remarkably like the file card system they had used in the past.

FAREWELL, Mr. Webster!
AU REVOIR, Funk & Wagnalls



megahaus™
WE MAKE COMPUTERS WORK HARDER. / Easier.

announces

The only dictionary/spelling checker designed especially (and ONLY) for owners of Megawriter Word Processors.

Here's what **MEGASPELL** does:

- Provides a dictionary of 40,000 words. Everything from "cat" to "supercalifragonisticexpialidocious." (Some spelling checkers provide only 20,000 words and cost more.)
- Lets you add on additional 10,000 words of your choice. (Great for technical, legal or medical references.)
- Displays your error in context. (Some spelling checkers only give you a list of mis-spelled words. You have to locate them in your document. Boring!)
- Simplicity itself. Only five single keystroke commands (One for each finger.)
- Smart! Rejects "false alarms" caused by format commands. Many spelling checkers pick up format commands as mis-spelled words. Isn't that dumb?)

MEGASPELL is YOURS for $59.95.

(And you can give your old dictionary away!)

MEGASPELL is available for shipment to dealers now. If your dealer doesn't have it, show him this announcement and tell him to get it.

MEGASPELL is available for APPLE Computer and IBM PC

MEGAWRITER and MEGASPELL are registered trade marks of: MEGAHAUS Corporation, 5703 Oberlin Drive, San Diego, CA 92121 • (619) 450-1230

IF YOU'RE CONFUSED ABOUT BUYING A PERSONAL COMPUTER, HERE'S SOME HELP.

Computers come in two parts.

One part is the "hardware," the machinery itself. The other is the "software," which tells a computer what to do, the way a driver tells a car what to do.

Without software, a computer can't do anything. And vice versa. You have to buy both.

Buy the software first.

Since the reason you're buying a computer is to get the capability the software gives you (remember it's the software that tells the computer what to do), it makes good sense to pick the software first.

Start by making a list of the things you want the computer to do. Possibilities include word processing, inventory control, accounting, graphics, recordkeeping—you name it, there's probably software that does it.

Next take your list into a computer store and ask the salesperson to demonstrate software that will do the things you want.

Even though you'll need a computer for the demonstration, keep in mind the computer is just a vehicle. The software is the driver. Once you've decided on software, picking the rest of the computer system will be that much easier.

The simpler the better.

Some people will tell you that software has to be complicated to be powerful. Nothing could be further from the truth.

Good personal software should be, as the computer people say, "friendly." Meaning that it helps you do what you want to do without getting in the way.

Good software keeps the complications in the computer, where they belong. And keeps the capability at your fingertips. It's that simple.

Simply see for yourself.

You can read any number of interesting books and magazines about personal computers. You can ask your friends who have them.

Or look at all the sales literature you can get your hands on.

But as helpful as that can be, there's no substitute for a live demonstration.

When you do go shopping, we recommend you take a look at the PFS® Family of Software.

Designed the way we think a software family should be: simple, straightforward and powerful.



Currently there are four software packages in the family: PFS:WRITE, PFS:FILE, PFS:REPORT and PFS: GRAPH, with more on the way. Here's a little more about each of them.

PFS:WRITE. The simplest way to get your message across.

PFS:WRITE is ideal for people who want to make their writing time more productive. It displays what you write on your computer screen so you can make revisions as you compose.

With WRITE, you can correct misspellings or substitute one portion of text for another, with just a few keystrokes.

And when you're through revising, WRITE shows you "on-screen" just how your document will look when it's printed. So there are no surprises afterwards.

WRITE also works with most popular software programs, including the PFS Family of Software.

This feature allows you to add names and addresses from mailing lists to generate form letters. Or combine columns of numbers or graphs with your text.

PFS:FILE. The simplest way to get organized.

FILE is basically a paper filing system without the paper. So you can record, file, retrieve and review information in a fraction of the time it takes with a conventional filing system.

With FILE, you arrange your information on a "form" you design yourself. And when you need to track something down, FILE sorts through your records electronically. It lets you retrieve information in a variety of ways so you can be as selective as you want.

PFS:REPORT. The simplest way to sum it all up.

REPORT is a powerful analysis tool that works with FILE.

REPORT sorts through your files and retrieves the information you're looking for. Then assembles it all into one report, so you can analyze, plan and make better-informed decisions.

REPORT is also good at math. It quickly sorts through columns of numbers and performs calculations, so you won't have to.



PFS:GRAPH. The simplest way to spot trends.

GRAPH is ideally suited for professionals who need charts or graphs in a hurry.

All you do is specify the kind of graph or chart you want and enter the information. GRAPH does the rest.

GRAPH transforms columns of facts and figures into pie, line and bar charts so you can spot trends quickly and make better-informed decisions.

GRAPH works with PFS: WRITE, PFS:FILE, VisiCalc® files or data entered directly into the computer. And supports most popular printers and plotters.

Send for our Free PFS Software Catalog.

It'll tell you more about the PFS Family of Software and how to use it.

It's free. And all you have to do to get one is return the coupon below or see your participating PFS dealer.

The PFS Family of Software.

We've already made computers simpler to use.

Now we're making them simpler to buy.

pfs®:

FREE ST 11/83



PFS SOFTWARE CATALOG

Name _____

Address _____

City _____

State _____ Zip _____

I plan to use a personal computer:
☐ at home ☐ at work ☐ both

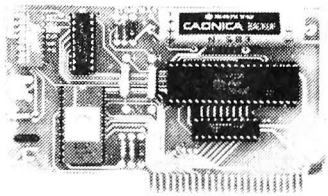
Mail to: **PFS, 422 Aldo, Santa Clara, CA 95050**

®PFS is a registered trademark of Software Publishing Corporation, 1901 Landings Drive, Mountain View, CA 94043. The PFS Family of Software currently runs on the Apple,® IBM,® Compaq,® Texas Instruments,® and equivalent personal computers.

APPLIED ENGINEERING
THE BEST PERIPHERALS FOR THE BEST COMPUTER

The TIMEMASTER
Finally a clock that does it ALL!

Automatically date stamps files with PRO-DOS



Fully PRO-DOS compatible

- Designed in 1983 using I.C. technologies that simply did not exist when most other Apple clocks were designed.
- Just plug it in and your programs can read the year, month, date, day, and time to 1 millisecond! The only clock with both year and ms.
- Powerful 2K ROM driver — No clock could be easier to use.
- Full emulation of most other clocks, including Mountain Hardware's Appleclock (but you'll like the TIMEMASTER mode better).
- Basic, Machine Code, CP/M and Pascal software on 2 disks!
- Eight software controlled interrupts so you can execute two programs at the same time. (Many examples are included)
- On board timer lets you time any interval up to 48 days long down to the nearest millisecond.

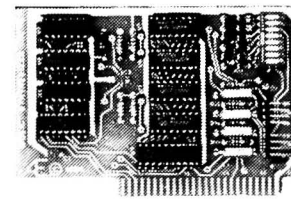
The TIMEMASTER includes 2 disks with some really fantastic time oriented programs (over 25) plus a DOS dater so it will automatically add the date when disk files are created or modified. This disk is over a $200.00 value alone — we give the software others sell. All software packages for business, data base management and communications are made to read the TIMEMASTER.

If you want the most powerful and the easiest to use clock for your Apple, you want a TIMEMASTER.

PRICE $129.00

Super Music Synthesizer

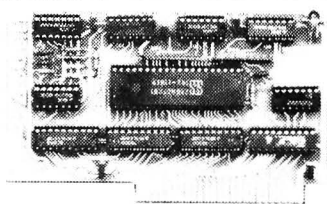




- Complete 16 voice music synthesizer on one card. Just plug it into your Apple, connect the audio cable (supplied) to your stereo, boot the disk supplied and you are ready to input and play songs.
- It's easy to program music with our compose software. You will start right away at inputting your favorite songs. The Hi-Res screen shows what you have entered in standard sheet music format.
- Now with new improved software for the easiest and fastest music input system available anywhere.
- We give you lots of software. In addition to Compose and Play programs, 2 disks are filled with over 30 songs ready to play.
- Easy to program in Basic to generate complex sound effects. Now your games can have explosions, phaser zaps, train whistles, death cries. You name it, this card can do it.
- Four white noise generators which are great for sound effects.
- Plays music in true stereo as well as true discrete quadraphonic.
- Full control of attack, volume, decay, sustain and release.
- Will play songs written for ALF synthesizer (ALF software will not take advantage of all the features of this board. Their software sounds the same in our synthesizer.)
- Automatic shutoff on power-up or if reset is pushed.
- Many many more features.

PRICE $159.00

Z-80 PLUS!



- TOTALLY compatible with ALL CP/M software.
- The only Z-80 card with a special 2K "CP/M detector" chip.
- Fully compatible with microsoft disks (no pre-boot required).
- All new 1983 design incorporates the latest in I.C. technologies.
- Red "CP/M WORKING" LED indicator, the Z-80 Plus does not interfere with non-CP/M programs.
- An on-card PROM eliminates many I.C.'s for a cooler, less power consuming board. (We use the Z-80A at a fast 4MHZ)
- Does EVERYTHING the other Z-80 boards do, plus Z-80 interrupts.

Don't confuse the Z-80 Plus with crude copies of the microsoft card. The Z-80 Plus employs a much more sophisticated and reliable design. With the Z-80 Plus you can access the largest body of software in existence. Two computers in one and the advantages of both, all at an unbelievably low price.

PRICE $139.00

Viewmaster 80

There used to be about a dozen 80 column cards for the Apple, now there's only ONE.

- TOTALLY Videx Compatible
- 80 characters by 24 lines, with a sharp 7x9 dot matrix
- On-board 40/80 soft video switch with manual 40 column override
- Fully compatible with ALL Apple languages and software — there are NO exceptions
- Low power consumption through the use of CMOS devices
- All connections on the card are made with standard video connectors, no cables are soldered to the board
- All new 1983 design (using a new Microprocessor based C.R.T. controller)

JUST COMPARE!

	PRICE	BUILT-IN SOFTSWITCH	SHIFT KEY SUPPORT	PASCAL COMPATIBLE	7X9 DOT MATRIX	LIGHT PEN INPUTS	40 COLUMN OVERRIDE	INVERSE CHARACTERS
VIEWMASTER	169	YES	YES	YES	YES	YES	YES	YES
SUP'RTERM	375	NO	YES	NO	NO	NO	YES	YES
WIZARD80	245	NO	NO	YES	YES	NO	YES	YES
VISION80	375	YES	YES	YES	YES	NO	NO	NO
OMNIVISION	295	NO	YES	NO	NO	NO	YES	YES
VIEWMAX80	219	YES	YES	YES	YES	NO	NO	YES
SMARTERM	360	YES	YES	YES	NO	NO	YES	NO
VIDEOTERM	345	NO	NO	NO	YES	YES	NO	YES

The VIEWMASTER 80 works with all 80 column applications including CP/M, Pascal, WordStar, Format II, Easywriter, Apple Writer II, Viscalc, and many others. The VIEWMASTER 80 is THE MOST compatible 80 column card you can buy at ANY price!

PRICE $169.00

MemoryMaster IIe 128K RAM Card

- Expands your Apple IIe to 192K memory
- Provides an 80 column text display
- Compatible with all Apple IIe 80 column and extended 80 column card software (Same physical size as Apple's 64K card)
- Available in 64K and 128K configurations
- Bank select LED's for each 64K bank
- Permits your IIe to use the new double high resolution graphics
- Automatically expands Visicalc to 95K storage in 80 columns! The 64K configuration is all that's needed, 128K can take you even higher.
- Complete documentation included, we show you how to use all 128K.

If you already have Apple's 64K card, just order the MEMORYMASTER with 64K and use the 64K from your old board to give you a full 128K. (The board is fully socketed so you simply plug in more chips.)

MemoryMaster with 128K	**$249**
Upgradeable MemoryMaster with 64K	**$169**
Non-Upgradeable MemoryMaster with 64K	**$149**

Our boards are far superior to most of the consumer electronics made today. All I.C.'s are in high quality sockets with mil-spec. components used throughout. P.C. boards are glass-epoxy with gold contacts. Made in America to be the best in the world. All products work in APPLE IIe, II, II+ and Franklin (except MemoryMaster). Applied Engineering also manufactures a full line of data acquisition and control products for the Apple: A/D converters and digital I/O cards, etc. Please call for more information. All our products are fully tested with complete documentation and available for immediate delivery. All products are guaranteed with a no hassle **THREE YEAR WARRANTY.**

All Orders Shipped Same Day. Texas Residents Add 5% Sales Tax. Add $10.00 If Outside U.S.A. Dealer Inquiries Welcome.

Send Check or Money Order to:
APPLIED ENGINEERING
P.O. Box 470301
Dallas, TX 75247

Call (214) 492-2027
7a.m. to 11p.m. 7 days a week
MasterCard, Visa & C.O.D. Welcome







Detective work involves information, most of it in the form of reports generated by field officers. Organizing and finding correlations between the incoming wave of facts used to be a difficult task involving clipboards, maps, pins, charts, and filing cabinets—a perfect place for a computer to help, as Lieutenant Moniz (above left) and Sergeant Dextradeur (left) point out.

There are headings for entering ten pieces of information, plus a longer space for comments where anything unusual can be added. Most of the information thus entered is pretty straightforward. It includes date of the crime, name of complainant, address, and so on. However, it also includes the day of the week (coded 1–7), a code for the geographical district, and a code for the time of day.

This last is particularly puzzling with burglaries, since the time the crime occurred is usually a best-guess situation. To get this information into a format useful to both the police and the computer, they've broken the day into time zones. Where they can be specific, they are. Where they can't, they do their best to narrow the time down to a zone.

A department secretary enters the information into the computer. The detectives pull it out as needed. Lieutenant Moniz and his sergeants are all familiar with the machine and software. In this particular instance, the patterns that had taken two weeks of part-time work to spot by hand were spotted in an hour or two with the Apple. Essentially all that had to be done was to ask for the Apple to sort the information, keying on different significant items.

The result was a detailed memorandum from Lieutenant Moniz to the uniformed patrol officers in the region. It told them there had been a concentration of burglaries (twenty-three, actually) during the past two months in a small portion of their patrol area. It suggested that the commercial break-ins were taking place between midnight and 6:00 a.m. on Sundays and Mondays. The housebreaks were happening on Tuesdays, Wednesdays, and Saturdays between 6:00 p.m. and midnight. The patrolmen were asked to report anything they heard that might relate to past break-ins in this time frame and of course to be on the lookout in the designated region during those particular times for suspicious activity.

In a few days a report came back from one of the officers patrolling the area. He had picked up some information on the street. It was just a few names and some activity that was difficult to explain, but it fit with the other information. It gave detectives the opportunity they needed. They questioned the people involved, got more information, and soon had enough of a case to arrest two persons and put a warrant out for the arrest of a third.

As this is written the case is still before the courts. But for weeks following the arrests, no new pins have gone into the map for that particular South End neighborhood. That doesn't mean there won't be some. Lieutenant Moniz doesn't expect to turn the world upside down with the microcomputer. "We're never going to clear it all off," he says, gesturing to the map. "But we're going to slow them down a bit."

What is fascinating is not the sophistication of the process, but the way in which the people involved have taken a relatively simple tool and applied it effectively in an unusual area. They are not computer buffs. Lieutenant Moniz has some vague ideas about word processing, but he is the first to admit that "what I know about computers you could put on the tip of your little finger."

But he does know that detectives live by information. They have a need to collect as many facts as possible and then find meaningful relationships. Using computers to help in this activity isn't new to law enforcement. The police application has been around practically as long as computers, but usually on a larger, more expensive scale. This is not New York, Chicago, or Los Angeles.

Actually, New Bedford police had used a computer for several years. Down the hall and up a flight of stairs, in the planning division, was an Incoterm computer. But it was out of sight, out of order, and for practical purposes not usable for this task—not, at least, without some extensive reprogramming. The detectives wanted something close at hand—something they could tailor to their needs without the help of a programmer. There was a computer buff in one of the other divisions who gave them some advice and pointed them in the general direction of Apple. They also took their problem to a local consultant. "We learned something from that," says Lieutenant Moniz, "but the ideas were on a bigger scale than we had in mind." (Scale here was determined by the size of the division and the size of the budget.)

They pretty much settled on the Apple as the machine for the job. They drew up a plan and applied for funds from the district attorney's office, then put it out to bid. The result was that they bought the Apple IIe, two drives, a black-and-white monitor, and a dot-matrix printer. They also bought *PFS:File* and a box of blank disks.

That's it. At this point it's easy to imagine the computer gurus shuddering. Aren't there better programs that will have greater capacity and do fancier sorting? Maybe. But it's doubtful that more sophisticated software would be approached with the enthusiasm demonstrated by the detectives. They've learned enough about the computer—without benefit of federal grants and special seminars—to give them a legitimate return





Oddly enough, many items taken in common house burglaries in New Bedford wind up in one of the city's several pawn shops. Local laws require pawnbrokers to keep strict accounts of incoming goods; records are inspected regularly by Sergeant Larson, who then sees if any of the "parts" fit into the "puzzle" held on the Apple.

on their investment. It's obvious they feel comfortable with it. They use it. And in the couple of months they've had to play with it they've already begun exploring a variety of creative uses.

One of the simpler ones is to track stolen property. In fact, it was this use that got them started down the computer trail. Stolen property—anything that's identifiable, at least—is one of the most concrete leads they can have in a burglary, says Lieutenant Moniz. Identifiable frequently means jewelry with inscriptions, but there are many other possible items.

With several burglaries every day, it doesn't take long to fill up such a file of stolen items. Two months into the Apple era, Lieutenant Moniz is still hedging his bets by keeping stolen property files using the old wood pulp technology. But he also has a *PFS:File* form that follows the general pattern of stolen property information used by the federal government's National Crime Information Center computer. (Yes, he makes backup disks.) In this file the type of property is keyed by a letter (designating general category, such as jewelry, farm equipment, appliance) and the first six letters of the name of the property. ("That way we don't have to worry about someone spelling something in an unusual fashion when they enter it," says Lieutenant Moniz.)

To see this at work, follow Detective Sergeant Gilbert Larson as he makes the rounds of pawn shops and gold and silver dealers. Not a very glamorous task, but New Bedford has a stiff ordinance requiring the dealers to keep all sorts of useful information about who sold what. The first two stops yield little of interest. Then he spots a high school ring with the initials "R.W." inscribed in it. Funny. Says here it was brought in by "John Smith."

He makes a few quick notes, then it's back to the office. Pre-Apple days would have required an extensive check of paper files—a check that wasn't always successful but was nearly guaranteed to be tedious. ("You know, the faster a guy can do a job like this, the more enthusiastic he can get about it," says Lieutenant Moniz.)

Today Sergeant Larson sits at the Apple, boots *PFS:File*, puts in the stolen property disk, and from the main menu selects the search function.

The screen asks for retrieve specifications. Highlighted in reverse text in the upper left of the screen are the letters "TYP:". Sergeant Larson positions the cursor and types "JRING". (The "J" simply indicates jewelry.) He quickly jumps the cursor to the line for school and fills in a code number. (Each of the schools in the area has been assigned a number. It takes up less storage space.) There's a line for year; he types "53."

He presses "control-C," and at the bottom of the screen a series of numbers begins a rapid countdown from 486. (The disk was 96 percent full with that number of records.) The counting stops at number 239 and the screen fills with information. Bingo. A match. The ring was stolen in a housebreak. Two weeks ago. Maxwell Street. "Let's go talk to Mr. Smith."

If Mr. Smith came by the ring honestly, he probably can give the detectives information that can be verified, in whole or in part. If he can't, he may be in for some real trouble. Having stolen property in one's possession is no joke. "It's our job to find probable cause," says Lieutenant Moniz. "The rest is up to the courts. If a person cannot give a reasonable explanation. . . ." He turns his hands palms up.

Robberies?

"See these red pins? They're armed robberies." His index finger traces a crooked line across the center of the map. There is no geographical pattern. But information about each robbery was coded into the *PFS* file and a pattern emerged.

It wasn't much to go on, but they were able to make an informed guess as to the day of week and time of day the robber was likely to strike again. Making a guess at the geographical area, they prepared. Result? Nothing. "But the guy hit in the next town, Fairhaven," said Moniz. The time and day were right. The location was impossible to predict. Score one for the bad guys.

Homicide?

Well, there's a rather complex case under investigation now. The detectives didn't want to talk much about it for obvious reasons, but they did say it involved several persons and a thick pile of phone records. It would be nice to know who was talking to whom and when, and that too was clearly a job for the Apple to tackle.

"We could use a file on nicknames," he says. "That would be helpful. And we have a check-and-fraud unit that I would like to get involved."

The New Bedford police station still looks old. It still gives off an aura of yesterday. But in a small office, in the back of a room on the second floor, is a little island of tomorrow. ■

NEW! GPLE
GLOBAL PROGRAM LINE EDITOR
by NEIL KONZEN

$49.95: Includes Peeks/Pokes Chart & Tip Book #7.

NOW A BEAGLE BROS DISK! GPLE lets you edit Applesoft program lines *FAST* without awkward cursor-tracing and "escape editing".

INSERT & DELETE: GPLE works like a word processor for Applesoft program lines. You make changes instantly by jumping the cursor to the change point and inserting or deleting text. No need to trace to the end of a line before hitting Return.

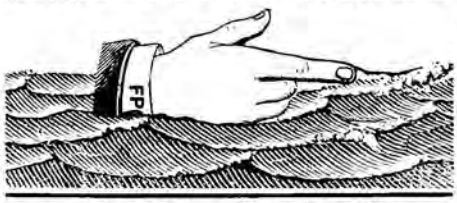
GLOBAL SEARCH & REPLACE: Find any word or variable in your programs, *FAST*. For example, find all lines containing a GOSUB, or edit or delete all lines with REM statements, or all occurences of any variable. **Replace any variable**, word or character with any other. For example, change all X's to ABC's, or all "Horse" strings to "Cow".

80-COLUMN COMPATIBILITY: All edit & global features support **APPLE IIe** 80-column cards and most 80-column cards on *any* Apple IIe, II+ or II.

DEFINABLE ESC FUNCTIONS: Define ESC plus any key to perform any task. For example, **ESC-1** can catalog drive 1, **ESC-L** can do a "HOME: LIST", **ESC-N** could type an entire subroutine... *Anything* you want, *whenever* you want.

GPLE DOS MOVER: Move DOS and GPLE to Language Card (or IIe upper 16K) for an EXTRA **10,000 BYTES** (10K) of programmable memory.

Plus APPLE TIP BOOK #7: Learn more about your Apple! Includes all new GPLE tips and tricks.



UTILITY CITY
21 PROGRAMMING UTILITIES
by BERT KERSEY

$29.50: Includes Peeks/Pokes Chart & Tip Book #3

LIST FORMATTER prints each program statement on a new line. Loops indented with printer Page Breaks. A great Applesoft program de-bugger.

MULTI-COLUMN CATALOGS, with or without sector and file codes. Organize your disk library.

INVISIBLE and trick catalog file names. Invisible functioning commands in Applesoft programs too.

MUCH MORE: 21 utilities, including auto-post Run-number & Date in programs, alphabetize/store info on disk, convert dec to hex or Int to FP, protect and append programs, dump text to printer...

LEARN PROGRAMMING: List-able programs and informative documentation. Includes Tip Book #3. Hours of good reading & Applesoft experiments.

ALPHA PLOT
HI-RES GRAPHICS/TEXT UTILITY
by BERT KERSEY and JACK CASSIDY

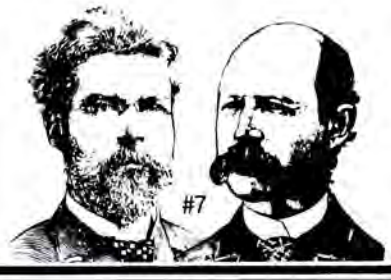
$39.50: Includes Peeks/Pokes Chart & Tip Book #4.

DRAW IN HI-RES on both Apple "pages" using easy keyboard commands OR paddles/joystick. Pre-view lines before plotting. Solid or mixed colors & Reverse (background-opposite) drawing. FAST one-keystroke circles, boxes & ellipses, filled or outlined. Add text for graphs & charts. All pix Save-able to disk, to be called from your Applesoft programs.

COMPRESS HI-RES DATA to 1/3 disk space (average) allowing more hi-res pictures per disk.

MANIPULATE IMAGES: Superimpose any two images, or RE-LOCATE any rectangular section of any drawing anywhere on either hi-res page.

HI-RES TYPE: Add text to your pictures with adjustable character-size and large-character color. Type a*nywhere* with no Htab/Vtab limits. Type sideways too, for graphs. Includes Tip Book #4.



Beagle Bros
Micro Software Inc.

4315 SIERRA VISTA / SAN DIEGO, CA 92103
619-296-6400

ALL BEAGLE DISKS ARE UNLOCKED, COPYABLE AND COMPATIBLE WITH APPLE II, II+ AND IIe.*
(Don't Settle for Less!)

* DISKQUIK requires Apple IIe.
"APPLE" is a Registered Trade Mark of You-Know-Who.

BEAGLE BASIC
APPLESOFT ENHANCER
by MARK SIMONSEN

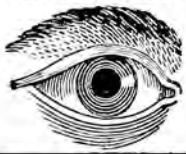
$34.95: Includes Peeks/Pokes Chart & Tip Book #6.
Requires Apple IIe (OR II/II+ with RAM Card).

RENAME ANY APPLESOFT COMMAND or Error Message to anything you want. For program clarification, encryption/protection or even foreign translation. Plus add optional powerful NEW COMMANDS:

ELSE follows If-Then statements, like this:
IF X=2 THEN PRINT "YES": *ELSE* PRINT "NO"

HSCRN reads color of any hi-res dot for collision testing. **SWAP X,Y** exchanges 2 variables' values. New **TONE** command writes music with no messy pokes & calls. **SCRL** scrolls text in *either* direction. **TXT2** lets Text Page 2 act exactly like Page 1.

PLUS: GOTO & GOSUB may precede variables, as in "GOSUB FIX" or "GOTO 4+X". Escape-mode indicated by special ESC CURSOR. Replace awkward Graphics screen-switch pokes with 1-word commands. Change ctrl-G Beep to any tone. **INVERSE REMS** too! All GPLE compatible.



```
1 FOR S=768 TO 773: READ A:
  POKE S,A: NEXT: POKE 232,0:
  POKE 233,3: DATA 1,0,4,0,5,0
2 HGR2: FOR R=0 TO 192: ROT=R:
  SCALE=96: XDRAW 1 AT 140,95:
  SCALE=30: XDRAW 1 AT 140,95:
  S=PEEK(49200): NEXT: RUN
```

PRONTO-DOS
HIGH-SPEED DOS / DOS-MOVE UTILITY
by TOM WEISHAAR

$29.50: Includes Peeks & Pokes Chart

TRIPLES THE SPEED of disk access and frees 10,000 bytes of extra memory by moving DOS.

Function	Normal	Pronto
BLOAD HI-RES IMAGE	10 sec.	3 sec.
LOAD 60-SECTOR PROGRAM	16 sec.	4 sec.
SAVE 60-SECTOR PROGRAM	24 sec.	9 sec.
BLOAD LANGUAGE CARD	13 sec.	4 sec.
(Text Files: No Change)		

Boot the Pronto disk or your updated disks, created with the normal INIT command. Compatible with all DOS Commands, GPLE, Double-Take, DOS Boss, Diskquik and almost all unprotected programs.

MOVE DOS to your Language Card, RAM Card, or standard Apple IIe upper 16K, freeing up **10,000 EXTRA BYTES** of memory for your programs.

15 EXTRA SECTORS per disk. Catalog Free-Space displayed every time you catalog a disk.

TYPE-COMMAND ("TYPE filename") prints contents of any Text File on screen or printer.

NEW! DISKQUIK
DISK DRIVE EMULATOR
by HARRY BRUCE and GENE HITE

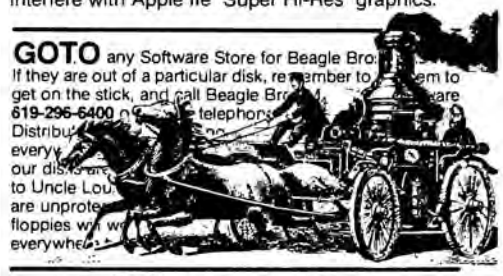
$29.50: Includes Peeks & Pokes Chart
Requires Apple IIe with Extended 80-column Card.

ACTS LIKE A DISK DRIVE in Slot 3, but much faster, quieter, more reliable and $350 cheaper. Enjoy the benefits of a 2nd (or 3rd or 4th...) drive at less than 1/10th the price. Catalogs normally with "CATALOG, S3" command. Load & Save any kind of files into RAM with normal DOS commands.

SILENT AND FAST: Since no moving parts are involved, Diskquik operates silently and at super-high speeds. See it to believe it. Your Apple IIe's Extended 80-column Card (required) can hold about half the amount of data as a 5¼" floppy disk!

MANY USES: For example, load often-used files, like FID and other utilities, into RAM when you boot up, so they are always available when you need them. Copy files from RAM onto disk and vice versa, just as if a disk drive were connected to slot #3.

FRIENDLY & COMPATIBLE with 80-column display, GPLE, ProntoDOS, and all normal Applesoft and DOS commands and procedures. Will not interfere with Apple IIe "Super Hi-Res" graphics.



GOTO any Software Store for Beagle Bros! If they are out of a particular disk, remember to [illegible] get on the stick, and call Beagle Bros [illegible] 619-296-6400 [illegible] telephone. Distribu[illegible] every[illegible] our disks [illegible] to Uncle Lou[illegible] are unprote[illegible] floppies wi[illegible] everywhe[illegible]

DOUBLE-TAKE
2-WAY-SCROLL/MULTIPLE UTILITY
by MARK SIMONSEN

$34.95: Includes Peeks/Pokes AND Tips/Tricks Charts.

2-WAY SCROLLING: Listings & Catalogs scroll Up AND Down, making file names and program lines much easier to access. Change the Catalog or List scroll-direction at will, with Apple's Arrow keys.

BETTER LIST FORMAT: Each program statement lists on a new line for *FAST* program tracing & de-bugging. Printer-compatible; any column-width.

VARIABLE-DISPLAY: Displays all of a program's strings and variables with current values.

CROSS-REFERENCE: Sorts and displays line numbers where each variable & string appears.

BETTER RENUMBER/APPEND: Merges programs (doesn't just connect end-to-end).

AUTO-LINE-NUMBER, instant Hex/Dec Converter, Program Stats, Eliminate/Redefine Cursor, Free Space-On-Disk... All GPLE/Pronto compatible.

RUSH the following disks by First Class Mail—

☐ Alpha Plot	$39.50	☐ Frame-Up	$29.50
☐ Apple Mechanic	29.50	☐ GPLE	$49.95
☐ Beagle Bag	29.50	☐ ProntoDOS	29.50
☐ Beagle BASIC	34.95	☐ Tip Disk #1	20.00
☐ DiskQuik	29.50	☐ A.M Typefaces	20.00
☐ DOS Boss	24.00	☐ Utility City	29.50
☐ Double-Take	34.95	☐ ADD ME to mailing list.	
☐ Flex Text	29.50	☐ ALREADY ON mail list.	

AT YOUR APPLE DEALER NOW!
Or order directly from Beagle Bros—



Visa/MasterCard or COD, call TOLL-FREE
Nationwide: **1-800-854-2003** ext. 827
California: **1-800-522-1500** ext. 827
Alaska/Hawaii: **1-800-854-2622** ext. 827

OR mail U.S Check, Money-Order or Visa/MC#
to BEAGLE BROS, 7th Floor
4315 SIERRA VISTA, SAN DIEGO, CA 92103

Add $1.50 First Class Shipping, Any-Size Order.
Overseas add $4.00. COD add $3.00. California add 6%
ALL ORDERS SHIPPED IMMEDIATELY.

CLIP COUPON OR USE SEPARATE SHEET

MARKETALK

Reviews



Unless otherwise noted, all products can be assumed to run on either Apple II, with 48K, ROM Applesoft, and one disk drive. The requirement for ROM Applesoft can be met by RAM Applesoft in a language card. Many Apple II programs will run on the Apple III in the emulator mode.

If the cryptic initials at the ends of reviews don't fit staff (listed on page 4), then they refer to guest reviewers—this month, Dave Albert, Nick Anis, David Chandler, William H. Harrington, Forrest Johnson, Jim Kovalchik, and Howard A. Shore.

Exodus: Ultima III. By Lord British. *This evening, in the deep night, when the first moon was in its final phase and the second moon was in its third, after an arduous quest of 393,976 moves' duration, the clever and agile bowsman and former thief Breadwinner, and the gentle but deadly wizard Merlin, did survive to conquer the mighty Exodus.*

Thereafter, they gathered up their dead, the valiant and powerful paladin Great, and the beautiful, magical cleric Jessica, and returned to Sosaria, where they fought—two alone—to earn the money to resurrect their friends at the healer's in the castle of Lord British.

All four reunited, they sought audience with their monarch, proud indeed and wishing to report to him their great and successful feat and hear once more the stirring strains of Rule Britannia!

If Lord British weren't already a member of the peerage, he might well be knighted by his monarch (whoever that might be) for the enormous progress he has made from *Ultima II* to *Exodus: Ultima III*.

Improvements are not confined to programming ones, although those are rife. For instance, all the creatures are animated; they don't have much of a repertoire—balrons flap their wings, orcs threaten with their arms, cutpurses fence—but the activity adds liveliness. Water no longer swoops in cartoon curlicues but gently waves and laps against the shore. Banners on castles and towns flap in the wind, realistically unsynchronized. And dungeons are full-color.

But the most significant improvements are in the gaming—the plot and the player characters.

Exodus's plot doesn't exist primarily in the documentation. It's a crucial, well-integrated foundation for the game, woven well throughout play. There is even a mystery of sorts—after all, who is Exodus?—and gathering essential clues requires traveling throughout the land, visiting every town, dungeon, forest, glen, and beyond.

The map appears small—much smaller than those of *Ultima I* or *II*. Gone are the time doors, but moon gates—warps in space dependent on the phases of this unique land's two moons—expand the horizons, and learning the secret of using them reveals lands unseen. There are no barren and useless places such as some of the planets in *Ultima II*. Every place in *Ultima III* is rich with information and purpose.

It seems appropriate that such a full universe should have more than a single lonely little role-playing critter to explore it, and it does. Lord British has provided a means to build twenty characters on the play disk, four of whom can travel through the game at a time. Although the group is represented by a single figure while moving about, the characters break out into unique individuals whenever there's conflict. Then each one is controlled separately and can fight or move or cast a spell independent of the others. Monsters also break out individually in battle. At just about any time, characters in the group can exchange goods and cast spells upon each other.

As usual in the *Ultima*s, characters start out at a severe disadvantage to the adversaries they encounter. But Lord British's characters are not yet quite so personal as those in *Wizardry*, and it's hard not to consider making dummy characters just long enough to take their money, food, and arms to strengthen the genuine characters who are going to be playing the game—or to collect enough gold to have a fallen character resurrected. Everything except experience costs money.

Among its many hidden features is one that appears only on Apples with Mockingboards. *Ultima III* is accompanied by a complete soundtrack—an original musical score by Ken Arnold. (At least most of it is original. The tune that plays in the presence of Lord British may be slightly familiar.) It's as if you were playing a movie.

Exodus: Ultima III is Lord British's magnum opus—so far. It's fun and exciting to play and constantly intriguing. And the ending is marvelously unexpected and not a bit disappointing—except that it is the ending, and, as with a good book, you'll probably wish there were more.

When dawn arose, once more did the worthy adventurers, Great, Breadwinner, Jessica, and Merlin, set out from the shores of Sosaria. They knew the nature of the treasure they were after, and they hoped their quest would not be a long one. They sailed in search of Ultima IV. MCT

Exodus: Ultima III, by Lord British, Origin Systems (Box 58009, Houston, TX 77258; 713-333-2539). $54.95.

Infidel. By Michael Berlyn. Fiction writers enjoy developing all kinds of characters, not just heroes. Kids, when they're playing make-believe, enjoy pretending to be all kinds of people, not just heroes. So why shouldn't computer game players enjoy playing roles that aren't heroes?

The protagonist of *Infidel* is not a very nice guy—in fact, he's the heavy. As the story opens, his generally obnoxious behavior toward others has just begun to catch up with him. Without proper planning and provision, he has bullied a crew into an archaeological expedition he has no right to make, all for stolen glory and wealth. Now the crew has abandoned him in the desert and taken all the provisions with them. Ironically, a crucial navigational tool arrives by plane-drop just after our nonhero discovers the mutiny. Angry and alone, he can use the device to find the buried pyramid they were seeking and explore it for its treasures and secrets.

And, of course, that is the meat of the game. Now the player takes control of this rather Machiavellian person. Since you probably aren't mean, unscrupulous, and greedy, and since you're probably a lot more interested in solving the puzzles than in whether the imaginary pyramid is sacred, this is where you pretty much forget about the character of your character.

The puzzles are excellent. Although losing sight of the unique portrayal leaves you playing a relatively standard, single-protagonist-in-the-world adventure, that standard adventure is among the best of its kind. And a twistingly clever ending returns your antihero to himself.

It's a terrific concept—that of creating games in which we can play roles very different from ourselves—and Berlyn is a fine enough writer to achieve it. Perhaps if there were puzzles that required behaving dishonorably for solution . . . beyond greed, that is. All adventurers have learned to accept as a given the idea of gathering up all the treasure as if they had a right to it without any reference to reality. So characterizing greed is temporarily ineffective.

But there are all sorts of possibilities. . . .

Other than providing a fascinating, well-written background and setting, the alter-characterization doesn't work in *Infidel*. However, the adventure remains one of the best and certainly one of the most literary games available. So play it and relish its puzzles and, when you're through, sit back and enjoy contemplating the gaming future it suggests. MCT

Infidel, by Michael Berlyn, Infocom (55 Wheeler Street, Cambridge, MA 02138; 617-492-1031). $49.95.

The General Manager. By Paul Malachowski and Kevin Cooper. This program should win the overlooked-four-leaf-clover award.

It's been around awhile, it's the best Apple database there is, and its sales don't reflect that. Yet *The General Manager* is cream—and we all know what cream does.

This program will operate in forty or eighty columns, with 48 or 64K memory, and with one to four disk drives. And all these versions are contained on one disk. The real beauty of *The General Manager* is its expandability. You can start with a one-drive forty-column Apple II Plus, and as your database and wallet grow you can expand the system to eighty columns, 64K memory, and a ten-megabyte hard disk. If you don't think this is a nice feature, try reentering a few hundred records when you've outgrown your present filing system.

The General Manager is totally menu-driven, a feature that is helpful for the first-time user. Other nice features include the ability to program the open and closed apple keys on the IIe, a print screen function in the data search mode, a very powerful report generator, and the ability to write an Applesoft user interface program to format the data to fit on any form.

Unlike many of its competitors, *The General Manager* is a complete system. There's no need to purchase any utilities or sort disks. Everything, including a powerful report generator, is here. The utilities include a sort, which will sort the entire database on any field or combination of fields, and a function that lets the user globally update and delete selected records. The most powerful facet of the whole program is the user interface capability. This feature allows someone with a knowledge of Basic programming to manipulate the stored data in any fashion desired. The interface program can be used to format data needed to fill out invoices or medical insurance forms, mix graphics and text, update records, and numerically count or total any figures in the database. In short, the user interface program is useful anytime the database restricts you from manipulating data or printing the way you'd like.

The General Manager does have a few shortcomings. One is the way the database handles dead records (the originals of records that have been changed or rewritten). These records continue to take up space on disk unless they are eliminated by reorganizing. Another problem occurs with the documentation of error messages. There isn't any! This can be expensive and frustrating, especially if you have to call Sierra On-Line from the East Coast. However, the folks at Sierra On-Line provide strong user support for their program, and its flaws are minuscule compared to its overall worth. *The General Manager* is flexible, expandable, self-contained, and powerful. In fact, CP/M aside (maybe), it's the best darn database on the market. JK

General Manager, by Paul Malachowski and Kevin Cooper, Sierra On-Line (Sierra On-Line Building, Coarsegold, CA 93614; 209-683-6858). $229.95. Hard-disk version, $374.95.

Spare Change. By Dan and Mike Zeller. Perhaps movies really came into their own when people stopped going to see a movie per se and began going to a drama when they wanted a good story, a horror flick when they felt like the excitement, and a comedy when they wanted to laugh and have fun. As movies developed and the process itself stopped being quite so enthralling, producers and directors began looking more closely at the content and dared to specialize.

Some computer adventure games have recently shown signs of this.

Some involve their players emotionally—the seeds of drama. *Spare Change* brings comedy to the medium—superbly.

Spare Change is a home-arcade game—second. First, it is Laurel and Hardy, the Keystone Kops, Harpo, Groucho, and boffo. Those roles are taken by the Zerks, two funny little leggy people with strange tops who just happen to live inside an arcade game. The player as arcade manager is stuck with being a straight man—but not straight-faced.

All the Zerks want is to save up five tokens in their squiggly-tailed piggy bank, and they don't care whose tokens they use. All the player wants is to store up enough tokens to get to see the Zerks perform in the Zerk show. But the Zerks are quick and pesty, and they keep taking the player's tokens right out of his bin. They don't manage to get all they grab to their piggy bank; they bump into one another and drop tokens, miss, or the player intercepts a pass from one Zerk to the other and gets his token back.

At this rate, level 1 could go on for a long time, and the Zerks would almost surely win. Luckily, Zerks have a failing. They have no resistance to distractions in the form of things they enjoy. When the player feeds a token to the jukebox, the Zerks just have to dance; when the player plops a token into the pay phone, the Zerks haven't the will power to let the thing ring—they run to a phone and talk to each other. Even the see-through popcorn machine has irresistible charm for them.

Does this make it fairly easy for the player to keep them busy while he gathers tokens to see the show? Not exactly. You see, the player, being the sane and serious one in this colorful world, has responsibilities. He must keep the token machines stoked with money from the cash register or there'll be no tokens for anyone. And the cash register runs out too, and he must bring money from the safe to fill it. Oh, the trials of a manager.

And what, after all this, about the reward? What is the Zerk show? Cartoons, of course. Not the kill-yourself-laughing roll-in-the-aisles kind, but pure whimsy. You win a look at one per level, and every fourth level you get a whole Zerk show, at which point you can run any of three cartoons, twelve in all. James Thurber, eat your heart out.

v-GRID Lister™
Prints VisiCalc Formulas

At last! Now you can document formulas in natural grid order — for over 15,000 cells! Only the new v-GRID Lister lets you:

- view full listings of even your longest VisiCalc formulas
- lay out a printed version of your entire model — to more than 15,000 cells
- professionally document a formal audit trail to support your projections
- analyze and dissect models developed by other VisiCalc users

There's more! With the unique v-GRID Lister you can:

- select the number of formula lines, 1 to 233 print positions, portions of spread sheets (e.g. lookup tables), and catalog all your VisiCalc data disks
- automatically print global settings and their meanings, calculate the longest formula in the spread sheet, and find and display the lower right hand cell location.

All you need to greatly expand the usefulness of your VisiCalc (or MagiCalc) program is the v-GRID Lister, an Apple II or IIe with minimum 48K (or Franklin ACE), at least one disk drive and a printer.

Price $75.00 Includes Shipping and Handling
Add $3.00 outside U.S.A. or Canada
Ohio residents add 6.5% Sales Tax

Order today! *VISA and MasterCard phone orders accepted, or send check or money order to:*

FoggWare

4913 Van Epps Rd., Cleveland, OH 44131 (216) 749-0942

VisiCalc, Apple, Franklin ACE and MagiCalc are registered trademarks of VisiCorp, Inc., Apple Computer, Inc., Franklin Computer, Corp. and ARTSCI, Inc. respectively.

The game itself is no *Lode Runner*, but then neither was *Choplifter*. It's a good enough game, better than most on the market, and the bright graphics, ultrasmooth animation, clever sound effects, and solid comedy make all the difference. Still, just to add a bit of challenge (or lessen it—in case you can't wait to see the higher-level cartoons), Broderbund, the people-caring company, has installed a player-control panel. You can alter the Zerks; make them dance more, stay hopping mad longer, be klutzier, and miss their piggy bank more often. Or you can make them smarter and more agile for a solid challenge. Once again, you do pay for your preferences; altered games don't make the scoreboard.

So if you feel like watching *Saturday Night Live* but can't remember how to unhook your television from your Apple and hook it into your antenna, if you're in the mood for Mel Brooks but forget where the movie theater is, if you'd like to curl up with the latest Fran Lebowitz but she hasn't written it yet, boot up *Spare Change* and chuckle, chuckle, chuckle.

The first computer slapstick comedy, *Spare Change* is an instant classic. MCT

Spare Change, by Mike and Dan Zeller, Broderbund (17 Paul Drive, San Rafael, CA 94903; 413-479-1170). $34.95.

Masquerade. By Dale Johnson. Diabolically clever puzzles for the sake of solvers who like hard thinking and testing and trying and that moment of click! I see, that's it! That's *Masquerade*.

It's an adventure puzzle solver's *piece de resistance*, but not everyone's cup of tea. If Lipton's your brand, forget it; pull up a cup of Twining's and play *Masquerade*.

There's a plot centered on underworld crime—beautifully depicted in high-quality cartoon-style graphics even better than those of Phoenix's *Sherwood Forest*. But the plot isn't very important; it's merely a base on which to build puzzles.

But what puzzles! One of the top adventurers around boasted that he had breezed through the opening puzzles, although now he was momentarily stuck. He was astonished when he was told that he may have found one set of solutions to the opening puzzles, but in fact he had already lost the game. He had overlooked two cunningly hidden clues and had solved a major problem in such a way as to cut himself off from half the game.

So you save the game a lot in *Masquerade*. The disk provides lots of room for it. And keep track of which point you've saved under which number; you'll undoubtedly have to go back to an early save once or twice.

Phoenix considers this game so hard that they've given it their level 5 rating—most difficult—and they're offering a thousand-dollar prize to one of the people who can send in the whole solution by June 30, 1984. Hard it is, but the puzzles are logical and solvable. And satisfying, too.

There are a lot of animals in *Masquerade*, by the way. A bird, a gorilla, a snake, a rat, all beautifully drawn. And a dog. Only you never see the dog. He's too shaggy. MCT

Masquerade, by Dale Johnson, Phoenix Software (64 Lake Zurich Drive, Lake Zurich, IL 60047; 312-438-4850). $34.95.

The Coveted Mirror. By Eagle Berns and Holly Thomason. Expression brings life. This very nicely drawn hi-res adventure takes place in an atmospheric medieval village filled with animated people the adventurer can talk to, and each one is distinguished by a characteristic expression. For example, the nasty (no one in *Coveted Mirror* is really evil) king looks like the powerful and royally unreasonable ruler he is, and the fact that he has a twitch that makes him scowl periodically renders him both more sinister and slightly ludicrous. Netta the nag has a mouth that never stops wagging; the kindly farmer Ferd raises his eyebrows expectantly; and the lovesick astronomer's eyelids droop and widen as he dreams. The animation isn't perfect, but what a liveliness it brings to the characters!

A few characters are just for color, but most have relevant clues to give. Clues build on clues, and solving puzzles leads to more important puzzles. Seldom does the adventurer feel at a loss about what else there is to do; the problem is deciding what to do, when, and how. And as for the puzzles, some are easy and others hard, but most are logical and fun. They often involve putting together prior observations, and if by chance you haven't yet observed all you need, you just won't be able to solve them. When in doubt, explore.

Berns and Thomason have done some experimenting. There are half a dozen games within this adventure. Two are relatively gentle arcade-

type games, one is a Simon-like exercise, and others are information-type games or guessing games—depending on whether you know the answers. It's necessary to complete most of them to win; some strengthen characteristics you need for other puzzles. And don't worry, you get all the tries you need—they just cost time.

Time is of the essence. Formally, the adventurer is imprisoned in the castle of King Voar. But the dungeon cell is not locked, only guarded, and the guards are pretty friendly, especially if you give them a nice goodie. You can always wander out of the cell between watches; the more valuable the bribe the longer that period will be. The worst that can happen to you is to be sent back to your cell. No one ever gets killed in *The Coveted Mirror*.

The designers of *The Coveted Mirror* are gentle people, and that shows throughout. The game often tells you when you're getting close to something or when you're on the wrong track; sometimes it seems to understand that you're heading for a mistake and throws you a clue.

The bits of humor included, asides for the authors, as it were, seem surprising but not distracting. Somehow they seem to fit in, perhaps because they often echo what you're thinking. It's as though Berns and Thomason are there with you as you play, poking gentle fun at their game now and then. They're caring folk. And the care isn't forgotten at the end either. The final puzzle requires careful thought, and when you solve it you crave more than a simple, "You won." And you get more. Wait and see. MCT

The Coveted Mirror, by Eagle Berns and Holly Thomason, Penguin Software (830 Fourth Avenue, Geneva, IL 60134; 312-232-1984). $19.95.

Caverns of Callisto. By Chuckles. The story so far: A swarm of mutants has ravaged the spaceship, taken crucial parts, and scurried off into hiding below the surface of Callisto. It doesn't take too much effort to figure out that the task at hand is to recover the missing parts of the ship and repair it.

Caverns of Callisto plays like one of those good news–bad news routines. The good news is that you're armed with a plasma rifle that will destroy a mutant with a single shot. The bad news is that you usually miss. It's like this: You don't really control your man with the joystick; he stays in the center while cavern walls and mutants move around relative to him. Unfortunately, your rifle shots also move in relation to you.

What this means is that if you move after you fire your rifle, your shots will move similarly. Even if you have the mutant in your gun's sight when you pull the trigger, you'll be way off target if you move so much as a few pixels after firing.

Other good news is that Origin has thoughtfully included in the packaging a map of the caverns. The bad news is that you need two pairs of eyes to make use of it. Mutants appear so frequently that it's impossible even to sneak a glance at the map. Nonetheless, the map is a necessity. Fly around without it and you may as well concede the game.

More bad news is that mutants are virtually everywhere, and they never stop coming. The good news is that you don't have to kill them to get rid of them. You see, the game works in such a way that if you fly so that the mutants disappear off the side of the screen, they won't be there when you fly back. Was the programmer generous, or lazy?

Let's face it. This isn't a game of retrieving lost things in a maze and escaping with your life. It's a game of killing as many mutants as you can without overheating your gun. Although you're awarded generous points for picking up rocket parts, keys, and your ion drive (the ion drive is worth one hundred thousand points), there seems to be little incentive to find all that stuff unless you can escape to repair the ship. What's the point in spending hundreds of dollars at the grocery store unless you can make it home to eat the food?

Looked at as a test of survival skills, the game is somewhat challenging—if you're the type who doesn't become frustrated quickly. Trying to maneuver through the caverns with a joystick (there isn't any keyboard mode) will let you know what it's like trying to perform surgery with boxing gloves on; a delicate touch is needed, to say the very least.

One new twist here is that you do get an additional hundred thousand points for completing the game. And after that . . .?

If the projects that Origin Systems has cooking in the oven turn out to be half as good as they sound, computer gamers should be in for some real treats. In all fairness, *Caverns of Callisto* shouldn't be taken as an indication of either the programmer's or the company's true talents. Chuckles has turned out superior things in the past and probably will again in the future. MTY

Caverns of Callisto, by Chuckles, Origin Systems (Box 58009, Houston, TX 77258; 713-333-2539). $34.95.

Magicalc. By William Graves. *Magicalc* expands on the features of classic spreadsheet programs and encourages the user's creativity in spreadsheet modeling.

Perhaps its most valuable feature is automatic and efficient use of up to 512K of RAM.

Spreadsheet models created with *Magicalc*, like *VisiCalc*, can use 254 rows, each divided into sixty-three columns. That's about sixteen thousand cells that can hold numerical values, labels, or formulas. But, even if you're neat and economical and restrict each cell to a ten-character entry, you'll have filled a 64K Apple's memory by the time you've used about two thousand cells. In practical terms, this means that a model with monthly entries covering two years is only good for about eighty different items. If you include cost, price, and net profit for each item, you're reduced to an overview of only twenty-five or thirty items.

Spreadsheet users have traditionally responded to memory limitations by cramming the data and labels as close together as possible, limiting the scale of the problems they attack, and breaking up large unified problems into fragmented smaller ones.

VisiCalc Pre-boot has made it possible to create 200K models, but *VisiCalc* users cannot conveniently store such large models on Apple's standard 128K disks. CP/M-based spreadsheets allow for large-scale disk storage but are incapable of using large amounts of RAM for the model. *Magicalc* allows 512K in RAM via RAM cards and RAM disks, and unlimited disk storage, by neatly clipping a large model into segments for storage on several standard Apple disks. It's completely compatible with hard disks and high-density floppies.

The freedom to expand memory encourages the use of good graphic technique when laying out a spreadsheet. *Magicalc* is automatically compatible with most eighty-column boards and accepts special drivers for using others. Even without an eighty-column board *Magicalc* provides a

The Easy Way To Plan Great Dinners

Let us send you our exciting meal planning system. Try it for 2 weeks free with no cost or obligation.

Because our ad manager has a small weakness for pizza, we call it The Pizza Program. Actually, it's a complete meal planning system. It generates delicious dinner menus and shopping lists according to your tastes, your diet, and your budget.

It is a great time saver for anyone who cooks. You can quickly print out a new menu or shopping list for a day, a week, or any period up to 42 days at a time. It can even remind you when it's time to go out to your favorite restaurant. Plus, it can arrange your shopping list in sequence according to the isles at your local store.

Accept our 2 week free trial. There's no need to send any money now. Just send the coupon. We'll bill you later. If you're not satisfied for any reason, just return it and write cancel on the invoice. What could be more fair?

Gourmet Software

Gourmet Software, Dept. S-10
3583 Barley Ct., San Jose, CA 95127

OK, Rush me The Pizza Program to try for 2 weeks and bill me later for just $34.50 plus $2 shipping. (Sales tax added in California). I understand I can return it within 21 days if not satisfied and owe nothing. My PC is an ☐ Apple II Plus or IIe ☐ IBM PC or XT ☐ Other _____ (Needs to run Apple or IBM software).*

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

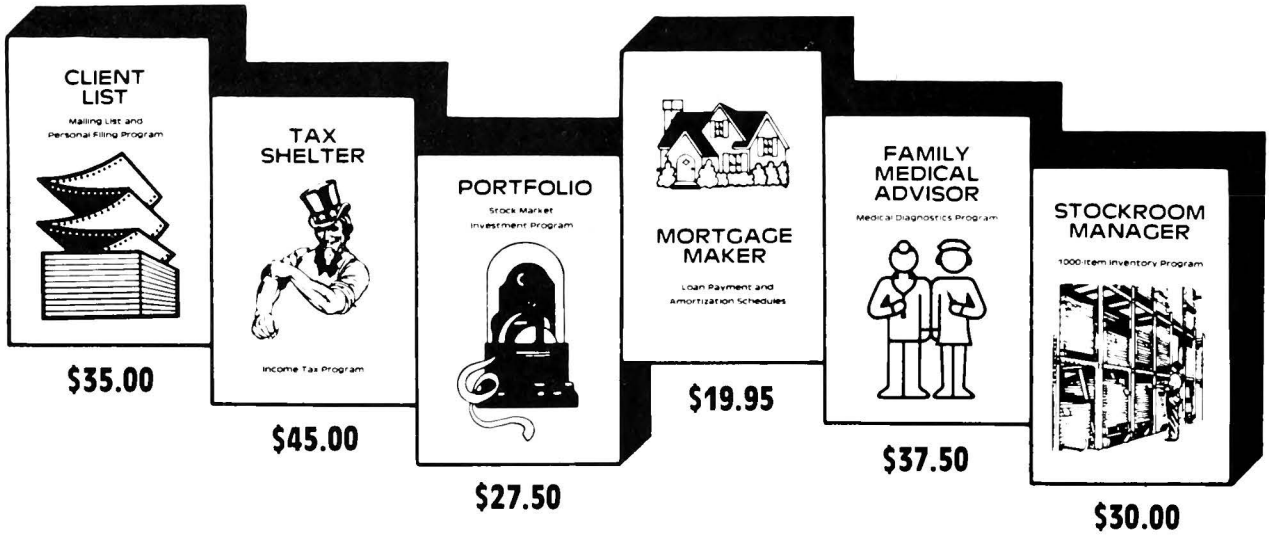
PHONE ( ) _____ In case we have a problem with your order and need to call you.

P.S. For faster service call our ad manager, Rich Smith at (408) 866-0887.

*Apple and IBM are registered trademarks of Apple Computer and International Business Machines

NAVIC SOFTWARE

HOLIDAY 3-PAK
— $49. —



CHOOSE ANY 3 OF NAVIC'S MOST POPULAR APPLE II PROGRAMS — PAY ONLY $49 FOR ALL 3!

EACH PROGRAM SEPARATELY PACKAGED WITH INDIVIDUAL DISKETTES, OPERATING INSTRUCTIONS AND REGISTRATION — VALUES UP TO $117 IF PURCHASED SEPARATELY.

CLIENT LIST

Personal Filing and Mail List Program

This program sorts and prints alphabetized lists with optional categories. It records Name, Address, Affiliation and Phone No. and prints labels up to 3-across arranged by zip code. Its applications are limited only by the users imagination. It accommodates up to 250 names.

Keep track of dues payments, and sort names by active or non-active membership status. Print alphabetical lists for fund raising activities and mailing labels for monthly bulletins.

Lists customers and prospects which are sorted by product interest and territory.

TAX SHELTER

Personal Income Tax

This program is based on the 1983 Federal Income Tax Rate tables. It accepts entries for each of the IRS specified income categories, adjustments, deductions, credits and payment methods, and projects "bottomline" tax liability.

This program makes subsidiary calculations on income averaging, alternate taxes, capital gains, exemptions etc. before displaying a summary of the various categories of income and expense.

Separate data bases can be stored by varying situations or for different individuals.

TAX SHELTER is an invaluable tax planning and estimating tool. It is not intended for printing IRS forms.

PORTFOLIO II

Stock Market Investments

Price information entered on a daily, or weekly basis is compared with the purchase price to establish gains and losses for up to 40 individual securities and for the whole portfolio.

The program accumulates the history of each security's price flutuations. Trends are then presented as line graphs, with the stop-loss and profit-taking limits an integral part of the video screen display.

Portfolio II also has flexible routines for additions, changes, and deletions.

Printouts of portfolio contents, and lists of designated sell-offs are preformatted and selectable from the main menu.

MORTGAGE MAKER

Installment Payments & Amortization Tables

This program is useful for accountants, attorneys, brokers and others who are in business or arranging financing on monthly payment plans.

There are 2 separate routines included. The first routine quickly calculates the amount of the monthly payment required for a loan of any value, term and interest rate. The user simply enters the essential data, and the computer responds with the exact amount of the monthly payment.

The computer then prints out the schedule of payments, detailing the allocation of principal and interest, as well as the principal balance for each monthly payment.

MEDICAL ADVISOR

Diagnose Common Illnesses

FAMILY MEDICAL ADVISOR is a program to analyze overt symptoms and identify the most probable causative medical condition. It uses the power of the computer to diagnose common ailments, obscure diseases, or simple childhood illnesses using nearly 10,000 possible combinations of symptoms.

Simple "yes' or "no" answers to a series of questions prompted by the computer establish a unique data pattern. A special algorithm then enables the computer to analyze the accumulated data, and diagnose the most probable medical condition from a data base of nearly 200 common (and some not-so-common) illnesses.

STOCKROOM MANAGER

1000 — Item Inventory Program

There are 5 separate files of 200 items each recorded on the diskette. Each entry is classified by its own part number and description up to 14 characters long. The item no. includes a file designator, and each entry also carries a location code, unit price and minimum stock level number.

Items may be retrieved from the files by searching for part number or description.

Printout routines are included for -(1) listing the entire inventory, (2) listing lowstock items below the preset minimum levels, and a separate routine for calculating the dollar value of the entire inventory.

ALL PROGRAMS RUN ON APPLE II PLUS OR APPLE IIe WITH SINGLE DISK DRIVE AND PRINTER

ORDER TOLL FREE 1-800-327-2133

IN FLORIDA CALL (305) 627-4132 OR SEND YOUR CHECK TO:

NAVIC SOFTWARE • BOX 14727 • NORTH PALM BEACH • FLORIDA • 33408

OFFER VALID THRU DEC. 1983 • APPLE II IS A REGISTERED TRADEMARK OF APPLE COMPUTER, INC.

seventy-column option from software.

Magicalc has easy commands for variable column widths and full-featured replication that permits selective patterns of duplication. *Magicalc* uses the four arrow keys on the IIe and treats the marker as if it were a cursor in a word processor. However, *Magicalc*'s formatting capabilities lack automatic centering of labels and decimal-point alignment when not in dollar mode.

The user can assign attributes to each cell, row, or column, specifying values or labels, hidden or protected. Once you have assigned protected cells, a tabbing feature lets you automatically skip to the next cell or the previous unprotected cell during data entry.

Magicalc's utilities are available through Artsci's standard easy-to-use menu system, which users of *Magic Window* have appreciated for two years. The menus use a highlight bar to select options. Typing the number of an option highlights the choice, and the program waits for confirmation, which is simply pressing return.

A file option menu offers the standard load, save, and DIF options plus lock and unlock commands that help prevent accidental deletion of important files. The files are catalogued by number; a file is selected by entering merely the number that appears next to it.

The print subsystem, also using the special menu system, accepts specialized printer setup codes, so you can use features such as variable line and character spacing.

Before printing a model, you can select top, bottom, and side margins and length and width of each sheet of paper. *Magicalc* accommodates the compressed (17 cpi) format available on many dot-matrix printers, so it's simple to print out 132-column sheets.

A bonus is the ability to print to disk. Many spreadsheet programs convert data into text files so that the information can be organized and printed with a word processing program, but those files are usually stripped of much of the structure you've built into the model. *Magicalc*'s print-to-disk feature generates text files for a word processor that appear much like your original screen.

With all it does for you, *Magicalc* makes you work when it comes to formulas. While some recent spreadsheet programs provide fairly elaborate financial and calendar functions at the press of a key, *Magicalc*'s built-in formulas encompass the same set of twenty-five or thirty functions that have been in spreadsheets for years.

Still, *Magicalc* is quick and slick, and, if you're willing to go the extra mile, you're apt to find it outperforming your expectations. In any case, it provides one of the best performance/price ratios on the market today. MA

Magicalc, by William Graves, Artsci (5547 Satsuma Avenue, North Hollywood, CA 91601; 213-985-2922). $150.

Eagles. By Robert Raymond. Looking for all the world like an overripe, elongated tomato, the German observation balloon sits one hundred feet below, nestled among bristling antiaircraft cannons. The ground crew is frantically trying to winch it down, while the guns fill the air with bursts of fire. A slight push on the controls and now it's in the gunsights. Squeeze the trigger again. . . .

The guns jammed! Holes begin to appear in the fabric of the Sopwith biplane. Suddenly the whole aircraft shudders as the engine begins to miss. Once again defeat has been snatched from the jaws of victory. You cannot outclimb the pair of Fokker DRIs above you, no matter how inviting the clouds that drift so lazily overhead. Perhaps a quick dive homeward will lure the Germans into the sights of your compatriots; at least you might survive to see the aerodrome again—and listen to the squad leader complain about overworked mechanics and careless airmen while you wait for your craft to be repaired.

Eagles is a maddening game, quite delightful in its appeal to the imagination and sometimes frustrating in its play. It is an introductory-level air war simulation from the folks at Strategic Simulations, and it can provide a good deal of enjoyment to the beginning war gamer; however, the more experienced player may find it wanting in some respects.

Taking place in the last two years of World War I, the game features eighteen predefined aircraft types, including balloons and reconnaissance planes. Combat may take place among up to twenty aircraft, with the Allied forces being made up of a single type of plane and the German side consisting of a variety of planes. The game allows for different weapons capacity and characteristics, as well as varying degrees of pilot skills. The player may assume the role of either the German or Allied pilot and may play against another player or the computer.

Once either the computer or the player has defined the scenario, game play is fairly quick and relatively easy to learn. The play field is divided into an unmarked grid over which the player can move a maximum of two squares per move. Most moves will cover only one square and will permit the player to turn either left or right while climbing or diving. Each plane is rated for maneuverability, climbing and diving capacity, speed, weaponry, and structural strength. The ratings are then translated into percentile chances of accomplishing a maneuver.

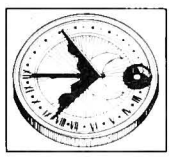
Failure to make one's maneuver successfully often results in disaster, since the plane may wind up anywhere, usually facing in the wrong direction.

Actual game play is where the program shines. The microcomputer is great at crunching all the numbers involved and spitting out an answer that neither player can argue with. With pencil and paper each move would be painstakingly long and often subject to debate, old-time war gamers being a disputatious and cantankerous lot. With a computer, however, there can be no arguments and the results of a move are calculated in the twinkling of a raster. There may not be another form of gaming that is so well suited to computers as is the war game.

However, occasional oversights can also make the computerized simulation a frustrating beast. Normally, the computer will detail available targets after the player's move, allowing one to fire a burst at the enemy. Sometimes while playing *Eagles*, however, the computer will ask the player to input the I.D. number of a target craft while neglecting to tell the player who is within shooting range. Since gunnery takes place midway through a turn, the player cannot revert to the overview screen to get the necessary information and winds up shooting blind.

Therein lies another of *Eagles*' flaws: verification of a move. When a plane chooses to dive, climb, or make virtually any move, the player must input a mnemonic letter or digit. The plane moves in 25-foot increments—3 equals 75, 6 equals 150, and so on. If the absent-minded player needs to dive 250 feet and begins to type in that number, he winds up diving 50 feet, and there is no way to change the move even if one catches the mistake before finishing the input. In an arcade action game, those are just the breaks. But *Eagles* is a simulation, and a real life WWI pilot could not afford such a mistake.

IT'S ABOUT TIME
$39.95



80 COLUMN
FOR THE IIe!

CIRCASCRIPT WORD PROCESSOR

INCLUDING:
- Tabbing
- Saving Parts of Text
- Underlining
- Global Word Search
- Inserting Files
- Search and Replace
- Access to DOS
- Conditional Paging
- Page Headings
- Indentations
- Center, Left, Fill Justify
- Shift Lock
- Lower Case Adaptor Compatibility
- Printer Commands within Text
- Easy-To-Use Instruction Manual
- Instant View Help Screens
- Applewriter 1.0 and 1.5 Compatibility

FOR APPLE II, II+, AND IIe

BOX 1208
MELBOURNE, FL 32901

(305) 723-5717

VISA/MC
ACCEPTED

Circadian
Software, Inc.

APPLE & APPLEWRITER ARE REGISTERED TRADEMARKS OF APPLE COMPUTER INC.

Similarly, *Eagles* provides for partial disabling of pilot or craft but fails to let the player know about it on a continuing basis. If one is wounded, or one's engine gets hit, the fighting capacity is reduced. However, no note is made of this by the program, either on the graphics screen or the overview screen. In a one-on-one dogfight this is a minor inconvenience, but when the player is trying to keep track of seven or eight planes it becomes a matter of paramount importance to know whose guns work and which pilot can or cannot successfully pull off a climbing half loop!

Except for these minor flaws, *Eagles* is a wonderful game and a very good introduction to war games for the novice. The play is fast-paced, with the game complex enough to provide lots of entertainment. It is particularly enjoyable in the two-player mode and does away with the squabbling that made paper-and-pencil war games all but impossible to play with any but the best of friends. If one is not already a war gamer, *Eagles* is an excellent game on which to begin. DA

Eagles, by Robert Raymond, Strategic Simulations (883 Stierlin Road, Building A-200, Mountain View, CA 94043; 415-964-1353). $39.95.

Gruds in Space. By Chuck Sommerville and Joseph Dudar. Talk about antiheroes. In this hi-res space adventure the hero is a Hans Solo-like captain who is perfectly willing to save the human race—for the small fee of one million dollars. To accomplish this feat and get the bucks, he must coax some Saturn miners out of their precious fuel and deliver it to the United Federation (the hope of mankind), who just happen to be out of gas in the middle of a battle.

Sounds easy, but when the hero gets there he finds a very hostile situation. The Saturn miners are all Gruds: They hate humans and charge them double for everything. Nice of Sirius to quarantine all those loose Gruds on one planet. Somehow players must gain the Gruds' confidence, trick the Gruds, steal from the Gruds, buy their way through the game, be trigger-happy, run errands, become mud pearl divers, all of the above, or none of the above. There must be an easier way than this to earn a few bucks.

Graphically, Sirius seems to be bidding for the lead in development of illustrated adventure games. In this one, frequent superb little pieces of animation steal the show. Ceiling fans rotate, bat wings flap, mysterious eyes blink in the dark, lights flash, and clocks' pendulums swing. These animated touches enliven the graphics and provide a third dimension to the screen, giving players the feeling of being there. "There," however, is back and forth across the solar system so many times that you could qualify for the million-light-year club! Much too often, players are required to find an object at point A, take it to point B to use, and go back and get something else at point A that then requires a return to point B. Some of that is fun, but it's overdone in this program. Excessive back and forth shuttling is no substitute for development of locale.

Apart from this, however, many of the puzzles are quite challenging and some even offer multiple solutions. Save often—Gruds love to surprise you with nasty tricks and diabolical traps.

Withal, it's the well-drawn animated Gruds that save the game. Perhaps some day the screen will be completed, and the player will be submerged within the game's universe. RRA

Gruds in Space, by Chuck Sommerville and Joseph Dudar, Sirius Software (10364 Rockingham Drive, Sacramento, CA 95827; 916-366-1195). $39.95.

Argos. By Ron Lowrance. Why does Dave Gordon have an arrow through his head?

Is he trying to prove that the people at Datamost are out of their heads? Possibly. Out of ideas for games? Probably.

Want to know what *Argos* is about? Just boot it up and play. Don't read the instructions; you won't need them. Don't read the story line; it doesn't matter. Don't think about the game; it just proves that anyone can design a computer game.

Argos is divided into three rounds. The first round is Datamost's recreation of Broderbund's *A.E.* The enemy ships fly in formation like the aliens in *A.E.*, and the firing technique is the same—press button to fire; release button to detonate missiles. A new twist here is that missiles can be guided by the joystick, which gives the player more control after the missiles have been launched. The players' perspective is also different in *Argos*. Instead of being situated at the bottom of the screen, as is conventional in this genre, the player's battle station orbits in the upper left-hand corner. And stays there.

Argonians fly slowly enough to be decimated without much trouble. Programmer Ron Lowrance recognized this and compensated for it; one hit from the Argonians and the game is over.

In case shooting aliens from the upper left-hand corner of the screen is too revolutionary a change, round two gets back on the ground, allowing the player to fight from familiar territory. The pesky Argonians have penetrated the earth's atmosphere and are attacking ground forces now, trying to take over Lost Angeles, the last surviving city on Earth. Getting excited?

Though this phase of the game is by far the simplest (hold down button zero and aim toward the skies), not everyone may choose to win. Many residents of northern California and other parts of the country would just as soon let Lost Angeles be decimated. But for serious gamers, there's finally round three.

There's a tank. It fires from the bottom of the screen. The player can move it left and right. Aliens descend and parachute from the sky. Can you handle this much excitement?

The goal is to survive. To quote the game's instructions, "Stay alive as long as possible and score as many points as you can. After all, life is challenging only as long as you continue to fight! One more thing—save Earth!" Jeez, no wonder Dave Gordon has an arrow through his head!

The concepts in *Argos* are not, by anybody's measure, original, or even challenging. However, credit must be given to Lowrance for his fine execution of the game's graphics and animation.

Gamers who have reached the higher levels in *Bandits*, *Repton*, or even *Threshold* will find little in *Argos* to hold their attention. Novices, on the other hand, may see *Argos* as a painless primer in shoot-'em-ups that will give them a feeling of success, until they're ready to move up to, say, *Mating Zone*. MTV

Argos, by Ron Lowrance, Datamost (8943 Fullbright Avenue, Chatsworth, CA 91311; 213-709-1202). $34.95.

Ana-List. By Bill Siddall and Alfred Poor. Let's face it. If a piece of software isn't what the buyer needs or wants, it's a wasteful, disappointing use of both time and money. A consumer may have to commit hours to learning a business program that sounds great in advertisements, only to find the material not detailed enough or incorrectly oriented for his purposes. Then the buyer often feels stuck with a program he doesn't



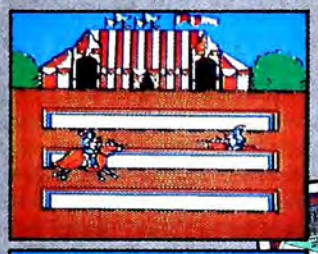
You are about to meet your match.

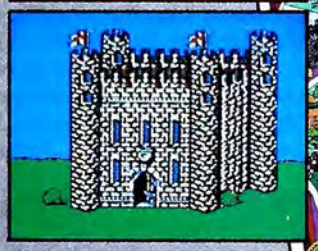
Your quest is clear...and dangerous – in this unique mix of software and boardgame.

Be the first to rescue the king from the clutches of the evil black knight!

Every step on the big, colorful gameboard – and the action-packed on-screen adventures that result – depend on your choices, your skill, your luck...and your opponents!

Beware! You'll be confronted with challenges requiring the skills of a master gamesplayer...battling against such formidable scoundrels as thieves, witches, trolls and dragons – in 20 breathtaking arcade-style computer games!







Families will love playing this game over and over!

No two games are alike. Children, ages 8 and up, delight in the humor, playability and colorful, fully-animated pictures. Grownups are challenged by the expert skills and strategy required to become a master Chivalry player. For 1 to 4 players.

An original boardgame for the Apple® that gives you more!

Look what you get with Chivalry: A disk with sturdy, colorful gameboard...PLUS, playing pieces, full-color poster, instructions, strategy hints and attractive packaging! Only $49.95!

Look for Chivalry, created by Optimum Resource, Inc., in finer computer stores everywhere. Or, call toll-free 800-852-5000, Dept. AB-37

Apple II or Apple II+, with 48K and one disk drive, 3.3 DOS; and Apple IIe or Apple III. Use with keyboard or joystick.

Chivalry

The ultimate marriage of software and gameboard – exclusively for the Apple!

Chivalry, by Richard Hefter and Janie and Steve Worthington, is a registered trademark of Optimum Resource, Inc. Apple and Apple II, II+, IIe and III are registered trademarks of Apple Computer, Inc. A/M13-C35

Weekly Reader Family Software

A Division of Xerox Education Publications
Middletown, CT 06457

want just because of the time and money spent.

Refreshingly enough, *Ana-List* does not contribute to these problems. Refreshingly enough, there are no murky advertisements here proclaiming the wonders of a product that's too unspecialized for use. And no unrealistic demand of time either. This product processes lists and analyzes the data without frills and fanfare. It doesn't claim features it doesn't have. Any manager who uses lists and tables would benefit by using this basically straightforward program. And *Ana-List* need not be restricted to a business office. Such software could be used to handle lists for a stamp collector, manage a collection of VCR tapes, or sort telephone numbers. *Ana-List* not only manages the compilation of data but also presents an analysis of the stored material in almost any manner desired. Reports are easily prepared and neatly typed and numeric fields are automatically calculated. Programs that use the DIF format, such as *VisiCalc*, can exchange information with *Ana-List*.

This product has several pleasant features, and the investment of time and money is certainly competitive with most database management systems. It only takes an hour of practice to grasp the basics and some of the more advanced features of *Ana-list*. The tutorial (forty-three pages of easy-to-read text) shows the user how to create a list, a skeleton of titles and column headings, to which data is added. *Ana-list* takes the pencil and paper out of your hands and puts the information on-screen.

Documentation problems do exist but are not insurmountable. For example, some screen representations in the tutorial are inaccurate. The tutorial display shows an eighty-character line taking up the space of exactly one line, but in reality *Ana-List* won't display all eighty characters on one line unless you use the formatting section. Additionally, *Ana-List*'s tutorial doesn't tell you that you need to use the same formatting section to configure the program for two disk drives. Also, an extra press of return is occasionally requested where it is not needed—and is not called for where such a keypress is necessary.

Positive features of the program include a tabbed reference section for each of *Ana-List*'s capabilities. Each tab letter relates to a section of the documentation where additional information may be found about the section you're looking at. Also, during printing, the program feeds paper to the top of the page for each new report so users don't have to continuously adjust the paper. In addition, *Ana-List*'s varying format can let the user completely customize reports, with calculations carried out to user-specified decimal places. *Ana-List* can also do multiple sorts of as many as ten columns rapidly. Numbers ranging from $-1.0x10^{38}$ to $1.0x10^{38}$ can be worked by *Ana-List*. With 48K the program can manage lists containing up to 800 items and an extra 16K increases list capability to 2,700 items, with tables ranging from one to forty-six columns wide.

Is this perfection? No, but certainly value received for dollar and time invested. *Ana-List* is easier to use than some heavily advertised packages, includes backup disk and manageable tutorial, and possesses a complete tabbed reference section for each of the program's capabilities. This product does exactly what the cover indicates—processes lists and tables. In *Ana-List*, truth in advertising has found a home. HL

Ana-List, by Bill Siddall and Alfred Poor, Synoptic Software (57 Reservoir Lane, Chestnut Hill, MA 02167; 617-277-0778). $150.

Minit Man. By Greg Malone. It is the fate of every new arcade game featuring a helicopter to be compared to *Choplifter*. So let's say it right off: The helicopter in *Choplifter* is better than the helicopter in *Minit Man*—easier to fly, more responsive, more realistic. As far as looks go, *Choplifter* beats it by a mile. But in terms of game complexity and difficulty, there is no comparison. *Minit Man* is as mercilessly difficult and minutely detailed an arcader as you are likely to find.

The idea is to build a bridge over a gorge, flying in the appropriate girders and trusses with your helicopter and lowering them into place (this isn't some wimpy Bell-jet model as in *Choplifter*; this is a double-rotor Huey muscle chopper). When the bridge is complete, a train chugs

If your eyes are overdosed but your computer fix is unsatisfied, if it's time to turn the monitor off but the computer has you too turned on, then drop our cassette into your hi-fi stereo system, close your eyes, and indulge in Apple music.

Apple Compote serves you songs from different worlds and different times, programmed for your listening pleasure. And all of it was produced by an Apple, interfaced with the *Electric Duet*, ALF MCI and MC16, the Music System, and the alphaSyntauri to create a variety of electronic sound.

Apple Compote features performances of classics and of original pieces by talented musicians Antone Walloch, Craig Crossman, Robin Jigour, Mario Acerra, Greg Bloom, Chris Light, Gerry Asp, Michael Abelson, and Bruce Berns.

Listen to the music of the world of computers.

Attending the San Francisco Applefest October 28–30? Stop by *Softalk*'s booth for a chance to preview and purchase *Apple Compote*.

Apple Compote costs $9.95 plus $1 for postage and handling.

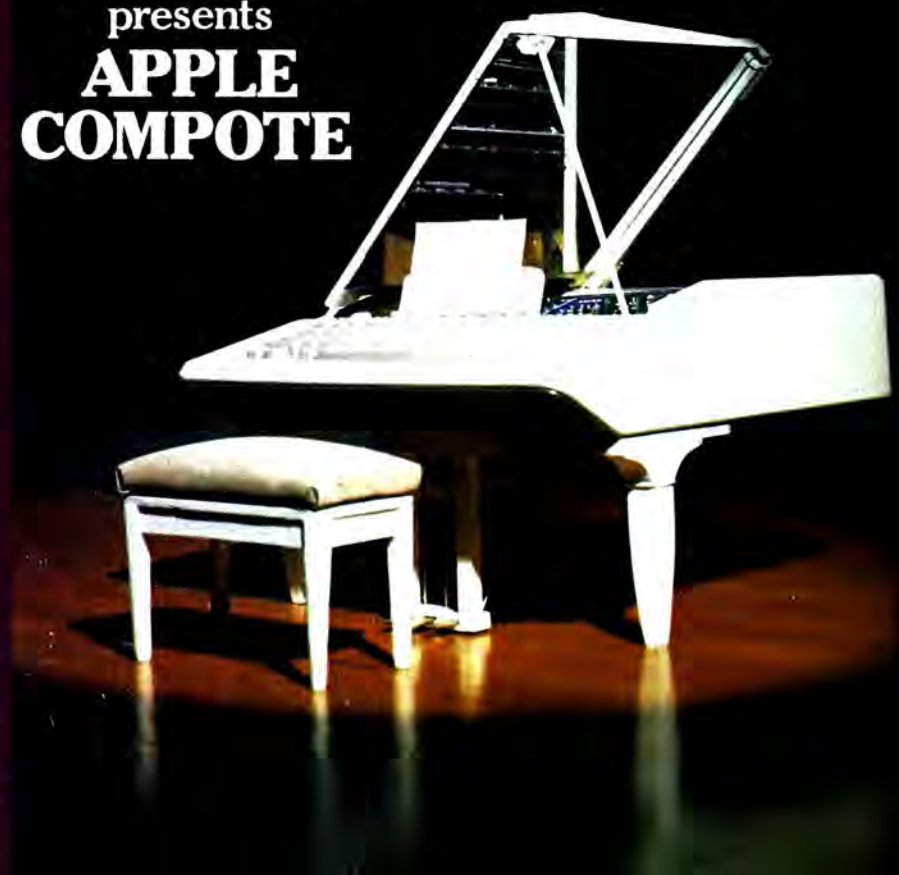
Send order with payment to:
Apple Compote
Softalk Publishing Inc.
Box 60, Dept. C
North Hollywood, CA 91603

California residents add 6½ percent sales tax.

Apple and Apple II Plus are registered trademarks of Apple Computer Inc., Cupertino, California.

HEAR IT NOW.

CHRIS LIGHT
presents
APPLE
COMPOTE



across it with missile in tow. At this point, you fly to the adjoining command center, land on the roof, climb out of your chopper, and skip down to the basement and the launch computer. If you launch three missiles successfully, they presumably land in the right place and all is once more well with the world. Of course, it is not that easy.

As fate would have it, all the best bridge girders are located as far away from the bridge as possible—two screens to the right. The enemy is a relentless swarm of marauding robots who realize it is not in their best interests that you complete your bridge, so they crash into I-beams, shoot at you, and begin to infiltrate the command center, where they slowly work their way down through the floors to the launch computer. There are also dish-shaped, particle-emitting radio transmitters guarding the aerial approaches to both the bridge and the building materials. In addition, you are being timed. A minute is shaved off the clock with each succeeding level. You definitely have to be good at multiple-task management to be good at *Minit Man*.

If you're not, you can still sit back and admire it as an impressive programming job. This game is built like a Swiss watch or one of the confabulated mechanical wind-up toys favored by Chinese emperors in which tiny parts move in exact, efficient precision. Notice that when you are over the girders, a tiny magnetic grapple automatically descends. It must, of course, be centered just right to pick up the girder so as not to overbalance the helicopter. Notice that whenever you land, moving the joystick left or right—*zut alors!*—immediately causes the tiny pilot to emerge from the helicopter. He can run, leap, duck, and fire a gun.

Then he can run back into the helicopter and take off. Notice, too, that zapping a marauding robot once merely causes it to mutate to another form—a second zap causes it to take yet another shape. The third time's the charm, but in disintegrating, it leaves a mine behind.

The program does, of course, have a few seams showing. There is a brief pause after your chopper clears the limit of each screen before it appears in the next one. And if you run out of girders and trusses (you really have to be clumsy), the show's over. But when a game has this much going for it, as with Dr. Johnson's performing dog, the miracle is not that it should be done well, but that it is done at all. AC

Minit Man, by Greg Malone, Penguin Software (830 Fourth Avenue, Geneva, IL 60134; 312-232-1984). $19.95.

How To Operate the Apple IIe. A plethora of computer instructional aids abounds in today's marketplace, each one vying for the dollar of new Apple IIe owners. FlipTrack Learning Systems's program should earn those dollars because it clearly and patiently explains how to use the Apple IIe—covering most of the basic and even some intermediate topics.

The system requires a cassette recorder, preferably one with a digital counter, and a commitment of time by the student. The topic areas include Getting Acquainted, Using Disk Storage, and Making Copies and Program Changes. Each one occupies its own cassette. The essence of the FlipTrack system is the supplementary information provided on the flip side of each cassette. For example, after listening to rudimentary editing techniques on the Getting Acquainted cassette, a user can receive additional information by turning the cassette over. The digital counter is reset to zero and more helpful techniques are given. Then, when this area is completed, the tape is simply rewound until the counter reads zero, the cassette is repositioned so that side 1 is ready for access, and the student finds that he has returned to the juncture where the program was originally halted. This is a simple and effective method to introduce advanced materials only to those interested in them. No one is force fed with FlipTrack's system.

The student is given ample time during instruction to gather needed materials, as well as to experiment with ideas already presented. And the instructor's voice is indeed easy to listen to and pleasant, with no subject matter given haste. Each topic is discussed in depth, and little is left uncovered. Someone new to computing could, within half an hour, manage to be on a nodding acquaintance with his IIe after listening to Getting Acquainted. Not only are the basics of disk booting and running a program covered, but a look "under the hood" helps cure the novice of computerphobia. The student learns that he is boss . . . not the inanimate object confronting him.

For those with additional equipment, such as eighty-column card or printer, the FlipTrack system appends the standard instruction by using side 2 of the cassette to increase knowledge in those areas. Arithmetic operations, displaying text, and other necessities are handled with clarity on tape 1.

Tape 2, Using Disk Storage, soon has the student programming a simple greeting program with which to initialize blank disks. It also teaches the method by which binary, Applesoft, Integer, or text files can be copied from one disk to another, how to make a single-sided disk double-sided, as well as how to place secret control codes in program names to protect them from unwanted prying.

Making copies and program changes is taught on tape 3 and manages to cover everything from duplicating disks to modifying programs and screen displays.

On each of the three tapes, side 2 quizzes the student through questions and demonstrations. Although these examinations are strictly optional, they represent a method by which the IIe owner can demonstrate his or her own success at learning the material presented. A handy operator's guide is included with the course and saves the student the necessity of taking notes. All the material in the guide is concisely formatted for future reference.

FlipTrack bases the start of its instruction on the Apple program disks supplied with the computer when purchased and expands upon the manuals that are also packed with the Apple IIe. For beginning computerites anxious to learn the proper methods for using their new pride and joy, FlipTrack Learning Systems's *How To Operate the Apple IIe* is well worth the investment . . . both in time and money. HL

How To Operate the Apple IIe, by FlipTrack Learning Systems (526 North Main Street, Box 711, Glen Ellyn, IL 60137; 312-790-1117). $49.95.

Ringside Seat. By Carl and Anthony Saracini. The latest release in Strategic Simulations's series of sports programs brings to your Apple all the fast-paced excitement and thrill of professional boxing. Remember how it used to be? It was Friday night and the old man had the trusty black-and-white television warmed up, the beer cooling in the refrigerator, and a pizza on order. Watching the fights with your dad was almost as much fun as staying up late. The greats and near greats are all present in *Ringside Seat*, from the Brown Bomber—Joe Louis, Brackton, Massachusetts's favorite son—to Rocky Marciano, Jersey Joe Wolcott, Marvelous Marvin Hagler, Muhammad Ali, and many more. All the

CASINO CASABLANCA™



BLACKJACK
Authentic six-deck casino blackjack for 1 or 2 players vs. the dealer. Insurance, doubling down, splitting pairs. A fast, accurate, no-nonsense, no-res version for serious players.

WHEEL OF FORTUNE
Hi-res version for 1-4 players. Where the wheel stops, nobody knows...

ONE-ARMED BANDIT
A nifty little slot machine that plays and pays better than the original, right down to the sound of the silver dollars clinking into your tray!

PACHINKO
The classic Japanese pinball game that can mesmerize an unwary bettor. You'll play it again and again, Sam.

AND SIDE GAMES (FOR OUR YOUNGER GUESTS):

4 SCORE
On a 6 × 10 grid, try to position 4 of your men in a row without the computer blocking you—or beating you to it! Or 2 play each other. Age 8 to adult.

PAULINE'S PERIL
"Hangman" with a new twist! Rescue Pauline from the onrushing train. Computer knows 500 ordinary but oddly-spelled words (e.g., "almond"). Or 2 play each other. Age 10 to adult.

DOUBLEDROP
The little balls roll along, falling downward through holes or bouncing upward on bumps. Which ball will reach bottom first? The courses change every time you play. Age 8 to adult.

TIC TAC TOE
A big graphic display that lets you play an infallible computer... or a computer that sometimes goofs! Or 2 play each other.

8 GAMES
12 VARIATIONS
$18.95
PLUS $2 SHIPPING
VA RESIDENTS ADD 4%

written in Applesoft for the Apple II and II+, DOS 3.3, 48K
ALL PIGGYBANK PROGRAMS ARE MODIFIABLE

piggybank programs
12724 OLIVIA DRIVE FAIRFAX, VA 22030
703/830-3883

please do not drop slugs in the piggybank
Apple II, Apple II+ and Applesoft are registered trademarks of Apple Computer, Inc.

prize fights that never were and might have been can now be fought and refought before your eyes.

In *Ringside Seat* the player uses extensive statistics to manage history's greatest sluggers as they refight one of the great bouts of all time. Or, in the most intriguing aspect of the game, the player can match fighters from different eras to determine once and for all who really was the greatest. The boxers perform as they actually fought. Strength, style, speed, and endurance are all statistically represented, and you can even create and save to disk your own fighters. However, should you simply want to play "what if," you can let the computer control both fighters and sit back and watch the action. Be warned; you may be on the edge of your seat in moments. The only thing left out is the sweat and cigar smoke as the announcer intones, "And in this corner, wearing the white trunks. . . ."

Ringside Seat can be played by two players against each other or a single player against the computer's manager. Just as in any respectable smoke-filled athletic club or the legendary Madison Square Garden, you, as the coach, select your fighter's strategy for each round in the ring. Up to seven separate strategies are available. Fighters may stand flat-footed and slug it out or charge in and try to score points with the judges. If your opponent begins to tire, then go for the knockout but look out for the counterpunch. And if your fighter gets in trouble during a round, you can elect to cover up by changing strategies in midround.

The grueling physical and mental punishment of boxing has been accurately depicted in *Ringside Seat*. Exhausted fighters are harder to control and more apt to neglect their coach's fight strategy. And should your fighter become too fatigued, he may become completely unable to follow your fight plan.

Ringside Seat employs an innovative graphics system and screen display to bring you literally all the blow-by-blow action and excitement you'd expect ringside. In the center of the screen, two hi-res fighters represent the current contestants. As each fighter lands a punch, clinches, or falls to the mat for the count, the action is shown on-screen. In addition, you can follow the scoring of each of the three judges round by round. The simulation even provides a constant running description of all the action and a color commentary from an imaginary announcer. Meanwhile, the screen displays the current status of each player, including the number of knockdowns and the nature and seriousness of cuts and injuries.

Commands may be entered through either the keyboard or game paddles; the gaming system is remarkably simple and correspondingly easy to learn. A straightforward five-page manual provides ample documentation.

SSI's latest release is a sophisticated simulation of all the variety and excitement of professional boxing, yet it is also easy to learn and play. Fast-paced and deeply addictive, *Ringside Seat* holds the player's interest game after game. Now just how do you think Joe Louis would have done against Muhammad Ali? WHH

Ringside Seat, by Carl and Anthony Saracini, Strategic Simulations (883 Stierlin Road, Building A-200,Mountain View, CA 94043; 415-964-1200). $39.95.

Fay: That Math Woman. By David Vincent and Paul Melhus. Feminism—what a concept! It has permeated practically every aspect of life, and now, at last, it has arrived in computerized education in the bustling, efficient form of Fay. Her arrival is a timely one.

Fay: That Math Woman is designed to teach math to children in grades one through four. It contains six levels of number line problems in addition, subtraction, multiplication, and division.

After booting the disk, the child chooses a level. On all levels, numeric problems appear in the lower left-hand corner of the screen. Next to this, the seconds remaining to answer a problem are counted down, and on the right is the score. Points are determined by the number of problems answered correctly and the amount of time it takes to answer them. Levels one, two, four, and five are similar; each displays fifteen number lines. In those four levels, a colorfully dressed Fay stands at the end of the first number line. When the problem appears, she starts tapping her foot until it's answered. Then she marches to the spot on the number line that represents the answer given. If it's correct, Fay will jump for joy and an elevator will lift her to the next number line. If the answer is wrong, a trap door will open beneath Fay and she'll fall through. Fay doesn't like being demoted. She waves her arms in frustration and tells whether the answer was too large or small, then shows how to do the problem correctly. Levels three and six are more gamelike. Three covers both addition and subtraction, and six combines all four operations. In both levels, time is vital. A row of random numbers appears, the numbers dancing up and down and chasing Fay. Speedy answers help her elude her pursuers, but the game ends when they catch up. A child can then enter his high score.

Fay: That Math Woman is a simple but well-executed program. The number line is great for tying an abstract equation to the visual level. Besides demonstrating problems, it helps kids with the concept of greater or less than, and clearly shows that multiplication is the inverse of division. Fay herself is also appealing. She makes you care whether you get a problem right or not, because she cares. She'll twirl around in jubilation if you're right, but watch out when you're wrong. Fay doesn't mess around. The program's sound effects are good, too. They reinforce learning by ticking off each point on the number line as Fay passes it. And the attractive, hardcover package is practically childproof.

Fay: The Math Woman is a plain, competent math exercise for kids, and yet it is more. Equality—what a concept! How sweet it is. (P

Fay: That Math Woman, by David Vincent and Paul Melhus, Didatech Software (2301-1150 Jervis Street, Vancouver, B.C. V6E 2C8; 604-687-3468). $29.95.

The Scaredy-Cat. By Patrick Nidorf. Representing a major step forward in both artistry and technical execution for Psychological Psoftware, *The Scaredy-Cat* attempts to teach youngsters important lessons about themselves and their approach to life through a unique format.

More of an animated children's picture book than a computer game, *The Scaredy-Cat* tells the story of a cat, frightened of its own shadow, who slowly learns to overcome his fears through encounters with other wild creatures.

The message is universal—how one faces life, more than any other factor, determines its richness. And although the message is aimed at children, it is one that nearly everyone can profit from, and it is delivered in an easy-to-use format for children.

Unlike Psychological Psoftware's previous efforts, the black-on-white text in *Scaredy-Cat* is large and easy to read. The pages remain on-screen until the space bar is pressed.

Also, unlike the company's earlier attempts, graphics and animation

IT'S SIMPLE. . . . . .
CALL & SAVE MONEY!
1-800-841-0860
Since 1978
• Reputation backed by years of experience • Pioneer in direct to consumer sales of Micro Computers & Electronics • Millions of dollars in sales over the years • Tens of thousands of customers • Honest • Reliable • Large inventory • Name brand products.
TRS-80 COMPUTERS $CALL
FRANKLIN COMPUTER CORPORATION ACE 1000 ACE 1200 $CALL
commodore 64 & EQUIP $CALL
MONITORS AMDEK TAXAN USI $CALL
PRINTERS EPSON • SCM TP-1 • OKIDATA • STAR • C.ITOH • COMREX $CALL
CARDS QUADRAM MICROTEK GRAPPLER+ $CALL
FREE UPON REQUEST
•PRICE LIST AND INFORMATION KIT
•COPY OF MFR'S WARRANTY
PRICES AND PRODUCTS SUBJECT TO CHANGE WITHOUT NOTICE.
Man's Best Friend
Dept. 39
MicroManagement Systems, Inc.
2803 Thomasville Road East Cairo, Georgia 31728 (912) 377-7120

are plentiful and remarkable. *The Scaredy-Cat* is illustrated by fine, well integrated digitized artwork. The pictures, primarily of a cat engaged in various friendly encounters with fish, birds, and insects, typically contain lively animation sequences. Youngsters will find them fascinating.

Safeguards such as setting the run-only flag, which runs an Applesoft program no matter what command is entered by the user, and auto-reboot are also implemented to prevent tiny hands from crashing the program.

Most important, *The Scaredy-Cat* represents an honest attempt to provide some of the younger computer kids with an alternative or at least a supplement to the kill-reward instant gratification customarily offered in arcade software.

The Scaredy-Cat probably won't shoot to the top of the bestseller lists, but it may be just the thing for parents wishing to help their children overcome fears and gain self-confidence.

The game is certainly a timely and valuable effort from Psychological Psoftware. HAS

The Scaredy-Cat, by Patrick Nidorf, Psychological Psoftware (4757 Sun Valley Road, Del Mar, CA 92014; 619-481-4182). $29.50.

Reach for the Stars. By Roger Keating and Ian Trout. This is an interstellar strategy game . . . but that's like calling the Apple a "nice computer": It leaves a good deal out. Think of it this way: If *Wizardry* is a fantasy game and *Zaxxon* is an arcade game, then *Reach for the Stars* is a strategy game.

To begin with, it's not just a game; it's a "game system," or a complete playing environment. You can play this game against up to three other people, or the program will play one or more of the others, giving you a solitaire mode. The solitaire version is an excellent game in itself, and there's even a tutorial mode, in which the program will make suggestions on how to play.

The objective of the game is the good old science-fiction classic, the Conquest of the Galaxy. You start with one inhabited planet in a universe of fifty-four stars, and your task is to develop and industrialize your home planet until it can support a colonizing fleet—and then go out and colonize! Of course, it isn't all that simple: Developing your home planet involves a lot of decisions, and that's nothing compared with the choices required in picking a new planet to develop and starting from scratch. And don't forget that you have three opponents out there, busily doing the same thing: developing their bases and sharpening their claws, getting ready to land in the middle of your back!

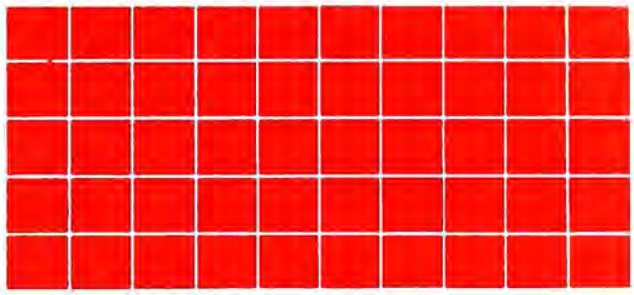
Like *Wizardry*, and like most good strategy games, this is a game for managers: people who enjoy keeping track of details and "fine-tuning" a complex system for smoothest operation. In *Reach for the Stars*, battles are won by the side that brings more and bigger ships to the confrontation; and that's usually the side that manages its resources better.

Right, then: Let's assume you know about strategy games. What's special about this one? The detail, that's what: the detail and the complexity. There's a fascinating wealth of possibilities and alternatives, and it all fits together into a solidly convincing game universe.

For example, here are some of the choices you have in developing a planet (this is during the production phase of the game, which occurs only on odd-numbered turns). You can increase the planet's industrial capacity, up to a certain limit; this is essential, since it increases the planet's productivity. You can increase the planet's social level, which determines whether the population will increase or decline (this also affects productivity). You can spend money on planetary defense, building and maintaining surface installations; and you can build fighting starships. You can build transports to carry your excess population to other stars, and you can spend money on research into more powerful weapons systems. Of course, you have only a limited amount to spend. . . .

The monetary unit, in this game, is called a Resource Point. Each planet generates a certain number of them each turn (depending on the factors mentioned above, and others), and then you decide how to spend them in the next production phase. A fully developed Primary (that is, Earthlike) planet can produce several hundred RPs per turn—but that's only after a long and expensive process of development.

And you have to manage more than money or RPs; you have to manage people. You need people to colonize new planets and to develop old ones; but a planet can only support so many, and large populations inevitably grow larger. Overpopulation, if left unchecked for a few turns, can do more damage to a planet than can enemy attack.



Cross Clues:™ The unique word challenge game.

It offers intellectual stimulation arcade games can't match . . . with all the excitement.

Fast-action fun isn't just for mystery or arcade games any more. *Cross Clues* is a word game that tests more than mere reflexes. It's the mind-challenging evolution of the crossword puzzle, with beat-the-clock excitement. The playing tempo is lively, but you decide how fast you want to go. The computer "umpires" while you compete with another player for hidden words, coaxing clues from the computer. Since a clue helps your opponent too, suspense builds till the end, when the best combination of skill, intellect, timing and luck wins.

If you're ready for an even greater challenge, try *Concentration Crosswords*,™ a game that offers 3 levels of difficulty and 3 ways to play—for even the most demanding word whiz. Again, you compete against the clock to uncover hidden words. But once discovered, they disappear, to test your memory. Here, a combination of word skills, intellect, memory and luck determine the winner.

Both games offer 50 mind-boggling puzzles that appeal to young teens through adults. Try them both!

To obtain these word games, see your local dealer. Or send in the convenient order form below.

Compatible with Apple II,® 48k disk, and IBM Personal Computer, 64k, disk drive (DOS 1.1).

For faster service, call Toll Free 800/621-0476. In Alaska, Hawaii or Illinois, call 312/984-7000.

SRA® SCIENCE RESEARCH ASSOCIATES, INC.
155 N. Wacker Dr., Chicago, IL 60606
A Subsidiary of IBM

Apple II is a registered trademark of Apple Computer Inc.

Yes! Please send me these Exciting games today!
Quantity
_____ Cross Clues $40.00*
☐ for Apple 88-5500 ☐ for IBM 88-5510
_____ Concentration Crosswords $40.00*
☐ for Apple 88-5508 ☐ for IBM 88-5520
Check method of payment:
☐ VISA # _____ Exp. Date _____
☐ Mastercard # _____ Exp. Date _____
Name _____
Street _____
City _____ State _____ Zip _____
Signature _____
*Plus shipping, handling, and local taxes, if applicable.
Mail to: SRA, Software Products Dept., 155 North Wacker Drive, Chicago, Illinois 60606

Let's say you've got your home planet pretty well developed; you've got a couple of dozen transports in orbit, full of colonists in coldsleep; and you've got a handful of level I fighters for escort, with a couple of the new level IIs: You're ready to go out and conquer a planet. Which one?

You want another Primary, if there's one nearby (your home planet is a Primary). They are the easiest to develop: They take less time (and fewer people) to become self-supporting. Secondaries are less Earthlike and therefore take longer to develop; and Tertiary planets are so bad that they can support only a small population at best, which means that everything takes even longer, and the population has to be constantly replenished by new suckers—er, colonists.

Then there are the hostile worlds. You can use up a lot of colonists terraforming one of these—but some of them have an industrial potential that is awesome!

After a few turns (let's say it's now around turn 18) you have a fully developed home planet, putting out fourteen transports and a couple of level II fighters during each production phase; and you have a couple of struggling young daughter colonies, two Primaries you found nearby (there was an exploring phase earlier, but never mind that now). Suddenly, out of nowhere, the Crellidae (that's what you told the program to call player 4, computer, beginner) come roaring into the system of your favorite colony! With overwhelming strength, they shoot down the orbital defense, plow up the surface bases, and settle in. What do you do now?

Well, that's what *Reach for the Stars* is for: It lets you try various strategies and observe the results. Then, if you ever find yourself in charge of one quadrant of a galaxy at war with itself, you'll know exactly how to proceed.

In short, the game itself is beautifully designed. More than that, the "engineering" of the thing (a stuffy person would say, "software implementation") is lovely: You can do just about anything you want to with the system, from adding various hazards to the game universe to stopping a game in the middle and saving it on disk. Of course there's a tradeoff for that—the instruction manual contains twelve large pages of small print, and even that doesn't explain everything; but nobody ever said that moving into a new universe would be easy.

One warning: In the "load a game from disk" routine, you are told to move the arrows in the display (by pressing the arrow keys) to point to the game you want and then press "C/R." This does not mean "carriage return," as you might expect, but rather control-R (hold the control key down, press R, release control).

And there's one other problem with *Reach for the Stars*—it's not easy to find in this country. It's published in Australia, and the company (at press time) doesn't have a distributor in this country. You can order it from the publisher or you can nag your favorite software stores until they order it for you. JR

Reach for the Stars, by Roger Keating and Ian Trout, Strategic Studies Group (Ground Floor, 336 Pitt Street, Sydney 2000, Australia; (02) 264-7560). Primarily handled in the United States by The Armory (4145 Ames Avenue, Baltimore, MD 21215; 1-800-638-3888). $50 (approximate).

Magic Memory. By Craig Jensen. Designed for the computer rookie, *Magic Memory* is a copy-protected program that is used like an ordinary tabbed address book. You make entries in sections that are tabbed with a letter of the alphabet. The tabs appear on the right edge of the screen and you open the address book by moving a cursor to the alphabetical listing you wish to see—for example, "A" for Apple, "P" for Peanut.

The program comes with two sets of twenty-four categories of built-in tabs. One set is alphabetical and the other is categorized into personal, family, and business sections. Because the program stores its information on data disks, you can design your own sets of tabs. The number of sets is limited only by the number of data disks you use. You can cross-index files and transfer information in one file to another.

Each record contains up to nine lines of data. A typical entry might include a last and first name in line 1, a street address in line 2, a city and zip code in line 3, and so on.

Entries can be sorted in any way you like—alphabetically by last name or first name, by company, numerically by zip code, by customer number, birth date, or even telephone area code. Sorting, however, is rigid, and what you format is what you'll get. There is no room for non-uniformity such as a misspelled word or a misplaced zip code. And there is no wild-card provision, nor a global search.

Data entry is accomplished by keyboard only. You must type in all the data you want filed and cannot assimilate data from other sources such as text files or other databases. You cannot, for example, access a file generated by Artsci's word processing program *Magic Window* (although for expert programmers there is an appendix that lists a complicated procedure to convert certain text files for use by *Magic Memory*). You can, however, read information from *Magic Memory* files into word processing or mail-merge programs.

In addition, *Magic Memory* has an extensive printing program that allows you to print out a standard address book with tabs, mailing labels, envelopes, or condensed summaries. The user has full control of page formatting, including options on single sheet feeds, perforation markings, numbers of copies, and page dimensions.

As a file handler or database manager, *Magic Memory* lacks many features that are available in less expensive programs. It has, however, one large charm—it is simple to use. DC

Magic Memory, by Craig Jensen, Artsci (5547 Satsuma Avenue, North Hollywood, CA 91601; 213-985-2922). $99.95.

Oil Barons. By Tom Glass. *Oil Barons* is a combination board game and computer game. The lavishly large, eight-piece hard board consists of pieces that lock together ingeniously to form a large, confusing playing area. The surface is not a standard map of the continents. Instead, it is divided into two hundred small squares, each filled with a striking photograph of a desert, forest, city, jungle, plain, mountain, or sea. Luckily, some of the same terrain stretches together, so the eye can make snatches of sense out of the kaleidoscope on the board. Understanding this is definitely an acquired skill. There is something quite jarring about finding a major city in the midst of an arctic ice flow!

Nine variations of the game may be selected, but the Reality and Classic modes are apt to be more popular. And up to eight players may play at a time, making this a good choice for family fun. On a typical turn, the computer keeps track of auctions, land deals, surveying, drilling, royalty payments, bank notes, financial statements, balance sheets, and depletion notices. News events and special announcements are unpredictable factors. It's pretty disconcerting to have a promising parcel of land suddenly declared a national park or lose an active oil field to a hurricane.

Initially, the computer deals each player four parcels of land and one million dollars in operating funds. Later, more land becomes available through a computerized auction in which competition is quite fierce. The computer generates five additional companies to compete for the drilling rights with the players. If the computer wins, the land goes back into the unused pile until a future auction.

During his turn, a player may survey his own parcel of land. The screen shows the cost of drilling in that location and the maximum depth that may be drilled. Then, when drilling commences, a hi-res picture of an oil derrick appears in the appropriate terrain (though it looks strange indeed to see an oil derrick operating on the side of a mountain). The screen also shows the ground beneath the surface, so you can watch the downward progress of the drill. Sometimes the drill encounters tough conditions. At this point, the player must choose either to authorize continued drilling at a higher cost or to cease drilling. Gushers are few and far between, so careful management of survey and drilling costs must be exercised in order to win at *Oil Barons*.

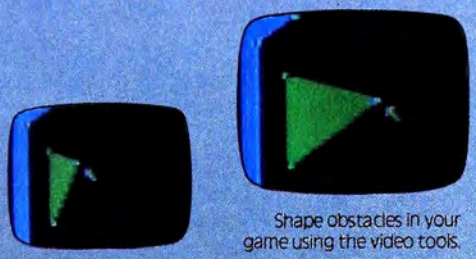
In the Reality mode, oil patterns for the entire board are generated randomly at the beginning of each game. This way, the likelihood of finding oil under a skyscraper is just as possible as in a desert. In the Classic mode, the possibility of finding oil is related to the type of terrain. In both modes, drilling costs vary substantially, depending on the terrain.

The other modes of the game allow playing parameters to be set to different ranges. For those who have mastered the basics of the game, the most challenging and exciting of these modes is the Gambling mode. Here, the computer scrambles every game parameter, and players must discover the rules under which they are playing as the game unfolds. Bizarre twists and turns can develop in such an environment, and none of the players knows until the end of the game just what determines victory in that particular game.

The game includes a large supply of plastic markers. Flat, colored stones are used for property markers, green pawns show active wells, and blue markers denote dry holes. Yellow, blue, and red barrels mark other activity levels. High marks to Epyx for packaging.

Oil Barons boasts one distinction it shares with only one other game.

Making pinball games used to be hard work. Now it's fun.



Shape obstacles in your game using the video tools.



Build it.

With Bill Budge's Pinball Construction Set you can easily build video pinball games of your own design. Using the set of video tools provided, put bumpers, flippers, and other pinball pieces wherever you like. You can execute all your ideas easily and instantly—Pinball Construction Set has a user-interface which until recently has been available only in expensive systems like Apple's LISA®. When you use Pinball Construction Set, you'll feel like you're building with your own hands.

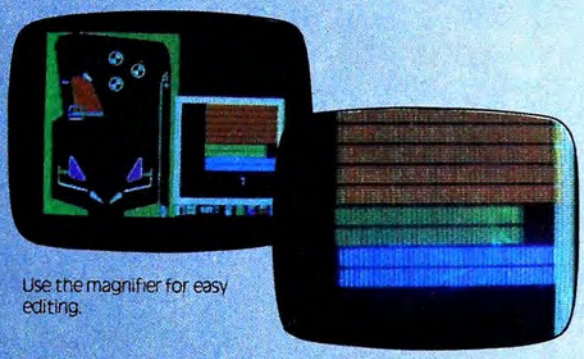
Play it.

Play as you build. You don't have to wait until it's finished. Start playing your game at any stage of construction.

Perfect it.

After you've tested your game, make any changes quickly and easily. Add all the finishing touches.

With the magnifier, create hi-res designs in color. Use the wiring kit to establish the scoring rules and sound effects. You can even tailor the physical characteristics of your game by increasing or decreasing the effects of gravity, bounce and elasticity on the play of the ball.



Use the magnifier for easy editing.



When you've built the game to end all games, save it on a disk. Give it to your friends or join the ranks of those who are actually selling games they made using Pinball Construction Set. One thing's for sure—you're in for countless hours of fun building with Pinball Construction Set by Bill Budge. Available for the Apple II® at your local software retailer. Suggested retail price: $39.95

The video pinball program that plays like a construction set.

BudgeCo

428 Pala Ave.
Piedmont, Calif.
94611 · 415-658-8141

Apple and LISA are registered trademarks of Apple Computer Inc.

It and *Time Zone* are the only microcomputer games you must fork over a C-note to play. RRA

Oil Barons, by Tom Glass, Epyx Computer Software (1043 Kiel Court, Sunnyvale, CA 94086; 408-745-0700). $99.95.

Buzzard Bait. By Mike Ryeburn. The California condors are nesting and are turning humans into an endangered species by snatching them to feed their chicks. Swoop, grab and the kid in tennis shoes goes down the hatch. The chick withdraws with a contented expression, to reappear as a vicious fledgling buzzard.

To combat this avian menace, you have three ships, which appear one at a time at the bottom of the screen. They move and fire much like the ones in *Space Invaders*. But there's an added twist. A dangerous penguin occasionally flies(!) across the bottom of the screen, and you must activate your jets to jump over it. At the higher levels of difficulty, the buzzards not only swoop down at you, they drop unmentionable substances. With a maximum of six buzzards on-screen, this makes for a messy battlefield.

An extra ship is provided for every five thousand points. In addition, there is a bonus ship round. This phase is a study in Brownian motion. You are bouncing around in space trying to retrieve parts of a ship from a cloud of bothersome penguins. To complicate things, there is a minelayer that runs around making life dangerous for you.

This game can be used with keyboard, paddles, or joystick. Most players will prefer the joystick. The animation is very smooth; the buzzards glide back and forth with uncanny deftness. The detail is very sharp. The only problem is minor: The program ignores a fire command if there are already two missiles on the screen. This means your guns can jam at very inconvenient moments.

But, taken as a whole, *Buzzard Bait* is a nice little shoot-'em-up for arcade lovers and the friends of James Watt. FI

Buzzard Bait, by Mike Ryeburn, Sirius Software (10364 Rockingham Drive, Sacramento, CA 95827; 916-366-1195). $34.95.

IIe Tender Keypad. The keyboard on the Apple IIe is a great improvement over that of its predecessor. It's got lower case, four arrows instead of two, all of the punctuation that was missing, and the typewriter-style function keys so useful in word processing. It even has the open and solid apple keys to let you play pinball without a joystick. So what's it lack? A numeric keypad.

There are probably quite a few Apple owners who are just as happy not to have one. Computers that have built-in keypads have keyboards that tend to be either awfully large or awfully cramped. And if you're going to cut down somewhere, you might as well eliminate redundancies first. After all, the keys found on a keypad also appear on the keyboard.

Nevertheless, a lot of people use their Apples for heavy-duty number crunching, and someone has to enter the numbers. In situations like that, the configuration of keys on the traditional adding machine calculator allows for much faster entry of numbers and math symbols than a typewriter keyboard does.

The IIe Tender Keypad by Track House is the latest alternative for those who push numbers for a living. It is an attractive, low-profile unit that nicely matches the color scheme of the Apple IIe. Compared with the keypad made by Apple, it costs a little more and offers a little more.

There are two small banks of keys on the keypad. The main bank is arranged in a four-by-five array of eighteen keys, with the zero key and the enter key (the functional equivalent of return) each the size of two regular keys. In addition to the obvious ten digits, four math functions, decimal point, and enter, the main pad includes a comma and a delete key. To the right of the main pad is a bank of nine keys: a space, four arrows, and four blank keys. The space key was included with *VisiCalc* users in mind (although the keypad can be installed only on an Apple IIe, there may be quite a few IIe owners with the older version of *VisiCalc*, which used the space to toggle the II Plus's two arrow keys between horizontal and vertical movement).

The blank keys are the IIe Tender's biggest extra. Realizing that no engineer could possibly imagine all the possible uses their customers would have for the keypad, they made these four keys "user-programmable." Each of them can be independently set to output almost any character that appears on the keyboard.

Actually, if "programmable" means controllable by means of a program, the keys aren't programmable at all. What they are is switch-selectable, which isn't as good for a programmer but is probably better for a user. Underneath the company logo on the keypad is a set of switches. Each key is controlled by four switches. Two of these switches combine to tell the keypad which keyboard key is being represented by the blank keypad key. The third switch for each key acts as its own personal shift key, and the fourth acts as a control key. Any of the main keyboard keys (except reset, control, shift, and the apple keys) can be duplicated by the keypad's blank keys.

The IIe Tender has one other interesting extra. Included in the package is a program called *Coupler-Calc* that simulates a desk calculator of the kind found in offices. It can do both floating point and accounting fixed point calculations, and it displays the "tape" on the computer screen.

People won't buy the IIe Tender Keypad for *Coupler-Calc*. They'll buy it for their spreadsheets, their accounting systems, and their home finance programs. But although it may not seem as important as those things, it's nice that the keypad can be just a calculator too. DD

IIe Tender Keypad, Track House (625 Trailwood Court, Garland, TX 75043; 214-270-0922). $199.

Hansel and Gretel and **Briar Rose.** By Susan Crandall, Thomas Halliday, and Richard Crandall. In contemplating the purchase of either of these programs, you should probably ask yourself what benefit you think you could impart to your students or children by exposing them to fairy tales via computer. For that, as you might suspect, is what these are. If the children in question are fascinated by home computers and have displayed an indifference to books, you might give these a go.

The computer versions of "Hansel and Gretel" and "Briar Rose" (also called "Sleeping Beauty") feature extremely abbreviated text, as well as pictures that in no way threaten the kid lit illustrative supremacy of Arthur Rackham or Maurice Sendak (the gingerbread house looks to be of standard postwar clapboard and shingle construction). The reason that all the people in Briar Rose's kingdom nod off at the same moment she does is passed over, but it's a sure bet your kid won't let it pass!

Briar Rose is the superior program of the two. The adaptors capture more of the actual ritual flavor of the tale and seem to be having more fun. The graphics are also clean, and the color fill is swift (though the minute-and-a-half boot-up and preliminaries remain). There is also nothing

Philately Just Gave the Personal Computer Its Stamp of Approval!

Small wonder. SoftStyle's Philatelic Management System for the Personal Computer has added a whole new dimension to stamp collecting.

Now you can efficiently manage your collection... and have more time to enjoy collecting. Every level of philatelist will find this superior software can grow with his collection needs. We've provided everything you need to start today, with flexibility for growth. You don't have to design and code a complex data base. There are over 40 programs in this powerful, yet *easy-to-use* package, that has been developed by software professionals and philatelists.

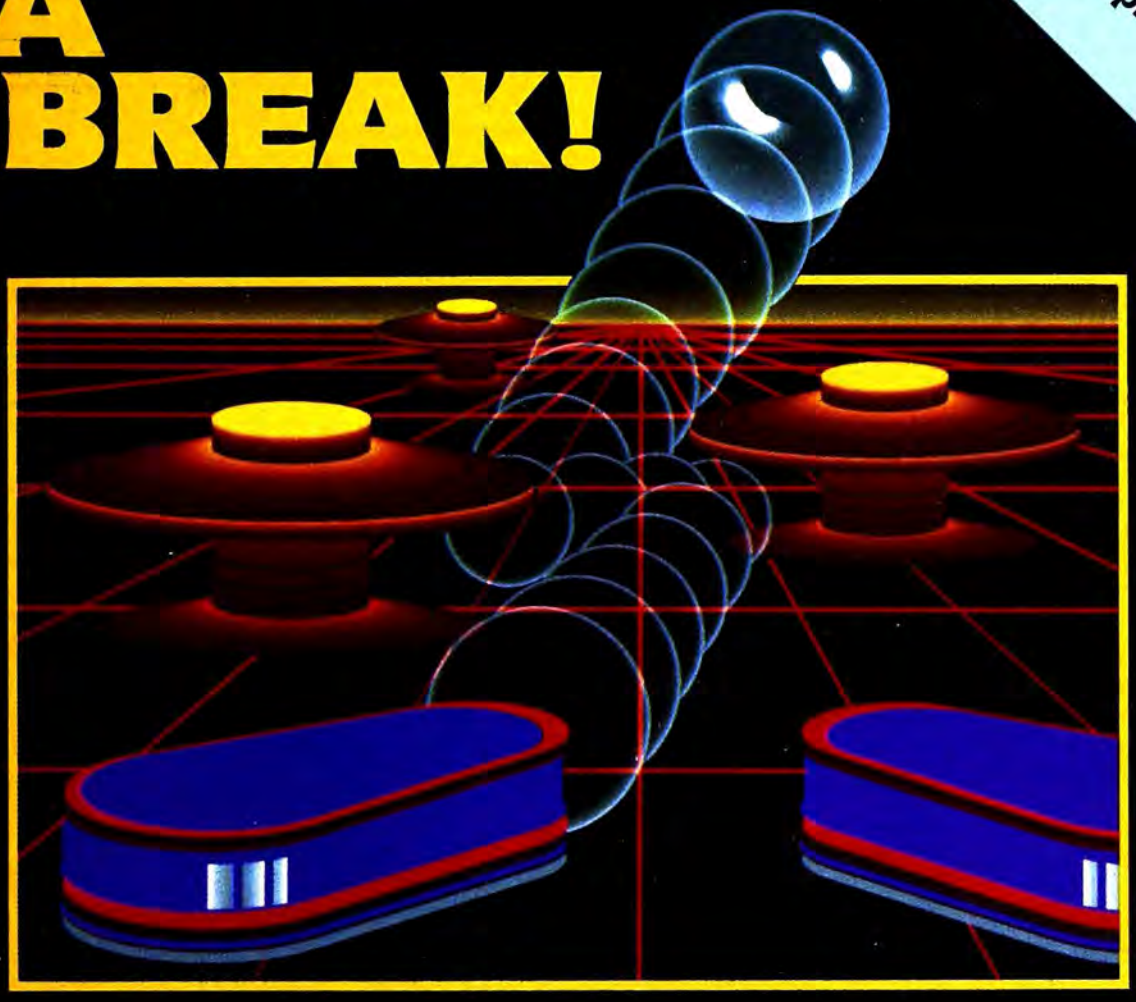
Please send me:
☐ **Free** product brochure.
☐ **Demonstration Package**, with informative manual and easy-to-run demo diskette, only $15, which can be credited to a Complete Package purchase.
☐ **Complete Package** with program diskettes, comprehensive instruction manual, installation guide, and Demonstration Package. Reg. price—$295. **Special Introductory Price** until Jan. 1, 1984—$219.
When Ordering: include your name, address, signature, and phone along with your check/money order, or MC/Visa. Send to: **SoftStyle, Inc.**
Foreign orders add $10. Hawaii orders add 4% sales tax.
Available for (check yours): ☐ IBM PC ☐ Apple][☐ Apple][+ ☐ Aple //e ☐ Apple ///
More versions to come. Needs 64K/2 diskette drives/printer optional.

Philatelic Management System™
for the Personal Computer

SoftStyle™
SOFTSTYLE, INC.
7192 Kalanianaole Hwy., Suite 200
Dept. L10, Honolulu, HI 96825
Phone: (808) 396-6368

TAKE A BREAK!

For Apple II, Apple II+, and Apple IIe



WITH NIGHT MISSION PINBALL

You deserve the best. You've earned it. Now reward yourself with a session of **Night Mission PINBALL**, the most realistic and challenging arcade simulation ever conceived! ■ Stunning graphics and dazzling sound effects put **Night Mission PINBALL** in a class by itself. Game features: multi-ball and multi-player capabilities, ten different professionally designed levels of play, and an editor that lets you create *your own* custom modes. ■ So take a break with **Night Mission PINBALL** from SubLOGIC. Winner of *Electronic Games* magazine's 1983 Arcade Award for Best Computer Audio/Visual Effects.



See your dealer . . .

or write or call for more information. For direct orders please add $1.50 for shipping and specify UPS or first class mail delivery. Illinois residents add 5% sales tax. American Express, Diner's Club, MasterCard, and Visa accepted.

Order Line: 800/637-4983

subLOGIC Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

in this to compare with the jarring moment in *Hansel and Gretel* when we are informed that the father tells the children their stepmother has died and are shown a picture of a grinning Hansel and Gretel flanking a smiling woman. Huh?

The real heart of these programs, and their most interesting aspect, is the options menu, which allows you to enter and edit your own text—expanding the vocabulary, rewriting the tale, or creating a new one to go along with the pictures. The applications in creative writing, or just good old down-home computer fun, are apparent. However, where everything else here is painstakingly menu-driven as it is obvious, the options mode possesses a level of difficulty equivalent to learning a small word processing program. It requires patience, a methodical nature, and a zest for the reading of software documentation.

Both stories incorporate a game of sorts in which you must help H and G find their way back home and help the prince get to his sleeping beauty respectively. Input is accepted for "right," "left," and a keypress for "go back." This scenario is fairly ill conceived in *Hansel and Gretel*, in which you proceed through a woodland scene where "right" and "left" have precious little meaning. The situation is much improved in *Briar Rose*, though it's still a matter of blundering amiably about until you eventually get there. At any rate, it's an introduction to the graphic adventure format that could give a youngster a sense of accomplishment.

So, if you want a child to experience the full power and magic of these tales, as well as the real involvement of reading, you'll still have to get them the books. But if they're already immersed in your Apple and you'd like them to learn how to read, slipping either of these into the disk drive would constitute a likely enough inducement. AC

Hansel and Gretel and *Briar Rose*, by Susan Crandall, Thomas Halliday, and Richard Crandall, Blythe Valley Software (40879 Highway 41, Silver Creek Center, Box 353, Oakhurst, CA 93644; 209-683-4735). $34.95 each.

College Directions. By Julia F. Margolis and Edward T. Gardner III. The best part about this program is that it doesn't require the student to look at the documentation. In an industry where learning how to use a product usually takes as much time as that spent using it, Systems Design Associates has come up with a program that runs itself with minimal work by the user.

The objective of *College Directions* is to help minimize the drudgery and tedium of thumbing through directories and reference books to find potential colleges for high school students. A thorough program in its own way, *College Directions* is meant to be integrated into a more complete counseling process by school counselors.

The program comprises four disks, and two disk drives are required. One disk, which contains a data file of thirteen hundred colleges, stays in drive 2 while the hapless student must constantly play musical disks with the other three, which take turns spinning in drive 1.

The program is menu-driven, and its overall structure is represented pictorially, making it easier for students to know which section they're in and what options they have.

The first section helps students develop a plan to enter the college of their choice. This includes letters of inquiry, acceptance, and refusal, as well as budgeting and financial planning. The letters section could have been omitted, since it is little more than a form letter into which students input name, address, and interests. One positive note is that this section puts students on the sending end of impersonal, computerized letters for once, with the academic institution as recipient.

A college exploration section contains brief profiles on specific colleges; the information is minimal, so students should be advised to consult printed sources for details.

The basis of *College Directions*'s analysis lies in the section that matches students to colleges based on the students' criteria. From a multiple-choice display, students can pick the desired community setting, size, costs, admission standards, financial aid availability, and academic curriculums of the schools they want to attend. When all criteria have been finalized, the college analysis section pulls out colleges from its database, based on the student's specifications. The list of schools can be printed for future reference, or, if no printer is available, all output goes to the screen.

College Directions is not meant to be used only by school counselors or students. A section devoted to counselors offers suggestions for helping students get started and for monitoring their progress. A lesson plan is also included with exercises and activities designed to give students a hand in getting a focus on their academic future.

Using this program is like swatting flies with a manhole cover; the end result is a desirable one, but the means are a bit cumbersome (four disks and a 105-page manual). Program execution is not as fast as would be expected from such a seemingly uncomplicated program. The program's modules are large, making it impossible to keep them in memory simultaneously; the result is frequent disk swapping by the user.

Systems Design offers yearly updates at fifteen dollars per disk. MTV

College Directions, by Julia F. Margolis and Edward T. Gardner III, Systems Design Associates (Union Building, Suite 403, Charleston, WV 25301; 304-342-0769). $250.

Bermuda Race. By John Biddle and Gordon Mattox. This is that rarity among sports simulations, a game of skill, challenge, and excitement devoted to the sport of yachting. *Bermuda Race* simulates the annual 635-mile sailing race from Newport, Rhode Island, to Bermuda. Your computerized yacht is a high-performance eighty-foot maxi-racer modeled after the *Nirvana*, the winner of the record-setting 1982 race. So thorough is the feel of *Bermuda Race* that after a few turns with the game you'll be wearing alligator sweaters and calling your best friend chappie!

Of course, all good sailors have to learn nautical terminology, sailing techniques, and navigation. The authors, both experienced yachting types who incidentally know their way around an Apple, have thoughtfully included an extensive on-disk sailing and navigational tutorial. While the game won't make you a blue water sailor overnight, you'll definitely get the feel of sailing and learn all about reefing sails, luff, and leech. Should you be a complete novice, *Bermuda Race* will even teach you fore from aft.

Your boat, an eighty-foot maxiracer, has been accurately modeled to perform and sail on your computerized ocean just like the real thing. *Bermuda Race* may be either a one- or two-player game. In the single-player version, the player races against the historic record set by the yacht *Nirvana* in the 1982 race.

In the two-player version, both players start in Narragansett Bay and race from Newport to Bermuda. The winner simply crosses the finish line first. Well, it's not quite that simple, as any sailor will tell you. There's the small matter of setting the proper amount of sail, learning how to tack into the wind as it shifts, compensating for wave height, and navigating by dead reckoning when your satellite navigation goes out. You'll even know the frustration of blowing out your sails in a high wind.

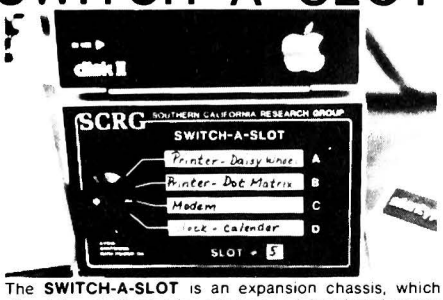
If the quality of the simulation is superb, the graphic display is equally first-rate. The race begins with a colorful hi-res map of Narragansett Sound, Rhode Island—including Block Island, Martha's Vineyard, and of course Cuttyhunk—you know, where Muffy and her family summer. Your position is plotted continuously as you sail out of the bay. When you finally reach the open sea, your chart display changes again to a hi-res representation of the Eastern seaboard and your final destination, Bermuda. The player can alternate chart displays with text screens that provide up-to-the-minute information on the current heading in degrees, course to Bermuda, wave height, wind direction, and speed. Another screen confirms your current amount of sail and the recommended amount you should be carrying for the current sea and wind conditions. Don't forget your centerboard—that thingamajig that all the fuss was about during the America's Cup. Throughout the race, you'll constantly have to raise and lower the centerboard just as you would on the open sea. To further add to the realism, you are provided with your own navigational aid—a three-piece cardboard device to represent your heading, wind direction, and luff angle. Hang on to it; you don't want to lose it overboard.

Game play is both challenging and exciting, with the battle against the sea every bit as engaging as that against your opponent or the record. Just as you've got your course set, the sails rigged, and the centerboard up, the wind may pick up and swing you around to the northeast—a storm! Better winch down some of the sail, lower the centerboard, and change heading. You can almost taste the salt spray and feel the ship heave as she comes about. Just as in a real boat on the open sea, the unexpected will happen. Currents can cause you to drift off course, gears malfunction, you name it. From the timed start in Newport to the final race to the finish line, *Bermuda Race* is as much fun as you can have this side of the yacht club. Now if the New York Yacht Club had only had something like this a few months ago. . . . WHH

Bermuda Race, by John Biddle and Gordon Mattox, Howard W. Sams (4300 West Sixty-second Street, Indianapolis, IN 46268; 317-964-1200). $29.95. ■

SCRG — For Apple][, Apple][+, & Apple //e

SWITCH-A-SLOT



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

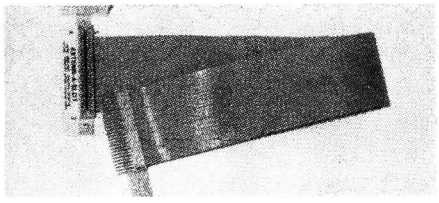
This product is especially useful where the software requires the printer to be in a particular slot, and the user wishes to choose between two or more printers.

- Allows up to four peripheral cards to be plugged into one peripheral slot.
- User selects desired card by front panel rotary switch.
- Only selected card draws power.
- Plugs into any peripheral slot.
- Saves wear and tear on delicate connectors.
- 18" cable connects Switch-a-slot to computer.
- Accommodates cards up to 10½" long.
- All connectors gold plated.

$179.50

SWITCH-A-SLOT and EXTEND-A-SLOT work well with all slow to medium speed cards, such as Modems, Printers, Clock, 80 Column, Music, etc. They are not recommended for high speed data transfer devices such as disk drive controllers, alternate processor, and memory cards.

EXTEND-A-SLOT



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

The perfect accessory for:

Owners of large numbers of I/O expansion cards—keep your frequently used cards installed. Use the EXTEND-A-SLOT for the others.

Technicians—easy access to test points on accessory cards under actual operating conditions.

Experimenters—make easy changes to cards while card is installed.

EASY TO USE—just plug it in as you would any expansion card, then plug your card in. When you want to change cards, do it easily outside the computer, without the wear and tear on the computer expansion slot.

$34.95

NEW PRODUCTS

QUIK LOADER

With this peripheral card, you can forget about problems caused by lost or damaged disks. Any machine language or BASIC program can be loaded instantly from solid-state memory. We will even back-up your copy of APPLE DOS and INTEGER at no extra cost. Now, when you turn on your computer, DOS and INTEGER are immediatly available. With the large memory capacity of the QUIK LOADER, users can have a large library of frequently used programs without use of a disk drive. Complete documentation shows the user how to program their own PROMs (Programmable Read Only Memory), or we will perform this service.

FEATURES:

- Up to 128K of memory
- Supports 2716, 2732, 2764, & 27128. These types may be freely intermixed
- QUIK LOADER operating system allows instant loading of programs, PROM catalog routines, etc.
- Multiple cards supported.
- Slot independent

Requires APPLE //e, or][+ and 16K card with minor modifications.

$179.50

D MAnual controller

This hardware product gives the user complete control over all I/O functions in the range $CØØØ through $CØFF.

Examples:

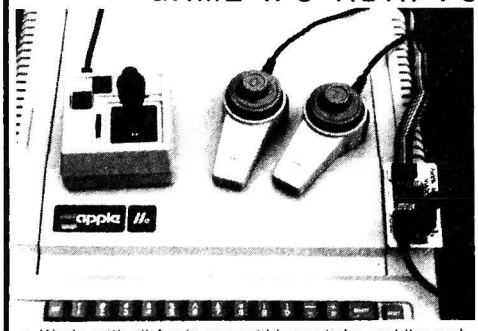
- Switch between TEXT & GRAPHICS
- Switch between Page 1 & Page 2
- Switch between HI-RES & LO-RES
- Turn disk drive ON or OFF
- Select between drives 1 and 2
- Step head in either direction
- Protect or enable language card
- Turn annunciators ON or OFF

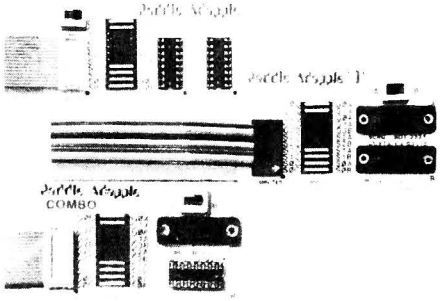
DMAnual controller allows all this while programs are running. Commands can be issued (via push-buttons) in the middle of a program, and the desired result occurs immediatly. The process used (known as CYCLE STEALING) allows immediate execution of these commands without interfering with the normal operation of the program. The card is slot independent, and is connected to a control panel by a four foot cable. DMAnual controller is fully described in the book "UNDERSTANDING THE APPLE][" by Jim Sather (copyright 1983 by Quality Software).

$89.50

Paddle-Adapple

GAME I/O ADAPTOR and EXTENDER





- Works with all Apple compatible joysticks, paddles and other I/O devices.
- Select one of two devices or . . .
- Use 4 paddles simultaneously.
- Unique "Jumpers" socket allows you to configure to meet your needs.
- BPI™ users can have BPI™ device and paddles plugged in simultaneously (**Paddle-Adapple** and **Paddle-Adapple Combo** only).
- Gives you four push-button inputs.
- Supports shift key modification.
- Exchange X & Y joystick axis.
- Small and compact — adheres to computer with supplied foam tape.
- All Strobes, annunciators and power available on all 16 pin connectors.
- Supplied with 18" cable.

$29.95

The **Paddle-Adapple** has two 16 pin sockets.

The Paddle-Adapple "D" works with the submmiature D connectors.

The **Paddle-Adapple** Combo has one 16 pin socket and one subminiature D connector.

THE MAGIC KEYBOARD

FOR APPLE][and][+ Only

- At the flip of a switch, select between standard "QWERTY" keyboard and your choice of **DVORAK, A.S.K., MONTGOMERY, LEFT & RIGHT ONE-HANDED,** and **ALPHABETICAL ORDER**
- Converts APPLE™ keyboard to one of eight 10-key or hexadecimal keypads
- Hardware conversion—compatible with **all** software
- Instantly switches between standard keyboard and keypad • Installs easily, no soldering

$49.95

SIX MONTH WARRANTY TEN DAY RETURN PRIVILEGE

TOLL-FREE ORDER LINES

in CA (800) 821-0774

(800) 635-8310

all other states (Including AK, HI, VI, & PR)

Information & technical questions: (805) 685-1931

Available at your local dealer or direct from:

SOUTHERN CALIFORNIA RESEARCH GROUP

Post Office Box 2231-S
Goleta, CA 93118
(805) 685-1931
VISA, MASTERCARD accepted

Add $2.50 for shipping, $5.00 outside U.S.A. & Canada. CA add tax.

Apple is a trademark of Apple Computers



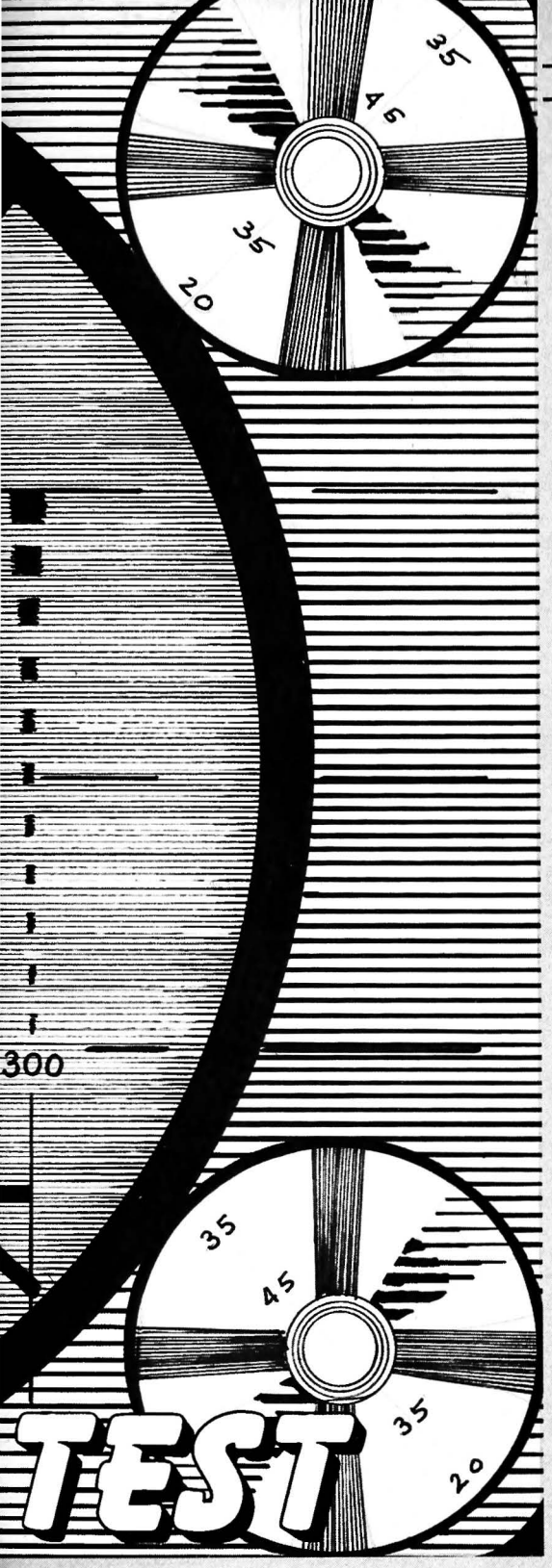
BY W. R. BOONE

The $64K Question these days is; Are you computer-literate? Of course, your answer depends on your knowledge of computers, right? Well, not necessarily. As the following test will show, to be truly computer-literate, one needs to have a good background in a variety of disciplines ranging from aardvarkology to Zen and the art of Popsicle maintenance. Truth is, you can never know too much, and after taking this test, you won't.

A word about cheating: Cheating is the American way, and far be it from me to ask you to be un-American. Remember, however, that only *you* can prevent forest fires.

This is a test. Repeat. This is a test. In the event of an actual disaster, you would have better things to do than to take it.

1. baddocumentation is
   (a) a hi-res game similar to badminton
   (b) a lo-res game similar to *Little Brick Out*
   (c) contrary to popular belief, more than one word
   (d) *
2. "Real" programmers
   (a) don't code Basic
   (b) don't use shape tables
   (c) do have hex appeal
   (d) *
3. Your spouse innocently tacks one of your stray disks on the refrigerator with one of those cute little magnetic dooies. You should
   (a) always make backups because things like this happen
   (b) file for divorce
   (c) load and run the following one-liner. Variables: RD =



refrigerator door, BR = beer.

```
10  FOR X = 1 TO AS MANY AS IT TAKES: OPEN RD:
    GET BR: CLOSE RD: NEXT X: GOTO 10
```

(d) *

4. Artificial intelligence (AI) is
   (a) fortified with eight essential vitamins
   (b) a known carcinogen
   (c) 100 percent polyester
   (d) *
5. It all started with two Steves and a garage. "It" is
   (a) the Midas Muffler franchise
   (b) listed on the Indianapolis 500
   (c) indirectly responsible for the Franklin Ace
   (d) *
6. Most folks prefer disk drives over cassette players because
   (a) the former seems to work much better with DOS 3.3
   (b) the explosion created by a blown disk is markedly less destructive than one made by an exploding cassette
   (c) the latter is usually hooked up to the phone-answering machine
   (d) *
7. Lite Hardware is
   (a) a third less filling
   (b) a Third World country
   (c) a portable computer dedicated to processing beer commercials
   (d) *
8. A serial interface will
   (a) be continued
   (b) frequently snap, crackle, and pop
   (c) smile more often than a serious interface
   (d) *
9. According to the Bible, Eve tempted Adam with
   (a) some slightly naughty software
   (b) an outfit she ordered from Frederick's of Hollywood
   (c) believe it or not, an unspecified fruit
   (d) *
10. By the year 1990, every household in America will have at least one.
   (a) broken game paddle
   (b) Grandma named Huntington
   (c) token from a defunct arcade
   (d) *
11. In an emergency, a word processor may be used to
   (a) entertain a bored child (for 350 seconds)
   (b) impress your date (for 35 seconds)
   (c) distract an intruder (for 3.5 seconds)
   (d) *
12. Silicon Valley is most famous for its
   (a) dual floppies
   (b) topless bars
   (c) annual chip-slinging contest
   (d) *
13. Green, yellow, orange, red, violet, and blue are the colors
   (a) of the Crayolas that get used the most
   (b) that made Howard Hues a very rich man
   (c) football fans and punk rock stars dye their hair
   (d) *
14. As the Beagle Bros would say, "you know who" hired Dick Cavett to do their commercials because
   (a) he is shorter than George Plimpton
   (b) Bill Cosby kept getting Jell-O on the keyboard
   (c) Morris the Cat was busy
   (d) *
15. IBM almost named its PC the
   (a) Avocado II+e
   (b) Itty Bitty Mini
   (c) SATTTS (Snob's Alternative to the Timex Sinclair)
   (d) *

The last five questions are true or falsies, but with a twist. You coin-flippers will need a four-sided quarter for these. AT = absolutely true; AF = absolutely false; RT = relatively true; RF = relatively false. A tip of the hat to Al Einstein for inspiring this system.

16. Isaac Asimov has guest-hosted *Saturday Night Live* more times than has Steve Martin.

17. Ada Lovelace and Charles Babbage had a purely platonic relationship.

18. Programs written in Forth will run on a Ronco vegematic.

19. The plural of mouse is mongeese.

20. BIC (the razor, lighter, and pen people) are presently designing a disposable computer, Lisa-compatible, that will retail for ninety-nine cents.

How to score: Not unlike hand grenades and horseshoes, "almosts" count in the above quiz. As long as your answer is among the four choices, give yourself 10 points. If you made up a better (funnier) answer, subtract 3 points. For 5,000 additional bonus points, send ten dollars to the exam writer's address. Note also that this test is available on a disk that saves your high score for no apparent reason. * Registered trademark of the Nunabove Co. ■

TURN AN EPSON INTO A DAISY . . .



with the **SUPER-MX CARD** for the APPLE II or APPLE IIe.

The standard of printing excellence is the daisy-wheel printer. The SUPER-MX interface card improves Epson printers so they have just about the same quality print as the daisy-wheels! And this high quality is easily available to all Apple software, even copy-protected diskettes.

SUPER-MX Roman font is the standard.

Four optional font styles are available in addition to the standard Roman font that simply plug into the card:

LETTER GOTHIC is modern looking.
ORATOR is easy to read and good for speeches.
SCRIPT adds the personal touch.
OLDE ENGLISH is very formal and elegant.

BETTER THAN GRAPPLER!

The Super-MX card has all the Apple Hi-Res graphic dump commands that the Grappler card has including: double dumps (both pages side by side), dump from page 1 or 2, double size, emphasized, rotated, strip chart recorder mode, and text screen dump.

The two expansion sockets allow EPROM expansion to 12K to insure you that the SUPER-MX card will remain the most intelligent interface around.

Spies Laboratories
(pronounced "speez")
P.O. Box 336
Lawndale, CA 90260
(213) 644-0056

Apple II is a TM of Apple Computer, Inc.
Graftrax is a TM of Epson America, Inc.
Grappler is a TM of Orange Micro, Inc.

THE BASIC Solution

By Wm. V. R. Smith

Bill Depew's circle routine, which appeared in this space two months ago, opens the door to a lot of graphical possibilities on the Apple, not the least practical of which is the pie chart. *Softalk* did a more complete pie chart program last March as part of a series on business graphs; this one is intended merely as an introduction to the basic elements of a pie chart.

A pie chart has to start with data in an array. Each datum is plotted as a slice of the pie. The data is read into the array in lines 100 through 240. You can enter as many elements of data (line 110) as you like, but if you use more than ten elements, you will have to dimension the A, B, and C arrays to the number of slices or more.

Once the actual data is read into array A and the total is calculated in T, the size of each slice in proportion to the whole becomes calculable. Subsequent references to the size of a slice refer to this ratio. From that, the border of each slice is determined and stored in the B array (line 270).

The center of a slice is calculated by averaging the values for the leading edge of the slice and the leading edge of the slice that comes before it. This value is stored in the C array. The center calculation is needed for labeling. A line is drawn from the center of the slice's outside edge to a point outside the circle. This function has been incorporated into the circle-drawing routine (lines 920 and 930).

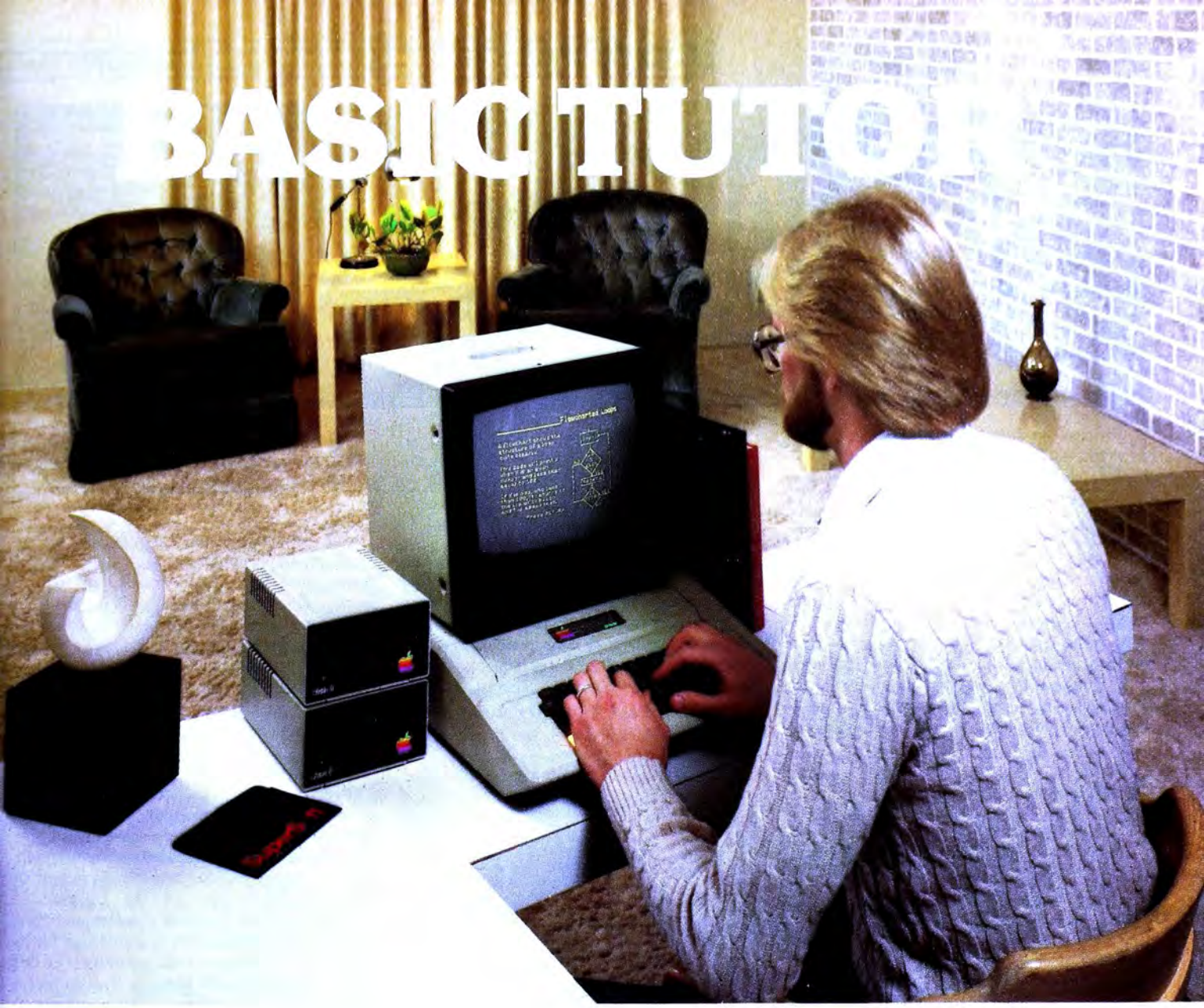
The rest of this month's program is the circle routine, modified to include the slice borders and label lines. These additional lines are an integral part of this section of the program. When the circle-drawing routine reaches a slice edge, the border is drawn; when it reaches a center, the label line for that slice is plotted.

The labels will have to wait until next month. One of the limitations of the hi-res mode on the Apple is that it includes no built-in way to write text characters. There are several utilities to put forty columns of text on the screen and also several word processors that use that technique to get lower case on standard, upper-case-only Apple II Pluses. The forty-column utilities are widely available—a few have been published in *Softalk*—but by the time the pie chart fills half of the screen, there isn't much room for labels that big.

The solution appeared in the Basic Solution a year ago: seventy-column text. By making each character four dots wide (including a one-dot space between characters) instead of seven dots wide, we can fit sufficiently long labels on the screen.

Have fun.

```
100 REM **** DATA
110 DATA 20,30,43,50,60,100
112 DATA -1
200 X = 1
210 READ A(X): IF A(X) = -1 THEN 250
220 T = T + A(X)
230 A(X) = T
240 X = X + 1: GOTO 210
250 NE = X:B(NE) = 1
260 FOR X = 1 TO NE
270 B(X) = A(X) / T
280 C(X) = (B(X - 1) + B(X)) / 2
290 NEXT
300 C(NE) = 100
310 HGR
320 HCOLOR= 7
330 R = 40:CX = 150:CY = 80
510 REM * CIRCLE ROUTINE
530 REM * BY BILL DEPEW
550 N = 0
560 PX = 200
570 V = 1
580 N = N + 1
590 IF (2 ^ (N - 1) > R) OR (R > = 2 ^ N)
    THEN 580
600 RD = 2^( - N)
610 CS = COS (RD):SN = SIN (RD)
620 X = .5:Y = R + .5
630 FOR N = RD TO 6.3 STEP RD
640 IF N> 6.3 / 2 THEN PX = 100
650 IF N / 6.3 > C(V) THEN GOSUB 900
660 IF N / 6.29 < B(V) THEN 700
670 V = V + 1
680 HPLOT CX,CY TO CX + X,CY + Y
690 GOTO 710
700 HPLOT CX + X,CY + Y
710 X2 = X * CS + Y * SN
720 Y = Y * CS - X * SN
730 X = X2
740 NEXT
750 B(NE) = 100
760 END
900 REM
910 C(V) = 100
920 X1 = CX + X + INT (X / 5):Y1 =
    CY + Y + INT (Y / 5)
930 HPLOT CX + X,CY + Y TO X1,Y1
940 HPLOT TO PX,Y1
950 RETURN
```



Let your Apple teach you to program in BASIC!

BASIC TUTOR makes learning BASIC easy. With it your Apple will give you step-by-step instruction in handling all the fundamental elements of the BASIC language.

BASIC TUTOR begins in lesson one by assuming you have no knowledge of programming. By the end of the last lesson you will be writing carefully planned, well-constructed programs of your own.

BASIC TUTOR is interactive, prompting you with questions to which you will respond at the keyboard. Positive reinforcement is given with each correct answer, and specific aid is provided with each incorrect answer to help lead you in the right direction. Also, frequent summaries and reviews help make your new knowledge stick.

BASIC TUTOR was designed for self-instruction. You can work at your own pace to optimize your learning curve. And **BASIC TUTOR** is fully compatible with Applesoft BASIC, so that any original programs you write will immediately run on your Apple computer.

BASIC TUTOR was written for SuperSoft by Courseware Applications, one of the pioneers in Computer Aided Instruction. Courseware Applications has had extensive experience in all areas of C.A.I., including corporate training programs, educational instruction (including programs for the international PLATO network), and military simulation courses. This experience has helped make **BASIC TUTOR** Computer Aided Instruction at its best.

With **BASIC TUTOR** you can turn your Apple into the greatest teacher you've ever had. So start learning BASIC today – with **BASIC TUTOR**.

Requires: Apple II DOS 3.3, 48K, one disk drive
BASIC TUTOR: $99.00

Apple II is a trademark of Apple Computers Inc.

SuperSoft®

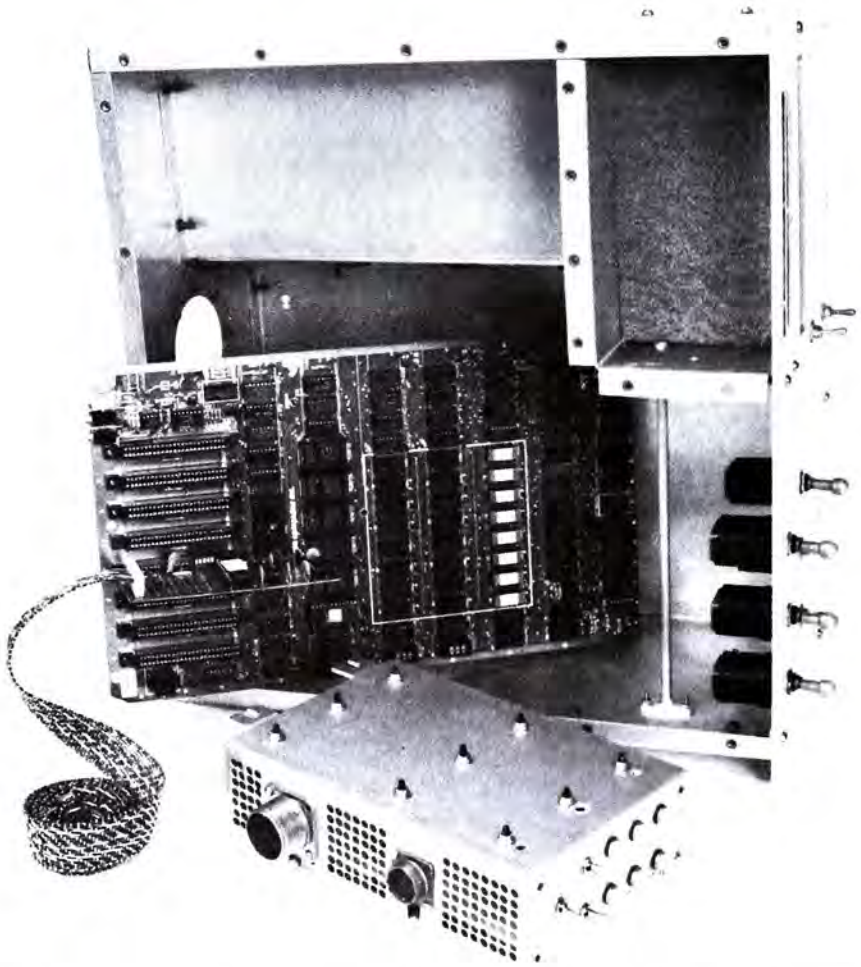
FIRST IN SOFTWARE TECHNOLOGY P.O Box 1628 Champaign, IL 61820 (217) 359-2112 Telex 270365



BY TOMMY GEAR

Science and technology are two words so often uttered in the same breath that they have become almost indistinguishable concepts in many people's minds. In reality, they present separate but intertwined facets of a juggernaut that drives us to seek the mastery of nature through a more finely articulated understanding of it. Both act upon and condition the other in ways that contribute to the refinement of each, and though dependent to this degree they are essentially distinct.

A breakthrough that occurred just this year in mathematics epitomizes a condition common among many contemporary scientific disciplines. The young German mathematician Gerd Faltings succeeded in proving that the number of rational solutions to a particular class of polynomial equations is finite. Mathematical scientists have attempted to do this for hundreds of years—and so what?



A modified Apple II Plus motherboard monitors Dr. Allan Brown's sunflower experiment aboard Spacelab—marking the first application of a micro on a manned space flight.

We are apt to dismiss as relatively useless much of the scientific research that makes it beyond even the funding proposal stage. This is because knowledge of this type is useless to us in its raw form. Ours are practical concerns. Many discoveries generated by today's science are initially of value only to an elite community ensconced in the rarefied atmosphere of a specialized area. But this doesn't lessen the import of such discoveries, nor does it lessen the potential influence they may come to exercise upon our day-to-day lives.

When scientific ideas are applied to the exercise of our will upon the natural world, technology is born. Theory transformed into practice becomes a corroborative test that, with goal-directed repetition, can alter the quality of life.

Science is the realm of theories and their testing in the advancement of knowledge for its own sake; technology is the application of this knowledge to a specific purpose. The proliferation of the latter has brought about a constant interchange today between the edifice of pure science and our more pedestrian reality, resulting in profound effects upon both. One area that particularly exemplifies this interaction is the space program, which has been largely responsible for the existence of the microcomputer.

The Scientific Apple. At press time, an Apple was slated to travel into space as part of the first joint American-European venture, Spacelab, scheduled for an October 28 launch. This event brings to mind two previous *Softalk* features that spotlight instances of the meeting of science and technology.

In April 1982 readers were introduced to Dr. Allan Brown, a plant physiologist at the University of Pennsylvania who, along with others in his field, was seeking answers to questions about how plants grow. Brown readily admits that his research is not motivated by any forthcoming practical application that might result from his findings. As a scientist, he is interested in testing inconclusive theories with the hope of making a contribution to our knowledge of plant behavior. Toward this goal he proposed an experiment to NASA that would be ideal to conduct in the weightlessness of space.

It seems that a century ago, Charles Darwin observed an oscillation phenomenon in plants whereby organs that grow by elongation, such

as roots and shoots, do so in a spiral fashion. This is called circumnutation. Darwin's seminal work speculated on the possibility of some kind of electrical or chemical influence within the plant to explain this growth pattern. Another school of thought ascribed this behavior to the influence of gravity. Later researchers discovered an essential growth hormone in plants called indoleacetic acid, also known as auxin.

Until the late 1930s, scientists erroneously explained all kinds of growth behavior in plants on the basis of this one hormone. Then, as a result of the development of modern biochemistry and its pursuant technology, five major classes of hormones in plants came to be discovered. The definite explanation for circumnutation—whether it's endogenic or conditioned by gravity—remained unresolved.

The experiment designed by Dr. Brown, known by the acronym HEFLEX (Helianthus Flight Experiment), takes advantage of the zero gravity environment of space to observe how plants, in this case sunflowers (Helianthus annuus), grow under those conditions. These findings will be compared to data, already gathered with a test instrument called a clinostat, on how sunflowers grow in a simulated zero gravity environment on Earth. In this way, the factors that may be causing circumnutation can be isolated and the phenomenon understood.

The variables and apparatus involved in this experiment require constant monitoring and control. In addition, there remain the special circumstances of conducting such an experiment aboard Spacelab, and these too must be considered. Portability and reliability were needed in the equipment, and that's where the Apple comes in, along with Joe Willson of Interactive Structures who was featured in a *Softalk* Exec in June of 1982.

Interactive Return Visit. A graduate of Princeton, Willson earned a doctorate in electrical engineering from the University of Pennsylvania. Before that, in April 1974, he formed Interactive Structures with two colleagues from school as a vehicle for his consulting activities in the areas of business graphics and management information systems. By 1977, Willson's attention became focused on the emerging generation of microprocessors, then still in the hobbyist-kit stage of development. He acquired a now legendary Apple I, which he had up and running just in time for the release of another micro that went far beyond it—with full-scale applications and hardware expansion potential—the Apple II.

Interactive Structures evolved into a manufacturer of peripheral interface modules for the Apple. The company produced hardware and software for various scientific and industrial applications. It was the growing reputation of these interface devices in the laboratory systems market that brought Willson's talents to the attention of Dr. Brown early in 1979.

As one member of a team of design engineers who were working with Dr. Brown, Willson recalls that at that time it seemed a bit gutsy of them to propose an experimental apparatus to be controlled by an Apple II Plus. "But it was just the kind of commercially available technology NASA was looking for," he says, "low-cost applications to demonstrate the practicality of the space shuttle program."

The finished design consists of a custom assembled II Plus motherboard, interfaced to various sensors and control devices using an eight-bit, sixteen-channel, analog-to-digital converter. This is a true multitasking system, with the computer in control of two on-board centrifuges, six temperature sensors, a heating unit, and a time-lapse video camera and recorder.

The Apple also controls enunciator lights to alert the crew of any anomalies in the experiment during flight and uses a direct link with the space shuttle's on-board computer to relay ongoing data about the status of the experiment to mission control in Houston. The software to accomplish these tasks, designed by Willson, is all in ROM.

Two payload specialists aboard the shuttle are responsible for the physical tasks of planting and moving the germinated sunflowers, totaling over thirty seedlings, during various stages of the nine-day mission. This is only one responsibility they share with other crew members in the maintenance of some forty or so scientific experiments scheduled for this initial flight of Spacelab.

Upon Spacelab's return to the earth's surface, the video tapes from the flight will be dispatched to Dr. Brown's lab for scrutiny. It will take some weeks to fully evaluate the findings. The sunflower plants will also be returned and kept under observation for any effects that germination in a weightless environment may have upon their subsequent growth.

A second stage of this experiment that will test the effects that various increments of hypo-

STOCK MARKET INVESTORS: Calling this toll-free number can be the best "investment" you'll ever make.

1-800-392-2669

Discover the Market Maverick—a revolutionary stock market program for the Apple II* and IBM-PC** computers—with a combination of money making/money saving features that you won't find in any other program at any price!

Ours is a decision-making tool. Ours is based on a model with 9 years of proven performance. Ours is used by professional investors. Ours has the longest published Wall Street track record of any model of its type. And ours is fully supported statistically!

With the Maverick, you not only pinpoint stocks with the greatest upside pofential, but you can avoid those that are over-extended and get out before price reversals.

Record of success.
For 9 years ending 11/30/82, the top 10% of stocks which the model identified as most attractive rose 222.4% and the least attractive 10% fell 11.2%! Two years ago, 14 of the 20 most overvalued stocks were in the energy sector. By 7/30/82, they had declined 53%. Meanwhile, the 20 most undervalued stocks (J.C.Penney, Philip Morris, McDonald's, etc.) appreciated 4.3%.

In the recent bull market, from 7/82 to 11/82, the most attractive 10%, led by MCI, Tandem, NME, and Mitel, gained 45% while the DJIA rose only 29%.

The Maverick helps you to be early in recognizing either neglected or overstated stocks, thereby giving you the needed perspective to profitably go against the crowd.

Call us toll-free.
No operators, your call comes direct to FSI people who have the answers. Ask about system requirements. Ask about our *$25 Home Demo Package* (which we apply to the $175.00 purchase price when you buy). Ask about some of the successes that users tell us about. You'll never really know how incredible the Market Maverick is until you try it!

FINANCIAL SOFTWARE, INC.
11401 Westridge Circle, Chardon OH 44024
For our free no-obligation brochure or more information, call (from outside Ohio)
1-800-392-2669
In Ohio, call 216-338-6811

*Apple II is a trademark of Apple Computer, Inc. **IBM-PC is a trademark of IBM.

gravitational force (less than 1G) have on plants is already being planned for a later mission. A further experiment on geotropism, called GTHRES, which will test the effect of forces greater than 1G, is being mounted by Brown in conjunction with Norwegian investigator Anders Johnsson, who developed the modern biophysical theory of circumnutation. Another experiment with Welsh scientist David Heathcote, called FOTRAN, will test the interactive effects that light and various degrees of weightlessness have on plant growth. Scheduled to be conducted aboard another Spacelab flight in 1986, these investigations will rely upon Apple-based systems similar to the one that made HEFLEX possible.

Going back to the issue of pure science and its relation to the technology it spawns, it's worthwhile to consider what effects research like Dr. Brown's may have and how its concomitant technology could be used by us.

Research conducted in the earlier part of this century into the behavior of plants and their biochemistry has produced many wide-reaching applications in agricultural technology. Today's multimillion-dollar herbicide industry is a direct outgrowth of these scientists' efforts to understand the effects chemicals have upon plant behavior. Another result has been the development of growth-regulating chemicals to control the stages in a plant's development. The ability to regulate the size of various fruits and vegetables is possible because of discoveries motivated, like Dr. Brown's, by the pursuit of knowledge for its own sake. Brown is hesitant to speculate yet on the possible implications his studies may have or the possible applications of his findings. But it seems certain that any serious considerations for the development of an agricultural technology in space will find his ground-breaking work invaluable.



With plans to unveil two new interface peripherals in its product line this fall, Interactive Structures's management includes, counterclockwise from top, company president Joe Willson, his wife and director of operations Michelle Kindt, and Kenn Kidd, sales manager.

Closer to home, the same kind of technology that made the sunflower experiment possible is available to us for any multitude of applications we may dream up using our Apples. Interactive Structures markets a whole array of interface devices in its modular DAISI product line, including the AI02 eight-bit interface used by Dr. Brown on HEFLEX. There is now the AI13 also—a twelve-bit, sixteen-channel, analog input board that takes up one slot in the Apple and has sixteen times the accuracy of the AI02. Such a device could be used to monitor temperature levels continuously in every room in your house and regulate the heat accordingly. Another device, the DI09 digital interface, provides thirty-two different general-purpose logic lines that can be used for either input or output of data.

By this Christmas, Interactive Structures will have released two new peripheral products for the Apple. One is an upgrade to the popular Pkaso printer interface, known as the Pkaso/U. Its special feature is that it is compatible with any printer—including some that aren't on the market yet. It also has the ability to produce superhigh-resolution graphics, as well as expanded screen dumps.

The other new release is the Shuffle Buffer, considered the big brother to the Pipeline parallel printer buffer introduced in January of this year. The Shuffle Buffer is for serial or parallel printers, and it allows you to mix and match serial input with parallel output or vice versa, with independent baud rate for input and output. In addition it features the patented Random Access Printing process, which gives you the ability to rearrange and combine different types of data, such as text and graphics, within the buffer.

Now employing twice as many people as when *Softalk*'s Exec article on the company appeared, Interactive Structures president Joe Willson and his wife Michelle, director of operations, agree that priority number one is making sure that the technology they develop and market is well supported. To this end the engineers and designers of their products seem more than willing to make themselves available if users have a need to consult with them. The company also publishes a bimonthly user newsletter, "Tips and Techniques," which discusses the company's full product line and spotlights various devices in depth from time to time.

As we strive to transcend the flood of technology that science makes possible, we discover there are creative ways to integrate both forces into our lives in a meaningful way. It may take a glance at newspaper headlines heralding the latest triumph in space exploration or just a long look at the stars to remind us that science at its highest level is ultimately the systematic pursuit and enjoyment of the wondrous, the awesome, and the mysterious. ■

KEYBORED?
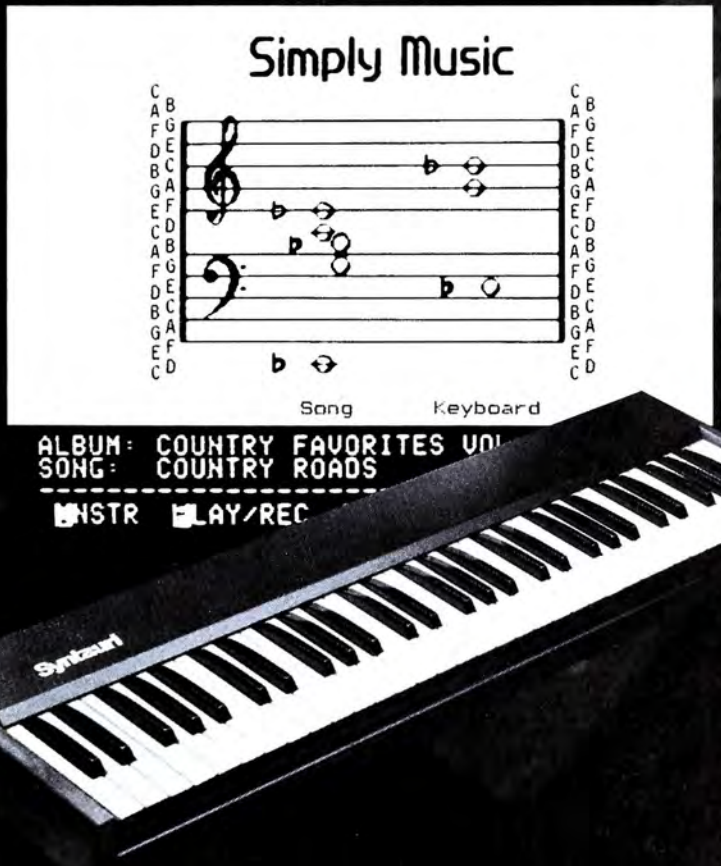
How about a musical interlude? With Simply Music™ you can learn, compose, perform, even teach music right in the privacy of your own Apple.

Bye, bye, keyboredom! From $1,295.

Syntauri™

SIMPLY MUSIC™

Simply Music, the microcomputer based synthesizer software and hardware system. For the name of your nearest dealer call (800) 227-1817 Ext. 65. Syntauri Corporation, 4962 El Camino Real, Suite 112, Los Altos, California 94022.



Apple is a registered trademark of Apple Computer Incorporated. Simply Music is a registered trademark of Syntauri Corporation.

THE ADVENTURE GAMES THAT TOOK 3,000 YEARS TO CREATE!

We're pleased to announce what we believe are the greatest adventure games of all time. They're based on stories that have been 3,000 years in the telling. They're filled with people, places and amazing events right out of one of the world's oldest history books. The Bible.

The Bible is where our stories begin. But we've woven *new* adventures through high technology. With stirring action. Startling sound. Dazzling sights. Every member of your family will thrill to the realistic animation and the high-resolution graphics. And you'll share in the pleasures of this unique, new game source—the Bible.

The first of our Bible Adventure Games is *The Philistine Ploy.* Based on the biblical Book of Judges, it starts at a time when law and order have fled from the hills of Judea. It's a turbulent world of intrigue and revenge, altars and idols, heroes and justice. You'll seek the long-lost mythical Treasure of the Seven Nations, racing against a dangerous Philistine warrior who is trying to kill you! But you don't have to know your Bible stories to begin enjoying this adventure game.

Then there's *The Lion's Share* based on the Book of Daniel. Crack your way into Babylon, an eerie city of dreams, stargazers, wizards and savage lions. Find Daniel, then signal your Persian forces to attack the city at the right psychological moment. Don't miss this!

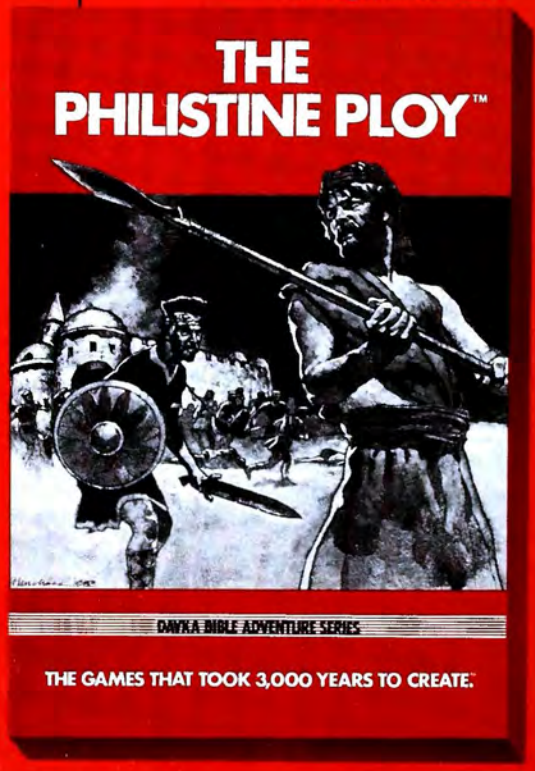
The Bible Adventure Game Series is for Apple II+/IIe computer with 48K and one disk drive. **Games are $34.95 each.**

Ask for these adventure games at quality computer software stores. To order direct, send your check. **Credit card holders may call toll-free.**

(Add $2 for shipping and handling.)

Call Toll-Free
1-800-621-8227
Dealers may call toll-free for information and orders.

Davka™
CORPORATION
845 North Michigan Avenue • Suite 843
Chicago, Illinois 60611



DAVKA ADVENTURE GAMES...WE TOOK OUR TIME.

Apple is a trademark of Apple Computer, Inc.

THE PASCAL PATH

By Jim Merritt

Jungle Fever, Part 9

We began our study of Apple Pascal's UNIT facility last month by examining and experimenting with *regular* UNITs. If you aren't able to refer to that discussion, you can compensate by reading chapter 5 of the *Apple Pascal Language Reference Manual*, as well as the section on program segmentation in the manual's addendum.

Incidentally, apologies are certainly due if you own an Apple II and faithfully tried to compile last month's demonstration UNITs. You were no doubt surprised and annoyed when the compiler refused to obey your wishes and instead complained of error condition #408: (*$S+*) needed to compile units.

To compile any UNIT under Apple II Pascal, you must invoke *compiler swapping* by inserting one of the compiler directives (*$S+*) or (*$S++*) somewhere before the first UNIT heading in each file containing UNIT source text. This is necessary because the Apple II simply doesn't have enough primary memory to compile UNITs unless the compiler's memory usage is optimized through the segment-swapping mechanism that is activated by the $S compiler directive instruction.

The examples presented last month lacked the crucial compiler directive because they were developed and tested on an Apple III computer, which boasts so much primary memory that compiler swapping is almost always unnecessary. Except for this slight (but important) omission, the UNITs were written so that they would compile without modification on either the Apple II or III. Please note that, in the absence of explicit labeling to the contrary, *any* demonstration software presented in this column should compile and execute without modification under Apple Pascal for the II Plus, IIe, and III.

UNITed We Stand. We have seen how easy it is to collect several useful subroutines (along with any relevant data declarations) into a UNIT. By doing so, you can effectively extend the definition of Apple Pascal on your computer to include subroutines, constants, variables, and data types of your own custom design. When client software USES a UNIT, the *public* objects defined within the UNIT (that is, the objects declared in the INTERFACE section) become available for use within the client's own subroutines and main body, even though they are not actually defined by the client itself. In a similar vein, your programs needn't bother to define such predeclared objects as MaxInt, Boolean, WriteLn, Chr, or MemAvail, because they are provided free by the Pascal language and compiler.

Of course, nothing in Apple Pascal is ever provided *completely* free of charge. In order to make the standard predeclared objects available to you, the Pascal compiler must consume more primary memory and execute a bit more slowly than it would if it were less hospitable. Even more memory and execution time would be lost if the compiler were sophisticated enough to merge UNIT code directly into the client software that uses it. Unfortunately, the extra memory required for this process is not available in most small computers (including the Apple II with language card and the IIe with 64K of RAM). Thus, you must use a separate utility program, the linker, in order to put all the pieces together into a single, executable code file. We saw an example of this process last month and at once apprehended the irony of the situation. It seemed rather strange that one must add another cumbersome step to the software development process in order to take advantage of one of Apple Pascal's most loudly touted "labor-saving" features!

Luckily, our dismay was anticipated by the designers of Apple Pascal, who created the INTRINSIC UNIT in a largely successful attempt at making UNITs more convenient. By adding a single line of source code, we can change the UNIT developed last month, CharTools, into an INTRINSIC UNIT.

This month's listing was produced by the Apple III compiler for the INTRINSIC version of CharTools. Actually, *two* lines of source were added to this UNIT; the first of these (and also the first line in the listing) is the compiler-swapping directive that was absent in last month's version of CharTools. It is the addition of line 3, however, that transforms the package into an INTRINSIC UNIT. To verify the syntax of this line of code, refer to figure 1, which reprints last month's set of UNIT railroad diagrams.

Syntax charts, of course, confirm only that a particular sequence of source code is indeed "proper Pascal"; they never explain what the code actually *means*! The purpose of the keyword INTRINSIC seems clear enough, but what of the keyword CODE and the Integer constant 24?

To begin, INTRINSIC UNITs need never be linked into their client programs. Instead, these special UNITs reside in the special code file, System.Library. When a client program is executed, the operating system first loads the client code into primary memory. Then it looks into System.Library to find the code for any INTRINSIC UNITs that are used by the client. This code is then automatically loaded into primary memory, alongside that of the client. In effect, the operating system handles all the work of identifying and locating all the parts of a program at execution time. More important, it combines them, automatically and instantaneously, into a coherent, executable whole. Much the same task is performed by the linker. But, for reasons that will be explored soon, it is a bit easier to stitch together INTRINSICs and their clients than to blend regular UNITs with theirs.

The Shocking Truth Revealed. As it happens, any UNIT (whether regular or INTRINSIC) is actually a SEGMENT PROCEDURE in disguise. To illustrate, a UNIT's initialization code is placed in the SEGMENT's main body; if the programmer omits the initialization portion of a UNIT, then the main body of the corresponding SEGMENT is left empty by the compiler. Subroutines that are defined by a UNIT are seen by the compiler as being nested within the analogous SEGMENT PROCEDURE. True, SEGMENT subroutines are frequently swapped into and out of primary memory during program execution, while UNITs are normally unmolested by the segment-swapping mechanism. On the other hand, a certain compiler directive instruction, which we'll study in coming months, can make a UNIT swap just like the SEGMENT it truly is.

If you think about the subject long enough and study a few program listings (as produced by the compiler), you should be able to discover many telltale similarities between UNITs and SEGMENTs. They are, in fact, two sides of the very same coin.

When we discussed SEGMENT PROCEDUREs last September, we noted that each segment in a program was known to the Pascal system (including the compiler and p-machine) by its individual *segment number*. This applies to UNITs as well. Suppose that your program calls the function Capital from the UNIT named CharTools. The Pascal com-

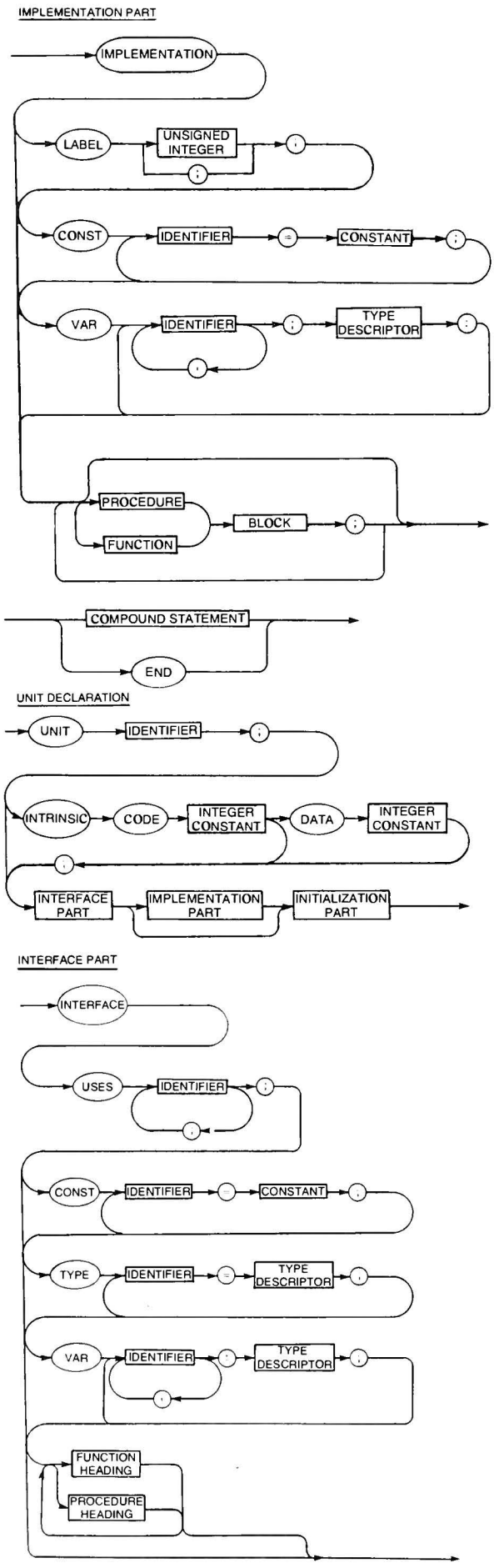


Figure 1. UNIT syntax diagrams.

piler translates the call into a series of p-codes that force the p-machine to shift attention to the CharTools code segment, then to select and execute the appropriate subroutine within that segment.

At the level of p-code and the p-machine, both segments and subroutines are identified by their respective individual numbers in order to speed execution. These numbers are nothing more than indexes into two arrays, the *procedure dictionary* and the *segment table*.

Look It Up! Every code segment includes a *procedure dictionary*. This is an array of subroutine addresses that may be indexed by Integers ranging from 1 to 149. In other words, each segment may define up to 149 subroutines! Each array element in the procedure dictionary is an Integer that represents the address in primary memory of the first p-code of the corresponding subroutine. For example, array element 3 stores the location of subroutine 3's starting point. When a "call subroutine 3" p-code is executed, the p-machine fetches the third element from the procedure dictionary of the currently active code segment, then begins executing p-codes at the location specified by that number.

While we're on the subject, the advanced reader should note that absolute memory addresses are never stored in the procedure dictionary; rather, each address is *relative* to the location of the particular segment in question. This *relative addressing* enables the system to load a segment into any unused area of primary memory. Without such flexibility, the system could not allow segments to be swapped in and out as freely as they now can be.

Playing the Slots. Just as each segment has its own procedure dictionary, each *code file* includes its own *segment dictionary*. The segment dictionary is an array, indexed from 0 to 15. Each element in the array contains several pieces of information, including the name of the corresponding segment as well as its official segment number, size (given in bytes), and location on disk relative to the start of the code file. An appendage to the segment dictionary, included primarily for the benefit of code files that contain UNIT clients, contains a table that gives the segment numbers of any INTRINSIC UNITs that are used by any client code that resides in the file. No segment dictionary entries need be used to describe these INTRINSIC UNITs, because code and segment dictionary information for them are stored in the System.Library file.

In the days when Apple Pascal was not as well documented as it is now, people used to believe that segment dictionary indexes—usually called *slot numbers*—corresponded to segment numbers. For instance, people thought that the segment described by segment dictionary entry 5 always had to be segment 5. In general, *there is no connection between slot numbers and segment numbers*. Thus, the information in segment dictionary slot 1 may in fact describe segment number 24. The segment dictionary is simply a collection of handy storage boxes for important information about the segments in a particular code file. Slot numbers are nothing more than labels that facilitate the access of that information. They have no other significance.

Tabula Rasa. When a program is executed, certain information in its segment dictionary is copied into the system's *segment table* (called the "run-time segment table" in Apple's manuals). The indexes of this array *are* segment numbers and range from 0 to 31. For instance, information about segment 5 is stored in segment table entry 5, information for segment 8 is stored in table entry 8, and so on.

Each entry in the segment table includes information that indicates whether the corresponding segment is currently resident in primary memory and, if so, its address. At execution time, some or all of a program's segments are loaded into primary memory, and information describing *all* of its segments is transferred from the code file's segment dictionary on disk to the system's segment table in primary memory. Remember, segment dictionary slot numbers are not the same as segment table segment numbers. Consequently, if the information in dictionary slot 1 described segment 24, it would be assigned to segment table entry 24.

The Numbers Racket. Whenever any segment is compiled, the compiler gives it a segment number. If the segment was declared as a true SEGMENT subroutine in the text of some program, then the number it received from the compiler would become its *permanent* segment number. If the segment was declared as a regular UNIT, however, the number it received from the compiler would be irrelevant. When it is linked into a client, the regular UNIT is given a different segment number, one that was allocated to it by the compiler during compilation of the *client*. Thus, MyUnit might acquire segment 7 on behalf of one client

and segment 8 when linked to another. The exact numeric assignments would depend upon the order of UNIT declarations within the respective clients. For example, consider the following portions of two client programs:

```
PROGRAM
  FirstClient;
  USES
    (*$U MYUNIT.CODE*) MyUnit;
BEGIN (* FirstClient *)
END   (* FirstClient *).

PROGRAM
  SecondClient;
  USES
    (*$U NEWUNIT.CODE*) NewUnit,
    (*$U MYUNIT.CODE*)   MyUnit;
BEGIN (* SecondClient *)
END   (* SecondClient *)
```

MyUnit is a regular UNIT that resides in the file Myunit.code. When MyUnit is linked to FirstClient, it will be assigned segment 7, because it was the first UNIT declared by the client and thus the *first additional segment* allocated by the compiler. On the other hand, MyUnit is assigned segment 8 when linked to SecondClient. In this case, NewUnit was declared first, so *it* will receive segment number 7. Notice that we have never mentioned the original segment numbers of either UNIT; they do not matter.

Linking: A Partial Rationale. Linking—that is, the process of merging regular UNIT code with client code—involves primarily the transformation of UNIT code so that it reflects the UNIT's new client-assigned segment number. The very existence of the INTRINSIC UNIT facility demonstrates that the operating system can merge code automatically under certain circumstances, so if the compiler could allocate permanent segment numbers to UNITs during compilation, you might think there would be little need for a separate, manual linking process at all. But think of the difficulties the compiler would have in trying to decide how to allocate segment numbers.

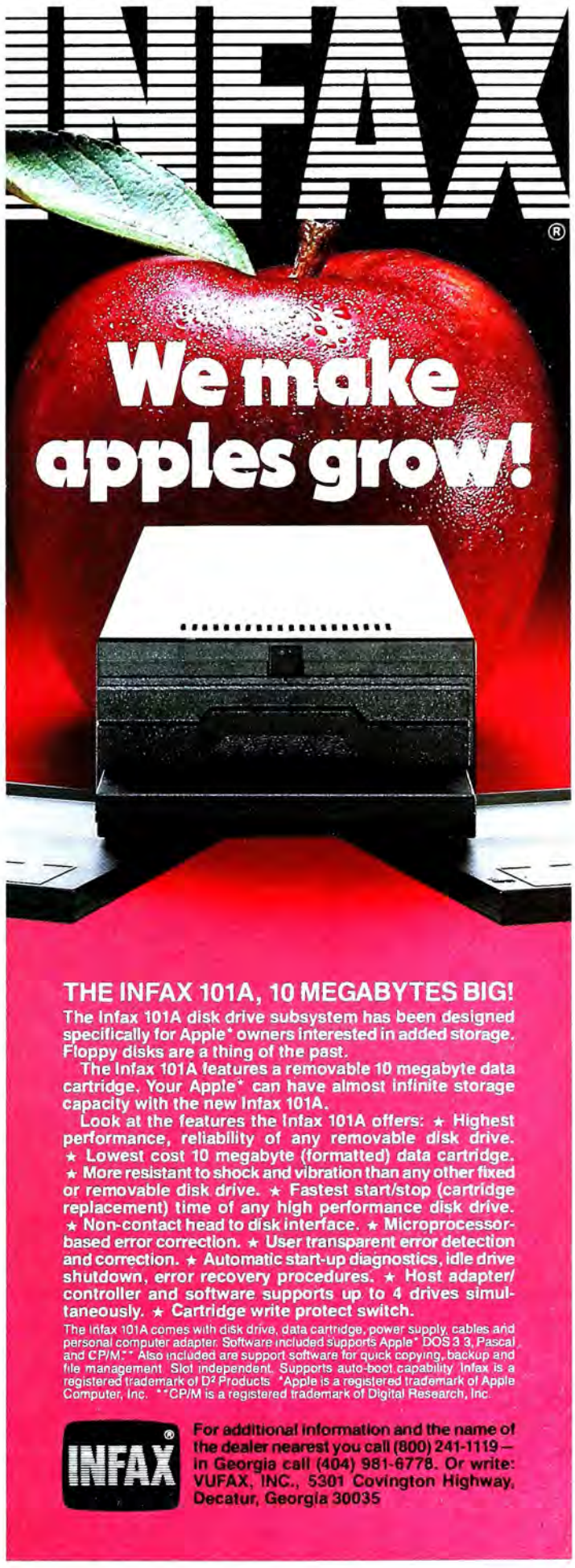
Consider that no two UNITs that are used by the same program can have the same segment number, since there is room in each segment table entry to describe only a single segment (either a SEGMENT subroutine or a UNIT). Certainly, a program should be free to use any combination of UNITs, so our hypothetical compiler would never be justified in assigning a given segment number to more than one UNIT. Theoretically, this policy would limit the maximum number of UNITs that you could write to the number of entries in the segment table: thirty-two. For reasons that will be explained soon, the practical limit on the number of UNITs would be even less.

The somewhat inconvenient linking stage is thus necessary to allow the creation of an arbitrary number of regular UNITs without risking segment number conflicts. You might argue, however, that linking should be an automatic function of the operating system and that it should be invoked without human intervention whenever the operating system is asked to execute an unlinked program. A very simple mechanism for doing just that does indeed exist in Apple Pascal, and it is intimately tied into the "workfile" feature. Unfortunately, Apple Pascal's workfile facility permits the development only of small, "toy" programs, so it is not worth covering here.

INTRINSIC Numbering: Your Responsibility. Even though it is unwise for the compiler to assign permanent segment numbers to every UNIT, the technique is still attractive because it eliminates the need for linking. As a matter of fact, INTRINSIC UNITs do receive permanent segment numbers from the compiler. This is possible because the compiler leaves it up to you to resolve any segment number conflicts. With the CODE keyword, *you* specify the segment number for a particular INTRINSIC UNIT. If you err in choosing, that's *your* problem.

For some INTRINSIC UNITs—specifically, those that declare *global* data in their IMPLEMENTATION (private) sections—you need to declare not only a CODE segment number but also a DATA segment number. We will work with examples of such dual-segment UNITs in months ahead.

Certain segment numbers should not be given to INTRINSIC UNITs. Segment table entries 0 and 2 through 6 are dedicated to portions of the



Pascal system itself. (In particular, segment 0 is the operating system core, about which we've hinted in previous discussions.) Table entry 1 is reserved for the main segment of your program. Certain numbers in the range 20 to 31 correspond to INTRINSIC UNITs provided by Apple in the System.Library, and these numbers (which will be listed momentarily) should never be assigned to your own UNITs.

Every UNIT Needs a Home. In order to make it easier for the compiler to find INTRINSIC UNITs when compiling clients, and for the operating system to load INTRINSIC UNIT code into primary memory at execution time, all INTRINSICs must be contained within the System.Library file. This is a code file like those produced by the compiler or linker, except that its file name does not include the customary .code suffix. Being a code file, it contains a segment dictionary that can accommodate up to fifteen entries. The standard Apple Pascal System.Library already contains several INTRINSIC UNITs, which together consume seven of the file's segment dictionary entries. This means that System.Library may contain up to nine of your own UNITs (less, if some of them require both CODE and DATA segments).

System.Library will accommodate regular UNITs as easily as INTRINSICs. If you put regular UNITs in the System.Library, you need not tell the compiler where to look for them when compiling clients; in the absence of any $U compiler directive instructions to the contrary, the compiler will look for any and all UNITs in System.Library. However, since you have the option of leaving regular UNITs in ordinary code files, but *must* put all INTRINSICs in the System.Library, it is usually wise to reserve System.Library for INTRINSIC UNITs only.

If your System.Library becomes too crowded, you are certainly free to replace some of Apple's UNITs with your own. But this is a risky business, since some of Apple's packages—notably Pascalio, Longintio, and Transcend—are tied to fundamental language capabilities and system operation. On the other hand, UNITs such as Turtlegraphics and Applestuff are not critical and may be removed from the file if you do not intend to call upon them in your own programs.

Installing the INTRINSIC UNIT. Since all INTRINSIC UNITs must reside within the System.Library file, you must learn how to install a UNIT into that file. Apple Pascal provides the Library utility program to aid you in this pursuit. This program is stored on the Apple3: disk in the file Library.code. Although the Apple3: disk must be mounted before you can execute Library, it may be removed as soon as the program has been loaded into primary memory and begins execution.

The Library program allows you to build a library code file by cannibalizing segments from other code files. You browse through one or more code files, called *link code files*, transferring the segments of your choice to a new library, called the *output code file*. (The Apple III version of the Library program calls these the input file and the output file respectively. In this discussion, we will employ the somewhat more obscure but nevertheless more commonly used Apple II terminology.)

While you are building the library, the output code file is temporary; if, when you are finished shuffling segments around, you decide that you don't like the new library, you can abort the process. If you do not explicitly abort the Library program, the library file under construction will be made permanent. If the new file has the same name as an existing file, the old will be erased to make way for the new. Conversely, the old file will be retained and the new one forgotten if you elect to abort the program.

Let's use Library to install CharTools in the System.Library. When you execute Library.code, the first thing the program will request from you is the name of the output code file. Next, you will be asked for the name of the (initial) link code file. To either or both of these requests, you may respond with either an asterisk or a *complete* file name, including the .code suffix if you intend the name to have one. (The Library program does *not* supply default file name suffixes, so be careful!)

Whenever your response to a Library program file name request is only an asterisk, the program translates this to *System.Library. In other words, by replying with an asterisk you specify the standard library file on the boot disk. In this example situation, you should use only the asterisks, since we are concerned with amending the System.Library file.





REACH OUT AND CONQUER SOMEONE.

Introducing FORTRESS.™ A classic strategy game of power and conquest. On disk for the APPLE® & ATARI.®

Like such classics as chess and *go*, FORTRESS ($34.95) is beautifully simple: Occupy a place, fortify it, lay siege to your opponent's fortresses, and dominate the countryside. The rules are few; the possible moves, nearly limitless. FORTRESS is very fast — each game lasts less than ten minutes.

This two-player game also contains a great solitaire scenario. Five different computer opponents are provided, each endowed with a unique style of play. For example, there is the ruthlessly aggressive Genghis Khan and Lord Maginot, the master of defense.

The crowning glory is that the computer opponents not only play, they *learn and improve* as they play you. The better you get, the better they get! Which brings forth a most fascinating event:



ANNOUNCING THE $1,000 SSI FORTRESS TOURNAMENT

Since you teach the computer opponents every time you play them, they are really an extension of yourself. SSI proudly announces a very different kind of strategy game tournament: computer versus computer! Send us the disk of your best trained computer player and we'll match it against other entries. The winner (the human, not his disk!) of this battle of electronic wits will win $1,000! Complete details in each FORTRESS box.

So get a head start on the competition and head on down to your nearest computer/software or game dealer today. FORTRESS, a game destined to be a classic, awaits you.

On disk for the Apple® II with Applesoft ROM Card, Apple II Plus, IIe, and IIi

Also on disk for the 40K Atari® 400/800/1200 with BASIC Cartridge

RapidFire
GAMES FROM SSI

Apple is a registered trademark of Apple Computer, Inc.

Atari is a registered trademark of Atari, Inc.



FINALLY, A VIDEO PINBALL GAME FOR THE PINBALL FAN!

On disk for the APPLE® & ATARI.®

QUEEN OF HEARTS™ ($34.95) is dedicated to all you pinball players out there. Just look at what it offers:

- Two playfields with five flippers.
- A realistic "TILT" feature.
- Four sequences: Hit the right targets in the right order and you'll get extra balls and rack up a huge score.
- Sound effects to complete the illusion of a real pinball game.

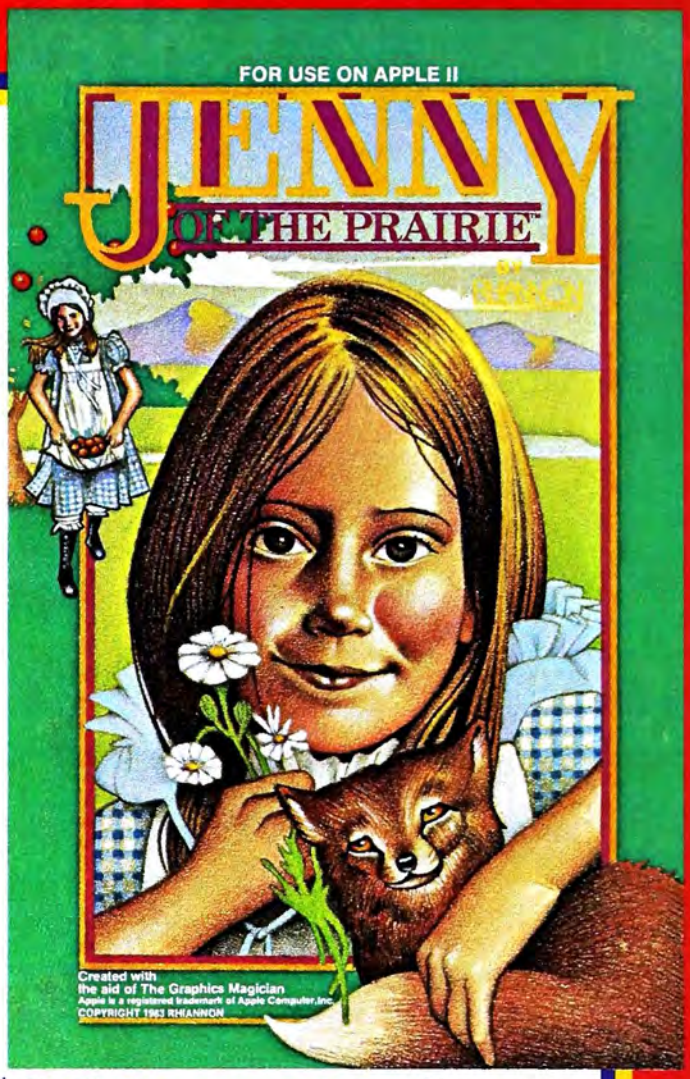
So if you're itching for a pinball game, don't think pinball arcade. Think computer/software or game store instead, 'cause that's where you can get hold of QUEEN OF HEARTS.

See above for Apple® specifications. On disk for the 48K Atari® 400/800/1200 with 2 joysticks.



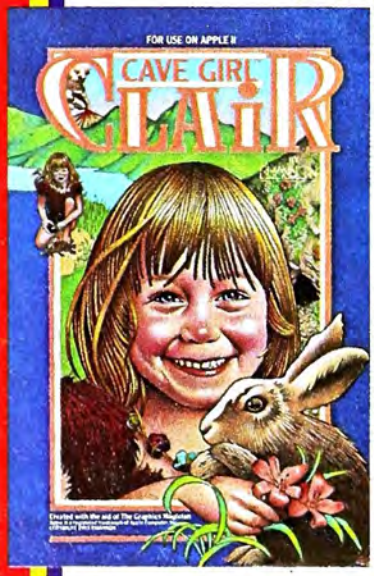
If there are no convenient stores near you, VISA & Mastercard holders can order direct by calling **800-227-1617, ext. 335 (toll free).** In California, call 800-772-3545, ext. 335. To order by mail, send your check to: Strategic Simulations Inc, 883 Stierlin Road, Bldg. A-200, Mountain View, CA 94043. (California residents, add 6.5% sales tax.) Please specify computer format.

WRITE FOR A FREE COLOR CATALOG OF ALL OUR GAMES.



Rhiannon brings girls and computers together.

When your little girl sits down to play with Jenny, Chelsea, Lauren or Clair, she is learning how much fun a computer can be. Our heroes capture her imagination and our graphics make her smile. We give her time to explore, to experiment, to be enchanted. We did not design these games to be fast, we designed them to be endlessly fascinating.





Jenny of the Prairie™ is a spunky pioneer girl, separated from her covered wagon train, who must gather nature's provisions from a hazardous environment.

Chelsea of the South Sea Islands™ is a 19th century British girl stranded on a small Pacific island with her pet Kiwi. She explores for native treasures and confronts tropical dangers.

Cave Girl Clair™ loves to wade through the tall grasses to watch the gigantic Woolly Mammoth, but her survival depends on seasonal gathering of food and skillful fire-tending.

Lauren of the 25th Century™ is in charge of a reclamation project at a sun baked desert outpost. The blazing sun provides solar energy, but threatens the fragile life forms she pledged to protect.

Ask at your computer store. $34.95. Or order direct. 3717 Titan Drive, Richmond, Virginia 23225. Copyright 1983 RHIANNON. All rights reserved.

For that special girl in your life, now there's

RHIANNON

COMPUTER GAMES FOR GIRLS

Figure 2 shows the screen display you should see as soon as you have named both the output and link code files. Dominating the display is a list of the entries in the link code file's segment dictionary. Notice that all segment (that is, UNIT) names have been truncated to eight characters. For example, Turtlegraphics has become Turtlegr and Applestuff has been shortened to Applestu. We said long ago that the compiler truncates identifiers to eight characters; now that we can look "within" a code file, the results of this process are strikingly obvious.

As you examine the segment dictionary display of figure 2, note the lack of correspondence between slot numbers and segment numbers. For instance, Chainstuff occupies slot 2 but has been assigned to segment number 28. Consequently, segment information for Chainstuff will always be placed in segment table entry 28.

```
SLOT TO LINK AND < SPACE >, = FOR ALL, ? FOR SELECT,
  N(EW FILE, Q(UIT, A(BORT

LINK CODE FILE - > *SYSTEM.LIBRARY
        0 - (30) LONGINTI   2452      8 -      0
        1 - (31) PASCALIO   1238      9 -      0
        2 - (28) CHAINSTU    214     10 -      0
        3 - (29) TRANSCEN   1202     11 -      0
        4 - (20) TURTLEGR   5202     12 -      0
        5 - (21) TURTLEGR    386     13 -      0
        6 - (22) APPLESTU    678     14 -      0
        7 -                    0     15 -      0

OUTPUT CODE FILE - > *SYSTEM.LIBRARY
CODE FILE LENGTH - 1
```

Figure 2. Library program screen display after specification of *System.Library as LINK CODE FILE. The legend CODE FILE LENGTH refers to the length in disk blocks of the OUTPUT CODE FILE, not the LINK CODE FILE. Segment numbers for the UNITs listed are given in parentheses. Note that TURTLEGR has both a code segment (20) and a data segment (21).

In order to add a segment to a library, you must first transfer all of the segments from the current copy of the library to the temporary one that is under construction. (Yes, it *is* cumbersome, but that's the way the system was designed, so we must live with it for now.) To effect a mass transfer of all segments from the link code file to the output code file, strike the equal sign. Note that this key is listed as one of the choices in the menu line at the top of the screen. (We'll deal with some other menu commands soon.)

Soon after you press the equal key, your display screen should resemble figure 3. Now that the output code file contains something, its reported length is much larger than it was at first, and its segment dictionary is displayed at the bottom of the screen. At this point, of course, the segment dictionaries of both the link code file and the output code file contain the same information.

To address CharTools, press the N key (another command listed in the menu line). This indicates that you wish to switch to a new link code file. As soon as you specify Chartools.code, your screen should look like figure 4. The display of the link code file's segment dictionary should become that of Chartools.code, while the display of the output code file's dictionary should remain static. Note that, even though CharTools occupies segment dictionary slot 1, it has been assigned the segment 24, as specified in the INTRINSIC UNIT declaration.

To copy CharTools into the output code file, you must indicate the number of the segment dictionary slot that it occupies in the link code file, then give the number of an empty destination slot in the output code file. (If you specify an occupied slot as the destination, the Library program will confirm that you really mean to eliminate the current occupant.)

Let's put CharTools in slot 7. Enter *1*, the number of the slot to be copied. Then press the space bar (or return). Next, press *7* and the space

LOCK-IT-UP

DISKETTE COPY-PROTECTION
AND DUPLICATION SYSTEMS
FOR THE APPLE COMPUTER

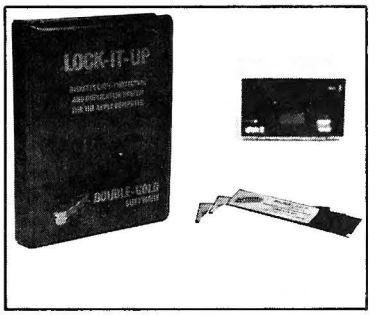
The Lock-It-Up systems are sophisticated, menu driven copy-protection and duplication utilities for the Apple II Computer. They feature several levels of protection which make standard diskettes uncopyable by even the most sophisticated nibble copy programs currently available.

- All sectors on the diskette can still be used.
- Data files can be loaded and/or saved to either the protected diskette or an unprotected diskette.
- Memory will be cleared and the disk will reboot if the reset key is pushed.
- The copying systems support up to 14 disk drives.
- Complete data-verification is optional during copy.
- Sequential serial numbers are assigned to each diskette produced by the system
- Master diskettes created with the system contain an I.D. stamp that you select. The I.D. stamp must be correctly specified before any diskettes can be duplicated. This prevents other Lock-It-Up owners from copying your diskettes.
- Extensive support is provided should you have any problems or special needs.
- Our system is supported by numerous disk copying services should you need a large quantity of diskettes duplicated.

Either system is available for $225, which includes three diskettes, an informative manual, and a non-exclusive license to copy as many diskettes as needed.

ORDER NOW! Call collect for COD, Mastercard or Visa orders

DEALER INQUIRIES INVITED



DOS VERSION:

- Any standard DOS 3.3 diskette can be protected.
- DOS command names can be changed and/or deleted.
- Autorun can be used to prevent the listing of a program or the use of any basic commands outside of a program.
- A faster DOS can be used in order to decrease disk access time by up to 50%!

REQUIRES: 48K Apple II or II+ with Applesoft in ROM or language system and at least two disk drives.

PASCAL VERSION:

- Any standard Apple Pascal 1.1 diskette can be protected.
- Files may be transferred to a standard Pascal diskette, but they will not run unless they are on the protected diskette.
- Easily added to any program by use of a Regular Unit.
- Compatible with Apple Fortran.

REQUIRES: Apple Pascal and at least two disk drives.



DOUBLE - GOLD
SOFTWARE

4010 Moorpark Ave., Suite 207
San Jose, CA 95117
(408) 554-9133



PIRATE SOFTWARE

Below manufacturers costs! *Limited Quantities

The most unbelievable purchase you will ever make. Compare our prices with anyone in the industry. **Guaranteed lowest prices anywhere!**

PRODUCT	CURRENT ADVERTISED PRICE	PRICE TO YOU
GL-Plus	$ 495.00	**$295.00** general ledger
Commodipak	395.00	**237.00** commodities mkt.
Critical Path Scheduling	495.00	**295.00** construction
Client Organ	99.00	**40.00** general office
Engineering	595.00	**235.00** slope analysis
Financial Partner	250.00	**135.00** small business
Exec. Acct. Sys.	1095.00	**550.00** large business
Pascal Tutor Pascal	295.00	**125.00** educational
Programmer	295.00	**125.00** educational
Service Mgr.	1895.00	**995.00** large inv. & service

Available for Apple II/III, IBM, NEC, Commodore. ALL PROGRAMS BRAND NEW LIMITED QUANTITIES AVAILABLE. FIRST COME FIRST SERVE BASIS. We accept MasterCharge, VISA, Money Orders and Checks. Time payments on approved credit.

Commodore Vic Products

PRODUCT	DESCRIPTION	PRICE TO YOU
MODEM	Vic Modem	$79.95
GAMES	Vical	9.95
	Buti	59.95
	Superhangman	9.95
	Space Division	7.95
	Vicat	13.95
	3-D Maze	8.95
	Kosmic Kamikazee	13.95
	Simon	8.95
	Raceway	8.95
	Alien Blitz	13.95
	Viterm A	12.95
	The Alien G.K.	12.95
	Draw Poker	18.95
	Vic Avenger	18.95
	Superslot	18.95
	Jupiter Lander	18.95
	The Sky is Falling	18.95
	Radar Rat Race	18.95
	Midnight Drive	18.95
	Mole Attack	18.95
SOFTWARE	Programmable Character 34	9.95
	Personal Finance 240	37.95
	Educational & Game 272	37.95
	Programmer's Aid 12	37.95

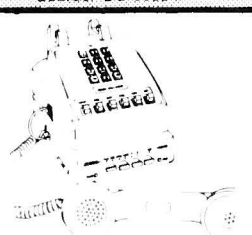
NEC hardware available at manufacturer's cost. 8000 Series and Advanced Personal Computer Series.

Contact **Pirate Software, Inc.**, 3308 Midway Drive, Suite 544 San Diego, California 92110, Phone: 619-223-5566, Ext. 544

FYTRON

FYTRON, INC., Dept. GDS
4765 Walnut Street
Boulder CO 80301

Fytron's 300 Baud Handset Modem is a highly reliable, low cost modem ideally suited to the personal computer owner as well as the small business manager. Easy to hook up and use, the HS 3000 operates in the Originate/Answer and Full/Half Duplex modes, with a self test mode. The HS 3000 is compatible with the Bell 100 series, and is fully guaranteed for one year. Retail price is $139.95. Order from FYTRON, INC., Dept. GDS, 4765 Walnut Street, Boulder CO 80301. VISA and MasterCard welcome.




```
SLOT TO LINK AND< SPACE>, = FOR ALL, ? FOR SELECT,
  N(EW FILE, Q(UIT, A(BORT

LINK CODE FILE -> *SYSTEM.LIBRARY
        0-(30) LONGINTI   2452      8-    0
        1-(31) PASCALIO   1238      9-    0
        2-(28) CHAINSTU    214     10-    0
        3-(29) TRANSCEN   1202     11-    0
        4-(20) TURTLEGR   5202     12-    0
        5-(21) TURTLEGR    386     13-    0
        6-(22) APPLESTU    678     14-    0
        7-                   0     15-    0

OUTPUT CODE FILE -> *SYSTEM.LIBRARY
CODE FILE LENGTH - 34
        0-(30) LONGINTI   2452      8-    0
        1-(31) PASCALIO   1238      9-    0
        2-(28) CHAINSTU    214     10-    0
        3-(29) TRANSCEN   1202     11-    0
        4-(20) TURTLEGR   5202     12-    0
        5-(21) TURTLEGR    386     13-    0
        6-(22) APPLESTU    678     14-    0
        7-                   0     15-    0
```

Figure 3. Library program screen display after execution of "=" command. The top portion of the display shows contents of the original library, while the new bottom portion reflects the contents of the library under construction—that is, the OUTPUT CODE FILE.

bar (or return). Now, your screen should resemble figure 5. CharTools has been copied from slot 1 in its original code file to slot 7 in the new library file.

At this point, you may elect to press the A (Abort) key, which will end the library construction process and leave the original *System.Library untouched. You should press Q (Quit) instead, however, so that the new, expanded version of *System.Library will replace the old. Before going ahead with the Q command, the Library program will ask you for a "Notice" and then wait for you to respond with a line of arbitrary text. Software developers may wish to respond with a legal copyright notice. The text is then embedded within the new library code file. The average amateur programmer cares little for copyright and thus usually responds to the "Notice" prompt with a simple tap of the return key. For purposes of this example, you should do likewise.

CharTools is now part of your own System.Library. This means that

```
SLOT TO LINK AND <SPACE>, = FOR ALL, ? FOR SELECT,
  N(EW FILE, Q(UIT, A(BORT

LINK CODE FILE -> CHARTOOLS.CODE
        0-                0      8-    0
        1-(24) CHARTOOL   242      9-    0
        2-                  0     10-    0
        3-                  0     11-    0
        4-                  0     12-    0
        5-                  0     13-    0
        6-                  0     14-    0
        7-                  0     15-    0

OUTPUT CODE FILE -> *SYSTEM.LIBRARY
CODE FILE LENGTH - 34
        0-(30) LONGINTI   2452      8-    0
        1-(31) PASCALIO   1238      9-    0
        2-(28) CHAINSTU    214     10-    0
        3-(29) TRANSCEN   1202     11-    0
        4-(20) TURTLEGR   5202     12-    0
        5-(21) TURTLEGR    386     13-    0
        6-(22) APPLESTU    678     14-    0
        7-                   0     15-    0
```

Figure 4. Library program screen display after selection of the file Chartools.code as N(ew LINK CODE FILE. Note that the name of the UNIT is now "CHARTOOL" instead of "CHARTOOLS," since the original identifier was truncated to eight characters by the compiler. Even though a new LINK CODE FILE has been selected, the OUTPUT CODE FILE has not changed in any way.

any program you write will be able to call upon the objects defined within CharTools by including a simple declaration:

```
USES CharTools;
```

Regular versus INTRINSIC—Round 1. It is true, of course, that each of the two kinds of UNITs requires you to learn and use a cumbersome utility program. But the linker must be used to produce an executable code file *every* time the *client* of a regular UNIT is compiled (or recompiled). In contrast, Library is used only rarely, when installing a UNIT (or other code segment) in the System.Library (or other library file). A library UNIT never has to be reinstalled unless the programmer desires to change or update it. Modifications to client programs never require the reinstallation of library code.

For programmers who are not afraid to handle their own segment number allocation, then, INTRINSIC UNITs can indeed be more convenient to use, overall, than regular ones. Those programmers who do not write their own UNITs, but instead write client software that uses UNITs produced by others, will find INTRINSICs much easier to use than regular UNITs, since no linking step is necessary.

A Present in Your Future. Go away for a month and experiment with UNITs, both regular and INTRINSIC. Certainly you should try writing, linking, and installing your own. Also, if you're the adventurous sort (and what are you doing here if you're not?), you might try using some of the INTRINSIC UNITs that Apple provides in the standard System.Library, particularly those that permit access to the Apple's graphic and musical capabilities. You'll find that these UNITs are described well in the official manuals. While you're having fun, keep this question in the back of your mind:

Suppose that you make your living by developing software for the mass market. In a frenzy of inspiration and activity, you create *CEO* (Chief Executive Officer), the world's most comprehensive, well-integrated business software system. You expect sales volume to reach the millions, or at least the hundreds of thousands. *CEO* depends upon a marvelous package of subroutines, Whizunit, which you also intend to use in other software products. Should Whizunit be a regular UNIT or an INTRINSIC one? Next time, we'll explore the issues involved in deciding which type of UNIT is best in a particular situation. You'll also receive a year-end present in the form of a UNIT that implements a new

```
SLOT TO LINK AND < SPACE>, = FOR ALL, ? FOR SELECT,
  N(EW FILE, Q(UIT, A(BORT

LINK CODE FILE -> CHARTOOLS.CODE
        0 -                0        8 -        0
        1 - (24) CHARTOOL  242      9 -        0
        2 -                0       10 -        0
        3 -                0       11 -        0
        4 -                0       12 -        0
        5 -                0       13 -        0
        6 -                0       14 -        0
        7 -                0       15 -        0

OUTPUT CODE FILE -> *SYSTEM.LIBRARY
CODE FILE LENGTH - 38
        0 - (30) LONGINTI  2452     8 -        0
        1 - (31) PASCALIO  1238     9 -        0
        2 - (28) CHAINSTU   214    10 -        0
        3 - (29) TRANSCEN  1202    11 -        0
        4 - (20) TURTLEGR  5202    12 -        0
        5 - (21) TURTLEGR   386    13 -        0
        6 - (22) APPLESTU   678    14 -        0
        7 - (24) CHARTOOL   242    15 -        0
```

Figure 5. Library program screen display after UNIT CHARTOOLS was moved from slot 1 in the LINK CODE FILE to slot 7 of the OUTPUT CODE FILE. Note that changing CHARTOOLS's slot assignment in moving it to a new file does not affect the segment assignment (in parentheses). The newly constructed library file now occupies thirty-eight disk blocks.

Why Your Apple Needs DAVID-DOS™

Your Apple is easier to use and runs much faster with this new, licensed by Apple, DOS 3.3 update.

DAVID-DOS (rhymes with moss), is rated AA, (top of its class), by the highly respected software review magazine PEELINGS II.

Novices and Pros

DAVID-DOS is licensed by programmers for inclusion in the software they sell. 30 out of 60 bought it on the spot when DAVID-DOS was demonstrated at the Original Apple Corps, UCLA. DAVID-DOS receives applause from Apple novices. That's why you need DAVID-DOS.

What's Going On

Every Apple II/IIe boots up with DOS 3.3 software.* DOS 3.3 is right there on the first three tracks of all your program disks. Your Apple is supervised constantly by DOS 3.3.

Easier and 5 Times Faster

Our Installation Program goes in and makes specific permanant improvements to DOS 3.3 on all your disks in a few seconds. (The programs on your disks are not touched). From then on your programs load up to 5 times faster. And you have new features that make your Apple easier to use.

*Exceptions are Pascal & CPM Operating Systems.

Apple II and Applesoft are trademarks of Apple Computer inc.

100 Sectors in 7 Seconds

Speed Load Applesoft, Integer & Binary 100 sector programs in 7 seconds. Tload Random and Sequential Text Files at the same speed with a simple command.

Automatic Card Support

Automatically supports an Integer or Applesoft Rom Card in Any slot (without configuring). Single key stroke Catalog and Catalog Abort. Shows Free Sectors Left on each Catalog.

Nine New DOS Commands

1. TLOAD speeds loads all Text Files.
2. TLIST lists all Random/Sequential Text Files.
3. DUMP Binary/Ascii to screen or printer.
4. DISA dissembles Binary to screen/printer.
5. AL prints program Address & Length.
6. / Single keystroke, second Catalog command.
7. HIDOS moves DOS to the Language Card.
8. FIND hex group in 64K memory in 3 seconds.
9. DATE prints out. Use with Mtn. clock card. Commands 8 & 9 in Hidos only.

10K More Memory

These nine commands operate identical to existing DOS commands. Use A or A$ for address and L or L$ for length. Enter new commands on the Keyboard and use them in Basic programs with the familiar D$. Use HIDOS in Hello program for turnkey startup, adding 10K free memory.

Variable Speed Scrolling

TLIST, DUMP, and DISA Features are:

1. Print with PR#.
2. Key operated variable speed control.
3. Instant pause with Space Bar.
4. Exit anytime with Return Key.

Compatible

All DOS entry addresses have been preserved. DOS is Same length and compatible with most software. David-Dos is copyable and creates fully copyable updated disks. Init areas were used for David-Dos. Works with all Apple IIs including IIe 80 Col. Requires 48K. Complete documentation for screen or printing and many utilities are on the disk.

California residents add 6½% sales tax. **$39.95** Foreign add $2.00.

DAVID DATA™

To Order: Send Check To
12021 WILSHIRE BLVD., SUITE 212C
LOS ANGELES, CA 90025 (213) 478-7865

and interesting data type: *rational* numbers. Chances are you'll be sorry if you miss out, so don't!

```
 1   1 1:D  1 (*$S+*) (* swapping is REQUIRED on Apple II *)
 2   1 1:D  1 UNIT
 3   1 1:D  1   CharTools;
 4  24 1:D  1 INTRINSIC CODE 24; (* assigned to segment #24 *)
 5  24 1:D  1 (* Various tools that are useful for
 6  24 1:D  1    manipulating Char values.
 7  24 1:D  1
 8  24 1:D  1    VERSION 1.3: 15 September 1983
 9  24 1:D  1 *)
10  24 1:D  1
11  24 1:D  1
12  24 1:D  1 INTERFACE
13  24 1:D  1   CONST
14  24 1:D  1     Blank =         ' ';
15  24 1:D  1
16  24 1:D  1     NoDigit =       -MaxInt;
17  24 1:D  1
18  24 1:D  1   FUNCTION
19  24 2:D  3     Capital(Ch
20  24 2:D  3                   :Char)
21  24 2:D  4       :Char;
22  24 2:D  4   (* Return Ch, converted to upper case
23  24 2:D  4      (capital), if Ch is lower case.  *)
24  24 2:D  4
25  24 1:D  4   FUNCTION
26  24 3:D  3     LowerCase(Ch
27  24 3:D  3                     :Char)
28  24 3:D  4       :Char;
29  24 3:D  4   (* Return Ch, converted to lower case
30  24 3:D  4      if Ch is capital alphabetic.  *)
31  24 3:D  4
32  24 1:D  4   FUNCTION
33  24 4:D  3     ASCII(Ch
34  24 4:D  3                 : Char)
35  24 4:D  4       :Char;
36  24 4:D  4   (* Return Ch, translated to ASCII range.
37  24 4:D  4      In other words, clear the high bit of Ch,
38  24 4:D  4      and return the result.
39  24 4:D  4   *)
40  24 4:D  4
41  24 1:D  4   FUNCTION
42  24 5:D  3     Alphabetic(Ch: Char)
43  24 5:D  4       :Boolean;
44  24 5:D  4   (* Return True iff Ch is an alphabetic character.  *)
45  24 5:D  4
46  24 1:D  4   FUNCTION
47  24 6:D  3     Digit(Ch: Char)
48  24 6:D  4       :Boolean;
49  24 6:D  4   (* Return True iff Ch is a numeric character. *)
50  24 6:D  4
51  24 1:D  4   FUNCTION
52  24 7:D  3     AlphaNumeric(Ch: Char)
53  24 7:D  4       :Boolean;
54  24 7:D  4   (* Return True iff Ch is either alphabetic or
                   numeric *)
55  24 7:D  4
56  24 1:D  4   FUNCTION
57  24 8:D  3     DigitValue(Ch: Char)
58  24 8:D  4       :Integer;
59  24 8:D  4   (* Return Integer value represented by Ch if Ch is
60  24 8:D  4      a digit; otherwise return NoDigit.
61  24 8:D  4   *)
62  24 8:D  4
63  24 1:D  4 IMPLEMENTATION
64  24 1:D  1
65  24 1:D  1   FUNCTION
66  24 1:D  3     Capital(* Ch
67  24 1:D  4                 :Char)
68  24 2:D  4       :Char *);
69  24 2:D  4   (* Return Ch, converted to upper case
70  24 2:D  4      (capital), if Ch is lower case. *)
71  24 2:0  0   BEGIN (* Capital *)
72  24 2:1  0     Capital := Ch; (* No change unless lower
                                    case *)
73  24 2:1  3     IF ((Ch >= 'a') AND (Ch <= 'z'))
74  24 2:1 10       THEN (* it's a lower-case letter - transform
                          it! *)
75  24 2:2 12         Capital := Chr(Ord(Ch) - Ord('a') +
                        Ord('A'));
76  24 2:2 19       (* Otherwise, it's not a lower-case letter, so
                      leave it
77  24 2:2 19          alone. *)
78  24 2:0 19   END  (* Capital *);
79  24 2:0 32
80  24 1:0 32   FUNCTION
81  24 1:D  3     LowerCase(* Ch
82  24 1:D  4                 :Char)
83  24 3:D  4       :Char *);
84  24 3:D  4   (* Return Ch, converted to lower case
85  24 3:D  4      if Ch is capital alphabetic. *)
86  24 3:0  0   BEGIN (* LowerCase *)
87  24 3:1  0     LowerCase := Ch; (* No change unless
                                      capital *)
88  24 3:1  3     IF ((Ch >= 'A') AND (Ch <= 'Z'))
89  24 3:1 10       THEN (* it's a capital letter - transform it! *)
90  24 3:2 12         LowerCase := Chr(Ord(Ch) - Ord('A') +
                        Ord('a'));
91  24 3:2 19       (*Otherwise, it's not a capital letter, so leave it
92  24 3:2 19          alone. *)
93  24 3:0 19   END  (* LowerCase *);
94  24 3:0 32
95  24 1:0 32   FUNCTION
96  24 1:D  3     ASCII(* Ch
97  24 1:D  4             : Char)
98  24 4:D  4       :Char *);
99  24 4:D  4   (* Return Ch, translated to ASCII range.
100 24 4:D  4      In other words, clear the high bit of Ch,
101 24 4:D  4      and return the result.
102 24 4:D  4   *)
103 24 4:D  4     CONST
104 24 4:D  4       HighBit =       128;
105 24 4:0  0   BEGIN (* ASCII *)
106 24 4:1  0     ASCII := Chr(Ord(Ch) MOD HighBit);
107 24 4:0  7   END      (* ASCII *);
108 24 4:0 20
109 24 1:0 20   FUNCTION
110 24 1:D  3     Alphabetic(* Ch: Char)
111 24 5:D  4       :Boolean *);
112 24 5:D  4   (* Return True iff Ch is an alphabetic character. *)
113 24 5:0  0   BEGIN (* Alphabetic *)
114 24 5:1  0     Alphabetic := (Ch IN ['A'..'Z', 'a'..'z']);
115 24 5:0 24   END  (* Alphabetic *);
116 24 5:0 36
117 24 1:0 36   FUNCTION
118 24 1:D  3     Digit(* Ch: Char)
119 24 6:D  4       :Boolean *);
120 24 6:D  4   (* Return True iff Ch is a numeric character. *)
121 24 6:0  0   BEGIN (* Digit *)
122 24 6:1  0     Digit := ((Ch >= '0') AND (Ch<= '9'));
123 24 6:0  9   END  (* Digit *);
124 24 6:0 22
125 24 1:0 22   FUNCTION
126 24 1:D  3     AlphaNumeric(* Ch: Char)
127 24 7:D  4       :Boolean *);
128 24 7:D  4   (* Return True iff Ch is either alphabetic or
                   numeric *)
129 24 7:0  0   BEGIN (* AlphaNumeric *)
130 24 7:1  0     AlphaNumeric := (Ch IN ['0'..'9', 'A'..'Z',
                    'a'..'z']);
131 24 7:0 24   END  (* AlphaNumeric *);
132 24 7:0 36
133 24 1:0 36   FUNCTION
134 24 1:D  3     DigitValue(* Ch: Char)
135 24 8:D  4       :Integer *);
136 24 8:D  4   (* Return Integer value represented by Ch if Ch is
137 24 8:D  4      a digit; otherwise return NoDigit.
138 24 8:D  4   *)
139 24 8:0  0   BEGIN (* DigitValue *)
140 24 8:1  0     IF ((Ch >= '0') AND (Ch <= '9'))
141 24 8:1  7       THEN
142 24 8:2  9         DigitValue := (Ord(Ch) - Ord('0'))
143 24 8:1 12       ELSE
144 24 8:2 16         DigitValue := NoDigit;
145 24 8:0 22   END  (* DigitValue *);
146 24 8:0 34
147 24 8:0 34 (* No initialization section necessary for this UNIT. *)
148  1 1:0  0 END (* CharTools *).
```

A teacher for the Apple

Meet Lee McFadden, your personal guide to the Apple //e. *Softalk Magazine* has praised Lee's audio cassette tapes as "a superior way to learn about an Apple." And Apple itself chose them to train its own field sales reps.

The reason? FlipTrack's carefully sequenced cassette lessons let you learn in the most natural way possible—by sitting down with a knowledgeable friend. Even if you have never touched a computer, in just 3 step-by-step sessions you will learn to:

- Use each special key and essential command
- Load and run programs
- Save programs and data
- Copy programs and diskettes
- Protect and modify programs
- And much more!

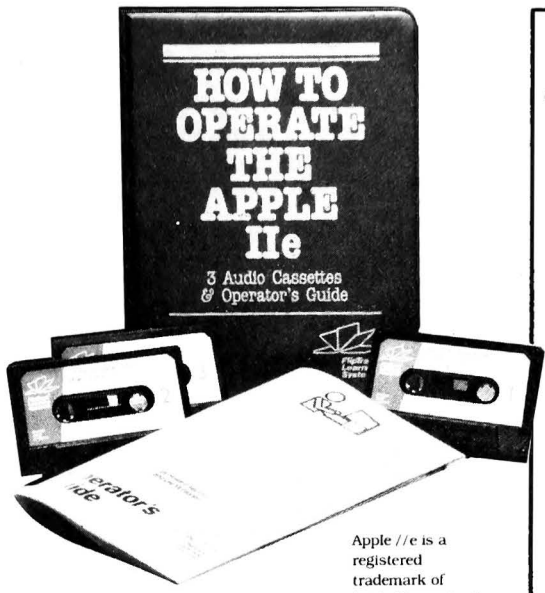
In short, you will be able to use existing programs with confidence, as you enter your own data, organize your files and understand the principles of what you and your computer can do. If you later decide to take up programming, you'll have the solid background necessary.

A Proven Teaching Approach

With interactive FlipTrack cassettes, you learn by doing. No reading required. You learn at your own convenience, at your own pace, on your own computer—like having a personal tutor "talk you through" each procedure.

You work directly with Apple's own 3.3 System Master and Sample Programs diskettes, trying the commands and programs you want to master, and seeing the results. No secondhand simulations.

Best of all, the patented FlipTrack format of the tapes lets you choose the subjects that interest you, covering as much or as little detail as you want. And a fully indexed Operator's Guide provides an invaluable, on-going reference.



Apple //e is a registered trademark of Apple Computer, Inc.

Moneyback Guarantee

Order from us on a 15-day "right of return" basis. Try a lesson or two yourself. Share them with others—friends, family, students or staff. If you're not delighted at how quickly and easily you begin to learn, simply return the program in its original condition for a full refund. No questions asked.

To Order:

Drop by your local dealer for a demonstration. Fill out the coupon below, and mail it. Or Visa and MasterCard holders may order TOLL FREE:

(800) 222-FLIP

In Illinois, call (312) 790-1117.

Other tested "how to" courses from FlipTrack:

Computer Operation

- ☐ Apple //e $57.00
- ☐ Apple II Plus $57.00
- ☐ Apple /// $110.00
- ☐ IBM PC $57.00
- ☐ IBM XT $75.00
- ☐ Franklin Ace 1000 . $57.00

Word Processing

- ☐ WordStar $57.00
- ☐ WordStar & MailMerge $75.00
- ☐ AppleWriter $57.00
- ☐ EasyWriter II $57.00

Spreadsheets

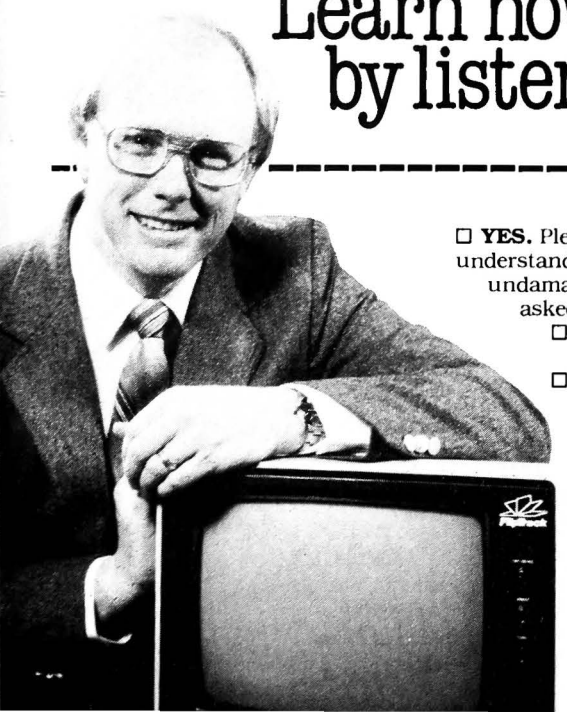
- ☐ VisiCalc $75.00
- ☐ SuperCalc $75.00
- ☐ Multiplan $75.00
- ☐ Lotus 1-2-3 ..... $75.00

Operating Systems

- ☐ CP/M $60.00
- ☐ CP/M-86 ..... $75.00

FlipTrack Learning Systems acknowledges the trademarks above as belonging to the companies whose products they describe.

Learn how to operate your Apple IIe by listening to a friend.



☐ **YES.** Please rush me the courses I've checked above. I understand that if I'm not delighted, I may return any course undamaged within 15 days for full refund. No questions asked.

- ☐ Check enclosed. (Include $2.50 for shipping. Illinois customers add 5.5% sales tax.)
- ☐ Charge my credit card:
  - ☐ VISA ☐ MasterCard

No. _____ Expires _____

Name _____

Address _____

City _____ State _____ Zip _____

Signature _____

Outside USA, add $10 per unit.

FlipTrack Learning Systems

Dept. ST-E
999 Main, Suite 200
Glen Ellyn, IL 60137
(312) 790-1117

FlipTrack Learning Systems is a division of Mosaic Media, Inc.

DOS

Filing Made Easy

PART 2

by Christopher U. Light

As we saw last month, text files are the Apple's way of storing and retrieving data on floppy disks. They are the information files that contain address lists, telephone numbers, numerical data points for scientific studies, and the words for this article.

Both kinds of text files, sequential and random access, are created, altered, saved, and loaded only from programs, usually Basic programs. They cannot, unfortunately, be written or read directly from the keyboard. Therefore it is essential that a user take the point of view of a Basic program when approaching text files. Always keep in mind that input refers to data being transferred from a text file into the computer's memory, while output refers to data being transferred from the computer out to the file on disk.

Open Season on Text Files. Four commands are common to all text files, and all four must be followed by the name of the file they refer to. The command *open filename* checks the disk to see if a file with the specified name exists. If not, it creates the file on the disk and reserves a 595-byte buffer in the Apple's memory. The buffer is used for temporary data storage of input and output for that file. *Write filename* prepares DOS to accept the next print commands as an order to send data to the disk instead of the screen. *Read filename* tells DOS to treat the next set of input commands as instructions to get data from the disk file with that name rather than from the keyboard. And *close filename* saves on the disk whatever is still in its buffer and then releases the buffer memory back to Applesoft's control.

As with all DOS commands issued by a Basic program, text file commands must be issued as print commands to bypass Applesoft and contact DOS directly. A program that will use several DOS commands should contain the command *D$ = CHR$(4)*, which defines the string variable D$ as control-D, the signal to get DOS's attention. Thereafter, the statement *print D$; "command"* will treat anything within the quotation marks as a DOS command.

Random Access Files. Of the two types of text files, random access files are simpler to use than sequential ones, although they require a bit more care. They're designed for mailing lists and similar applications where it's necessary to find and make changes in one part of the file without disturbing the other parts. Random access files are subdivided into records, all of which must be the same length, and these records are further subdivided into fields, whose length can vary. Think of the file itself as an expandable file folder and the records as sheets of paper in the folder. You can add and subtract pieces of paper, but each sheet must be the same size as all the others. Fields, then, are like words written on the pieces of paper. The lengths of the words themselves can vary, and there


BILLS
GAS
AUTO
NSURANCE
IN USE
disk II

is no specific limit to the number of words. However, when the total number of characters fills the metaphorical page, then the record is full. Just as a page can be blank, a record can exist but be empty. If DOS is searching a file and finds an empty record or field, it will assume it's reached the end and will stop with an end of data error message, even though there may be valid records beyond that one. Therefore it's best not to leave an empty record in the file.

Only the four text file commands we talked about last month are needed to use random access files, but the commands have to be followed by parameters that modify them. In fact, if the parameters are omitted, DOS assumes that the commands refer to sequential files rather than random access ones. A parameter following the open command is used to specify the length of each record in a random access file. The statement takes the form *open filename, L100*, where L indicates the length parameter and the length is one hundred bytes. The maximum record length permitted is a very generous 32,767 byes. Because it's essential for you to remember the length of the records in a file, and because DOS 3.3 doesn't contain any way to read the record length of a file, it's a good idea to include the number of bytes in the file name. Each character sent to a text file, including spaces and returns, requires one byte. Unused bytes at the end of a record will be part of that record but will remain blank.

Read and write work with random access files in much the same way they work with sequential files. They still act to instruct input and print to operate on a disk file instead of the keyboard and the monitor. With random access files, however, you can instruct read and write to work with a specific record using the record parameter. Such a command takes the form *write filename, R10*, which tells print to send data to the tenth record in the specified file. The command *close filename* requires no parameters. Let's see how these commands and parameters work together by creating a rudimentary phone list. Type *new* and then enter the following program. Save it under the name Write.phonefile.35. We will assume that no record will require more than thirty-five bytes, so we'll use thirty-five as the record length and include it in the name of the text file. That way we'll always know how long the records are.

```
3   NAME$(1) = "ADAMS J. 123-1776"
5   NAME$(2) = "AIRLINE 1-800-BZZ-BUSY"
7   NAME$(3) = "MILLER G. PA 6-5000"
10  D$ = CHR$(4)
20  PRINT D$; "MONICO"
30  PRINT D$; "OPEN PHONEFILE.35,L35"
40  PRINT D$; "WRITE PHONEFILE.35,R1"
50  PRINT NAME$(1)
60  PRINT D$; "WRITE PHONEFILE.35,R2"
70  PRINT NAME$(2)
80  PRINT D$; "WRITE PHONEFILE.35,R3"
90  PRINT NAME$(3)
100  PRINT D$; "CLOSE PHONEFILE.35"
```

What you should have on your disk after running this program is a short random access file containing three records. Each record has one name and phone number linked together as a single string. Line 30 ends with the parameter *L35* to tell DOS that each record will be 35 bytes long. Line 40 ends with *R1* to indicate that the next print command places data into record 1. The parameters *R2* and *R3* work the same way in lines 60 and 80.

If we wish to retrieve only the second record, we can structure our read program to do just that. Type *new*, enter the following program, save it as Read.Phonefile.35, and run it.

```
10  D$ = CHR$(4)
20  PRINT D$; "OPEN PHONEFILE.35,L35"
30  PRINT D$; "READ PHONEFILE.35,R2"
40  INPUT NAME$
50  PRINT D$; "CLOSE PHONEFILE.35"
60  HOME: PRINT NAME$
```

Because the mon command was turned on by the previous program and never turned off, you should see the disk I/O commands for an instant. Then, after your program has notified DOS that it's through with the text file, the screen will clear and you'll see the second name from your list. The second name was read because you specified record 2 in your read command in line 30. You'll note that we used the length parameter again in the open command. This parameter is necessary every time a random access file is opened. If you don't specify the same length in the program that reads the file as you did in the one that wrote the file, you'll be in trouble. DOS uses this parameter to count characters to see where one record ends and the next begins. If you don't treat a given file consistently, you'll probably end up with garbled records. It's also up to you to make sure that any record you enter is no longer than the length specified. DOS doesn't check or print out an error message if, say, you put a forty-byte name into a thirty-five-byte record. Instead, it will probably write over part of the next record. If you want a routine that counts characters in a string before it is sent to the disk (and gives you an error message if the string is too long), you'll have to do it yourself in Applesoft. Here's one possibility:

```
100  IF LEN(NAME$(I)) > 35 THEN 9999
9999  PRINT "RECORD LENGTH EXCEEDED": GOTO 60
```

The Write.Phonefile.35 program suffers badly from redundant coding. Load and list it and then make the following changes. Delete lines 40 through 90 and add the following lines:

```
40  FOR I = 1 TO 3
50  PRINT D$; "WRITE PHONEFILE.35,R";I
60  PRINT NAME$(I)
70  NEXT I
```

By setting your loop to whatever size you need (and dimensioning name$ if you have more than ten names) you can enter any number of records. Save the new write program and then change Read.Phonefile.35 as follows:

```
15  I = 2
30  PRINT D$; "READ PHONEFILE.35,R";I
```

In both programs, using I for the record parameter allows us to vary the record handled by the read and write commands. The last obvious step is, of course, to let the user enter and retrieve the names in the file from the keyboard. Once again, change and save Write.Phonefile.35 as follows:

```
3   FOR I = 1 TO 3
5   INPUT "ENTER A NAME "; NAME$(I)
7   NEXT I
```

Then change line 15 in Read.Phonefile.35 to

```
15  INPUT "WHICH RECORD NUMBER? ";I
```

Now, when you run the write program, it will ask you to type the names and phone numbers and will save them in the file in the order you enter them. The read program will ask you for the number of the record you'd like to see and will display only that one.

Changing what is stored in a record is simply a matter of reading it, printing it on the screen to make sure you have the correct one, entering the replacement string, and writing the new record to the disk using the same record number. To see this, enter and run the following program. When you're done, save it as Change.Phonefile.35.

```
10  D$ = CHR$(4)
20  INPUT "WHICH RECORD? ";I
30  PRINT D$;"OPEN PHONEFILE.35,L35"
40  PRINT D$;"READ PHONEFILE.35,R";I
50  INPUT NAME$
60  HOME: PRINT NAME$
70  PRINT D$;"CLOSE PHONEFILE.35"
80  INPUT "REPLACE THIS RECORD? (Y OR N)";A$
90  IF A$ = "Y" THEN 110
100  GOTO 200
110  INPUT "ENTER NEW NAME AND NUMBER "; NAME$(I)
120  PRINT D$;"OPEN PHONEFILE.35,L35"
130  PRINT D$;"WRITE PHONEFILE.35,R";I
140  PRINT NAME$(I)
150  PRINT D$;"CLOSE PHONEFILE.35"
200  END
```

It's a nuisance, of course, to have to reenter a complete record just to change part of it. It's also a good way to allow errors to creep in. Therefore, records within random access files can be subdivided into segments called fields, and each field can be changed without affecting the others. From the standpoint of the text file, fields are groups of characters separated by carriage returns. From the standpoint of the Basic program controlling the text file, each field is a different string or

ACCOUNTING SOFTWARE

for Portable, Personal and Desktop Computers

Available for these popular 8-bit and 16-bit microcomputer formats:

All CP/M® 8" Computers (SD)
All IBM PC Compatibles
TRS-80 Model 2 (with CP/M)
TRS-80 Model 4 (with CP/M)
Apple II (with CP/M)
Apple IIe (with CP/M)
Franklin ACE (with CP/M)
Morrow Micro Decision
Northstar Advantage
Corona PC & Portable
Corona Portable
COMPAQ Portable
Hyperion Portable
Seequa Chameleon
TI Professional
Columbia MPC
Osborne Executive
Osborne I (SD)
Osborne I (DD)
DEC VT-180
CompuPro
Xerox 820
IBM PC
IBM XT
KayPro II
KayPro 10

Call about other formats



SATISFACTION GUARANTEED or Your Money Back

Complete Package of Software, Training Aids, Manuals, and Users' Newsletter

"...for several years the defacto standard for microcomputer software, and still a good example of some of the better thought-out software on the market." —Interface Age

ONLY
$395
CP/M format

$495
IBM format

Desktop Accountant™

FULL-FEATURE, FULLY-INTEGRATED ACCOUNTING SYSTEM

Everything you need to keep the books...at a price you can afford!

Your Bookkeeper, Accountant, and Banker will *love* you for installing this fine system!

Check these features:

This remarkably-valued Accounting System will manage your company's business records and **automate your entire bookkeeping process**—from the posting of individual transactions to producing up-to-the-minute Income Statements, Balance Sheets, and other important management reports. Desktop Accountant™ gives you a "Big Company," professional image with **printed** invoices, statements, and checks. It is **user-friendly, completely menu-driven,** offers **system-prompted data entry,** and is compatible with both floppy and hard disks. Feature-for-feature, and dollar-for-dollar it is **the best software value on the market!** But don't let the **low price** fool you. Desktop Accountant™ is **not a "cheap" accounting system, only inexpensive.** That's because original development costs were recovered years ago allowing us to sell **an excellent product** in high volume at low prices and still earn a fair profit. This **high-quality, reliable software** was designed and written in 1975 for small-to-medium sized businesses. Since then, **it has successfully proven itself in well over 10,000 companies** in all 50 states and in 13 foreign countries. It is also used and recommended by **hundreds** of bookkeepers, accountants and CPA's, including the regional offices of several famous "Big Eight" accounting firms! No other Accounting System offers you so many features, benefits, and valuable extra services. You can pay more but you can't buy more! Desktop Accountant™ is backed by our 30-day, no-risk, **money-back guarantee** of 100% customer satisfaction! Call for **free literature** or order now with complete confidence.

Read What Users Say...

"Two hours after receiving the Desktop Accountant I was up and running live data, and generated an entire month's work and financial statements the following day."
—J.C. Bartels, President
(accounting firm) Gonzales, Texas

"To get anything better we would have had to spend multiple thousands of dollars. I think it's a dynamite package for the money."
—Bob Cox, V.P. General Mgr. *LETTERS ON FILE*
(manufacturing company) San Antonio, Texas

Here's what you get:

1. A professional-quality, full-feature, fully-integrated accounting system. **2.** Six-to-fourteen diskettes (depending on your system's disk storage capacity). **3.** Four easy-to-follow, self-teaching User's Manuals (over 540 pages!) that are **highly rated by satisfied users. 4.** An exclusive, new **audio cassette tape** with **step-by-step instructions** for quick installation and start-up. **5.** "Read Me First" a unique 40-page system guide and start-up aid. **6. Complete sample data and sample reports** for practice and training...a big help to new users. **7. FREE 1-year subscription to Users' Newsletter,** "Debits and Credits." It's full of tips, ideas, news, and useful suggestions from us and other users. Recent issues have run over 20 pages long! **8. FREE complete Source Code** in popular MBASIC so you can easily customize *any* program to suit your special needs. **9.** Telephone "Hot Line" service for helpful Installation support, Start-up support, Technical support, and Training support. The quality of our cheerful customer support has been acclaimed **"excellent," "first-rate,"** and **"very courteous and professional"** by our users. **10.** Access to our growing network of **Experienced User Consultants**™ in both the U.S. and Canada. These qualified, knowledgeable businesspeople themselves own this fine software and are available to assist you with almost any aspect of installation, training, operation—or even customization, if desired. You'll receive the latest **Directory** of these helpful Consultants.

Look who's using it:

Here is a sample (taken from our customer files) of the wide variety of businesses successfully using this time-tested, solidly-established, user-proven software:

• Bookeeping services • CPA/Accounting firms • Construction companies • Wholesale Florists • Retail Florists • Printers • Insurance Agencies • Shopping Centers • Machine Shops • Engineering firms • Software Companies • Computer retailers • Publishers • Financial services companies • Investors • Appliance service firms • Dairies • Boilerworks • University Business School • Catholic Diocese • Baptist Ministeries • Sail Maker • Convalescent Hospital • Car Wash • Public Library • Cement Plant • Industrial products manufacturing companies • Mortuary • Coal Company • TV/Film producers and distributors • General Store (in Alaska!) • Health services organization • Government Agencies • Record and Tape stores • Trade Association • Graphics firms • Office products companies • Real Estate firms • Oil Products distributor • Instrument Company • Hydraulic Products company • Outdoor Expeditions company • Many types of schools • Chiropractors • Physicians • Landscapers • Law firms • Restaurants • Plumbing Companies • Railroad • Farmers • Banks • Consultants • and many, many, more!!

A Complete System!

includes all four standard general accounting programs:

GENERAL LEDGER is completely integrated to automatically post end-of-month transactions from A/R, A/P and Payroll. It **prints 13 detailed reports** for the entire company, and optional **Income Statements for up to 99 departments.** It produces up-to-the-minute **comparative financial statements** with current, year-to-date, budget, and last year (month and YTD), showing **both dollar amounts and percentages,** and presents everything you, your bookkeeper, and your accountant need to know about the company • **G/L automatically reconciles all accounts,** and maintains extensive, **detailed audit trails** showing the source of each G/L entry for quick, easy, tracing • Trial Balance includes all transactions • **Flexible Chart of Accounts** • True double-entry bookkeeping • Master File capacity: 400 Accounts • Monthly Transactions capacity: 1,000 with 200K diskette; 3,500 with 500K diskette; 7,000 per Megabyte with a Hard Disk.

ACCOUNTS RECEIVABLE provides **instant, on-line customer account information (both current and aged),** with complete, timely invoicing, including open-item (or balance forward) and statement capabilities. It makes the entire billing process fast, easy, and efficient. It quickly identifies your overdue accounts, **helps speed collections,** helps control your cash flow, and assists you in making better financial decisions. Both detailed and summary **customer activity and aging reports** are instantly available • Preprinted forms available for **invoices and statements** • **Detailed audit trail** • Maintains comprehensive customer data files • **Produces 8 reports and documents** • Includes automatic periodic customer/client billing option which is ideal for service businesses • **Itemized monthly transactions** • Master File capacity: 400 Customers • Monthly Transactions capacity: 800 with 200K diskette; 3,500 with 500K diskette; 7,000 per Megabyte with a Hard Disk.

ACCOUNTS PAYABLE maintains complete vendor/voucher history and includes **check-writing** capabilities. **Current and aged payable reports** are available upon command. It prepares an extremely useful **cash flow/cash requirements report** that greatly improves management control of your most valuable resource—cash! It prints checks (on commercially available forms on which **your company name, address and logo can be imprinted**) with comprehensive check stubs that your vendors will appreciate • **Produces 11 reports and documents** • Automatic pay selection program allows payment by due date or by discount date • **Manual and automatic checkwriting** • Check register • **Detailed audit trail** • Itemized monthly transactions • Master File capacity: 400 Vendors • Monthly Transactions capacity: 800 with 200K diskette; 3,500 with 500K diskette; 7,000 per Megabyte with a Hard Disk.

PAYROLL is a complete, **easy-to-use** professional-quality payroll system. Be the office hero each week when the checks come out on time! This program **calculates payroll for every type of employee** (hourly, salaried, and commissioned) and **prints payroll checks** (with popular, comprehensive check stubs) with an absolute **minimum** of input. **Your company name and logo** can appear on these, too. • Stores and reports comprehensive employee and payroll information. • Maintains monthly, quarterly, and yearly totals for reporting purposes in **multiple states**(!) • Offers **user-maintainable Federal, State, and local tax tables**(!). • W-2 printing • 941 Reporting • **Produces 10 reports and documents** • Master File capacity: 400 employees. An **outstanding** Payroll package!

Produces 42 Reports & Documents:

General Ledger 1. Chart of Accounts 2. Chart of Accounts with summary dollar amounts 3. Chart of Accounts with prior year comparisons 4. Daily Transactions Report 5. Itemized Monthly Transactions 6. Balance Sheet 7. Balance Sheet with prior year comparison 8. Income Statement 9. Income Statement with prior year comparison 10. Departmental Income Statement(s) 11. Departmental Income Statement(s) with prior year comparison 12. Detail report for individual accounts 13. Trial Balance Statement

Accounts Receivable 1. Daily Transactions Report 2. Invoices (with or without preprinted forms) 3. Statements (with or without pre-printed forms) 4. Summary Aging Report 5. Detailed Aging Report 6. Itemized Monthly Transactions 7. Detailed Customer Activity Report 8. Summary Customer Account Report

Accounts Payable 1. Daily Voucher Report 2. Daily Credit Report 3. Checks with Detailed stubs 4. Check Register 5. General Ledger Transfer Report 6. Cash Requirements Report 7. Transaction Register 8. Open Voucher Report 9. Aged Payables Report 10. Detailed Vendor Activity Report 11. Summary Vendor Account Report

Payroll 1. Federal Tax Tables 2. State Tax Tables 3. Payroll checks with stubs 4. Payroll Check Register 5. Monthly Payroll Summary 6. Quarterly Payroll Summary 7. General Ledger Transfer Report 8. Detailed Employee File Listing 9. Produces 941 Worksheet 10. Prints annual W-2 Forms

System Requirements: Either CP/M® or MS-DOS (PC-DOS) • Microsoft BASIC • 64K RAM • Two disk drives or hard disk • 132 column wide carriage printer, or an 8½"x11" printer with compressed print mode (an Epson MX-80 or similar printer).

100% SATISFACTION GUARANTEE

No-Risk, 30-day Money-Back Guarantee

Order Desktop Accountant and evaluate it yourself for 30 days. Test the performance of each program using our comprehensive *Sample Data Files* to enter and process data, query accounts, print checks and reports, and more. Review the five User's Manuals, hear the Training Tape, read the users' Newsletter, even call our Technical Support Group with your questions. ***You must be completely satisfied*** with Desktop Accountant or you may return it in good condition *with the Sealed Master Disk UNOPENED* (it installs *your* live data) for a prompt, courteous, complete refund!

*Call for **FREE LITERATURE**, including sample reports, comparison chart, user letters, etc.*
Not sold in stores • Order today by Mail or Phone • Phone Orders Filled Promptly

Orders, Questions, and Literature Requests CALL NOW, TOLL-FREE

MasterCard VISA ☎ **1-800-832-2244**

Please mention Ad #120-G

In California call 1-800-732-2311

Technical Support Hotline (8 AM to 5 PM, Mon.–Fri.): (415) 680-8378

Send Orders To: 1280-C Newell Avenue, Suite 147-G, Walnut Creek, California 94596

• When ordering please mention or include the Ad number appearing near our telephone number • Orders shipped within 48 hours via UPS • Add $5.00 for faster 2-day Rush Air Service • California residents add 6½% Sales Tax • Payment by VISA/MasterCard/COD/MO/Cashier's Check • All Brand Names are manufacturers' registered Trade Marks • No sales to Dealers • Foreign orders please call or write before ordering • ©1983 Rocky Mountain Software Systems.

ROCKY MOUNTAIN SOFTWARE SYSTEMS
Specialists in Accounting Software

numeric variable. You'll need to think of them in both ways, as strings (or numbers) separated by returns when you write to the file and as separate variables (including subscripted ones) when you're reading from the file or manipulating the information in a Basic program. Since the print command always generates a return at the end unless it's followed by a semicolon, the returns will be inserted almost automatically; it's important, however, to remember that it's the return, not the print command, that actually separates the fields, because DOS searches for embedded returns to find the fields. To see how fields work, enter and run the following program:

```
3  FOR I = 1 TO 3
5  INPUT "ENTER NAME: ";NAME$(I)
7  INPUT "ENTER NUMBER: ";NUMBER$(I)
9  NEXT I
10  D$ = CHR$(4)
20  PRINT D$;"MONICO"
30  PRINT D$;"OPEN PHONEFILE.35,L35"
40  FOR I = 1 TO 3
50  PRINT D$;"WRITE PHONEFILE.35,R";I
60  PRINT NAME$(I): PRINT NUMBER$(I)
70  NEXT I
80  PRINT D$;"CLOSE PHONEFILE"
```

Changes must be made to Change.Phonefile.35 to make it handle two fields in each record. Now if you dimension your string variables and make your for-next loops realistically large, you'll find that you can make these three programs into a small but workable phone file or address list system.

If you want to add embellishments like sorting alphabetically or searching for a particular name, you can do these things with Applesoft routines. It's merely a matter of reading the entire text file into an array, manipulating the array as you wish, deleting the old file, and writing the new file back to the disk under the old name. If the file is too large to load all at once, you can still search or sort by loading, reading, and manipulating only one or a few records at a time.

As we've said before, the reason for deleting the old before saving the new is that, if the new file is shorter than the old, information still on the disk from the old file can become incorporated into the new file without warning. Also note that you must allow space in each record for the returns that separate the fields.

Sequential Files. If you want to use space on the disk as efficiently as possible, a sequential text file is the type to use, especially if you don't plan to change the data within the file once it's been entered. Essentially a sequential file is just the same as one long record from a random access file. Because it is the default condition, you'll get a sequential file if you don't specify a record length parameter on the open statement. Go back to the first program you entered and saved as Write.Phonelist.35 (the first one in this column). If you still have the original on disk, load it and make the following changes. Otherwise, reenter the program, changing these lines and deleting lines 60 and 80:

```
30  PRINT D$;"OPEN PHONEFILE"
40  PRINT D$;"WRITE PHONEFILE"
100  PRINT D$;"CLOSE PHONEFILE"
```

The important changes are the ones that remove the length parameter from the open command and the record number parameters from the write commands. In addition, since the new file will not have records of equal length, it's a good idea to eliminate the *.35* reminder at the end of the name of the text file itself. If you make a practice of always including the length in the name of a random access file and never putting a number at the end of the name of a sequential file, you'll be able to tell from the catalog which kind of file it is. This is important because DOS won't let you find out easily later on.

After running the new Write.Phonelist program, you should have on your disk a file called Phonefile, which contains three fields with names and numbers. The fields contain seventeen, twenty-two, and nineteen characters respectively. Each field in the file is actually one byte longer than these figures because it contains the return separating the fields. To read the file, run the following program:

```
10  INPUT "ENTER NUMBER OF FIELDS ";N
20  D$ = CHR$(4)
30  PRINT D$;"OPEN PHONEFILE"
```


THE AFFORDABLE ACCOUNTING PROGRAM

EZ-LEDGER The answer in the 80's for self-employed professionals or small businesses operating out of the home.

EZ-LEDGER uses the simplest form of bookkeeping possible. Single entry bookkeeping requires only posting transactions either under INCOME or EXPENSE.

EZ-LEDGER will keep track of expense items under any one of 99 user selected tax codes plus all year-to-date and monthly running totals for each of the selected items. Expense items may be entered under DEDUCTIBLE or NON-DEDUCTIBLE type codes.

EZ-LEDGER will produce INVOICES with an automatically incremented invoice number and then automatically post the data to an ACCOUNTS RECEIVABLE holding file or directly to INCOME and updates all totals.

The accounts receivable and accounts payable files are "holding" files with their own running year to date totals. Transactions in these files may be automatically posted to INCOME or EXPENSE and all respective totals will be updated automatically.

FEATURES:
- Up to 99 EXPENSE accounts and 9 INCOME accounts
- VISICALC / MAGICALC interface
- 1500 transactions per disk • 1 or 2 disk drives
- Unlimited transactions per month plus easy backdating
- Produce invoices • 80 or 132 column printer
- Great for HOME accounting or BUSINESS

EZ-LEDGER requires 48K ram, APPLESOFT rom and DOS 3.3

Applesoft and Apple are registered trademarks of Apple Computers, Inc.

VISA

master charge

The Affordable EZ-LEDGER ON DISK

Only **$60.**

Washington residents add 7.9% sales tax.

HIGHLANDS COMPUTERS 14422 S.E. 132nd • Renton, Washington 98056 • (206) 228-6691

APPLE® MODEM. WITH EVERYTHING.

$129

Your best buy in modem history. The **Networker**™ a plug-in single-slot direct connect modem for your Apple II, II+, and IIe (or Franklin, Albert, or other Apple compatible computer). You are immediately linked to the vast network of computers — data bases like the Source,® Compuserve,® or Dow Jones,® friends, banks, businesses, and hundreds of local "bulletin boards." For only $129. There's absolutely nothing else to buy. And it even comes with software.

This is the modem that does it all, and does it for less. The Apple Communications Card is on board, so you won't need to buy one. That will save a bunch. It's 300 baud, the most commonly used type of modem. It comes complete with its own communications software on Apple compatible disk, giving you features ***no*** modem offers.

Like "data capture" to lock the messages into your Apples' RAM, and then move the information onto a disk for easy reference and review. A terminal program that turns your computer into a communications command center, displaying on-screen "help" menus, continuous updates of memory usage, carrier presence, baud rate, communications status, all while taking in and displaying information from any computer.

The **Networker** supports both originate and answer modes, so you can send and receive information, in full or half duplex modes. And its all easily programmable right from the keyboard of your Apple computer. All you do is plug **Networker** into any slot (except 0) in your Apple computer. It'll even ask you what slot it's in. It's that easy to use.

NETMASTER™ COMMUNICATIONS SOFTWARE

For $179 we include the even more incredible **Netmaster** software for advanced users. **Netmaster** is a "communications freeway" that lets you speed any Apple file to another Apple through noisy phone lines, without errors. **Netmaster** even includes its own Disk Operating System to control the flow of information and leave you over 40K of "buffer" memory from your 64K RAM. And there's always help when you want it. On screen. Status indicators keep you fully updated.

Netmaster will let you transfer games, computer graphics, programs, sales reports, documents, any DOS 3.3 file, all directly from disk to disk, all with computer (not telephone) accuracy. **Netmaster** is completely configurable to understand any computer, even mainframes. File size is unlimited.

But **Netmaster** is not stuffy. It will talk to the other communications packages like Visiterm® or ASCII Express.® Of course they don't support **Netmaster's** superb error checking, that guarantees you won't miss even a comma. It doesn't only talk to the Networker either. It will also talk to those more expensive modems from Hayes and Novation.

And **Netmaster** is fast. It transfers information disk to disk three to five times faster than the others. Of course **Netmaster** is fully compatible with them. But if you want things to happen really fast, talk to another Netmaster.

We sell **Netmaster** by itself for $79, and even if you have another modem for your Apple, **Netmaster** is an outstanding value. It will even support auto dial and auto answer. **Netmaster** requires 48K of Apple memory, disk drive and DOS 3.3, and ZOOM's **Networker** modem or another modem. It can also be used without a modem when two Apples are hardwired together, using a 6850 or 6551-based interface card.

Networker, **Netmaster**, and **Networker/Netmaster** combo are all produced in the USA by ZOOM Telephonics, producers of the popular **DEMON DIALER.** The Networker is FCC registered, and all products come with a one-year warranty.

HOW DO I GET ONE? OR TWO?

Check with your computer dealer. Or call us direct at 1-800-631-3116, and we'll let you know where to get them in your area.

Massachusetts residents call 617-423-1288.

The following are trademarks: Apple by Apple Computer, the Source servicemark by Source Telecomputing, Compuserve by Compuserve, Dow Jones by Dow Jones & Company, Visiterm by Visicorp, ASCII Express by Southwestern Data Systems, DEMON DIALER by ZOOM Telephonics. ©1983 ZOOM Telephonics, Inc.

ZOOM

ZOOM Telephonics, Inc.
207 South Street, Boston, MA 02111

```
40  FOR I = 1 TO N
50  PRINT D$;"READ PHONEFILE"
60  INPUT NAME$(I)
70  NEXT I
80  PRINT D$;"CLOSE PHONEFILE"
90  HOME:FOR I = 1 TO N:PRINT NAME$(I):NEXT I
```

Everything's very simple until you want to make some changes, and then you discover why random access files were invented. There are two additional commands that can be used with sequential files to let you make changes or find particular fields. These commands are append and position. The first opens a file that's already been created and prepares DOS to write to it. Append won't create a new file if the file specified isn't already on the disk. Instead of going to the beginning of the file, as open does, append goes to the end of the file and waits for the program's next instruction. After saving the Read.Phonefile program you've just run, type *new* and then run the following program:

```
10  D$ = CHR$(4)
20  PRINT D$;"APPEND PHONEFILE"
30  PRINT D$;"WRITE PHONEFILE"
40  PRINT "APPLE COMPUTER 408-996-1010"
50  PRINT D$;"CLOSE PHONEFILE"
```

Now when you run Read.Phonefile, you should find that the text file has four names and numbers.

When you need to make changes in the middle of a sequential file, you have to use the position command to find the field you want. Unfortunately this command will carry you only forward through the fields and won't allow you to back up. If you need to do that, you'll have to open the file again to set the pointer at the beginning and then use position to go forward through it again. The command takes the form *position filename, R25*, where the number following R is the number of fields forward that you'd like to go. Let's assume we want to read only the second and fourth fields in our file. Type *new* and run the following:

```
10  D$ = CHR$(4)
20  PRINT D$;"OPEN PHONEFILE"
30  PRINT D$;"POSITION PHONEFILE,R1"
40  PRINT D$;"READ PHONEFILE"
50  INPUT NAME$(1)
60  PRINT D$;"POSITION PHONEFILE,R1"
70  PRINT D$;"READ PHONEFILE"
80  INPUT NAME$(2)
90  PRINT D$;"CLOSE PHONEFILE"
100  HOME : PRINT NAME$(1) : PRINT NAME$(2)
```

Line 30 moves the pointer through the file from the first field, where the pointer is placed when the file is opened, to the second field. Line 40 reads that field and places the pointer at the beginning of the next field. Thus when the program reaches line 60, the pointer is at the third field, and it must go forward only one more field to get to the fourth one. Even though the read command was given in line 40 and the file is still open, it must be repeated in line 70. Any DOS command, or even *print D$* by itself, cancels both read and write commands.

If you expect that you'll need to change the information, use random access files. On the other hand, if you're writing an adventure game and the room descriptions won't change as the game is played, by all means use sequential files. Note that position will work with random access files to move forward from field to field either within a record or across record boundaries. It's not the recommended way to do it, however, because the records may not have the same number of fields, so you can get lost easily. And of course you can't back up.

Exec Files. You may have noticed (and become confused by) the reference to something called an *exec* file in your *DOS Manual*. The exec file isn't really a separate type of file. It's a sequential text file that's used to store a series of commands rather than data. The exec file is named for the exec (short for execute) command, which will read a text file and interpret it as commands from the keyboard. Among other things, this helps to get around the restriction that you can have only one Basic program in memory at a time. Although the exec file isn't precisely a Basic program, it can do some of the things a program can without disturbing the program in memory. Unfortunately there's a serious limitation. The only commands allowed in exec files are those that can be entered from the keyboard. They can be Applesoft or DOS commands or act as input to a running program. Unlike a program, an exec file can't have line numbers. This eliminates branching commands such as *goto* and *gosub*, but if-then statements are all right for conditionally executing other commands besides branching ones. To see an example, create a text file with a simple Basic program by running the following:

```
10  D$ = CHR$(4)
20  PRINT D$;"OPEN CATFILE"
30  PRINT D$;"WRITE CATFILE"
40  PRINT "CATALOG"
50  PRINT D$;"CLOSE CATFILE"
```

As you should realize immediately by now, this program will create and save on your disk a sequential text file with only one field containing the word *catalog*. Type *exec catfile* and you'll see the catalog. The exec command can be used both from the keyboard and from within a Basic program (preceded by the customary print D$).

Using Multiple Files. Suppose you want to transfer some of the information in one text file to another. It would be perfectly feasible to open one file, read the appropriate fields and assign them to Basic variables, close the file, open the other file and write the information, and finally close that file. It's unnecessary to go through all that. Instead you can have several files open at one time. You can read from some of them and write to others as you wish. That's why all text file commands must have the name of the file (except close, which closes all files if used by itself). When DOS is booted, it creates three 595-byte file buffers, one of which it needs for its own operations and two of which are available for the user. These buffers begin at memory location 38400 ($9600 in hex), which is why we normally say that DOS extends in memory upward from that location.

If you need to have more than three files active at a time, you can allocate up to sixteen buffers (fifteen for you and one for DOS) with the command *maxfiles n*, where *n* is the number of buffers. This command can be entered either from the keyboard or from an Applesoft program. Because the command puts these buffers into memory areas normally used by Applesoft for strings, it can clobber any data created by a program. If you use maxfiles in a program, make it the first line. ◻■

FOR APPLE II PLUS, FRANKLIN, APPLE IIe

Font DownLoader*

Expand the capacity of your printer hundreds of times

Load custom fonts into your Apple* Matrix Printer, Prowriter* 8510A, OKI* Microline 92, 93, 84 Step II, and Epson* FX and use them with virtually every word processor to turn your printer into a **custom typesetter.** After the fonts are loaded, they will stay in your printer until it's turned off. A font editor is also provided to allow you to create your own graphics, text, foreign language letters, math and electronics symbols to load into your printer.

On-Disk (Specify Printer) $39.00

*Requires printer interface that adheres to Apple protocall (Tymac, Apple, Epson, etc.) (Will not work with Pkaso, Wizard and some others)



$100 REWARD

Submit the best or most unique font using the above software and we will make you $100 richer. Other prizes for the first 25 runners up.

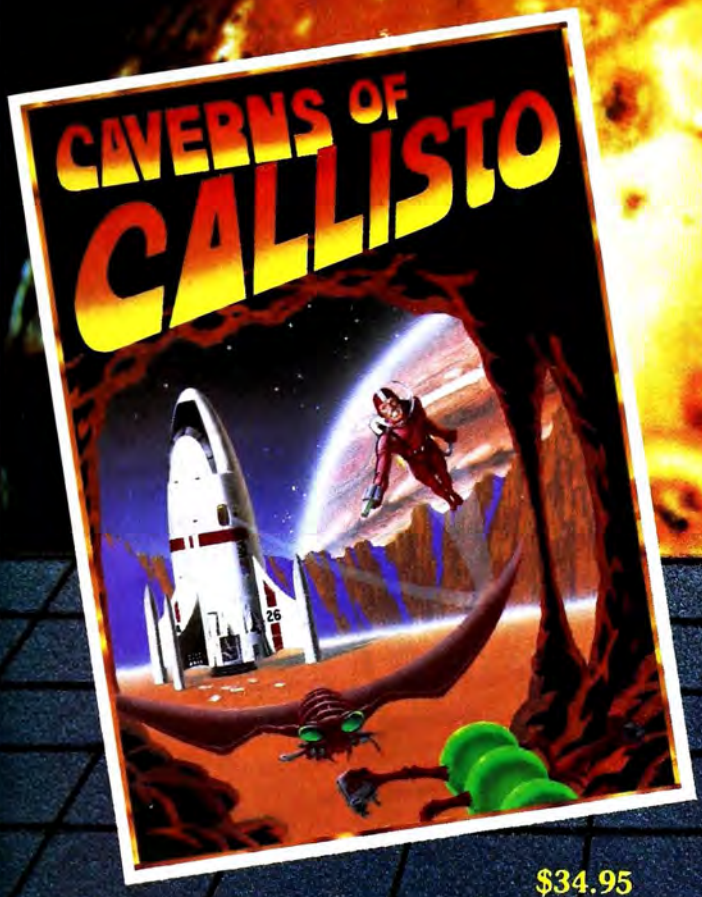
Dealer and Distributor Inquiries Invited

MasterCard VISA

MICRO WARE D

1342 B Rt. 23, Butler, NJ 07405
201-838-9027

Two Great Games From Out of This World!



$34.95

CREATED BY CHUCKLES

From the depths of Callisto, Origin brings you the excitement of arcade action with the intrigue of adventure gaming. Real time vertical and horizontal scrolling, along with expert color graphics, offer a truly unique entertainment experience. Chuckles has created five levels of caverns filled with treacherous monsters, boiling volcanoes, and secret passages that will challenge even the most experienced player.



$54.95

CREATED BY LORD BRITISH

From the land of Sosaria, EXODUS: ULTIMA III sets a new standard for excellence in fantasy role-playing games. Continuing the tradition of innovation established by Lord British, EXODUS features new animated graphic techniques, full sound effects, and mult-character interplay. Step into our new fantasy world and use your skill and wit to find and destroy the insidious EXODUS!

MOCKINGBOARD ENHANCED

from your local dealer or direct from:

ORIGIN SYSTEMS INC.

Available for Apple II/II+/IIe and for Atari 400/800

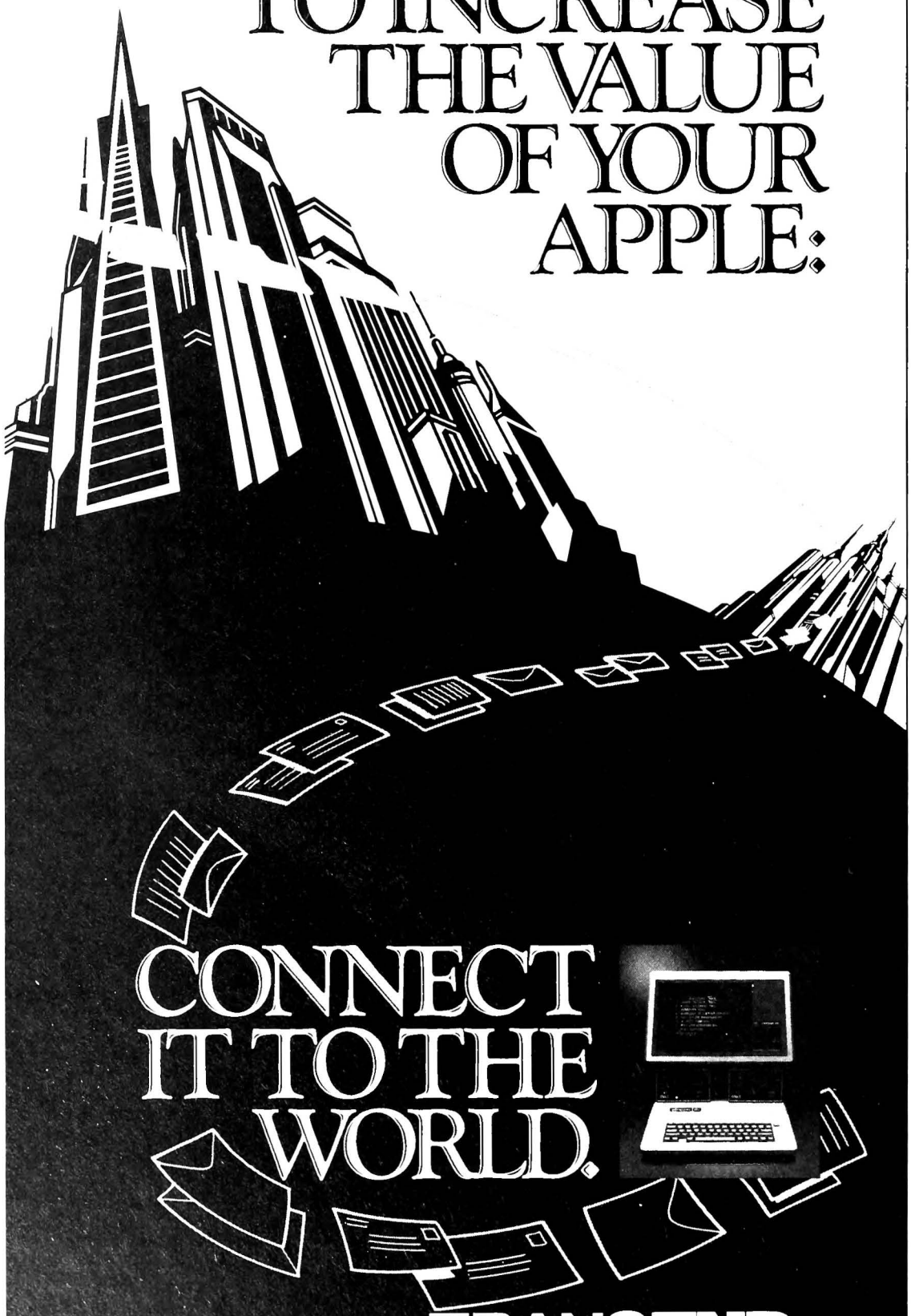
18100 Upper Bay Road, Suite 202
P.O. Box 58009
Houston, Texas 77258
(713) 333-2539

ORIGIN SYSTEMS - ORIGINATORS OF EXCELLENCE

Copyright 1983 by Origin Systems, Inc.

Atari is a Trade Mark of Atari, Inc. Apple is a Trade Mark of Apple, Inc.

THE BEST WAY TO INCREASE THE VALUE OF YOUR APPLE.



CONNECT IT TO THE WORLD.

TRANSEND

THE WORLD JUST KEEPS GETTING SMALLER.

Transend electronic communications software for the Apple is now faster and easier to use.

For the beginner: Menus guide you through each step. Hit a key to choose an option.

Once you've started: New HANDS-OFF macros do complete routines with just one command (or by pushing the "Power-On" button.) You can create macros of up to 33 commands, including terminal mode commands.

A HANDS-OFF command line can perform all your menu selections such as dial, receive, and print messages.

Choose the package you need: Transend 1™ connects you instantly to other computers and information services.

Transend 2™ sends information error-free. It's ideal for sending sensitive data with complete accuracy. And Transend 2 can send multiple files in one phone call.

Transend 3™ lets you schedule electronic mail deliveries with a minimum number of phone calls, from your unattended Apple to other unattended Apples. A built-in text editor lets you write and send messages without switching software.

Every Transend package includes a subscription offer to THE SOURCE™.

Money-back guarantee. Try Transend on your Apple. If you're not satisfied, return it for a full refund.

To learn more, ask for *The Who, What, Why, How and When of Electronic Communications* from Transend.

Transend Corporation
2190 Paragon Drive
San Jose, CA 95131
(408) 946-7400 SourceMail ST1422

Transend 1, Transend 2 and Transend 3 are trademarks of Transend Corporation. Apple is a registered trademark of Apple Computer Inc. THE SOURCE is a service mark of The Source Telecomputing Corporation, a subsidiary of The Reader's Digest Association, Inc.



KEYS TO THE WORLD BY MATT YUEN

Last month, we saw how a computer equipped with a modem is not always an economical means of person-to-person communication. It's much easier to pick up the phone and talk.

The primary reason for hooking up an Apple to the phone lines, then, is not for people to communicate with each other but to allow the computer to receive information from distant sources. The Source, CompuServe, the Dow Jones News/Retrieval Service, Dialog, and Delphi are just a few information databases available to anyone who has the right equipment and a few extra dollars.

Though tens of thousands of people subscribe to these services, there are those who might not need all of what they have to offer. For them, there are less elaborate information systems called bulletin board systems.

A bulletin board system, or BBS, is similar to what it sounds like, except you don't walk up to it; you dial it up on your computer. In most cases, it doesn't cost a thing to dial a BBS, except the price of the phone call. The best way to get acquainted with the way a BBS works is to call one up. Shall we?

Magical BBS Tour. The first and most obvious thing we need is a phone number. Ask some of your friends or someone at a computer store if they know of any good boards in operation. The numbers of a few popular boards that have been operating for several years are listed later on in this column.

It's possible to see a BBS as a sort of message center—or even a message taker. In addition to being able to post and read messages on the board, most users of BBSs can exchange private mail with each other. In this respect the BBS almost becomes an electronic postal service.

Once you're connected to a system, you'll receive a greeting message, which usually looks something like this:

```
*  Welcome to Nomura, the Japanese Science Fiction  *
*          Film Bulletin Board Service              *
*          Located in Torrance, California          *
*          Patty the Sysop is =>out                 *
```

Greetings run anywhere from a few lines to a few paragraphs in length, depending on how verbose the system operator, or sysop (pronounced *sissop*), is feeling.

What's the Delay? Somewhere along the line, you'll be asked how many nulls you need. A null is a delay that the remote computer sends if you set up your printer to print information as it comes across the phone line. The delay is necessary because the print head on a printer needs time to return to the left margin to print the next line. Without the delay, or null, it would lose whatever characters come in while the head is moving from one end of the printer to the other. Nulls, then, cause the stream of information to pause while the printer head catches up.

If you're not using a printer, enter zero as the number of nulls needed. If you are using a printer, you'll have to experiment to find out how many nulls you need, since all printers differ. Usually a number between zero and fifty is plenty.

Most of the time, the system will request you to enter your name, city and state, and phone number. This is just to keep track of who callers are and where they're calling from. Though most people do indeed input their names, monikers are a popular means of identification. Lord Radnar, Gumby N. Pokey, Sir Twitt, Grover the Gopher, Sunspot, Phangor, and Jitterbug are but a few aliases BBSers use.

Almost always, a BBS will ask you to enter a password or identification code. Don't be scared; often, a password is assigned to anyone who wants one. Depending on how sacred the information on the board is, acquiring a password usually involves nothing more than leaving your name and phone number and waiting for the sysop to call on the phone and verify your identity.

Some boards have security levels that provide users with access to various parts of the board. The higher your security level, the greater your access to privy information. At the very least, the lowest level password allows you to read and post messages and exchange electronic mail with other users.

Often, a password isn't necessary in order to use many of a board's commands. But if the BBS looks like one you might want to call more often, you'll want to leave a message with the sysop requesting a password.

After you enter the appropriate data, you'll usually receive some information on the system and any bulletins intended for all users. Finally, you're at the command mode.

In command mode, your screen displays an arrow prompt, waiting for you to input a single-letter command. If you're not sure of the commands, typing in a question mark usually displays all the commands and brief explanations of what they do. Most BBSs have two main services—a public board and private mail.

Hear Ye, Hear Ye. The public board is that part of a BBS that everyone is allowed to read. Notices include items for sale, requests for aid in adventure games, or general information on everything from international politics to the finer points of fencing. It's not uncommon to find beginning and advanced programmers requesting aid to solve a particular problem, movie buffs commenting on a recent release, *Dungeons & Dragons* fans exchanging bits of knowledge, or ordinary people expressing opinions on current events.

Some boards specialize in certain areas, and their public bulletins tend to relate to that area. Magnetic Fantasies in Los Angeles, for instance, contains several ongoing fantasy games run by a handful of the BBS's users. Players send their "moves" to the dungeonmasters via private mail, and the results of each player's move appear on the public board.

If you have neither the patience nor the time to read through all the public bulletins, a *quickscan* command lets you flip through the subject lines of some or all of the bulletins, allowing you to see their subject matter and who they're from to flag messages for later retrieval. Once you're finished flagging messages, a retrieval command pulls them out in the original order for you to read.

It's quite possible that you'll feel like responding to a message or two, either an answer to someone's request or just a personal opinion. There are two options here. You can either post your message on the public board for all to see or you can respond to someone through the private mail system.

Wait a Minute, Mr. Postman. Using private mail requires having a password or being verified by the sysop, which means you probably won't be able to send any mail your first time on the board. But as soon as you receive a password, a whole new dimension of the board is opened to you. You'll begin meeting people with whom to share information or exchange ideas. (On one BBS in Chicago recently, five users were involved in a dicussion about what rights to airspace the Soviet Union should have, if any, in light of this past September's Korean airline incident.)

Though some BBSs alert you when you log on whether or not you have mail waiting, there is a command that checks your mailbox for letters. If necessary, you can store letters for future reference, but it's usually good practice and common courtesy to delete letters from your box once you've read them.

There are probably as many different kinds of BBSs as there are people who run them, mostly because boards tend to reflect the personality of the sysop. While a common practice is to name a board after the software running it and the city where it's located (Net-Works Baton Rouge, ABBS San Mateo, and so on), it's not uncommon to find boards with names like Teledunjon, Magic Lantern, Coin Games, Chipmunk, Warlock's Castle, and Dial-a-Joke.

Your Own BBS. You don't need any software if you want to call a BBS; all you need is your computer, a modem, and a phone line. However, if you wish to set up your own BBS for others to call you, then you need the software.

Some of the most popular boards are run on the *Net-Works* software from High Technology (Oklahoma City, OK). In addition to the public board and private mail exchange, the Net-Works system allows Apple users with a Hayes Micromodem II and a disk drive to download Applesoft, Integer, and binary programs from the board directly to their own disks. To use this feature, you can't have a terminal program running at the same time. Net-Works sends the data to your Apple's RAM and saves it to disk for you. If you're using any other configuration (a different modem, cassette storage), then Net-Works assumes you have a method of capturing data as it comes across the phone line and will send but not save the program.

For non-Apple users or Apple users without a Micromodem II or disk drive, Net-Works allows you to download programs as text files. In addition to Apple programs, TRS-80 and Commodore Pet programs are also available. Once the text file is stored safely on your disk, you need to change it back to its original form—either Applesoft, Integer, or binary.

For Apples Only. One of the original BBS software packages for the Apple is *ABBS* (*Apple Bulletin Board System*) from Software Sorcery (McLean, VA). There are fewer ABBSs than Net-Works systems, though ABBS offers more depth. In addition to being able to download programs from the board to one's own disk, ABBS users are allowed to upload programs of their own onto the system. Other users then can download those programs for themselves.

All transferring of programs to and from the system, however, is done in the form of text files. Whereas the programs you can get from a Net-Works system are ready to run once you receive them, programs you download from ABBS must be converted from text to Applesoft, Integer Basic, or binary first. The same goes for the reverse process. If you have a program you'd like to put on the board for public consumption, you must convert it into a text file before doing so.

Instructions for converting Basic programs to text files are given, beginning on page 76, in *The DOS Manual* under the heading "Capturing Programs in a Text File." Instructions are also given in the *DOS Programmer's Manual for Apple IIe* beginnng on page 96, "Capturing Lines from a Basic Program." For binary programs, you need to change them to Basic first and then convert the Basic programs to text files. To find

f o x x i v i s i o n

Hit the bullseye! Blast a homer! Sink a birdie! Travel the galaxy and test your trivia without changing your disk! Foxxivision™ programs a great variety of fun. The Entertainment Pak 1 is joystick, joyport, and keyboard compatible. Here's a list of what this package contains:

- **Home Run Derby**
- **Firing Gallery**
- **Meadow Hills Golf**
- **Munch-a-dot**
- **Black Hole Game**
- **Maze Game**
- **Computer Trivia Quiz**
- **Pattern Generator**

All Foxxivision™ diskettes will work on all Apple compatible computers. Every package available from us is user friendly. At $24.95, you get more games for your money on Foxxivision™ than any other disk.

The odds are in your favor on Foxxivision's™ new Race Track Disk. Place your best bets on the most thrilling computer horse race around and watch your horse pull away to the finish line. This package also comes with an entertaining show and an enjoyable racing trivia quiz. Superb graphics! Great for parties! The disk sells for $24.95—a sure bet for fun, race after race.

Please rush the following packages by 1st Class Mail—
☐ Entertainment Pak 1 $24.95 ☐ Race Track $24.95
Add $1.50 for shipping and handling
Michigan residents add 4% Overseas add $2.00
☐ MASTERCARD ☐ VISA ☐ CHECK/MO
Card# _____ Expires _____
Signature _____
Name _____
Address _____
City _____
State and Zip _____
Mail U.S. check, money order or Visa/MC# to:
Foxxivision
28090 Tavistock Trail . . . . Southfield, MI 48034

Foxxivision™
The Home of Home Entertainment

*Apple is a registered trademark of Apple Computer Inc.
Foxxivision is a registered trademark of Foxxivision Inc.

SOFTERM

DOS, CP/M,® PASCAL

The only communications software you'll ever need!

Softerm 1
The Complete, Upgradeable Package for Home or Business Use

Softerm 1 is a powerful and flexible terminal emulation program that operates on an Apple* II, II Plus, or IIe to provide basic terminal communications to a variety of host computers, timesharing services, and information services such as *The Source*℠, *CompuServe*,* and the Dow Jones News/Retrieval.* It operates full or half-duplex at speeds up to 9600 bps using either a direct connection or any standard manual or auto-dial modem. Features include user-defined keyboard macros, built-in phone book for automatic dialing, terminal mode line capture simultaneously to print or disk, copy screen to print or disk, and terminal status display.

DOS, CP/M, and PASCAL File Compatibility Combined In a Single Program

Softerm 1 incorporates an advanced file manager which provides compatibility with DOS 3.3, CP/M, and Pascal disk formats for all file operations including file transfers. And at speeds up to 5 times faster than standard Apple DOS! Built-in disk utilities provide *INIT, CATALOG, RENAME,* and *DELETE* commands for all disk formats. Wildcard match characters can be used whenever filenames are entered.

Local file transfers allow DOS, CP/M, or Pascal files to be displayed, printed, or even copied to another disk. For example, a file on a CP/M formatted disk in Drive 1 could be copied to a Pascal formatted disk in Drive 2 providing a complete format conversion capability. Numerous editing options such as tab expansion and removing unwanted characters allow easy reformatting of data to accommodate the variations in data formats used by host computers.

Multi-Protocol File Transfer Capability

Softerm 1 offers file transfer methods flexible enough to match any host computer requirement. These include the *character* protocol with user-definable characteristics to provide maximum flexibility for text file transfers to any computer. The CP/M User's Group standard *XMODEM* protocol may be used for binary file transfers with systems using the CP/M operating system. The intelligent *Softrans* protocol can be used to transfer *any* type file and provides automatic binary encoding and decoding, error detection and automatic retransmission, and data compression to enhance line utilization. A FORTRAN 77 source program is supplied with Softerm 1 which is easily adaptable to any host computer to allow communications with Softerm using the Softrans protocol. Specific host computer versions of the Softrans FORTRAN program are available on request.

Softerm file transfer utilizes an easy to use *command language* which may be executed interactively or from a *macro* command file which has been previously entered and saved on disk. Twenty-three high-level commands include *DIAL, CATALOG, SEND, RECEIVE, ONERR, MONITOR, HANGUP,* and others. A *SCHEDULE* command even allows file transfers at a specific date and time.

Softerm 2
The "Choice of Professionals"

Softerm 2 includes all features of Softerm 1 and provides an *exact* terminal emulation for a wide range of conversational and block mode CRT terminals. Special function keys, sophisticated editing features, even local printer capabilities of the terminals emulated are fully supported. In fact, your host computer won't know the difference! *All* of the following emulations are included in Softerm 2 and the list is growing...

ADDS Regent 20, 25, 40, 60 • ADDS Viewpoint • Data General D200 • Datapoint 3601 • DEC VT102, VT52 • Hazeltine 1400, 1410, 1500, 1520 • Honeywell VIP7205 • IBM 3101 Model 10 and 20 • Lear Siegler ADM-3A, ADM-5 • TeleVideo 910, 925

You'll Never Outgrow It

For the latest program enhancements, you can access the Softronics Online Update Service 24 hours a day, 7 days a week. New hardware support or terminal emulations are immediately available to all Softerm users.

Softerm 1—$135 Softerm 2—$195

Available now from your local dealer or Softronics, Inc.

*Apple is a registered trademark of Apple Computer, Inc., CP/M is a registered trademark of Digital Research, Inc., Dow Jones News/Retrieval is a registered trademark of Dow Jones, Inc. The Source is a service mark of Source Telecomputing Corporation. CompuServe is a registered trademark of CompuServe, Inc.



SOFTRONICS

6626 Prince Edward, Memphis, TN 38119, 901-683-6850

out how to convert binary programs to Basic, take a look at page 77 in *The DOS Manual*, under "Converting Machine Language Routines to Basic," or page 98 in the *DOS Programmer's Manual for Apple IIe*, under "Translating Machine Language to Basic."

Unlike *Net-Works* software, which runs only on the Hayes Micromodem II, *ABBS* supports the Micromodem II, the Novation Apple-Cat II, the SSM ModemCard and AIO-II, and the Apple Super Serial Card. Remember, though, that any computer—IBM, Commodore, Radio Shack, Atari, Heathkit, or whatever—can call and use a BBS. So just because a BBS is run on an Apple doesn't mean only Apple users can call it. Naturally, it works the other way around; you can call any BBS with your Apple and modem, regardless of the type of computer running the service at the other end.

Another feature of ABBS is the multiple public boards available. On many BBSs, there is one public board that everyone uses. This means that if you're looking for someone with an interest in shortwave radio, for instance, you have to weed through all the other messages and try to pick out those that interest you. On ABBS, several boards are categorized according to interest and subject. On a typical ABBS, you might get a choice of boards that specialize in politics, religion, hobbyists, fantasy games, ads, movies, sports, or rock music.

There is also a news module on ABBS that allows the sysop to create, edit, and post news stories that might be of interest to callers.

Take note that if you're considering ABBS as the way you'd like to set up a BBS, the bare-bones software includes only the public board. All features such as the multiple boards, uploading and downloading of programs, private mail, and news features cost a few bucks extra.

The Biggie. A third and more elaborate type of system is *PMS* (*People's Message System*) from Datel Systems (Lakeside, CA). One prominent feature of PMS is its lengthy list of other known operating BBSs. The list covers BBSs of all kinds (IBM, TRS-80, CP/M, Net-Works, ABBS, CBBS, and others). Because of its length—a printout of the list runs about thirty pages long—you can choose to list only those boards you're interested in, as you would list records on a database. PMS lets you search for numbers by area code, BBS type, or city. For example, typing *O;ABBS* at the command level will list only ABBS boards, while typing *O;(312)* will list only boards in the 312 area code.

TerminAll
FOR THE APPLE ///™

TURN YOUR APPLE INTO ANY OF THESE POPULAR TERMINALS:

DEC VT 100 series
TELEVIDEO 900 series
HAZELTINE 1500 series
BEEHIVE DM series
and others

TerminAll allows your Apple /// to simulate each of these terminals. Need a different terminal? TerminAll can be changed to simulate most popular computer terminals.

Large computers and computer services are designed to communicate with computer terminals, not personal computers. Often programs on large computers will not operate correctly when accessed from a personal computer. With TerminAll your Apple /// can act like the computer terminal you need. Save the expense of purchasing more costly hardware, use TerminAll and your Apple ///.

TerminAll simulates the commonly used features of most popular terminals including: cursor addressing, insert and delete lines, clear screen, clear line, clear to end of line, communication protocols, inverse video, and more.

FOXWARE PRODUCTS
(801) 364-0394
2506 W. Midwest Dr., Taylorsville, UT 84118
Apple is a trademark of Apple Computer Inc.

PMS's strongest feature is the wealth of information available on it for callers to read and save to their own disks. Besides having possibly the most complete list of BBSs in the world, PMS boards have a section that contains news features, articles, and excerpts from published works.

Again, the sysop is the one who decides what goes into this section. Some carry articles written by fellow callers, some are reprints of stories from national wire services, and some are bits of information that defy classification. Subjects of articles include the Moscow telephone book, a review of Epcot Center, brownie recipes, Apple programming tutorials, satellite communications, poetry, and stunning truths.

PMS costs considerably more than the other two BBS software programs, but according to Bill Blue—author of *PMS, ASCII Express: The Professional*, and coauthor of *ABBS*—many purchasers of *PMS* report that they started out with other programs and found them far too limiting. Other users of *PMS* are businesses that set up boards strictly for the use of their employees. Such boards don't make their telephone numbers publicly available, for obvious reasons.

Even though many PMS boards are alike in features, some contain unique offerings. A PMS board in Anaheim, California, run by enthusiast Freida Wolden, bills itself as *If* magazine. *If* costs $10 to join (nonpaying callers can still have access to most of the board's features) and members get price discounts on hardware and software purchases. A popular feature on *If* is a newly added *Dungeons & Dragons* game.

The Kids' Message System in San Diego is just that—a system devoted entirely to kids. Callers should be prepared to encounter messages on the public board describing things as "real gross," "wicked," and "totally righteous." Recounting why he left his former rock band, one teenager on the system described his former partner as "a real scum." Another youth wanted to know if he had any fellow schoolmates on the system: "Hey, how many of you go to Parsons Junior High?"

For the Sake of Posterity. Often you'll want to keep some sort of permanent record of what you find on a BBS. Letters from other users, bulletins of interest, lists of commands for various boards, and news items may come in handy in the future. If you have a printer, you can keep a hard copy of your BBS sessions by initializing the printer before you call a board. Though effective, this method has its drawbacks.

First of all, you'll have to print everything that you receive from the BBS and not just the items you wish to keep. Second, it means you can receive information only as fast as your printer can print. In most cases, the transfer of data across the phone lines is slow enough without having to wait for the printer to spit out everything you receive.

A better way to capture the information you want is with a *terminal program*. In addition to making it possible for you to send and receive files between you and another person, most terminal programs set up a *buffer* (a holding area) in your Apple's memory that will retain whatever data comes in through a modem or is typed at your keyboard. This way, you can collect all the data you need, and when you're off the phone, you can save it all to disk as a text file and print it at your convenience.

Most programs permit you to control the buffer while you're on the phone so you don't have to save everything that comes in. For example, you can have the buffer closed while you log on to a BBS, enter your password, and then receive the obligatory greeting message. When you want to read your mail, just open the buffer so it can save your letters as they come in through the modem. When you're done receiving your mail, close the buffer and continue with your business.

When you hang up, the buffer will be holding only your letters. Most of the time, terminal programs save the contents of the buffer as standard Apple text files. If you have a word processor that handles Apple text files, you can use it to edit files before printing.

Consumer Watch. Next time, we'll examine and dissect various kinds of terminal programs so we'll know what sort of features to look for when shopping for one. In the meantime, here are a few BBS numbers to keep you and your telephone busy:

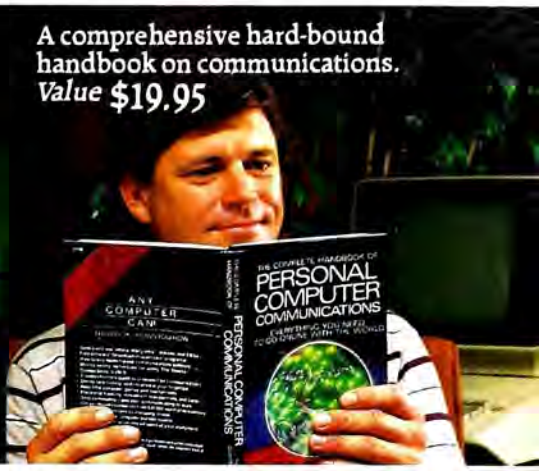
PMS—Santee, CA	(619) 561-7277
Dial-Your-Match—Burbank, CA	(213) 842-3322
Mark the Mixed Up Martian—Santa Monica, CA	(213) 390-3239
Net-Works—Newburgh, IN	(812) 858-5405

All of these numbers are the original boards of their kind. On them you'll find numbers for similar boards around the country. PMS lists the numbers of more than six hundred BBSs of all types, and it's updated frequently.

Buy Micromodem IIe™ with Smartcom I™ software *right now,* and get this $140 value FREE!







Your Apple's telephone.

Hayes



Between Nov. 1–Jan. 15, you and your Apple can make the big break. From isolated desktop computing. To the exciting world of telecomputing. With Hayes Micromodem IIe and Smartcom I communications software. A complete telecomputing package for Apple II, III, IIe or Apple Plus computers. Let Micromodem IIe connect you, via telephone lines, to computers, terminals and information services all across America. Including THE SOURCE.℠ AMERICA'S INFORMATION UTILITY.℠

This offer takes you right to THE SOURCE! And you won't have to pay to join! The same day you purchase your Micromodem IIe with Smartcom I, call THE SOURCE on their toll-free number. And you're already well on your way to getting on-line!

It frees up your time. This offer also entitles you to $20.75 worth of connect time–at no charge. Use it as you please! Check the latest news and sports. Look up your flight schedule. View your stock portfolio. You name it. The time is yours! Sixty minutes worth, or more, depending on the day and hour.

Giving you lots of connections. THE SOURCE has assembled the most comprehensive programs available on any system. For fun and practical applications. From games to commodity news. Electronic mail to teleconferencing. Discount shopping to abstracts of articles from business magazines. And everything you need to know is right there in your comprehensive, illustrated User's Manual. It's included with your free membership to THE SOURCE during this special, limited time offer from Hayes.

Plus the last word on communications. Now here's a book that delivers what it promises! In Alfred Glossbrenner's best seller, *THE COMPLETE HANDBOOK OF PERSONAL COMPUTER COMMUNICATIONS*, you'll find a thorough, informative study of microcomputer communications. Worth every cent of the $19.95 this hard-bound book sells for. And yours absolutely free! *If you act now!* See your dealer soon. Buy Micromodem IIe with Smartcom I, and get the best telecomputing system for your Apple. *Plus* a $140 value FREE.

Hayes®

Hayes Microcomputer Products, Inc.
5923 Peachtree Industrial Blvd., Norcross, Georgia 30092. 404/449-8791.

Here's all you have to do:

1. When you purchase your Micromodem IIe with Smartcom I, *save* your sales receipt and Hayes registration card (packed inside the box).
2. Pick up the phone and call THE SOURCE, on their toll-free number:

1-800-336-3366.

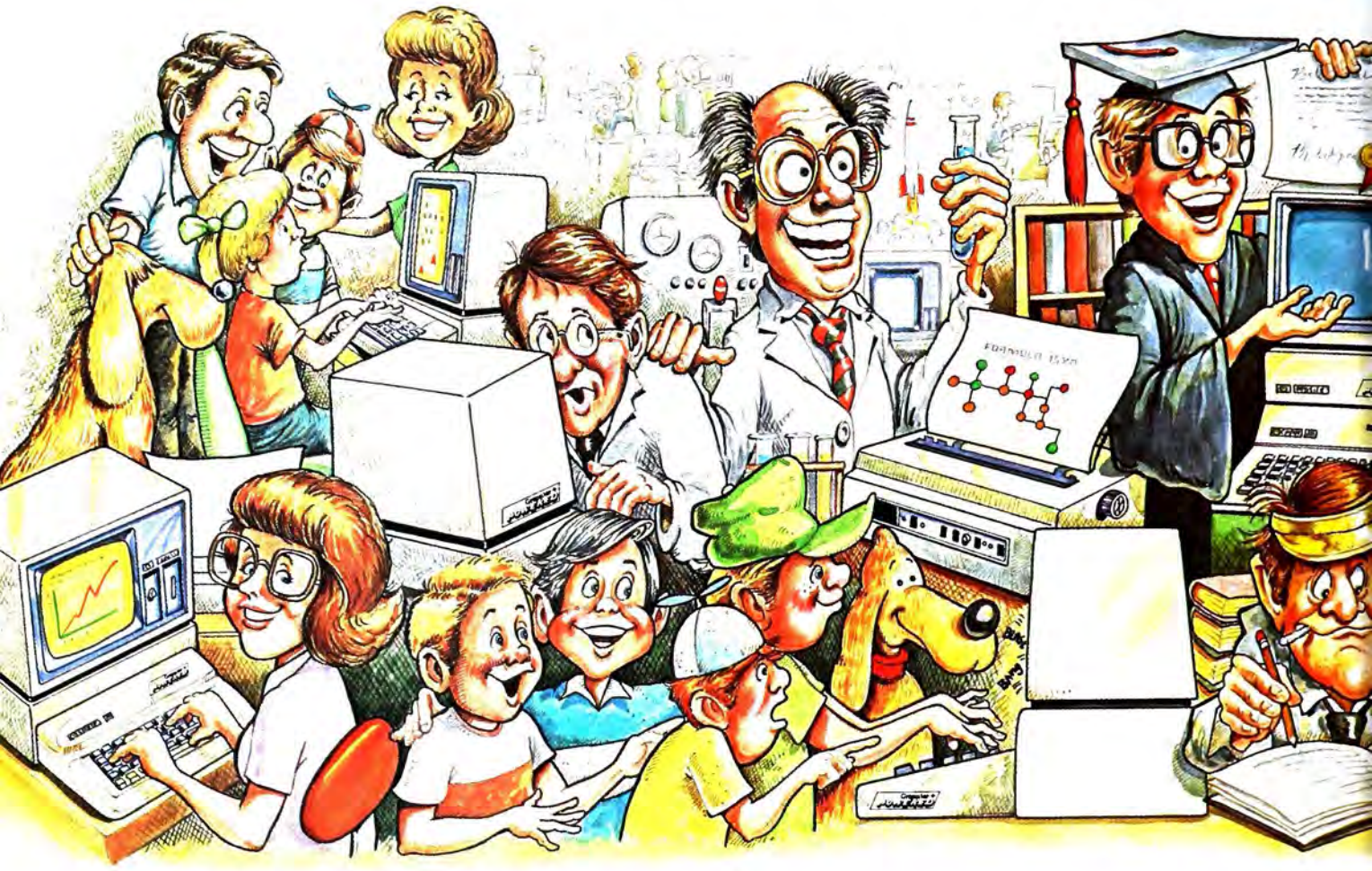
Tell THE SOURCE representative that you are participating in the special Hayes promotion, give the serial number of your Micromodem IIe (on the modem), and your credit card number (VISA, MasterCard, or American Express).† You will get your password to THE SOURCE, right on the spot!
3. Within a week you will receive an agreement from THE SOURCE, along with your New Member Kit. Sign the agreement, and return it within 10 days to THE SOURCE, along with your sales receipt for Micromodem IIe/Smartcom I, and Hayes registration card. Remember, send no money. Your membership is free!
4. That's all it takes! Look for your User's Manual and free communications book within two weeks of receipt of the agreement, sales receipt and registration card.

†THE SOURCE requires a major credit card for billing of hourly connect time to individual members. Corporate members may apply for direct billing.

*Suggested retail price. **60 minutes or more connect time, depending on the day and hour.

©1983 Hayes Microcomputer Products, Inc. Micromodem IIe and Smartcom I are trademarks of Hayes Microcomputer Products, Inc. THE SOURCE and AMERICA'S INFORMATION UTILITY are service marks of Source Telecomputing Corporation, a subsidiary of The Reader's Digest Association, Inc. Apple Computer is a registered trademark of Apple Computer, Inc.

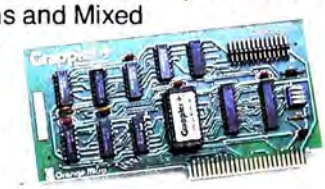
Satisfying Over With Innovation



Grappler™ +

Printer Interface

The Original Apple® graphics printer interface. Since its introduction three years ago, the Grappler has been imitated by many, but never matched. Now with Dual Hi-Res Graphics for side by side reproductions and Mixed Mode screen dumping, the Grappler + remains the most intelligent interface available. Over two dozen commands give Apple users full control over any graphics or text on the Apple screen, including a new 80 column text dump. Performance, reliability and support have made the Grappler + the #1 selling intelligent Apple interface.



Bufferboard™

For Apples and Printers

The economical way to add printer buffering. The Bufferboard easily adds memory to your current Apple interface system, freeing your computer for additional input. Easily upgradable from 16K, the Bufferboard can store up to 20 pages of text. It fits neatly inside your Apple, "docking" onto your existing printer interface.* No clumsy boxes or cables, no external power supplies...just convenience and economy. With the Bufferboard, you might never wait for your printer again.



*Versions for standard Grappler + , Epson APL and Apple Parallel Interfaces.

90,000 Apple® Owners And Excellence.



BUFFERED Grappler + ™

The most sophisticated buffered Apple printer interface available. The New Buffered Grappler + combines the industry leading features of the Grappler + with the time saving economies of the Bufferboard.**



With this much interface power, you'll never need anything else. And the price will surprise you, too.

**Not available for IDS printers.
Apple is a registered trademark of Apple Computers, Inc.

Over 90,000 Apple computers are using Orange Micro products. Innovation and excellence have made us the #1 manufacturer of intelligent printer interfaces. The top selling Grappler + has become an industry standard, recommended by more software houses and Apple dealers. To meet the users' latest needs, Orange Micro will continue to introduce new products. Recent innovations include the Grappler + for IDS color printers and the new Orange Interface, with text screen dumps and formatting at a low price. There is an Orange Micro product designed for your application.

For a complete demonstration, see your Apple dealer today.

Orange Micro inc.

1400 N. Lakeview Ave., Anaheim, CA 92807 U.S.A.
(714) 779-2772 TELEX: 183511 CSMA

©Orange Micro, Inc., 1983





TAKING IT TO THE STREETS

BY MELISSA MILICH

Street corners in the sleazy part of every town have them — gangs of kids, bored, tough, and looking for something, probably trouble. Most people drive by such street corners with their windows rolled up, doors locked tight. The drivers look straight ahead, trying to get out of the mean part of town as quick as possible.

Ida Mae Sydnor, on the other hand, drives up to the knot of kids on a street in California's capital city and does something a little different. She stops and rolls down her window.

"You boys want to learn about computers?" she asks.

The "boys" are transplants from a south-central Los Angeles gang. They had been involved in heavy-duty gang activity down south. Now, here was this lady, a grandmother, asking if they would like to learn about computers.

Some of them can't read all the words in the homemade brochure the



A sense of the fun of learning permeates the computer room at the Computer Alternative Center in Sacramento, California. Students, who come mostly from underprivileged neighborhoods, are taught programming and other skills, good work habits and attire are also stressed.

lady in the gray Chevy hands them. That doesn't matter, come anyway, she says.

So, what do the "boys" have to lose?

Others may shun them, but these are exactly the type of kids Ida Mae Sydnor, mother of fourteen children, grandmother of fifteen, is looking for. In fact, these transplanted gang members are the first group of pupils to enroll in her computer programming class for dropouts and delinquents.

Lilies of the Field. One day Sydnor told the members of her church congregation in Sacramento, California, that praying was fine, but that it was "time to get out of the church and into the streets." Her proclamation got her a committed group of people who wanted to help the kids on the street corners, kids who don't have anything going for them.

It was June 1981 and computers were still a way off. Sydnor and friends formed the nonprofit Black Sacramento Christian Club and started offering classes in ceramics, interpretive dance, and gospel singing. Sydnor went door to door to find students and had her friend Joyda Middleton or her husband Clarence drive her around the streets. They



Earline Gaines



Michael Barron



Stephanie Sanchez



James Henry

went looking for kids with nothing to do.

Sydnor and the other volunteers paid for all the class materials and supplies out of their own pockets. They required no fees from the young people to take any of these classes. "If a mother has to choose between class fees and bread, she's going to buy bread," says Sydnor.

So she got some kids off the street and instructed them in singing, dancing, and making things out of clay. Her scheme worked, but it was not enough. What these kids really needed were jobs.

Computers were close and yet far away in Ida Sydnor's life then. She was working in then Governor Jerry Brown's office on the Community Relations staff. When the department's first word processor arrived for one of the secretaries, Sydnor asked to be trained on it.

"Whenever I see something new, I want to learn how it works," she said. And she kept asking, "Are you offering training on that word processor?" Her name was put on a list.

She knew it would be a magical machine if she could ever get her hands on it. Finally, three and a half months later, she was given one hour of instruction, and a book of documentation was dropped in her lap.

The word processor was indeed magical, and Sydnor's encounter with it inspired her to take a data processing class at a local junior college. She decided everybody was going to need computer literacy—soon. Those kids on the street corners needed computer literacy, too.

Sydnor's first thoughts about computers were prophetic. She read an article in *Time* confirming her prophecies about computers being the wave of the future, but the article also said minorities were going to be left out of the computer technology boom. The reason? Minorities do not have access to the information.

"Well," Ida Sydnor said. "That doesn't have to be." And so she began formulating plans for the Computer Alternative Center for Independent Study, where her students could learn computer programming. Now that's not learning key punch or data entry, but programming, which Sydnor feels is the highest skill to be learned on a computer. Sydnor took it upon herself to break the poverty cycle.

Poverty to Him That Refuses Instruction. The poverty cycle had a lot of Sydnor's kids absolutely dizzy. They didn't fit in anywhere except, maybe, street corners. They couldn't read. They couldn't write. They couldn't fill out a job application.

"They're going to be the last people to get jobs," said Sydnor. "They need some kind of an edge. Any type of computer knowledge they can pick up will help them get a job."

A fund-raiser is always a good way to bring in cash fast, but sometimes the best-laid plans go awry. The First Annual "He Lights the Way" Banquet, held in July 1982 by the Black Sacramento Christian Club, was expected to bring in a tidy sum—or at least enough to buy a lone Apple, because Sydnor had already decided that Apple was the way to go.

It was a grand affair, with a spread of food well worth the ticket price.

Outside the Oak Park Community Center, where the banquet was held, there's always a crowd of little children playing. They saw the catering trucks and smelled the food, and they peeked through the windows at the banquet. People were already lining up and these little children figured, well, they'd get in line too. Ticket? Who needs a ticket?

Suddenly there were a lot of them, appearing seemingly out of nowhere, hungry little waifs all wanting food. It was like a scene out of *Oliver*!

"What are we going to do?" cried one of the organizers.

"Let them eat," Sydnor said.

The caterer, who was charging by the plate, lost count with so many new arrivals. He threw up his arms in despair and decided to charge the group one lump sum. Consequently, the Black Sacramento Christian Club only cleared sixty dollars on their grand-affair banquet.



Tangie Johnson and Monica Williams try their hand at entering data into the Datapoint 8200 system.

And Bring Forth Fruit with Patience. There is an old saying that the more you give away, the more comes back. Soon after the banquet, Pacific Telephone gave the group a $2,500 grant, which Sydnor plunked down immediately at a computer store for an Apple. The second Apple came when they were awarded another grant from Pacific Telephone. Both grants were helped along by Steve Heath, district manager for media relations at the phone company, says Sydnor. Federal funds started trickling in, and Sydnor knew she was going to bring some computer geniuses into the world.

But apparently a lot of people had read the same *Time* article, and some people believe everything they read. They told Sydnor it couldn't be done, teaching dropouts and delinquents how to program. After all,



Tangie Johnson



Dave Sanchez



Percilla Perez



William Holloway

they didn't even have the basic educational skills.

"A guy from Hewlett-Packard told me, 'You're not ready for it [teaching programming and word processing] yet.' And by the way," Sydnor emphasizes, "this was not a white man talking."

People don't make up Sydnor's mind for her. She had an instructor in mind, C.E. "Chuck" Starks, who would teach—step by step—the math skills students would need for programming as they went along. The students would learn basic but simplified math, cutting through all the extraneous material to acquire the skills necessary for programming.

"These computers demand that you know things," says Sydnor. And she told the students, "I will give you the opportunity. And you're not going to rob yourself of this opportunity!"

With that kind of encouragement, Ida Sydnor's gang began to learn programming.

Their Redeemer Is Mighty. Sydnor says she turns these kids around by "getting inside their heads." To accomplish this, she has informal talk sessions in her office.

"What were you on your way to becoming before you first walked in here?" she'll ask a young man seated across the desk from her.

"I planned to be a first-class bank robber," is the reply.

Although some of the students in Sydnor's classes probably never even stole an empty pop bottle, much of the enrollment is made up of veterans of Juvenile Hall and the California Youth Authority. Many, probably 95 percent, are high school dropouts. Sydnor thinks it's funny that one teacher thought at first that he had to bring a gun to protect himself from the students.

Sydnor is not a big lady or a tough-looking woman, but she has a commanding demeanor, with a good deal of motherly affection thrown in. She is proud of the fact that "not one of the students ever even swore at me."

What makes someone a gang member, anyway? The boy who was planning to be a first-class bank robber said there was "nothing else to do." Sydnor's mission is to show these kids there are ways to do things legally. There are a lot of success stories, but not everyone, of course, is going to turn out on the right side of the law.

"You can lead a horse to water, but you can't make it drink," Sydnor says. Still, she leads every stray horse she can round up.

You Can Lead a Stray Horse to a Computer, but You Can't Make Him Program in Basic. One day, before Apples arrived on the scene, Sydnor noticed someone standing outside peeking through the Venetian blinds at the ceramics class.

"You don't want *him* in here," warned the ceramics teacher. "He's into drugs." "Him" was a tall, troublesome-looking kid, with long hair down to his shoulders.

Sydnor was already marching outside. "That's exactly the kind of person I want in here."

And when they were face to face: "I hear you're into drugs," she said.

"Yeah," he said.

"I hear you sell to kids," she said.

"No, I don't sell to kids," he said.

She looks back on her first meeting with the kid who was peeking through the Venetian blinds and recalls, "What I appreciated about him was that he didn't lie to me."

His name is Michael Barron and he would come clean off his drug habits and dealings, and then, with the arrival of the Apples, would become one of the top programmers at the Computer Alternative Center.

But it was a long battle, a nightmare, in fact. Michael went to see her once at the governor's office while Sydnor was still working there. He was so high, Sydnor said, on a mixture of dope and embalming fluid that she started crying. "Don't cry, Ida," Michael said, "I'll never do it again."

Now Barron attends classes there in the afternoon, at a junior college in the morning, as well as an adult education institution at night to earn his high school diploma. Sometimes Barron gets "edgy" and needs something to fill up the void. Then he gets the keys to the center from Sydnor and programs long into the night. Sometimes he just cleans and mops the floor there.

The computers are the drawing card for such successes. Sydnor says she's never screened for good hoodlums or bad hoodlums, but invites them all. A pool room (trouble with a capital T) was right next to the computer room.







"Why don't you guys come in and try the computers?"

And they shook their heads and warned her, those pool players did, about those brand-new Apples sitting there like sitting ducks: "Ida, they're going to get ripped off."

"Oh no," she boomed. "Those are your computers now. If someone steals them, they're stealing *your* computers. You'll know where they are. And you can find out easily enough where they are and go back and get them!"

The Beginning of Knowledge. There's not much that Ida Sydnor is afraid of. Oh yes, there is one thing.

"The future is going to be absolutely frightening for the noncomputer person," she says. "The next force of people that are going to be out of work are the computer illiterates. People need to advance—to move with the times. Either you know how to run a computer or you stay behind."

Amen.



Opposite page and above: You need spend only a few moments in the office of Ida Sydnor to witness an incredible panorama of the human condition as the young people at the center come to grips with things like time cards, coping with responsibility, and dealing with the realities of their past.

The Computer Alternative Center for Independent Study is the first community computer program in the world started for blacks and completely run by blacks. But students of all ethnic origins are evident here. Whoever has a need and wants to learn—no age limit—good hoodlum or bad or not a hoodlum at all, is welcome to come in and try the computers.

When you know about the backgrounds of some of Sydnor's students, it's surprising to see the "boys" now. Most dress well and have a businesslike attitude. Teenage boys actually wearing ties? It wasn't easy.

"You guys gotta do it," she reasoned with them. "If you're going to tell me no, you're going to tell your boss no." They wear the ties.

The Ties That Bind. The Computer Alternative Center is striving to be professional. They have formed a fledgling corporation called Data Oak (after Oak Park, the predominately black section of Sacramento where the center is located). Data Oak just completed its first project—programming and compiling a mailing list for an upcoming convention in Sacramento. Now they're ready to do similar projects for churches and small businesses, projects that involve writing their own programs for mailing lists, bookkeeping, and inventory.

At the head of Data Oak is briefcase-toting general manager William Jerome Holloway. Nineteen-year-old Holloway says his mother is overwhelmed because he's now doing things she has never seen him do before—getting out of bed in the morning and reading books and newspapers to improve his reading skills. Holloway said he was a troublemaker during high school, but he's reached the age now where he knows he's going to have to decide what he's going to do with his life.

James Henry, twenty-one—whom Sydnor says "can't spell a lick, but is one of the best programmers we've got"—works on creating and designing programs with Stephanie Sanchez. Reuben Watts is production manager.

Federal funding for the Computer Alternative Center stopped in Oc-

tober. Sydnor narrowly missed getting a grant proposal in when her mother suddenly became ill. Sydnor stayed at her mother's bedside every moment, and the older woman pulled through. But Sydnor missed the deadline for the grant and couldn't get an extension.

The Promised Land. Sydnor and her people have a dream of making the Computer Alternative Center self-sufficient—either through the profits from Data Oak or from several computer literacy seminars instructor Starks will be offering to the general community for a fee.

Data Oak also plans soon to start producing some of its own software for sale.

"I think to be a good programmer you have to create, and the minds of these kids work swiftly," says Sydnor, who promises that the Data Oak line of software—especially the games—will be completely different from what's already available on the market. "Just go into a low-income area—those kids think differently about games than kids who grew up with ready-made toys.

"When I was a kid I made my doll furniture out of milk cartons. We took an old tire and attached a metal rod to it and wheeled it down the street. You stick kids from a low-income background into software design and their computer games are going to turn out completely different."

One of the reasons Sydnor likes Apple so much is because of the wealth of educational software available for the machine. But she would like to see more software that incorporated black history. "Some people can't live without peanut butter, but do they know it was invented by a black man? That was George Washington Carver.

"And did you know that it was also a black man responsible for the traffic lights at busy intersections?

"There're so many things that have happened to blacks in this country that could be incorporated into educational software—Martin Luther King, the kids who got killed at Selma, Alabama. But it doesn't have to be totally all our history. I don't want any kid to play one of our games and feel left out."

Badlands. Sydnor says computers are going to enhance the educational system. "Many of my kids came in here, and they couldn't read, and I mean," she pauses for emphasis, "couldn't *read*!

"It's not their minds. There's something else going on here. I don't care what caused them to leave school—we've got to get them back into the educational system. They're not going to get a good job without it."

A teacher from one of the local junior colleges recently visited the Computer Alternative Center. Sydnor's students, with their programming skills, demonstrated to this junior college instructor that they already knew everything in the entry-level class he taught and were ready to go on to the upper-level courses.

"He allowed my students to get the credit for that beginning class and go up to the higher levels immediately," says Sydnor. "Of course, we didn't tell him that none of those kids ever even had algebra."

Those are the older kids. Sydnor recently had one little boy who got kicked out of the public school system at the age of eight. Repeatedly, teachers said Raython was a nuisance and booted him out of class.

The problem that finally got the little boy kicked out of the system wasn't his fault at all. Raython had gone way ahead of his classmates in learning multiplication and came to a screeching halt at 9 times 7. He kept asking the teacher, "What's 9 times 7?" The teacher refused to tell him until the rest of the class caught up. Raython got bored and wouldn't sit down, making himself a "nuisance."

"Raython," said Sydnor, when she first heard the story, "come here. Do you want to know what 9 times 7 is?" She plugged a math software program into the Apple. The screen soon displayed: $9 \times 7 = 63$.



The afternoon class of the Computer Alternative Center. Back row (from left to right): Joyda Middleton, Chuck Starks, Ida Sydnor, Reuben Watts, Earlie Moore, William Holloway, Gary Conner, John Horton, Michael Barron. Middle row: Macia Fuller, Ramona Thornton, Teresa Ellis, Kay Scales, Percilla Perez, Earline Gaines, Bryan Haynes. Front row (seated): Alice McGee, Stephanie Sanchez, Tracie Conner, Monica Williams, Netra Dixon, Tangie Johnson. (Kneeling): James Henry, Mikeail Rahmaan, and William Hill.

"So that's what it is!" said Raython. He mastered that disk in no time and promptly asked for another. Now he's back in the school system again.

"The computer allows kids to move at their own pace," says Sydnor. "Why should they wait? Kids' minds move fast and the computer allows them to move ahead, as they should. When kids get bored, they get bored. Only the real disciplined ones do well in the traditional school system."

The Price You Pay. So they leave. Sydnor herself dropped out of high school at age sixteen. In those days, the ugly facts of racism were a constant burden. She still remembers her shock when she learned she was barred from the choir at one school in Michigan.

Sydnor had a gift, more like a calling, to work with problem kids. She went back to school and has been working with delinquents and all kinds of other misfits for more than twenty-six years.

"You have to recognize that young people start being wounded. They don't need teachers telling them they can't learn."

Kids need motivation. They need that first taste of success. Once they get that—a program that works or an introductory letter that shines—Sydnor tells them, "Hey! That's fantastic!" And the kids want to hear it again and again.

The Computer Alternative Center does everything it can to prevent the kids from dropping out of the program. Instructor Starks warns the kids about the frustration phase they are bound to reach in the process of learning and urges them not to drop out then—because seeing that frustration stage through usually brings about a click! They've learned something.

"You mean *this* is computer programming?" the students say, truly shocked. "It can't be that *easy*!"

"If you can keep up with this, you can do anything," Sydnor tells them. "This is one of the highest technologies. Whatever you want to be, it's at your fingertips."

The computers have already given her kids an edge. Three of Sydnor's former students, including two women, have already taken full-time jobs in the industry. She tells the rest of the students, "You will be able to make your way up in a company, once they find out you know programming."

In the midst of her thoughts, Sydnor receives a phone call from a distraught mother of one of those street-corner kids. Sydnor gets a lot of similar phone calls from parents throughout the day.

"Sweetheart, I always . . ." she begins and then counsels the mother for a long time, tells her that she is going to have to bend also, and then warns her right before she hangs up the telephone: "Don't let him go back there. He'll be dead in a year."

Wherever "there" is, Sydnor is trying to keep the kids, her stray ponies whom she cares so much about, away from it.

"You have to try," she says. "My husband is always telling me that I think I can change the world. Well, somebody has to take the time to deal with the problems or we're going to have more problems.

"And I have told my husband, this year has been one of my most successful. If I go to bed now and I never get up again, I'll be satisfied."

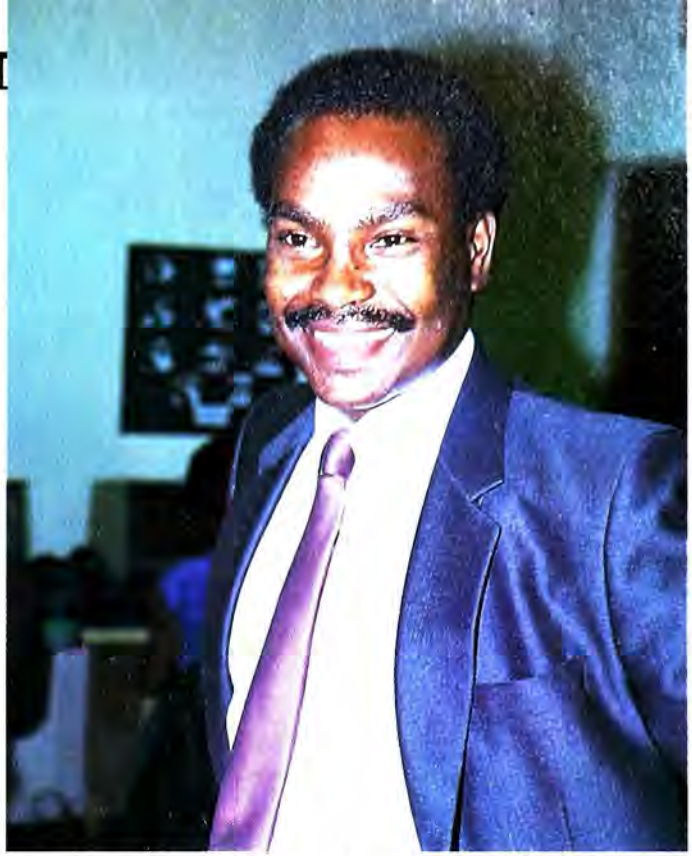
Graduation Night. The word *commencement,* as in commencement ceremonies, means beginning, and the word never held truer than it did this last September 30 when the first group of students—forty-five in all—from the Computer Alternative Center received their diplomas for successfully completing the course work. These kids have had a new beginning, and they were proud, and their parents were proud, and Ida Mae Sydnor was the proudest of all.

She bustled around before the banquet began, making last-minute preparations, greeting everybody, making sure everybody knew where to sit, rounding up the gospel singers, and straightening out who would be the recipients of the special awards to be given out during the ceremony. For this last duty, she and Starks bent their heads over the awards certificates while everybody else started the first course of the meal.

"Student of the year is Bryan Haynes," Sydnor whispered while Starks printed the name on the certificate. "The best programmer awards go to Stephanie Sanchez and James Henry. Most cooperative, David Sanchez and Donald Wilson. Best dressed are Bryan Haynes and Ramona Thornton. And when you read off the award for the most likely to succeed," she concluded, "have the entire group of graduates stand up."

And who should be passing out the diplomas but Chet Tatoian,





Above: Class instructor Chuck Starks beams on the final session of his afternoon class; obviously no "frustration phase" here. Below, left: "Student of the year" Bryan Haynes receives his certificate of completion from J.T.P.A. chief Chester Tatoian.

California State CETA representative, and Jim Pardum, a SETA representative. SETA and CETA were the very organizations from which the Computer Alternative Center's funds were cut.

Tatoian had been one of the most skeptical observers of the Computer Alternative Center from its beginning, telling Sydnor that all her students would drop out.

"Man, was he surprised when I told him just how many graduates we would have," Sydnor said gleefully. "We're graduating sixteen out of twenty from the afternoon class and twenty-nine out of thirty-five from our morning class."

The speeches were actually short and to the point. Starks told them, "Keep pressing on. Only you will stop yourself. I challenge all of you to help one person in your community to make a similar accomplishment—a friend or a relative, you know who I'm talking about. Reach out."

When student of the year Bryan Haynes was called upon to make his speech, his groan could be heard at the back of the room. But Haynes, who had overcome a great deal of brain damage caused by drugs and managed to complete the course successfully, told the audience how much he appreciated his classmates and said, "It would be nice if we could all get a job in the same place."

Everybody seemed to have either a handkerchief or a camera up to their eyes.

Afterward, Holloway, who received one of the class leadership awards, said Sydnor was "like a goddess to us." Holloway is one of those big, tough-looking kids that used to stand on street corners until he started hanging around the Computer Alternative Center instead.

"I never thought I would graduate from anything," he said. "I used to look at all my old friends not doing anything with their lives, just smoking dope. They were a mirror to me, what I didn't want to become. Now I know I can do anything I want because I completed this course." He paused and then stammered a little: "I feel like crying."

At that moment, his mother, Velma, came running over with her camera. "One of you all together," she commanded, herding her big son and his fellow graduates into a group.

Cameras are funny things. They make everybody freeze just for a moment. But they record that moment forever. The kids all hustled together and held their diplomas high. No one had to tell them to smile. The scene froze for an instant. Then the first graduating class of the Computer Alternative Center moved on to the future. ◨

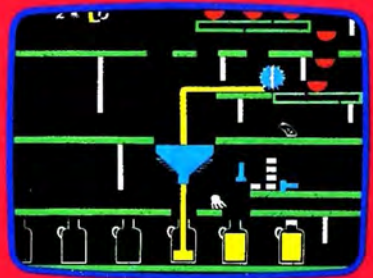
BUY 2 SIERRAVISION PRODUCTS GET 1 FREE



CLIMB TO NEW HEIGHTS WITH APPLE CIDER SPIDER!

Apple Cider Spider's spent a tough day catching pests in the basement of a cider factory, and all he wants is a good night's rest. Leap through streams of cider and avoid the slice smasher on the first floor. Dodge apples and the slicer on the second floor. Steer clear of falling fruit on the third floor. Finally, crawl into your attic web for a final hurrah! The hazards increase with each level: hungry frogs, birds and wasps. A teddy-bear mode lets little ones in on the action. Let Apple Cider Spider put hours of pesky, playful fun into your life!







Sierra ON-LINE™

SIERRA ON-LINE BUILDING COARSEGOLD CA 93614
209 683 6858

APPLE • ATARI • COM 64 • COLECO

TM designates a trademark of Sierra On-Line, Inc.

Mind Your Business

BY PETER OLIVIERI



Now that it's November, you're probably getting started on some Thanksgiving holiday preparations. There's always plenty to be thankful for, isn't there? No matter how bad things are, they could always be worse. Just imagine—your Apple could decide to erase one of your disks. Actually, that wouldn't be all that much of a disaster because you've been faithfully making one or two backups of all your important programs and data, right?

III Apple People. Chances are some Apple III owners are feeling a bit like unwanted children these days. Not much attention is being paid lately to this important group.

In contrast to the current trend, this column will continue to provide information about Apple III programs and hardware. Another important way Apple III people can stay informed is by keeping up with what fellow users are doing. One effective way of doing this is by participating in your local user group. Our very own B.U.G. members are likely to be another valuable resource. And in addition, there's now a publication of special interest to Apple III owners and users. It's called the *Open Apple Gazette*, and it's published by the Original Apple IIIrs, a San Francisco-based user group.

Joining the group costs about thirty dollars per year. Membership entitles you to receive the *Gazette*, a bimonthly publication containing information on *VisiCalc*, Business Basic, a thorough question-and-answer section, and much more. The biggest advantage you stand to gain from membership is the connection with other members with whom you share common interests. In essence, you'll have a forum where questions and problems can be resolved. In addition, it stands to reason that the group may have more influence on developments affecting the Apple III than owners acting individually would.

Apple III Bits. Speaking of information about the Apple III, did you know that Apple Computer has recently begun offering the Apple III with 256K as the standard amount of RAM? Also of interest, a new SOS manual is now available. The manual is intended more for programmers than for the average user; if you think you might be interested, stop by your local dealer and take a look.

In other news, Apple now has a CP/M card for the Apple III, at a cost of between $500 and $600. As we mentioned in an early column, there are a great many CP/M programs out there that might interest you.

Software Publishing Corporation, developer of the PFS series, has incorporated some new features into its software. If you have an Apple III and a ProFile hard disk, it's now quite easy to back up large hard disk PFS files onto floppies.

By the way, it's now possible to get dust covers designed especially for the III. You can now even cover a "complete system" made up of the Apple III monitor, a ProFile hard disk, and the computer itself. Since many of the environments in which Apple IIIs do their work are far from dust-free, a dust cover is inexpensive insurance indeed.

One last note for owners of Apple IIe's and Apple IIIs who are interested in running IIe software on the III: The III's emulation mode does not recognize any of the customized features that might be designed into a piece of software made especially for the IIe.

Net Profit. The term *network* comes up a lot these days. It's used in describing television conglomerates, dating services, telecommunications facilities, and even computers. Since computer networks are certainly of interest to computer users, it's appropriate that we take time here to explore what networking is all about.

In the computer world, the term *network* is used to refer to a group of computers that are, in a sense, connected to one another. If these computers are in the same location within a facility (in a microcomputer lab at a school or as workstations in an automated office, for instance), the network is often termed a *local network*.

One reason for establishing a network is to reduce costs. Let's say you're about to install ten Apples in your office environment. Can you really afford to buy a printer for each computer? And can you afford to equip each Apple with two disk drives? Setting up a network gets around these questions handily because it means that your ten microcomputers can share a printer or two and a hard disk. The hard disk offers greater speed and significantly more storage, and it is less expensive than ten or twenty individual disk drives. In addition, network users can store their programs on data on the hard disk; from there they can be shared by others.

Of course, networks impose some limitations. Computers in a network are far less "portable" than complete individual Apple systems; they can't usually be taken home or to another office. Also, there's not a lot of software available at present for computer networks, and some commercially available programs can't be loaded onto a hard disk or are copy-protected to inhibit such resource sharing.

Nevertheless, networks will almost certainly become increasingly common over the next few years. The ability to communicate with co-workers in the office via electronic mail and the appeal and/or necessity of working from our homes will usher in the age of the network. Quite a few schools and universities have already begun setting up extensive local networks. And one day soon we may see networks in which users working from different Apple stations will be working together on a single project.

Various manufacturers now offer networking software, including Apple Computer and Corvus Systems (creator of Omninet, which uses the company's own hard disk drive). So if you're thinking about automating the office or establishing a microcomputer lab, you might want to consider setting up a local area network. Perhaps some B.U.G. members who have experience with networking and Apples will get in touch to share their experiences.

Health Checklist. Various factors in a computer environment can affect your health and well-being and that of those around you. Every so often, it's a good idea to take a good look at your circumstances to be sure they are the best they can be in terms of comfort and safety. Some questions worth considering include the following:

1. Is your computer setup safe? Make sure that the electrical outlet to which the computer is connected is not overloaded. And if your machine has a tendency to overheat, be sure you've installed a fan or taken other appropriate measures.

2. Does your computer display contribute to eyestrain? Tinted screens can help alleviate the problem of eyestrain. In addition, do whatever you can to reduce on-screen glare, which may come from objects in the room that are being reflected or from the brightness level of characters on-screen.

3. Are you suffering from computer-related backaches? You have only one back. Sitting too long at the computer can contribute to, or cause, aches and pains. So take breaks. And it isn't just sitting in one position for so long that can cause problems. Consider the chair you're sitting in. Is it comfortable? Is it too high or too low? Does it support your back?

4. What role does stress play in your computer environment? Stress is a real hazard, both to you and to your employees. If you're the boss, it's a good idea to consider the possible computer-related stresses your employees may be experiencing. Some people dislike or are afraid of machines, others worry about fouling up the computer data, and others wonder what to do if the computer asks them something they don't know. A bit of understanding and awareness can make all the difference

in these kinds of situations. (Have you hugged your data entry person today?)

First Base with Databases. Database management systems have been talked about in this column before, but it's been more than a year since we've discussed them at any length. Very soon we'll be taking an excursion into these systems. In preparation, it seems appropriate to review some relevant terminology; this should help new readers and may offer regulars a good refresher.

A database is a collection of data, and this collection is usually made up of files. For example, an organization may have a database containing a personnel file, an inventory file, a financial file, and so on. A file contains records (the electronic equivalent of file folders) and a record usually has several fields. In the example just mentioned, one of the file folders in the personnel file would be the record on a particular employee. One of the fields in that record would contain the employee's name, another would contain a figure representing that employee's salary.

A database management system is a set of programs designed to help you manage the data contained in a database. Database management packages are usually very general in nature—that is, such systems can usually be adapted for use in almost any record-keeping application you have. You can maintain anything from a personnel database to a database of your stamp collection. The idea is to have means of retrieving information in a variety of ways to facilitate your management of the data at your disposal.

When you start looking into database management packages, you'll discover that they vary greatly in what they can do. To qualify as a true database, a system must possess at least five component programs. First, it must be able to create the database (for the first time); second, it must be able to search through the database according to search criteria you set; third, it must be able to make a backup copy of the database you create; fourth, it must allow you to format and print reports about selected data; and fifth, it must have a program that permits you to update (delete, add, or change) entries in the database.

What Else Can You Expect? In addition to the basic five components just named, you can expect to find a variety of features in most commercially available packages. Most packages can calculate values based on data currently contained in the database, sort database records into any order you choose, design customized reports, prepare mailing labels, and create a special input screen to facilitate data entry.

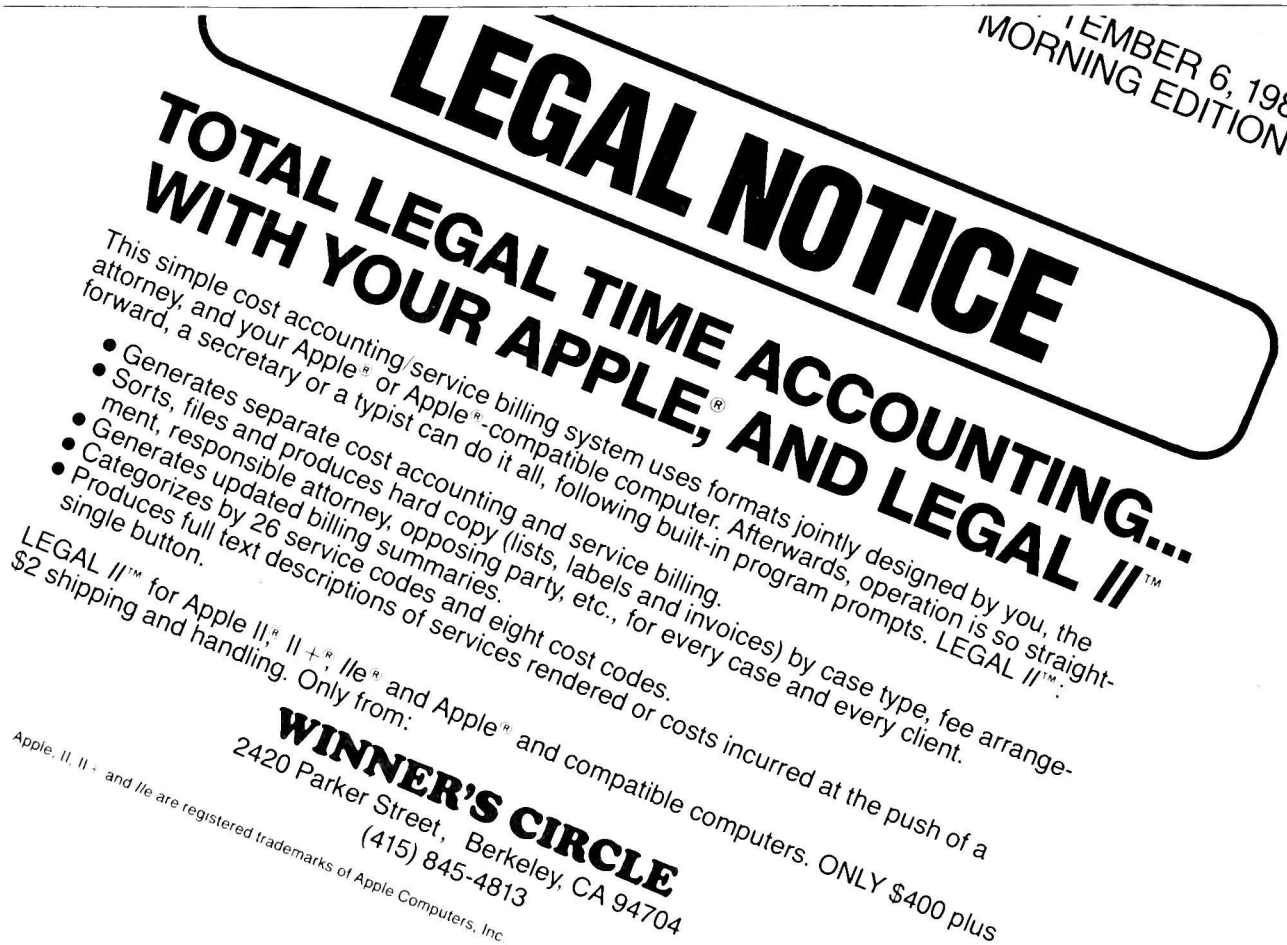
In the December issue, we'll not only review some of the leading database management systems, we'll also spend time addressing two other topics. First, we'll identify the characteristics you should be looking for in a DBMS, and second, we'll set forth a means of evaluating your own particular DBMS needs. The goal of this series is to put you in a better position to know both how you might use DBMS software and what particular packages might best meet your needs.

In Brief. Events happen so fast in the microcomputer arena that it's easy to miss something. In light of this, every now and then we'll devote some column space to a quick "in brief" section. Perhaps this will make the task of keeping up a little more manageable.

Not so long ago, the only way to get programs and data into a computer was by using a keypunch to prepare punched cards containing the instructions and data. It was a tedious and cumbersome process. While there are still some installations that depend on punched card processing, a great many computer installations are now keypunchless and cardless; instead data and programs are being entered at microcomputers or terminals. Nevertheless, there are still some excellent uses for punched cards. Reader survey cards in a magazine, with certain areas darkened (using that famous number-two pencil) for reading by an optical card reader, are one good example.

Perhaps you have boxes of punched cards that contain valuable data you'd like to enter into your Apple. You may have tests to grade, surveys to analyze, inventory records to consider, or time cards to record. If so, it should come as good news that it's now possible to read punched card data into an Apple. A company called Chatsworth Data Corporation manufactures a series of card readers. The model that can be used with the Apple II comes with an intelligent interface board that plugs into slot 4. All the firmware required to interface the reader with the Apple is stored in a PROM on the card reader interface board. A single command activates the reader.

The machines offered by Chatsworth are versatile. The company's



TIME IS MONEY™ personal

The real reason to buy a personal computer

FAST The **Home Accounting System** with machine language speed—instant access to any transaction or balance—and there's no complex or tedious setup prior to use.

EASY Using **Time is Money**™ is easier than keeping a checkbook by hand—even if you've never used a computer before. No codes, no accounting terminology needed. Simple checkbook balancing with a full statement on-screen.

FLEXIBLE Works for a single checkbook or an entire small business. Define, change, or delete categories and accounts at any time—you won't have to start over when your needs change.

POWERFUL Maintains balances for multiple checking and savings accounts, charge cards, loans—up to 240 separate assets and liabilities. Tracks up to 240 types of income from 240 different sources. 240 expense categories with tax deductions.

Hardware requirements: Apple][,][+, //e or compatible computer, 48K or more, one disk drive. Printer optional.

We encourage comparison shopping. Compare **Time is Money** to any other home accounting program for ease of use, speed, versatility, and power. Call or write for a data sheet.

Easy-to-read 40 column display, or can take full advantage of Apple 80 column card. Displays reports and graphs on screen or uses printer. Creates Net Worth Statement, summary of selected expenses, income, budget performance—and much more. Lists all or selected transactions—with lightning speed.

Professionally designed tutorial and manual by Sigea.

Time is Money for Apple][,][+ or //e. Available now for $100.00 from your local dealer or:

TURNINGPOINT™ SOFTWARE

11A Main Street, Watertown, MA 02172
(617)923-4441

Visa—MasterCard—Check—COD
Add $2.50 postage and handling
Mass. residents add 5% sales tax

DEALER INQUIRIES INVITED

© Copyright 1983 Turning Point Software, Incorporated
Apple is the registered trademark of Apple Computer, Inc.

OMR 200 Card Reader, for example, has a card feed rate of sixty cards per minute and can read punched, preprinted, or number-two pencil-marked cards.

Along these lines, you may now be wondering whether the Apple can also process magnetic tape. Not the slow, clumsy cassette tape once used with the original Apples in BD (before disks), but rather the tapes normally found around a typical computer facility. It would certainly be advantageous to be able to work with tape, especially since data important to business people is sometimes only available in tape format. For example, it's quite common for mailing lists and census data to be kept in mag tape format. In addition, mag tape has always been an inexpensive and fast storage medium. It would also be a good way of backing up data stored on a hard disk.

As it turns out, mag tape drives are relatively expensive ($2,000 to $3,000), but for certain application areas they can be well worth the investment. One manufacturer of such drives for the Apple II, II Plus, and IIe is Electrovalue Industrial in Morristown, New Jersey.

A doctor a day keeps your Apple away . . . from the repair shop. Now you can take care of your own Apple yourself. What's that, you say? You're not qualified? You're a nontechnical-type person? Have no fear—let your Apple diagnose its own problems.

Nikrom Technical Products sells a disk designed to diagnose your Apple's technical problems. The disk is inexpensive and works with the Apple II, II Plus, or IIe. The program it contains evaluates your system's Monitor, the RAM chips, and the disk drive. There's also a test for Hayes Micromodem users. The manual is well written, as is the program. It even provides instructions on how to do various repairs on your own. The disk is not an alternative to a service contract or good rapport with your dealer, but it does offer less knowledgeable users a way to keep track of the health of their Apples.

Keep your eyes and ears open for legislation that will bring tax breaks to microcomputer owners. The Family Opportunity Act proposes a $100 annual tax credit to any families that buy a computer for business or educational use at home. In fact, the bill also argues for depreciation allowances. It may not be much, but every little bit helps.

The Readers Speak. Dave Howell, a reader in Oklahoma, would like to know more about what an Editor is and whether it would be a useful addition to his software library.

Basically, an Editor is a computer program designed to allow the user to manipulate textual material. While not really word processing programming, an Editor can perform some similar tasks. For example, most Editors allow you to add and delete text, replace all instances of a certain character within a document with some other character, and so on. An Editor usually won't justify the right margin of your text, format a document, or control document printing.

Editors are often used by programmers. Sometimes, using an Editor is a very convenient way of repairing a lengthy program. In other instances, an Editor must be used to "create a file" in a language that cannot normally be run on the computer being used. The "file" is then sent to a host machine and the program is executed. This is a common way of creating and running programs in Cobol (Common Business Oriented Language), the language used for most business applications developed to run on a mainframe computer.

To respond more specifically to Howell's question, an Editor has plenty of uses if you're a programmer, fewer if you're strictly a computer user. If you've been writing some of your own programs or getting involved in creating your own files, you're likely to find an Editor program quite helpful.

Holiday Attractions. By the time you get the next issue, you'll be eagerly anticipating the December holidays. (Can we be that close to 1984? And how close are we to the propositions suggested in the book of that name? Not very close yet, we'd argue.)

Next month should mark the beginning of our database management series. Until then, have a happy Thanksgiving and drop us a line now and then. ❑■

Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014, (408) 996-1010. Chatsworth Data Corporation, 20710 Lassen Street, Chatsworth, CA 91311, (213) 341-9200. Electrovalue Industrial, Box 376-D, Morris Plains, NJ 07950, (201) 267-1117. Nikrom Technical Products, 25 Prospect Street, Leominster, MA 01453, (617) 537-9970, (800) 835-2246. Original Apple IIIrs, 1850 Union Street, Suite 494, San Francisco, CA 94213. Software Publishing Corporation, 1901 Landings Drive, Mountain View, CA 94043, (415) 962-8916.

GENERAL LEDGER MADE EASY.

1

How would you like to have the most powerful General Ledger system ever produced for the Apple II* Plus and the IBM* PC? M&R's SUP' R LEDGER is just that . . . a system that up until now was available only for large computers.

2

How would you like a system that is so easy to use that in less than 4 hours you can have the system up-and-running? It's true! Thanks to our simple, concise user's guide the mystery of operation is quickly solved.

3

Is it possible to have all of this and still have a program that can accommodate 200 separate accounts, up to 1400 separate transactions in any given time period, and provide information on 10 separate cost centers? Yes! SUP' R LEDGER offers all of this and much more. Send for details.

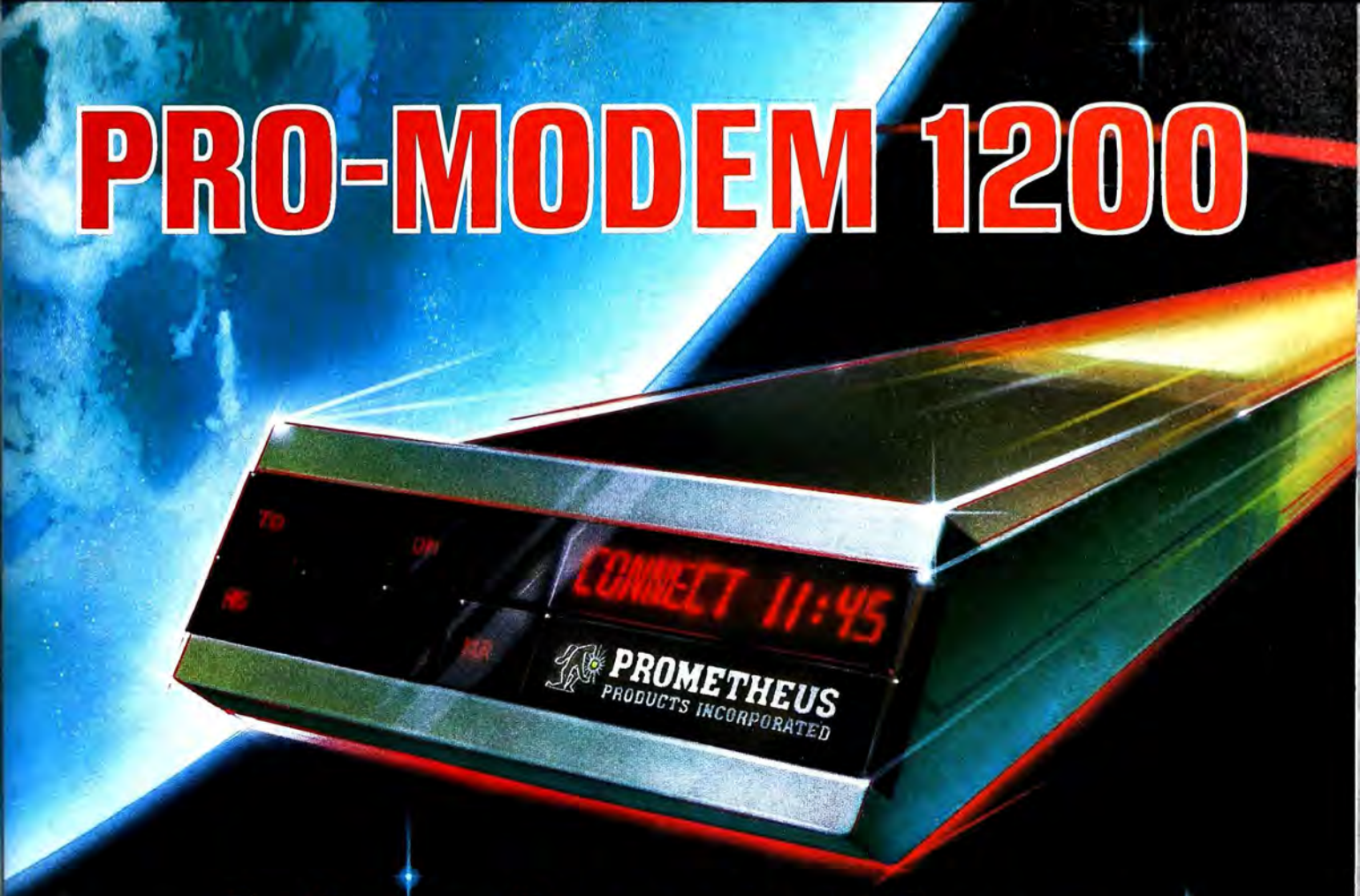
SUP' R LEDGER

M & R ENTERPRISES
910 GEORGE STREET
SANTA CLARA, CA 95050
(408) 980-0160

*Apple II Plus is a registered trademark of Apple Computers

*IBM PC is a registered trademark of International Business Machines

PRO-MODEM 1200



It's about time.

Time for your computer to make the telephone connection – with an intelligent, full 212A 300/1200 baud modem – with a real time clock/calendar – and with the capability to expand into a complete telecommunications system. It's time for PRO-MODEM 1200. Much more than just a phone modem.

When you're on-line, time is money. PRO-MODEM telecommunication systems help you save. By monitoring the duration and cost of your phone calls. And by sending and receiving messages, unattended, at preset times when the rates are lower. . . with or without your computer.

Compare the $495 PRO-MODEM 1200 with any other modem on the market. For example, you'd have to buy both the Hayes Smartmodem 1200 plus their Chronograph for about $950 to get a modem with time base.

PRO-MODEM 1200 is easy to use. A convenient "Help" command displays the Menu of operating command choices for quick reference whenever there's a question about what to do next. Extensive internal and remote self-diagnostics assure that the system is operating properly. Some of the other standard features include Auto Answer, Touch Tone and Pulse Dialing, and Programmable Intelligent Dialing.

PRO-MODEM does more. It lets you build a full telecommunications system with features like Auto Dialer, Incoming and Outgoing Message Buffering, Business/Personal Phone Directory, Programmable Operating Instructions, a 12-Character Alpha-Numeric Time and Message Display, and versatile PRO-COM Software. PRO-MODEM commands are Hayes compatible so you can use most existing telecommunications software without modification.

There's much more to the PRO-MODEM story. See your local dealer for complete details. He'll show you how to save time. And money.

Prometheus Products, Inc., 45277 Fremont Blvd., Fremont CA 94538, (415) 490-2370



PROMETHEUS



HOW TO UNSCR YOUR NEST

It doesn't take a computer to tell you that money can't buy you happiness.

But at last there is a piece of personal computer software that can make you a lot happier about your money.

And you're looking at it.

Who needs it?

Dollars and Sense™ is designed for everyone who wonders where their money is going. Or why it isn't going as far as it used to. Or even as far as it's supposed to.

It's designed for people on a budget. And for people who aren't.

It's designed for people with expense accounts. And people who just want to account for their expenses.



For people who don't know a thing about computers. And people who know everything.

For people who can't balance a checkbook. And people who can do it in their sleep.

And if you've read this far, it's designed for you.

Where have all the dollars gone?

Dollars and Sense saves you money by organizing your money. By giving you the clearest picture you've ever had of your financial behavior.

You can establish budgets along any lines you like. Monthly or annually. Fixed or variable. On up to 120 accounts.

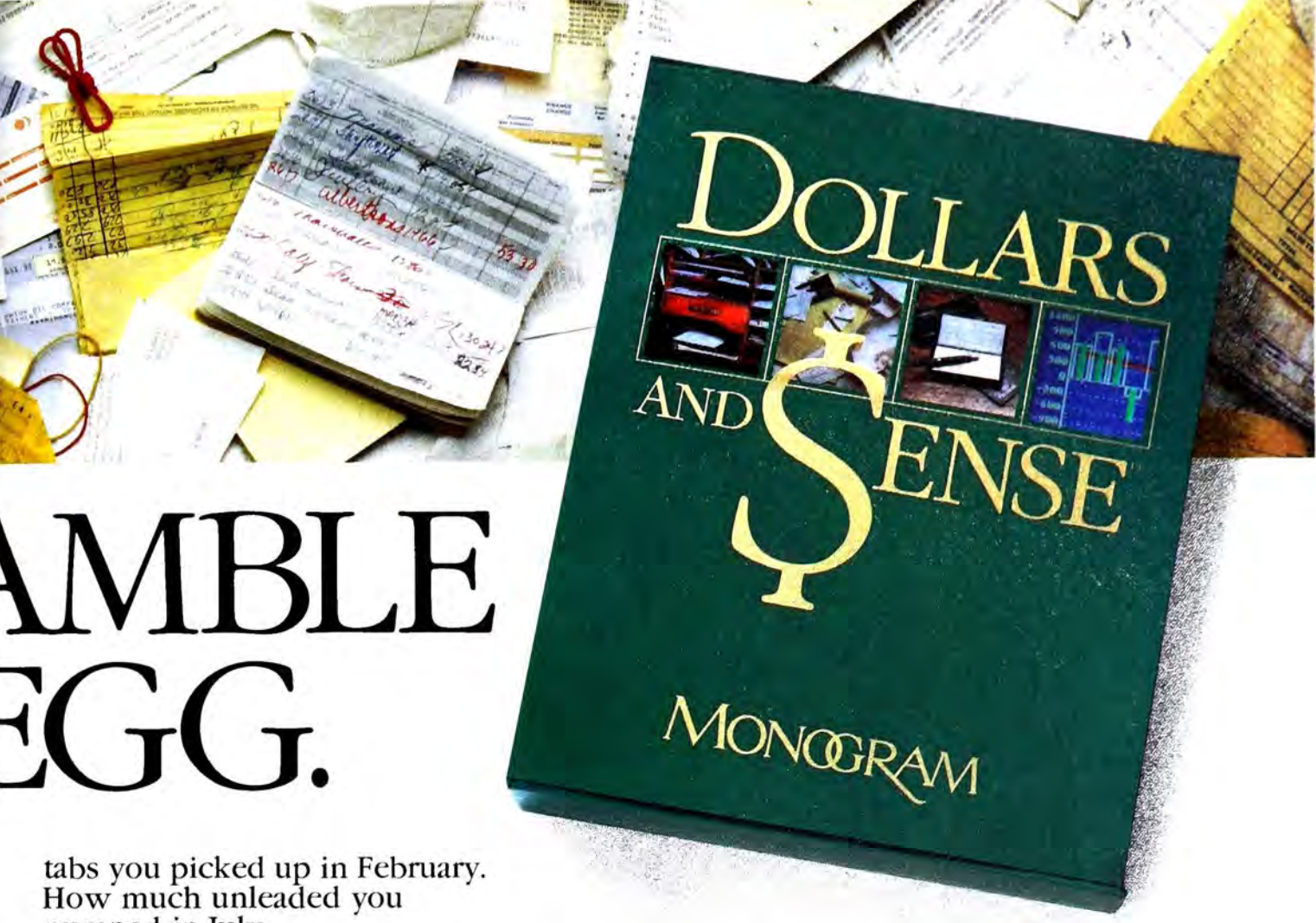
It can write checks, make transactions automatically, even remind you to pay your bills.

And as time goes by, it tells you exactly how you're doing. With a complete set of reports and full-color graphs*.

Year-to-date summaries. Income statements. Balance sheets. Cash flow analyses. Monthly and yearly comparisons of where you wanted to be vs. where you are.

You can look into the future to discover how much damage that new car, new driver, new dress or new baby will do to your budget.

Or look into the past to find out anything you like. Like how many bar



AMBLE EGG.

tabs you picked up in February. How much unleaded you pumped in July.

Or whether your utility bills have gone far enough through the ceiling to justify a new roof.

And all you have to do is spend a few minutes each week telling your IBM® PC, Apple® II or IIe what came in and what went out.

Tax break.

You can use Dollars and Sense around the house or around the office.

And around April 15, you'll be glad you did. Because a few simple keystrokes will present you with all the information you need to satisfy Uncle Sam.

If you do your own Long Forms—or your own loan applications—you'll save time. If someone else does them for you, you'll save money.

Year after year.

User friendly. Really.

Dollars and Sense also happens to be very easy to use. For everyone who uses it.

If you're a novice, at computing or accounting or both, don't worry.

The interactive demonstration disk will get you started. And the program will keep you going. With sample accounts, on-screen prompts and two different beeps.

One for typographical errors. And another for other kinds of errors.

As you get faster, so does Dollars and Sense. You can enter and edit large amounts of information, right on the screen. Move from function to function without waiting around. And get instant, up-to-date reports.

On screen. Or on paper.

And one more thing. Dollars and Sense is tax-deductible.

But only if you use it on your taxes.

MONOGRAM™

8295 South La Cienega Blvd.
Inglewood, CA 90301
213/215-0529

Apple is a registered trademark of Apple, Inc.
IBM is a trademark of International Business Machines.
*Color monitor required

```
130  PRINT "THIS IS AN EMPHASIS TEST"
140  PRINT "THIS IS A NORMAL TEST"
150  PRINT "THIS IS AN EXPANDED TEST"
160  PRINT CHR$(20) "TEST"
170  PR O
```

Results:

THIS IS AN EMPHASIS TEST
THIS IS A NORMAL TEST
THIS IS AN EXPANDED TEST

There are two main types of printer interfaces: parallel and serial. Most printers today expect to receive character data from the computer in parallel mode (see figure 1). This means that the character to be sent is represented by eight electronic signals called "bits", which are sent over the eight data lines of the interface cable simultaneously -- the eight bits representing the character travel down the eight electronic wires of the cable, one bit in each wire. This mode is sometimes referred to as "Centronics compatible" after the company that first used it.

Serial data is sent one bit at a time over a single wire. This mode is commonly used by printers that are designed to be connected to modems. It is cheaper to build the circuitry required for serial data transmission, but it is slower. The main advantage is that you need a simpler cable.

Last month we took a look at the various aspects of printer hardware, such as the paper-out condition, ribbon handling, maintenance tips, and DIP switch settings. This time we'll proceed to the second category of commonly asked questions about the Epson: printing from program control.

"Program control" refers to printing under the control of a program written in a computer language commonly used on the Apple such as Applesoft, Pascal, assembly language, and others.

All the basic concepts of printing will be covered in this installment, including transmission mode, output redirection, embedding, control codes, escape codes, and ASCII characters.

Transmission Mode (Serial or Parallel). To print characters, you must send them to an output device. This means that you need not only the output device itself, but also a set of wires (a connecting cable) that will carry the signals representing characters from the Apple to the output device. Consider, for example, the monitor (or television set) that displays the Apple's output on its screen. The path that the output travels from computer to monitor is provided by a cord that is connected to the Apple's video output jack at one end and to the monitor's input jack at the other. It's also worth noting, in this example, that there is special circuitry in the Apple that transforms the "character signals" into a video signal that can be displayed on the monitor.

The printer is connected to the computer in a similar way. There is a cable to carry signals from the Apple to the printer (called an interface cable); and there is (usually) a special circuit board (called an interface card) in one of the expansion slots of the Apple, which translates the Apple's output into a form the printer can use. The cable and card together are sometimes called the *printer interface*.

There are two main types of printer interfaces: parallel and serial. Most printers today expect to receive characters from the computer in parallel mode (see figure 1). This means that the character to be sent is represented by eight electronic signals, called *bits*, which are sent over the eight data lines of the interface cable simultaneously. The eight bits representing a character travel down the eight parallel wires of the cable, one bit in each wire. This mode is sometimes referred to as "Centronics compatible" after a type of printer that was popular at the time the Epson was introduced. Parallel interfacing is commonly used by printer manufacturers, because it is cheaper to build the circuitry required; the main problem with parallel interfacing is that you need a complex cable, with ten or more wires in it, to connect to the printer.

It is also possible to run the Epson in serial mode, by using a parallel/serial interface adapter (distributed by Epson) that plugs into the parallel port in the back of the printer. Serial mode means that the eight bits representing a character are sent not side by side, but one after another: Thus only one wire is needed, instead of eight (see figure 2). An unexpected advantage to serial interfacing is that it allows us to save a slot in the Apple, and avoid the expense of a printer interface card, by connecting a couple of wires from the game I/O port of the Apple to a serial adapter on the Epson. Instructions on how to do this, and an accompanying program to print characters, can be found in the user manuals of the *Big Mac* and *Merlin* assembler programs in the section entitled "Game Paddle Printer Driver."

Output Redirection (PR#). Have you ever wondered why something as cumbersome as PRINT CHR$(4);"PR#1" (or PRINT D$"PR#1", if D$=CHR$(4)) must be used when you want to send something to the printer? This is especially interesting when you consider that other Basics have a much simpler command (such as lprint, for "line printer"). The answer lies in the relative antiquity of the Apple's design.



An Evening with Outstanding Characters

When the Apple was invented, there were no disk drives for it and hence no need for a disk operating system or DOS commands (a tape cassette player was the mass storage device). Convenient printer commands were not high on Apple's list of features either, but designer Steve Wozniak did leave a way for output to be controlled.

After a pathway has been established from your Apple to your printer, characters can be sent to the Epson by telling the Apple to *redirect* character input or output (that is, send it somewhere else). The Apple has two handy, programmable switches that control where input characters will be received from and where output characters will be sent. The input control switch is called KSW (for keyboard switch), and the output one is CSW (character switch); they are at memory locations $38 and $39 (KSW) and $36 and $37 (CSW). (The "$" means hexadecimal notation.)

When you turn on your Apple and press reset before DOS has a chance to finish booting, KSW is set to read the keyboard and CSW is set to send characters to the screen. If you boot DOS, the switches will be changed to cause a detour into DOS (see figure 3). DOS can then check every input to see if you have typed in or have printed a DOS command. If you haven't, the characters will be sent on to the normal screen destination; or, if you have entered a DOS command, DOS will execute it. Here is a summary of the switches and where your characters go:

I/O Switches

Name	Meaning	Location	Points to (No DOS)	Points to (DOS)
CSW	Character output switch	$36, $37	$FDF0	$9EBD and then $FDF0
KSW	Keyboard input switch	$38, $39	$FD1B	$9E81 and then $FD1B

(Note: $FDF0 is the address of the screen output routine; $FD1B is the address of the keyboard reading routine.)

A convention was established with DOS so that, if you print a control-D

and then a string, DOS will know that you mean the string to be a DOS command. If there is no control-D, DOS just passes the string along for formal outputting. The print statement, then, must be used to "talk" to DOS from Applesoft control.

Note that a control-D is not needed if you type in a DOS command in immediate mode. This is because KSW is set to detour each character through DOS as it is typed, so it can be checked, character by character, to see if it matches a DOS command.

There is a fly in the ointment, however. If you use PR#1 instead of PRINT D$"PR#1" in a program, you will be unable to execute any DOS commands within the program. This is because PR#1 is executed by Applesoft first (it doesn't get to DOS because it is not in a print statement, remember?), which sets CSW to point to slot 1 and the heck with DOS. DOS at that point is partially disabled, because the switch that normally sends characters from print statements to DOS for command checking has been changed to point to slot 1, before DOS had a chance to do anything about it. DOS is unable to intercept any future print commands; hence it is unable to execute any DOS commands from your Applesoft program.

The usual solution for this sorry state of affairs is to give DOS a chance to use its *own* PR# routine (yep, this duplicates the Applesoft PR# command) by using PRINT D$"PR#1". This keeps DOS in control and allows it to change the final destination of characters from the screen to the printer slot. At the same time, it allows DOS to continue intercepting all print statements to check for DOS commands.

Another, less familiar solution is to use something like:

```
100  PR#1 : CALL 1002
```

The call 1002 is to a subroutine at $3EA that reconnects DOS. This has the advantage of restoring DOS capabilities within an Applesoft program, without generating a carriage return (as would be caused by a print statement). This can prevent your program from scrolling the screen up, in case you are trying to do something like a screen dump.

One advantage of the "change the I/O hooks" method of redirecting output is that it is convenient to use with printed output. Other Basics must use one command (print) to send output to the screen and another (lprint) to send output to the printer, but with this method, the same command

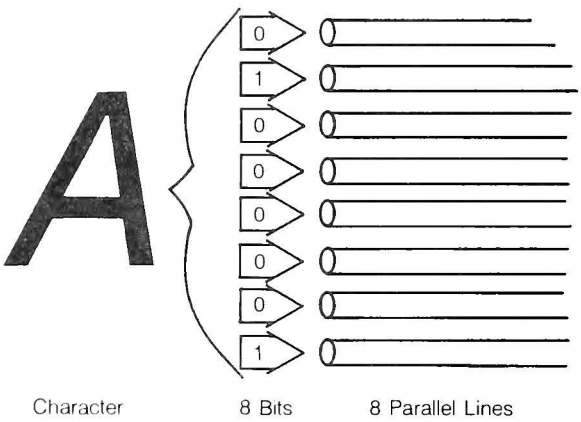


Figure 1. Parallel transmission.

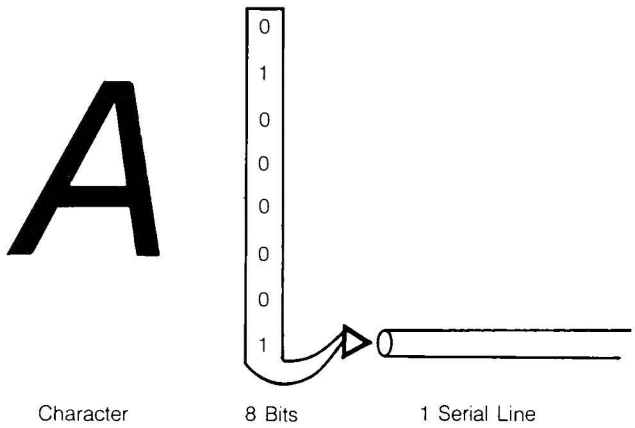
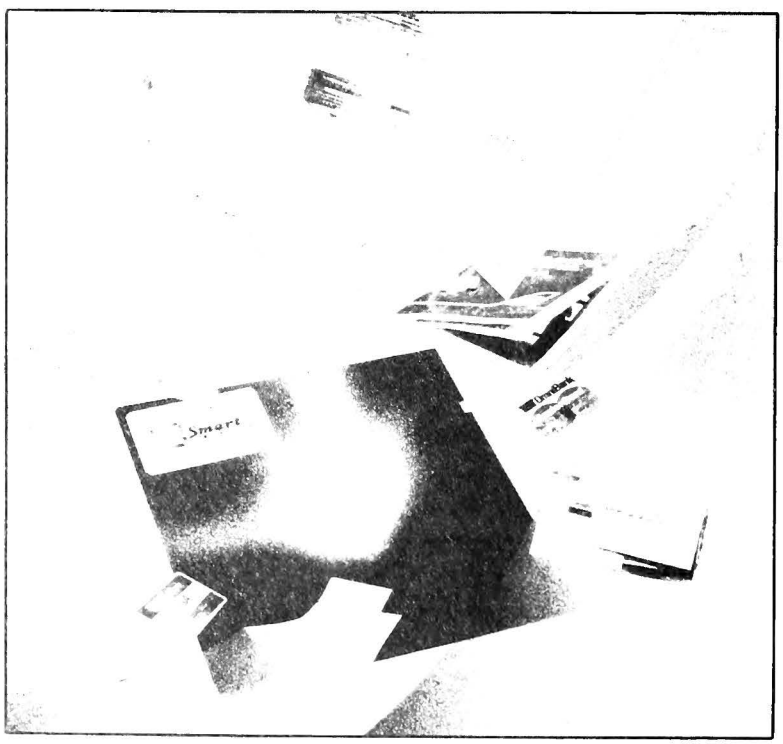


Figure 2. Serial transmission.

Making money is one thing. Managing it is something else.



The Smart Checkbook does the job. Manages your money the way you want it managed—easily.

Imagine: push a button and get family budget reports, net worth statements, tax records. Custom reports, too. Know where your monies go, accurate to the penny and well organized.

"Instant Reconciliation." The Smart Checkbook doesn't just tell you if you're out of balance—it finds mistakes and corrects them on the spot. It even catches bank errors!

AND print checks, of course! With payee's name and address!

Advanced features? Split transactions and assign the amounts to the categories you choose. Track sales taxes and much more. And there's a practice account to get you started.

Yes: unlimited accounts, combined accounts, organized accounts. A 160k disk, holds up to 2,000 transactions. Bigger disks—even more.

The Smart Checkbook is available for Apple CP/M, IBM-PC, and most CP/M, CP/M-86 and MS-DOS computers.

Order today. $149 complete. VISA and MasterCard accepted. Call 703-281-1621

Softquest Inc.
P.O. Box 3456
McLean, VA 22103

the Smart Checkbook

Trademarks
The Smart Checkbook—Softquest Inc. CP/M and CP/M-86—Digital Research, Inc. PC-DOS—IBM MS-DOS—Microsoft Corp.

Even HOLLYWOOD can't stop this one... the sequel to Super Stellar Trek!

STELLAR DEFENSE



by Tom Burlew

The tenuous peace treaty with the Machiavellian Cartel has finally failed as the Confederation of Planets comes under attack from all quarters. If that is not enough, the treacherous Sadic Empire, although claiming neutrality, pursues a covert campaign of hostility. You, as the captain of the only spaceship fit for immediate duty, are charged with the military defense of the Confederation.

At your disposal for this task are deflector shields, the Positron beam, plasma torpedoes, and, if you have the courage, the experimental Deathray. Beware of novas, supernovas, black holes, and the mysterious worm holes that may transport you anywhere in space and time. The fate of the galaxy is in YOUR hands!

Requires: Apple*II Plus or Apple //e.

A fast-paced, HIRES, real-time space adventure.

RAINBOW COMPUTING INC.

Software Dept. No. ST
8811 Amigo Ave.
Northridge, CA 91324
(213) 349-0300 or (800) 423-5441 (except Calif.)

$49.95

*Apple is a registered trademark of Apple Computer,Inc.

For direct orders add $3.00 shipping and handling. (Calif. residents add sales tax.) Dealer inquiries invited.

(print) can do both.

Finally, these problems are unique to Applesoft. More recent languages have better means of switching back and forth from hard copy to screen printing. Pascal, for example, allows you to put the name of the output device in front of the string that you want printed:

```
WRITELN(OutputDev,'This is a test');
```

Embedding. Once a pathway from your Apple to your printer has been established, and output has been redirected to the printer, any printable characters that you send down that pathway will be printed on paper. Most printers, however, allow you to go far further than simply printing out text. They have various special functions such as emphasis, italics, underlining, subscription, and superscription. These special functions are invoked by sending the printer codes known as *escape* codes and *control* codes.

For example, if you send the Epson an ESC (escape) character, you will get the Epson's attention: It is programmed to intercept the escape character and then wait for the next character to determine which special feature you want (the escape and the next character will not be printed). If you then send a capital "E," you will have turned on the emphasis mode: Any text sent after that point will be printed out darker than normal. Since you communicate with your printer with print statements, the escape-E sequence could be sent like this:

```
100  ESC$ = CHR$(27) : REM Define escape character
110  PR#1
120  PRINT ESC$"E" : REM Turn emphasis on
130  PRINT "THIS IS AN EMPHASIS TEST"
140  PR#0
```

Results:

```
THIS IS AN EMPHASIS TEST
```

An important point to notice here is that you cannot send an escape character to the printer merely by pressing the escape key. This is because your Apple is programmed to watch everything you type, in order to intercept the escape signal and use it to control various features. If you are programming in Applesoft, for example, you will find that escape enables the I, J, K, and M keys to move the cursor around the screen. In addition, there are many more escape commands used by your Apple, such as escape-E, which is used to clear that portion of the screen from the current cursor position to the end of the line. Invalid escape commands are simply absorbed and not passed on to the output device.

This means that the only way you can send the escape character to the printer is by using an ASCII code. On page 138 of the *Applesoft Basic Programming Reference Manual*, or page 16 of the IIe reference manual, you'll see an ASCII chart with escape listed near the bottom left edge of the page. You'll see that escape has an ASCII code of 27 assigned to it. This means that if you use PRINT CHR$(27), you'll be sending an escape character to the output device. And, since you are sending it in a print statement and not by typing it from the keyboard, it will not be intercepted by the Apple.

In the previous example, we prettied up this process by first defining ESC$ = CHR$(27) (line 100) and then using PRINT ESC$ instead of PRINT CHR$(27) (line 120). Either way works.

The emphasis mode can be turned off by sending an escape-F to the printer in a manner similar to the way we sent the escape-E.

```
100  ESC$ = CHR$(27) : REM Define escape character
110  PR#1
120  PRINT ESC$"E" : REM Turn emphasis on
130  PRINT "THIS IS AN EMPHASIS TEST"
140  PRINT ESC$"F" : REM Turn emphasis off
150  PRINT "THIS IS A NORMAL TEST"
160  PR#0
```

Results:

```
THIS IS AN EMPHASIS TEST
THIS IS A NORMAL TEST
```

After the Epson receives an escape-F, it turns off emphasis mode and prints out all text thereafter in normal mode.

It is possible with Graftrax 80 and later models to put all of the codes

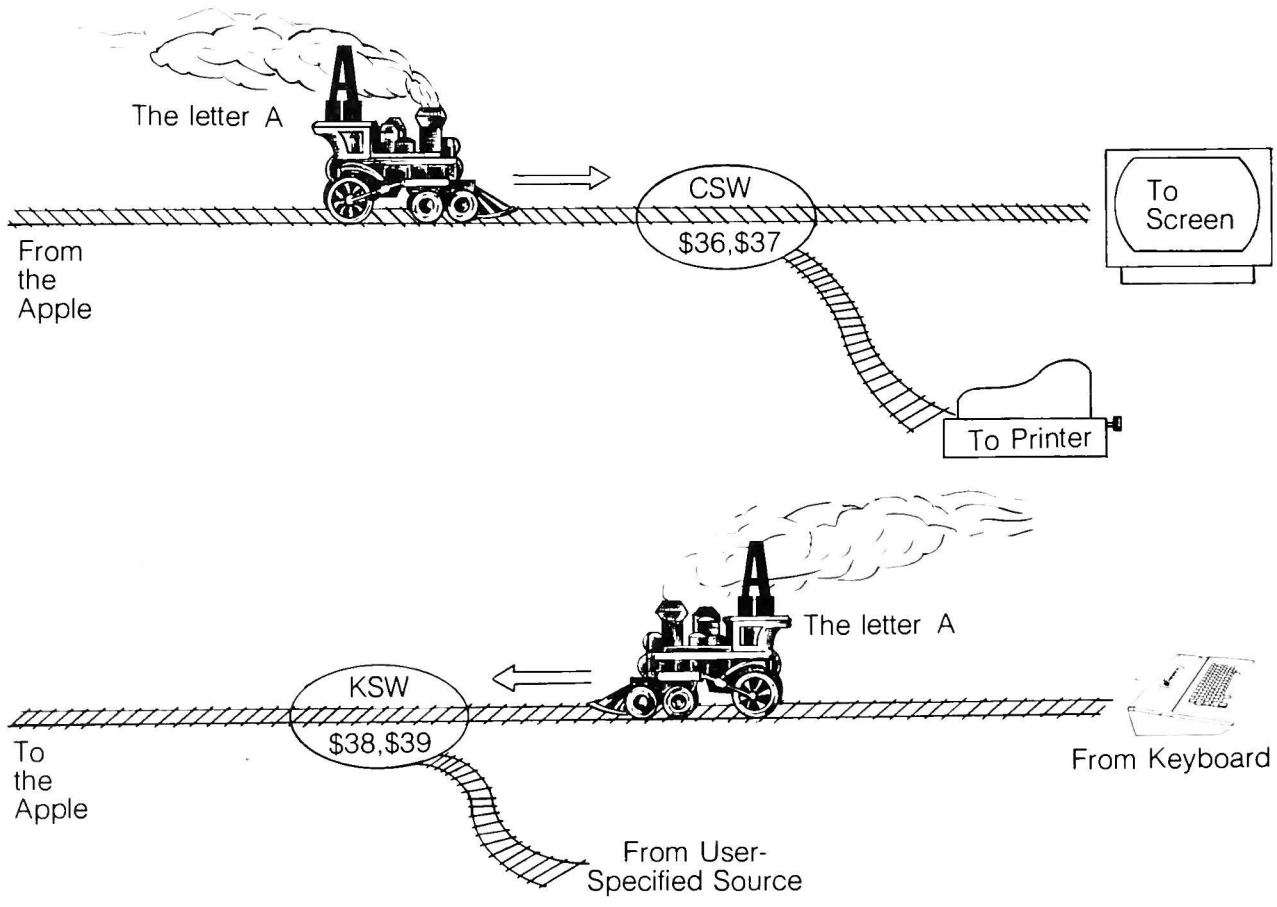


Figure 3. I/O switches.

The Ultimate Spreadsheet Display For Apple®

128 Columns by 32 Lines, 80 Columns by 24 Lines

UltraPlan™

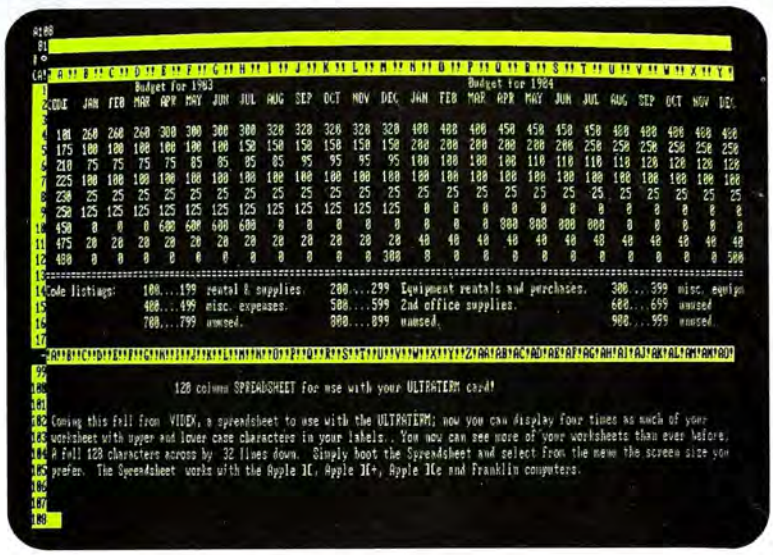
SPREADSHEET CALCULATOR

Software For use with Apple

- **EASY TO FOLLOW MENUS**
- **VARIABLE COLUMN WIDTHS**
- **SHIELDS CONFIDENTIAL INFORMATION**
- **PREVENTS ACCIDENTAL CHANGES**
- **EASY CURSOR MOVEMENT**

UltraPlan—an advanced spreadsheet program—makes planning, forecasting, and budgeting easy, fast, and accurate. UltraPlan can make full use of the UltraTerm, Videoterm, and can use additional memory cards for models as large as 512K. UltraPlan is compatible with VisiCalc® data files and features advanced commands not found in VisiCalc. UltraPlan is compatible with the Apple][and Apple //e computers.





Actual photo of 128x32 screen.

UltraTerm™

A DISPLAY PERIPHERAL

To display more than 80 columns or 24 lines, you will need an UltraTerm video display card. This card gives your Apple][or Apple //e the ability to display more characters than ever. Nine display modes that can display as many as 4096 characters allow you to choose the number of columns and rows best suited to your application.

UltraTerm utilizes 8 x 9 or 8 x 12 dot character matrix (versus the normal 5 x 7) to deliver superb resolution in the crispest, cleanest characters available anywhere.

Other display attributes such as highlight/lowlight, inverse, and half-intensity backgrounds can be chosen to suit your own viewing preferences.

Videoterm™

The Videoterm—the best selling 80 x 24 display card for the Apple][—can be used with UltraPlan. The advanced software features and expanded memory capability of UltraPlan are also available to Videoterm users.

See us at

COMDEX/Fall '83

Videx Inc.

897 NW Grant Ave. • Corvallis, Oregon 97330

(503) 758-0521

Apple is a registered trademark of Apple Computers, Inc. UltraPlan, UltraTerm and Videoterm are registered trademarks of Videx, Inc. VisiCalc is a registered trademark of VisiCorp.

and text on one line:

```
100  ESC$ = CHR$(27) : REM Define escape character
110  PR#1
120  PRINT ESC$"E";"THIS IS AN EMPHASIS TEST";ESC$"F"
130  PR#0
```

Results:

THIS IS AN EMPHASIS TEST

Note that this cannot be done with the original MX-80 and the original MX-100. The turn-off code will cancel the turn-on code, if both occur in the same line, thus forcing you to emphasize the entire line. Emphasizing individual words is not possible with these two models.

We can go one step further with our example and include (embed) our escape codes right in the middle of our *text stream* (the string of characters we want to print):

```
100  ESC$ = CHR$(27) : REM Define escape character
110  PR#1
120  PRINT "THIS IS AN "; ESC$"E" ; "EMPHASIS "; ESC$"F";
     "TEST"
130  PR#0
```

Results:

THIS IS AN EMPHASIS TEST

Again, this will not work with the original MX-80 or the original MX-100, for the reason explained previously.

The concept of *embedding* is an important one to grasp, because it is the method used by most word processors to send special functions to the printer. If you are having difficulty getting your word processor to control your printer properly, chances are it is not embedding (or not allowing you to embed) the proper printer command codes in the text stream.

There is one other type of printer command code used by the Epson: control characters. They are used in much the same way as escape codes:

```
100  CN$ = CHR$ (14) : REM Control-N: Turns on expanded mode
110  CT$ = CHR$(20) : REM Control-T: Turns off expanded mode
120  PR#1
130  PRINT "THIS IS AN "; CN$; "EXPANDED"; CT$; " TEST"
140  PR#0
```

Results:

THIS IS AN EXPANDED TEST

There are many escape and control codes available for your Epson. Take a look at the appendixes of your printer manual to see what they are.

Escape Codes, Control Codes, and ASCII Codes. For the sake of clarity, a word or two on escape codes, control codes, and ASCII codes should be mentioned here.

If the truth be told, your computer doesn't give a rat's tail about upper case, lower case, underlining, or any other type of character. It cares only for numbers (actually electronic signals, but it's easier for us to symbolize electrical states with numbers). With numbers, the computer can easily add, subtract, compare, move memory, and do all the things we have come to know and love, at tremendously high speeds.

Accordingly, some sort of uniform system must be devised to assign a number to every character you want to use. Fortunately, such a system was designed some time ago, by a committee also concerned about the problem. The committee devised a simple, yet clever, scheme where A = 65, B = 66, C = 67, and so on. (In case you're wondering, the control characters are at the low end of the code: Control-A = 1, control-B = 2, control-C = 3, and so on.)

The committee gave this code a name, *ASCII*, which stands for the American Standard Code for Information Interchange. Under the ASCII system, nearly every conceivable character (plus a few inconceivable ones) was given a number. All in all, the committee managed to assign numbers to 128 characters, ranging from 0 to 127. This includes 26 upper-case letters, 26 lower-case letters, 32 control codes, the 10 digits, and 34 punctuation and special characters.

Today, this code is used on nearly every computer (except, of course, for IBM, which uses its own standard, EBCDIC), and ASCII charts can be found in just about any computer book. The standardization of the ASCII scheme allows communication of information between different types of computers.

If you look at the low (0–31) end of the ASCII chart, you'll see some familiar characters: ESC, CR, BEL, to name a few. This means that, to a computer, control characters are valid characters just as text characters are. A limited keyboard may force you to resort to some tricks to enter the character (such as with PRINT CHR$(27)), but once you get it into the computer, it is treated just like any other character.

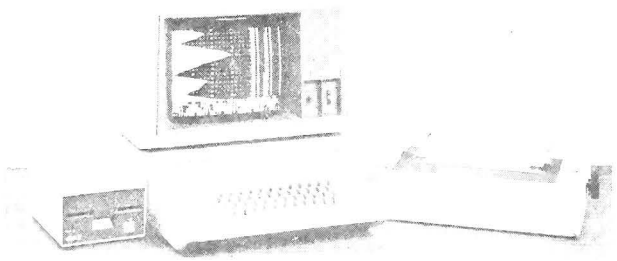
Finally, there is another ASCII character set that Apple uses, called *Apple ASCII*, *high-bit ASCII*, or *negative ASCII*. The designers of the Apple wanted to add fancy flashing and inverse modes to characters printed on the screen, so they duplicated the ASCII set by adding 128 to each character. The sum of 128 + 128 is 256, the maximum number of values a byte can represent.

When you're working with some character charts (such as the ones in the back of a printer's user manual), don't be puzzled by a supposed ASCII value greater than 127. The true ASCII value and the Apple ASCII value represent the same character, and in most cases either will work just fine in your programs. To convert from true ASCII to Apple ASCII, just add 128 to the true ASCII character value. To convert Apple ASCII to true ASCII, subtract 128 from the Apple ASCII character value. Here are some examples:

Character	True ASCII	Apple ASCII
CR	13	141
ESC	27	155
A	65	193
B	66	194
C	67	195

Now you see how a printer can be controlled by commands that are invisibly embedded in the text it is printing. We have covered only a few of the possibilities. In addition to emphasized and expanded printing, some Epsons can also do condensed, double-width, or double-strike printing; subscripts and superscripts; underlining; intermixed text and graphics; and other fancy tricks. Next month, we'll show you how to control some of these capabilities. ■

ADALAB™ Automates Lab Instruments



• Interactive Microware's general-purpose ADALAB™ data acquisition and control system interfaces with virtually any lab instrument using a recorder or meter, including GC and HPLC systems, spectrophotometers, pH meters, process control apparatus, thermocouples, etc.

• Lab Data Manager™ software facilitates single or multi-channel acquisition, storage, display and chart recorder style output of lab instrument data. IMI QUICKI/O software operates within easy-to-use BASIC!

• Thousands of scientists currently use IMI software and/or ADALAB products worldwide!

*Price includes 48K APPLE® II+ CPU, disk drive with controller, 12" monitor, dot matrix printer with interface, IMI ADALAB™ interface card.

†Trademark of Apple Computer, Inc.

Attention APPLE Owners

IMI'S ADALAB INTERFACE CARD IS AVAILABLE SEPARATELY FOR ONLY $495

(Includes 12-bit A/D, 12-bit D/A, 8 digital sense inputs, 8 digital control outputs, 32-bit real-time clock, two 16-bit timers plus QUICKI/O data acquisition software.)

INTERACTIVE MICROWARE, INC.
P.O. Box 771, Dept. 2
State College, PA 16801 (814) 238-8294



The game that puts space games in perspective. Zaxxon™, one of the most popular arcade games of 1982, is now available for use with your home computer system.

Zaxxon™ technology and creativity present a 3-dimensional-like playfield which sets Zaxxon™ apart from other computer games.

Zaxxon™ looks and sounds like aircraft flight, and players can soar to new levels of home computer entertainment. From the daring attack on the enemy's floating fortress and the blazing battle against the enemy's fighter fleet to the final showdown with the deadly armored robot, Zaxxon™ challenges the skill and imagination of every player at every level of skill.

Imagine yourself the pilot, attacking the enemy fortress–climbing, diving, strafing to score points and extra fuel. The enemy fights back with a barrage of missiles and gunfire. Then you face a fleet of enemy fighters in a gripping dogfight of altitude strategy and flying skill. Survive this battle and the enemy's fortress, defended with laser barriers, then you've earned the ultimate challenge; a blazing confrontation with the powerful robot, armed with a lethal homing missile.

Zaxxon™ is the one game that you must see to believe. You have to play it to feel its impact. If you're ready to face the challenge, check with your local software dealer or send check or money order with $2.00 postage/handling. California residents add 6½% sales tax. Available on cassette or diskette. Suggested retail price $39.95.

Available on Atari® 16K cassette, and 16/32K disk, Radio Shack® Color 32K cassette and disk, Apple® 48K disk.

Datasoft Inc.®
COMPUTER SOFTWARE
9421 Winnetka Avenue
Chatsworth, CA 91311
(213) 701-5161

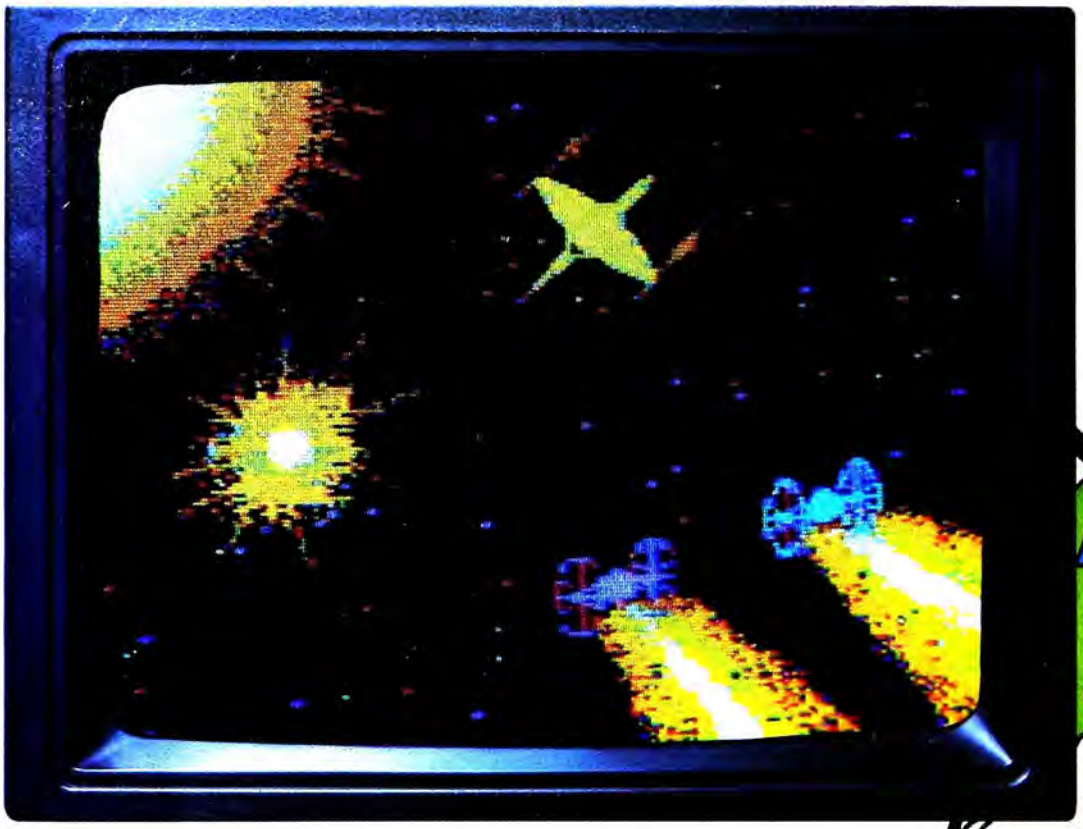
©1982 Datasoft® Inc.

Datasoft® is a registered trademark of Datasoft Inc.

Sega® and Zaxxon™ are registered trademarks of Sega Enterprises Inc.

Announcing

SuperSprite™





Plug arcade excitement into your Apple computer

Super Sprite is an amazing peripheral card that plugs easily into the Apple's expansion slot. It magically transforms your Apple into an exciting entertainment center for colorful and dramatic animation, realistic sound effects and actual speech.

Sprites Galore

Only Super Sprite has multi-plane graphics for life-like 3-D animation. Watch your screen come alive with animated characters (sprites) that flit and fly, intersect and interact, and never get in the way of each other. And sprite action can join standard Apple graphics on the screen at the same time.

Software Support

Every Super Sprite package includes the Ampersprite™ software language that lets you devise sprites in seconds from the keyboard. Plus sound effects and speech! Or, simpler yet, you can buy a commercial game that's already written around the Super Sprite.

Your computer store should have Super Sprite in stock. If not, ask him to order one for you. Suggested retail is only $395.

Super Sprite package includes operator's manual, Ampersprite programming utility and demo diskettes.

Synetix Inc.

15050 N.E. 95th, Redmond, WA 98052, (206) 881-8440 **1-800-426-7412**

*Super Sprite is a registered trademark of Synetix Systems, Inc., 1983.
**Ampersprite is a registered trademark of Avant Garde Creations, Inc. *Apple is a registered trademark of APPLE COMPUTER, INC.

ANNOUNCING A REVOLUTION IN APPLE GRAPHICS AND SOUND



THE MAGIC BEHIND THE MIRACLE

here is no question that the new SUPERSPRITE BOARD from Synetix is nething of a miracle.

uddenly, the Apple's graphics capabilities have been pulled from diocrity and launched into the forefront of today's state-of-the-art phics explosion. SPRITE GRAPHICS, 16 HI-RES COLORS, 35 VIDEO NES, APPLE & SPRITE GRAPHICS TOGETHER, EXTENDED SOUND ECTS, VOICE AND MUCH MORE . . . NEVER POSSIBLE ON THE PLE BEFORE NOW.

qually amazing are the three special software packages created espec- for this board by Don Fudge, aptly titled THE STARSPRITE SYSTEM. board, without STARSPRITE, would be much like the Apple without any gramming language -- STARSPRITE is the key.

y the end of the first sitting with the STARSPRITE SYSTEM, you'll not be able to perform functions once reserved only for seasoned program- s, you'll also be able to create graphics and animation that, until now, en't even thought possible on the Apple.

TARSPRITE I is included at no extra charge with the SuperSprite board. software and extensive manual teaches you how to take command of the board's graphics, sound, music and voice capabilities and includes three exciting, alterable arcade games.

STARSPRITE II is designed for intermediate programming and contains utilities and tutorials for animation, sound effects, music, scene creation and much more.

STARSPRITE III is a professional programmer's dream-come-true, providing the entire system's source codes, machine language routines, pokes, buffers, collision paths, Ampersprite™ information, etc.

The STARSPRITE SYSTEM is unlike anything yet created for the Apple. For more information dial (503) 345-5202 for a special two-minute recording. Our order number is (503) 345-3043. Call us now to experience the future.



SPRITEWARE™ FROM AVANT-GARDE

(503) 345-3043 P.O. Box 30160 EUGENE OREGON 97403

Announcing
The best 6502 Assembler in the World

ORCA/M™

Now. The kind of high-level support you'd only expect to find on a main frame.
ORCA/M (Hayden's *Object Relocatable Code Assembler for Micros*) lets you develop sophisticated applications with the speed and ease of a high-level language, yet retain the control and efficiency that only assembly language can give.

Here's what ORCA/M gives you:

The Assembler

Macro language features:
- Conditional assembly of source and macro files
- Separate source and macro files
- Nestable macros
- Parameter mid-string and string search functions
- Symbolic parameter assignment
- Numeric, string, and boolean type parameters
- Parameter subscripting
- Global communication between macros
- Macro expansion loop control
- Count, length and type parameter-attribute functions

Extensive Macro Libraries

Memory Constant Declarations:
- Integer
- Character
- Four-byte Integer
- Hexadecimal
- Floating Point

Relocatable object module generation

Fast assembly directly to disk

Program segmentation:
- Selectively assembly individual subroutines
- Global and local scope of symbols

The Linker

Produce executable binary files from relocatable object modules

Link routines from library files

Link subroutine re-assemblies

Define a new origin for previously assembled code

Invoke at assembly time or by command

Subroutine libraries:
- Floating point and double-precision routines
- Transcendental functions
- Hi- and lo-res graphics
- Multiple-precision integer math
- Input and output

The Editor

Co-resident screen editor:
- Global search and replace
- Block move
- Entry of non-keyboard characters

Supports lower case adapters and shift-key modification

80-column: horizontal scrolling with 40-column displays

The System

Monitor: transparent control of system from one command level

Extended Disk Commands:
- File copy
- File undelete
- Catalog sort
- Wildcard filenames

Disk ZAP: Built-in disk sector editor

Optimized DOS 3.3 compatible operating system

Operating system interface:
- Supports a variety of configurations
- User-modifiable to allow linkage of custom drivers for peripherals

64k RAM supported, 48k required

This unique array of features and functions speaks for itself: the power of **ORCA** is unsurpassed.

All features are documented clearly and extensively. Source listings for the subroutine and macro libraries, as well as the operating system, are included.

ORCA. If you're serious about developing 6502 software, it's the one to have.

Available from your local dealer, or call:
800-343-1218
(In MA call 617-937-0200)
ORCA/M: 21609
Apple II or IIe disk, 48k, DOS 3.3
Two drives and 64k recommended

Introductory Price: $99.95

$149.95
After September 30, 1983

ORCA/M is now also the best 65C02 assembler, supporting all 27 new opcodes. New hardware support includes the IIe 80 column board and disk emulators for the Legend ™ 128K card and IIe extended memory card.

HAYDEN SOFTWARE



Have you ever read the warranty that comes with Apple DOS 3.3? It's quite an eye-opener. It carries the title "Disclaimer of All Warranties and Liability" and reads, in part: "Apple Computer Inc. makes no warranties, either express or implied, with respect to this . . . software . . . its quality, performance, merchantability, or fitness for any particular purpose. Apple Computer Inc. software is sold or licensed 'as is.' The entire risk as to its quality and performance is with the buyer. Should the programs prove defective following their purchase, the buyer . . . assumes the entire cost of all necessary servicing, repair, or correction and any incidental or consequential damages."

Five Years or Fifty Thousand Miles? Can you imagine where Chrysler would be today with a warranty like this?

Before you jump to the conclusion that Apple is the only publisher with a rotten software warranty, let's admit that just about every software publisher on the face of the earth carries a warranty similar to the one above.

The development of *VisiCalc* was one of the great intellectual achievements of the 1970s. Nonetheless, its publishers don't know whether it works or not, according to their warranty—and if it doesn't, why, "the entire risk . . . is assumed by you."

Some software companies have apparently realized how ridiculous such warranties look. These companies, still unwilling to warrant their software, write: "For ninety days from the date of purchase, we warrant to the original purchaser that the diskette provided is free from defects in material or workmanship under normal use and service."

Can you imagine the gall it takes for a software company to refuse to warrant its own product, the software, and instead warrant the disk, which it bought from somebody else?

Let's hope that the lawyers who recommend that software publishers use these warranties and that the marketing wizards who accept such small legal advice soon come to the ends they deserve.

All software products should be warranted to perform as described in advertising and other documentation. If the software does not perform, the publisher should be obligated to supply updated software for no more than a nominal (less-than-$10) fee. If a software publisher truly doesn't know whether a product works, as claimed in its warranties, it shouldn't be in business.

Perhaps the lawyers would be happier if we did allow the software publishers to limit their liabilities. This, however, is a separate issue from the warranty.

No one who buys a program costing less than $500 should expect to be able to collect damages in excess of the program's purchase price, even if the program is clearly at fault. People who want to be able to collect indirect and consequential damages shouldn't buy mass-market software.

If there is a software publisher somewhere in the world who thinks he or she can justify these rotten warranties, let us hear about it. We'll donate space in this column for your point of view.

Meanwhile, the only hope we have is that as the software business gets more competitive, a few publishers will recognize the competitive advantages that a real warranty, properly marketed, would bring them.

Books of Summer. Those of you who didn't have to go to movies or computer stores for air-conditioned comfort last summer may have missed the new DOS manuals Apple released in late July. There are two of them, the *DOS User's Manual* and the *DOS Programmer's Manual*. They are in the same format as the Apple IIe manuals—quite nicely done.

If you've purchased an Apple disk drive anytime since January 1983, you've noticed there was a certificate in the package entitling you to free copies of these books. Don't forget to cash the certificate in if you'd like to have them. The certificate was supposed to expire in September '83 but the books weren't available as early as they were expected, so the deadline has been extended to next March. If the dealership where you bought the disk drive is out, try somewhere else. Any Apple dealer will honor the certificate.

Professional Disk Operating System. During the summer Apple also released to software developers a new disk operating system for the Apple II series of computers. Apple calls the new system ProDOS.

ProDOS doesn't make DOS 3.3 obsolete. Apple will continue to license DOS 3.3; software developers will no doubt continue to use it. But ProDOS is very good—it, too, will be very widely used. Apple plans to release ProDOS to the public in early 1984.

ProDOS commands are for the most part compatible with DOS 3.3 commands. A few have been removed, however, and others have been enhanced. Several completely new commands have been added. There is enough compatibility that most Applesoft programs will run without modification, but there is enough difference that not all will.

Note very carefully that word *Applesoft*. ProDOS doesn't support Integer Basic at all and most assembly language programs will have to be modified to work with ProDOS. If you have a large library of Integer and assembly language programs, you will probably continue to use DOS 3.3 for a long time. Any copy-protected commercial software you own will also live out its days under the DOS you bought it with.

Some other disadvantages of ProDOS are that it requires 64K of memory, its files are totally incompatible with DOS 3.3, and a special program is required to initialize disks—init is not a ProDOS command.

About the Pro in ProDOS. But listen to the advantages of ProDOS. A new *dash* command, executed by typing a dash and a file name, will run a Basic, binary, or exec file. A new *store* command will quickly save the current values of an Applesoft program's variables. A *restore* command reloads these values into the same or a different program.

ProDOS automatically clears long Basic programs out of the hi-res graphic memory area when it sees an hgr command. This is something the programmer has to do when using DOS 3.3. The Applesoft commands trace and notrace work with ProDOS; they don't work with DOS 3.3.

The ProDOS *chain* command works correctly with Applesoft programs, unlike the DOS 3.3 chain command, which works only with In-

SIMPLY THE BEST

IN DIAGNOSTICS
(For Apple® II and *IIe*)

XPS-Diagnostic II & IIe



There's no diagnostic program more comprehensive or easier to use than an *XPS-Diagnostic*. Each program comes complete with a simplified user manual, **back-up disk** and **lifetime warranty.**

XPS-Diagnostic tests all major functions of your Apple II or *IIe* system with minimal user input... and **it speaks your language.**

XPS-Diagnostic II and *IIe* require DOS 3.3 Version *II* requires 48K.

Tests Include:

MAIN MEMORY	KEYBOARD	MONITOR TESTS
SYSTEM ROMS	PRINTER	GAME PORT
•LANGUAGE CARD	CPU	••80 COLUMN CARD
DISK SYSTEM	PERIPHERALS	••AUX MEMORY
DRIVE SPEED		MEDIA VERIFY

•XPS-Diagnostic II only ••XPS-Diagnostic IIe only

XPS-Diagnostic II or IIe: $49.95

(Please specify system. PA residents add 6% sales tax. No charge for shipping or handling.)

To order and/or receive more information call XPS: (717) 243-5373

XPS

XPS, Inc.
P.O. Box 140
Carlisle, PA 17013

Apple® is a registered trademark of Apple Computer Inc.

teger Basic programs. The new chain allows a programmer to write Applesoft programs that are too large to fit into the computer all at one time.

Files are compatible with the Apple III's Sophisticated Operating System. An Apple III SOS disk can be inserted into an Apple II drive and data files can be used directly (program files can't, since the two machines use different versions of Basic). The Apple III can use ProDOS files too.

ProDOS will work with disks of any size. With DOS 3.3, a hard disk has to be initialized to look like thirty or more floppies with different volume or drive numbers. With ProDOS a hard disk is treated as one big disk. ProDOS works with hard drives as large as thirty-two megabytes and files as large as sixteen megabytes (a megabyte is a few bytes more than a million). Under DOS 3.3 it is difficult to create files larger than 130K. But many database applications require much larger files. Under ProDOS, you can have them.

ProDOS overcomes the speed problems of DOS 3.3. ProDOS handles files as quickly as the speed-enhanced versions of Apple DOS, such as *David-DOS*, *Diversi-DOS*, and *ProntoDOS*. If used on a 128K Apple IIe, ProDOS automatically uses the extra 64K of memory as a very high-speed, RAM-based disk drive. ProDOS automatically time-stamps files if your computer has a Thunderclock, and it can be adapted to other clocks. It also supports interrupts, for those of you who know what that means.

ProDOS uses what's known as a *hierarchical file structure*. This means that a single disk can have many different catalogs. There is one main catalog for each disk. The main catalog can hold up to fifty-one of the usual kinds of files as well as a new type, a directory file. A directory file is a second-level catalog. When you look at one of these subdirectories, you find more files of any type—possibly including more directory files.

If you were using ProDOS with a word processor, your main catalog would probably hold the word processing program itself and several directories. One of these directories might be used for business letters. The business letter directory could hold a number of other directories—one for each of your major clients. You would get to this subdirectory and its files with a *path name*. In this case the path name might be */wp/bus/acme* if you called your word processing disk */wp*, your business directory */bus*, and you had as a client a company named Acme. Typing the command *catalog/wp/bus/acme* would give you a list of the files holding your correspondence with that company.

Path names are wonderful things for people using large storage devices such as hard disks. Few users of standard floppy drives will ever need more than a floppy's main directory, however. Those who have been appalled by the rigmarole that the Pascal operating system requires of floppy users will be happy to learn that ProDOS is much simpler. Typing the standard command *catalog,d2* will show you the main catalog of the disk in drive 2 no matter what the disk's path name is. Pascal likes to give the equivalent of a volume mismatch error unless you spell out the disk's name. If you were cataloguing the disk to find out the disk's name, you feel like a character in *Catch-22*.

ProDOS file names can be only fifteen characters long, as opposed to DOS 3.3's thirty-character file names. Because of the subdirectories, however, this doesn't seem to be much of a limitation. A path name can be as long as sixty-four characters. But ProDOS file names can't include any characters other than letters, numbers, or the period. Since the space isn't a letter, number, or period, you can't put a space in a file name. The user's inability to include spaces within ProDOS file names is a major step backward. One hopes there is a good reason for this foolishness. Something more than Apple just trying to give ProDOS a more "professional" (read nerdish) feel with all those periods.

ProDOS doesn't require any changes to the disk controller card. It uses the same hardware as DOS 3.3. ProDOS appears to be a major development in the world of Apple disk operating systems. Stay tuned for further developments.

Now, Then, about the File Manager. The rest of this month's column is a continuation of October's discussion concerning the use of the DOS 3.3 file manager directly. As mentioned last month, the book *Beneath Apple DOS* also talks about the file manager, but no other publication that we're aware of, including the many from Apple itself, says a word about it.

If you get distracted partway through this stuff, come back next month for an elementary and useful look at text files and how to use them

with the exec command.

Last month's column explained what the DOS file manager is, why a programmer might want to use it directly rather than using the normal DOS commands, and how to get the file manager to do housekeeping commands such as delete, lock, rename, and init.

You tell the file manager what to do by filling in the pigeonholes in a table known as the File Manager Parameter List and calling on the file manager using a vector in the page three vector table. Last month's column included a Basic program that will set up three short assembly language routines and three Basic variables that can be used when working with the file manager.

The variables are parm, which is the address of the parameter list; neofile, the address to call when you want the file manager to create a new file; and oldfile, the address to call for all other uses of the file manager.

Last month's column also included a figure showing what pigeonholes in the parameter list have to be filled in for each of the housekeeping commands. Figure 1 in this month's column is similar. It shows the structure of the parameter list when it is used for file access commands.

The Commands. There are three file access commands. They are *read*, *write*, and *repoint*. The command number is stored in the parameter list at parm+0. The read and write commands each have four subcommands. These are *do one byte*, *do range*, *repoint and do one byte*, and *repoint and do range*. The subcommand codes are placed at parm+1, as shown in the figure.

In *Beneath Apple DOS* the function called repoint here is called *position*. Calling it repoint keeps it from getting confused with the DOS position command. What repoint does is very different from what position does.

The standard DOS position command is used with sequential text files to move what is known as the position-in-file pointer ahead (only) a specific number of fields. Position works by reading a file beginning at the current point and counting carriage returns. Returns are used in sequential files to indicate the end of a field. When the specified number of returns have been read, the position command ends with the position-in-file pointer set at the first character of the next field.

Repoint, on the other hand, has nothing to do with counting carriage returns. Instead, repoint performs a mathematical calculation to move the position-in-file pointer (forward or backward). This calculation is based on three variables—the length of the file's records, the record number, and the byte offset.

Programmers who have used random access files will recognize these variables as the L specified with the DOS open command and the R and B parameters specified with read and write commands.

The repoint calculation is $(L * R) + B$. Using the repoint calculation, the position-in-file pointer can be instantly moved to any position of any record in a file.

Normally the R and B parameters are used only with random access files. However, as far as the file manager is concerned, they can be used with any type of file. Normally files other than random access files are opened with the L parameter automatically set to one. Thus each character in the file can be considered a record. The repoint feature is difficult to use with these files because it is hard or impossible to keep track of what is at any particular point in the file; nonetheless, if a user wants to see a portion of a file beginning at byte 1,000, or any other specific byte, it can be done quite easily.

As shown in the figure, command 10 is repoint only. DOS itself always uses this command to repoint the position-in-file pointer for random access files. Interestingly, the read and write subcodes 3 and 4, which repoint before reading or writing, are never used by DOS itself.

Filling in the Parameter List. As you can see in the figure, whenever the repoint feature is used, parm+2 must hold a two-byte record number and parm+4 must hold a two-byte byte offset. The numbers you place in these parm locations will be the ones used in the repoint calculation. If you are doing a read or write without repoint (subcommands 1 or 2), these pigeonholes do not have to be filled in.

In fact, if you want to do one-byte reads or writes, the only other parts of the parameter list that must be filled in are the buffer addresses at parm+12, parm+14, and parm+16.

If you are reading a file one byte at a time, simply call the file

DIVERSI-DOS IS THE BEST

*** NEW *** NEW *** NEW ***

TLIST — Lists BASIC files without destroying the program in memory. Use TLIST to copy lines from one program to another / Improved list format without indents, for easier editing / Visible control characters / Also lists program in memory with improved format

Insert/Delete Mode — Makes program editing a pleasure! Insert characters in the middle of a line without re-typing. Also works for data entry!

Keyboard MACROS — Enter whole phrases with a single keystroke! Make your own custom editing keys, or redefine your entire keyboard (Dvorak keyboard included)

Wildcard file names — Enter only the first few letters of a file name (searches the directory for a match)

BSAVE — "A" and "L" parameters are not necessary (uses "A" and "L" from last BLOAD)

Recognizable ESCAPE and INSERT mode cursors

Lowercase DOS commands accepted

Catalog abort key

Lists text files to screen or printer

"Of all the DOS enhancement packages reviewed in Peeling II to date, **DIVERSI-DOS** is the most powerful in terms of its capabilities coupled with its price. **DIVERSI-DOS** is the only product to speed up all areas of DOS—LOAD BLOAD, RUN BRUN, SAVE BSAVE, as well as the READ and WRITE of text files. The documentation is superb. (Rating AA)"
Peelings II Magazine

WHAT ARE YOU WAITING FOR???

Are you tired of waiting for DOS to load and save files? Are you tired of waiting for DOS to finish so you can type again? Are you tired of waiting for your printer? When you buy **DIVERSI-DOS™**, by Bill Basham, you won't have to wait any more! Here's why:

1. DOS speed up: Apple DOS 3.3 takes 18 disk revolutions to read a single track, whereas **DIVERSI-DOS** reads or writes a track in just 2 revolutions. This speeds up file processing tremendously (see table).

2. Keyboard Buffer: **DIVERSI-DOS** allows you to type ahead, as fast as you can, without missing a single character.

3. Print Buffer: **DIVERSI-DOS** can use a RAM card (16K 128K) to temporarily save characters before they are printed. Thus, your computer won't have to wait for your printer to finish.

4. DDMOVER: **DIVERSI-DOS** can now be moved to a RAM card to increase the available memory in a BASIC program.

DIVERSI-DOS, the QUADRUPLE utility, requires a 48K Apple II, II+ or IIe with DOS 3.3. A simple, menu-driven installation program is included on the un-protected disk. So what are you waiting for?

	APPLE DOS	DIVERSI-DOS
SAVE‡	27.1 sec.	5.9 sec.
LOAD‡	19.2 sec.	4.5 sec.
BSAVE*	13.6 sec.	4.1 sec.
BLOAD*	9.5 sec.	2.6 sec.
READ**	42.2 sec.	12.4 sec.
WRITE**	44.6 sec.	14.9 sec.
APPEND**	21.3 sec.	2.3 sec.

*Hi-res screen ‡ 80-sector BASIC program
** 52-sector text file

ORDER TOLL-FREE

Call NOW: 800 835 2246 ext. 127 (orders only)
For information, call 815 877-1343
Disks normally shipped within 24 hours
Only $30: Includes 1st class or foreign airmail.
Sold by mail order only.
Return in 30 days for full refund, if not totally satisfied!

FREE with your order — FREE
DOGFIGHT* II By Bill Basham
A special mail-order version of the arcade game for 1 to 8 players, recently listed #6 on the best seller list!

Send $30 (U.S. funds) to:
Diversified Software Research, Inc.
5848 Crampton Court
Rockford, Illinois 61111

dsr

Name: _____
Address: _____
City: _____
State: _____ Zip Code: _____
Visa Mastercard C.O.D. or personal check accepted
Card #: _____
Exp. Date: _____

S

PARM		— READ — Do 1 Byte	Do Range	Repoint and Do 1 Byte	Repoint and Do Range	— WRITE — Do 1 Byte	Do Range	Repoint and Do 1 Byte	Repoint and Do Range	Repoint
+0	COMMAND	3	3	3	3	4	4	4	4	10
+1	SUBCOMMAND	1	2	3	4	1	2	3	4	—
+2	RECORD NUMBER	—	—	✓	✓	—	—	✓	✓	✓
+4	BYTE OFFSET	—	—	✓	✓	—	—	✓	✓	✓
+6	RANGE LENGTH	—	✓	—	✓	—	✓	—	✓	—
+8	DATA BYTE .... RANGE ADDRESS	D	✓	D	✓	D	✓	D	✓	—
+10	ERROR CODE	✓	✓	✓	✓	✓	✓	✓	✓	✓
	UNUSED									
+12	ADDRESS OF WORK-AREA BUFFER	✓	✓	✓	✓	✓	✓	✓	✓	✓
+14	ADDRESS OF T/S LIST BUFFER	✓	✓	✓	✓	✓	✓	✓	✓	—
+16	ADDRESS OF DATA BUFFER	✓	✓	✓	✓	✓	✓	✓	✓	—

Figure 1. File manager parameter list, file access commands. D refers to one data byte at parm+8 instead of two-byte range.

manager, check the error code, and retrieve your byte from parm+8. If you are writing one byte at a time, place the byte you want to write at parm+8 before calling the file manager.

One-byte reads and writes are what DOS itself uses when working with text files. All of the overhead inherent in calling the file manager occurs for each character in the file. This may give you some idea why text file handling is so slow.

Note that when you are using the file manager's read and write commands, you do not have to give a file name address. You may wonder how the file manager knows which of the files on your disk you want to read from or write to.

The particular file is determined by the buffers you point to with parm+12, parm+14, and parm+16. You must open a file before you can read or write to it, just as with normal DOS. The buffers you use when you open the file and the buffers you use when you read or write must be the same ones. When you are finished with a file you must use the file manager's close command to finish the processing of the file.

DOS itself handles binary and Basic files as snapshots of memory ranges. When reading or writing a range, a two-byte range length is placed in parm+6 and a two-byte range address is placed in parm+8. These are the same as the A and L parameters you are probably used to working with when saving binary files.

Using normal DOS, it is impossible to read only a portion of a binary file. Using the repoint feature of the file manager directly, a user can employ the read-range or write-range routines to gain fast access to any part of any kind of file.

File Manager Errors. You may remember from our discussion last month that the file manager doesn't take a file's type very seriously. When you specify a type, he dutifully stores it in the catalog with other information about the file. However, as far as the file manager is concerned, all files are one type. It is the Captain who distinguishes between file types, who sends us file type mismatch errors, and who stores address and length information at the beginning of Basic and binary files.

Other errors that are the personal property of the Captain are language not available, no buffers available, program too large, not direct command, and the ever-popular syntax error. The file manager will never send you any of these. For the record, figure 2 contains the error conditions the file manager will return.

The file manager's end-of-data error occurs only when there are no further sectors in a file. The Captain will also give you an end-of-data error if he encounters a zero in a text file as he is passing it to you one byte at a time. The file manager doesn't care if there are zeros in a file.

Note that the file manager does no checking to see if the numbers you pass him in the parameter list make sense, except for the command and the subcommand. The file manager has no syntax error. If you give him a nonsense number he proceeds on his merry way until the system crashes or your disk is ruined. Figure 3 shows some limits you should be aware of.

When using the table in figure 3, pay particular attention to the upper limits on record length, record number, and byte offset. While 32,767 probably seems ample for any possible use, remember that nonrandom-access files have the record length set to one. Thus, if the file is longer than 32,767 bytes (130 sectors), the record number can exceed the upper limit shown here. If it does, the file manager's repoint calculation fails because of an overflow error. However, he doesn't notice it and will blindly move the position-in-file pointer to the wrong place. If you find a use for repoint with nonrandom files, use care when the files begin to get long.

This completes our discussion of the DOS file manager. Next month we're going to begin a study of text files by looking closely at the exec command. See you then.

Error Number	Condition
0	no error
1	(not used by file manager)
2	bad command number
3	bad subcommand number
4	write protected
5	end of data
6	file not found
7	volume mismatch
8	i/o error
9	disk full
10	file locked

Figure 2. File manager-related errors.

Item	Minimum Value	Maximum Value	Comments
Volume number	0	254	don't use 255
Drive number	1	2	
Slot number	1	7	
Range address	0	65,535	
Range length	1	65,535	
Record length	1	32,767	note upper limit
Record number	0	32,767	note upper limit
Byte offset	0	32,767	note upper limit

Figure 3. Parameter list limits.

Pack Your Christmas Stocking With

FUN!
EXCITEMENT!!
FRIVOLITY!!!
Even Mild Amusement!

All this and more is wrapped inside every issue of *Softline*, the bimonthly magazine for the playful computer.

Give your computer-owning loved ones *Softline* and you'll watch them giggle, learn, and maybe even earn enough to buy their own subscription next year.

They'll titter over Infomania—the craziest compilation of computer news any magazine dares to print. They'll chuckle as *Softline* experts put down the cheaters in the commentary to High Scores.

They'll learn with in-depth articles on various game genres, as well as in specific tutorials on how to build adventure, fantasy, and arcade games.

And they can earn enough to buy both you and them subscriptions next year in the dozens of contest and prize features that abound in each issue.

Of course, there's lots more; but the best news is that *Softline* is priced so low that even Ebenezer Scrooge would love it: $12 for a one-year subscription. That's a 0 percent savings off the newsstand price, so rush your orders to:

Softline
Box 60
North Hollywood, CA 91603



Over forty leading software companies are producing programs encoded for Mockingboard including Music Construction Set, Exodus: Ultima III, Zaxxon, Maze Craze, Lancaster and Bouncing Kamongas.



KNOCK YOUR SOCKS OFF. *Soon your ears will be lost without a listening device called Mockingboard. It's from a company named Sweet, and we're making computers utter strange and beautiful sounds. You'll be hearing a lot about us. Sweet Micro Systems, Cranston, RI 02910. (800) 341-8001.* MOCKINGBOARD™

MAKING SOFTWARE FIT THE COMPANY

The Custom Connection

By Jerry Kapp

So, you've had your computer for a while and it's done everything the salesman said it could. Even installing and using it has been easier than you thought possible. And his advice to use off-the-shelf programs has paid off. These packaged programs have kept the costs of computerizing your business to a minimum. They've also made it possible to be up and running on your computer the first time you turned it on.

However, you have become aware that packaged software no longer meets all your needs. Something seems to be missing. You have a feeling that profits could be greater if only you could get a few more features or specialized programs. Finding the specialized programs you need would seem like a simple, straightforward operation. Yet, there is no easy way to get them.

What can you do? Your first reaction, and a logical choice, may be to call a data processing consultant. But before you reach for the phone and call your local computer expert, consult your in-house business specialist. That's right. You know what your company needs, and therefore you are the ideal choice to define all program requirements. This may seem obvious. Yet many businessmen fail to take charge of defining what any new programs should do. Instead, they rely on consultants for all the answers.

Although most data processing consultants are professionals, you must have some idea of what your company needs before you make the call for help. As a matter of fact, the better you understand what goes into making a good program, the more you'll get for your money. And best of all, you may even find that a consultant or a new program isn't necessary. Instead, the answer may be as simple as improving the existing procedures.

The following guidelines will eliminate most problems that normally occur in selecting or developing programs. In addition, these simple steps will allow you to save time and money and will help you get just what you want from your computer. So let's begin by reviewing the outline.

I. Initial planning
   A. Don't be afraid of the problem
   B. Make a general outline of what you need
   C. Collect information
   D. Review the outline

II. Detail planning
   A. Prepare a detail plan of what must be done
   B. Determine the installation steps and responsibilities
   C. Estimate the value of these programs to your company
   D. Estimate the cost of the programs
   E. Research all the alternatives

III. Installation and testing
   A. Complete the design
   B. Purchase programs; hire consultant; hire contract programmer
   C. Prepare for testing
   D. Test and evaluate the results

IV. Acceptance
   A. Install the approved programs
   B. Change over to the new programs
   C. Review the completed project



Initial Planning. What is your goal? Is it to provide better customer service? Do you need to reduce inventory without affecting the current level of business? Are you looking for a program that will show you the management information you need, the way you need it?

Sounds confusing, doesn't it? Well, don't worry. Fearing that a business problem is too complex to solve is normal. Overcoming this fear will require that you believe and trust your own judgment. This will come about as you define exactly what you need.

Your first step is to make a list of all the things that will help your company solve existing problems. Next, determine which of these things can be done on the computer and assign a priority to them. Then tackle the high-priority programs first and begin planning.

Begin the planning phase by writing a general outline of what you want to accomplish with the finished program. After you've done this, gather all the information needed to complete the job. For example, you'll need copies of existing forms and reports. You'll also need to list existing procedures that go with the job or decide on new procedures. This outline and the information you gather will be used in each of the following steps; they'll be the basis for program development.

Before you continue you should review your outline. Does it need any revising? The more time you spend planning and deciding what must be done, the greater the success of any project. And that's what you're really after.

Detail Planning. Now that you're sure of what you need, make another, more detailed list of what you expect the program to do. And don't take anything for granted. (It can be costly to omit even a minor feature, especially when you are planning to hire a programmer.) Although you can't think of everything, most oversights can be avoided by reviewing your current business forms and procedures. These forms may also help you find other ways to make improvements.

Even though these forms can help you design a system, there is one important thing to remember: You must design the system to fit the person using it. Make it familiar. Be sure the terminology used on the screen and in any printed reports is consistent with existing programs and procedures. Keep in mind that people are different. If the person who'll operate the system is technical, use the technical terms he is accustomed to. If an average clerk is to use the program, skip the technical jargon and use words he is familiar with.

After you've completed your design, the next, perhaps the most difficult, step will be placing a dollar value on the new program or programs. What are they worth to you? How much time and money can be saved by using this new system? Try to make your estimates as realistic as possible. This means taking the time to evaluate all the benefits, some of which won't be apparent at first glance.

Another area requiring a lot of thought is estimating the cost of developing new programs. Besides the cost of programming, you must also include the cost of manual preparation. It may come as a surprise, but there is often more time and money spent gathering the required information than there is on developing the new programs. One way to estimate the cost is to assign difficulty factors to each new program. These factors appear in the accompanying chart.

This chart was devised to help you estimate the amount of work required to write a program. You should use it as a guideline only. Because this is a general guideline, each program must be reviewed for specific problems that may reduce or increase the cost.

Using this guideline is quite simple. Each point is equal to one hour of work. To estimate the program cost, all you have to do is multiply the total points by the hourly rate of contract programmers in your area. Now decide whether it's worthwhile to continue or whether the program will cost too much to develop. If it still seems like a good idea, get ready to request bids.

Before requesting bids from consultants or programmers, make sure your outline contains enough detail and matches the needs of your company. To help ensure success you must define each step, decide what must be done, and determine who is responsible. You must also specify the type of computer and other hardware you are currently using.

Besides giving the consultants information, you'll need some answers yourself. Be sure to ask which programming language they will use to write the programs. The most popular and commonly used languages are Basic, RPG, Cobol, and Pascal. If they use one of these, it will not be difficult to find someone to make program changes in the future. You should also find out if they provide installation planning, user training, documentation, and any conversion programs that may be necessary. And, above all, don't forget to ask for references.

Once you have all the answers you need, you can decide which company should do the work. Watch out for the good deal. If one bid appears quite a bit better than the others, it could be missing something. Compare the bids and award the contract to the company that offers a better value. This may be the higher bid, but you're looking for support from the company long after the job is completed. Follow your instincts, as you must feel comfortable working with the consultant or programmer. Working with someone who makes you uneasy may cause you to overlook some very important features.

After you've decided who will do the programming, you'll need to keep in touch with them regularly. In addition to phone calls, try to set up review meetings. These meetings will help you avoid surprises. They'll let you know if the project is on schedule and allow you to head off problems before they occur. The key to success in this phase is constant communication.

Installation and Testing. You're probably getting impatient by now. But you must allow plenty of time to test the new programs. Testing is the second most important step in getting the programs you need. The first, of course, is planning. Testing is boring and tedious; it involves checking and rechecking of reports and data.

All program tests should use actual, everyday input from your business. Another test is to check each field or operation to ensure that it can handle both the minimum and maximum values. Make sure the program checks and accepts only the valid input. This will keep the garbage out of your computer.

It is equally important to follow up on every step. Make sure you stay in charge of the project, including planning for the manual controls of the new programs. This control is a crosscheck to make sure the programs are working correctly.

In addition to controls, you'll need an emergency plan. This plan will be used when the computer is down or when files are destroyed. Even if files are destroyed, you'll not necessarily be out of business as long as

MIMCO STICK

Education and Entertainment with Quality



- **external socket** gives easy access to full game i/o connector
- rocker switch selects between joystick and external socket
- high quality self-centering stick with trimming adjustments
- three hair trigger buttons for maximum game flexibility
- smooth 0 to 255 range in both x and y axes

Mimco Stick
1547 Cunard Road
Columbus, Ohio 43227
2.00 shipping/handling fee
(Ohio residents add 5.5% tax)
*trademark of Apple Computer Inc

(214) 454-3801
(614) 237-3380

$59.95

you have a working backup plan. This plan may require you to back up your files daily and have two sets of backup disks or tapes. These disks should be switched every time you make a new backup. This way, if one set of files is damaged or lost you'll have another to operate with. If you use this approach or one similar, you can feel comfortable that your files are safe. This emergency plan can be improved significantly by keeping the two file backups at different locations.

Acceptance and Payment. Most consultants expect some type of payment before the work begins. This payment usually falls into one of the following categories: 10 percent of the price of the program when the work begins; 40 percent of the program price on installation; or 50 percent of the program price upon acceptance.

Or, if you are requesting modification of existing programs, you can expect to pay the following rates: 50 percent of the modification price when the work begins; or 50 percent of the price upon acceptance.

Try to avoid making the final payment until you're sure the program works. If the program is used regularly, hold off payment for one week. And, if the program is used less frequently, you may want to withhold payment for one month.

Installing the Programs. With the testing completed, you can now install the new programs. Make sure that everyone who'll be using the programs has been properly trained. And after the programs have been accepted and running for several days, plan a follow-up meeting. Have the users give their comments on the new programs. How do they feel about them? Now is a perfect time to reevaluate the costs and benefits. Has it been a success?

As we all know, the computer is a tool that can be used by practically anyone for just about anything. And you can have just the programs you've been looking for. All you have to do is make your plan, follow the guidelines, trust yourself, and stay in charge.

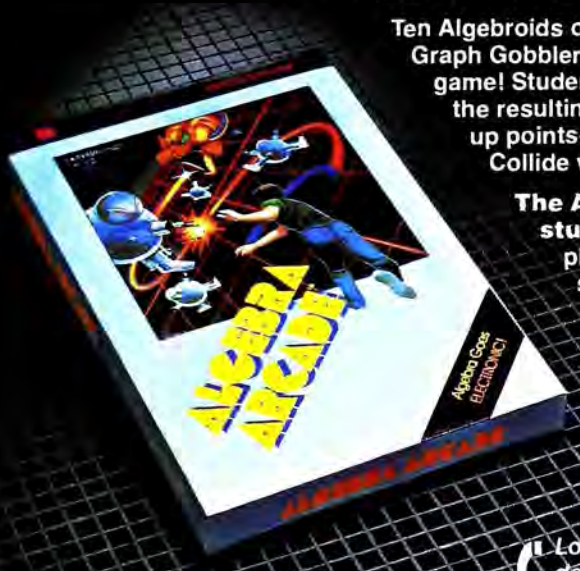
Cost Estimating Chart

Difficulty Factor	Description	Example
1 point	For every total to be printed or displayed.	If you need a sales report that will print totals for four product classes by customer, agent, territory, and company, you'll require that sixteen totals be printed (four classes times four totals). Multiply this by 1 point and add 16 points for this report
2 points	For every file used in the program.	To print the sales report previously described, you will be using four files. They are the customer, agent, territory, and sales files. Add 8 more points for this report.
1 point	If the program must display or print a report.	Add another point for this sales report. Add 2 points if you require the information to be displayed on the screen and a report to be printed on the printer.
2 points	For every file to be updated.	If, in addition to the sales report described above, you require the agent's record to be updated with his sales total, add 2 points.
2 points	For every element that is to be compared.	If you need to compare sales data for the current and prior year for each sales territory, add 4 points for every territory to be compared (2 points for the current year and 2 points for the prior year). So, if there are three territories, add 12 points. ■

ALGEBRA GOES ELECTRONIC!

ALGEBRA ARCADE was created by math instructors and student-tested for four years. It's educational software that really works.

Ten Algebroids on a coordinate system, the villainous Graph Gobbler and suddenly algebra is a game! Students enter in an algebraic equation and the resulting graph zaps the Algebroids and racks up points—but watch out for the Graph Gobbler! Collide with him and you lose points and up to three turns.



The ALGEBRA ARCADE is challenging to math students of every skill level. Beginners enjoy playing with simple straight lines while math sophisticates can create complicated curves using the ten algebraic functions included in the game (sine, cosine, tangent, etc.).

ALGEBRA ARCADE—educational software that brings algebra to *electric* life.

ALGEBRA ARCADE is available for $49.95 on the Apple II, IIPlus and IIe, IBM PC, Atari 800 and Commodore 64.

Look for ALGEBRA ARCADE at your local computer dealer.

WADSWORTH ELECTRONIC PUBLISHING COMPANY
10 Davis Drive / Belmont / California / 94002

WRITE IT.
PROOF IT.
SEND IT.

THE WORD JUGGLER™ SYSTEM FROM QUARK.

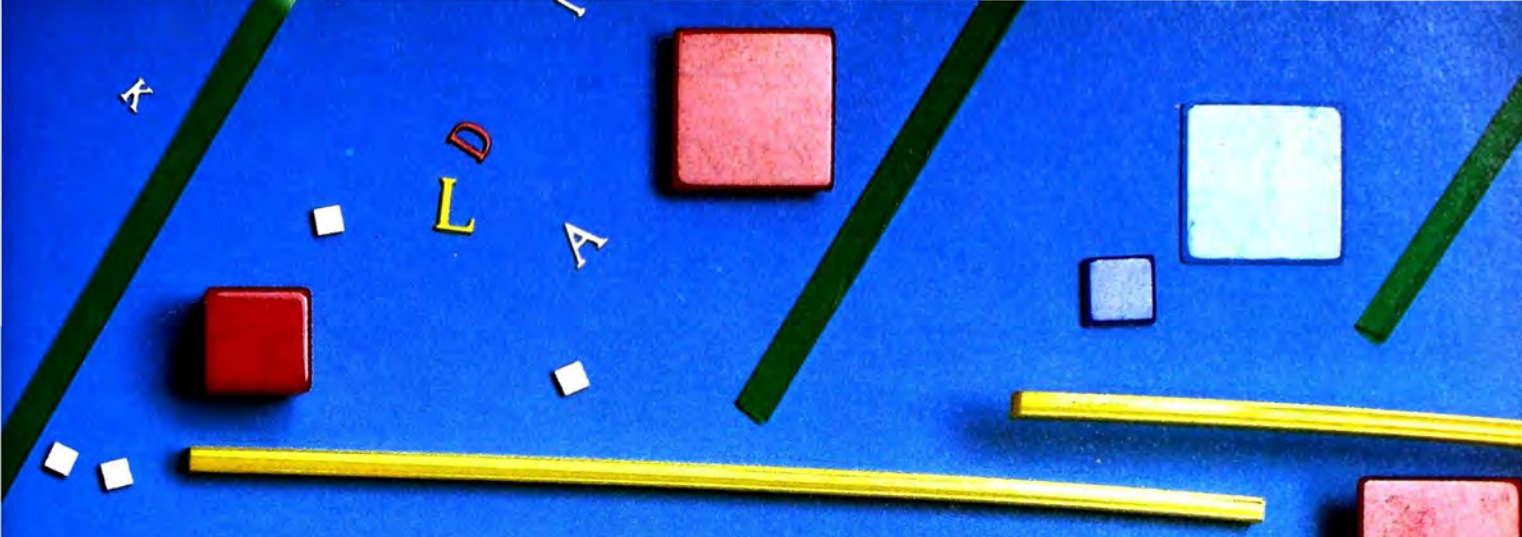
If you're serious about word processing on your Apple IIe or Apple III, you should test the Word Juggler System from Quark. Integrated tools that combine ease of use with extraordinary power.

WRITE IT WITH WORD JUGGLER.

The anchor of the system is Quark's Word Juggler word processor, a program that lets you easily perform the most intricate editing tasks. For example, you can delete characters, words, even paragraphs with just a single keystroke. You can instantly copy, move or delete entire blocks of text. Then display or print your document by simply pressing a key.

And there's virtually nothing to memorize. Because editing and formatting commands are always right there on the keyboard. Word Juggler for the Apple III comes with special templates which identify principal word processing functions. On our version for the IIe, the editing commands are labeled on easy-to-install, replacement keycaps.

Plus, Word Juggler lets you generate form letters from existing mailing lists, because the program has a built-in interface with both PFS:File and Apple's Quick File.



PROOF IT WITH LEXICHECK™.

Once you've written your document, you can quickly proof it with Lexicheck—a high performance spelling checker with a 50,000-word dictionary. Simple and fast, Lexicheck is invoked from within Word Juggler by a single keystroke. The program scans your document and highlights unrecognized words in context. If the words are actually misspelled, you can quickly correct them. If words are merely unknown, as with jargon or abbreviations, you can add them easily to your own personal dictionary.

SEND IT WITH TERMINUS™.

And with Quark's new Terminus communications program, you can use Word Juggler for electronic mail applications. A single keystroke invokes the program from within the word processor, allowing you to communicate with most any RS232 device. You can predefine the protocols you need to communicate with as many as 14 different systems, at transmission rates up to 9600 baud.

TEST IT TODAY.

Your dealer wants to give you a complete demonstration of all the features and capabilities of The Word Juggler System from Quark. And while you're there, check into Quark's full line of Office Automation Tools for the Apple III.

Word Juggler for the Apple III, $295
Word Juggler IIe, $239
Lexicheck for the Apple III, $149
Lexicheck IIe, $129

Terminus for the Apple III, $89
Terminus IIe, $89
All prices suggested U.S. retail

Quark™ INCORPORATED

Office Automation Tools

Quark, Word Juggler, Lexicheck and Terminus are trademarks of Quark, Incorporated.

Apple and Quick File are registered trademarks of Apple Computer, Inc.
PFS is a registered trademark of Software Publishing Corporation.

Apple II

CP/M

IBM PC

SPECTRUM

Professional Software Products

MATHEMATICS SERIES

The Series Includes These 4 Programs:

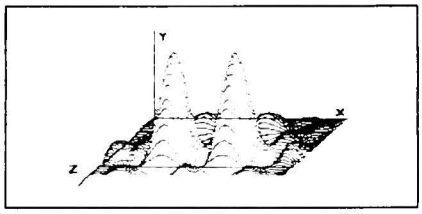
STATISTICAL ANALYSIS I: This menu driven program performs LINEAR REGRESSION analysis, determines the mean, standard deviation and plots the frequency distribution of user-supplied data sets.

NUMERICAL ANALYSIS: HI-RES 2-Dimensional plot of any function. Automatic scaling. At your option, the program will plot the function, plot the INTEGRAL, plot the DERIVATIVE, determine the ROOTS, MAXIMA, MINIMA and INTEGRAL VALUE.

MATRIX: A general purpose, menu driven program for determining the INVERSE and DETERMINANT of any matrix, as well as the SOLUTION to any set of SIMULTANEOUS LINEAR EQUATIONS.

3-D SURFACE PLOTTER: Explore the ELEGANCE and BEAUTY of MATHEMATICS by creating HI-RES PLOTS of 3-dimensional surfaces from any 3-variable equations. Hidden line or transparent plotting.

For APPLE II (48K) and IBM PC (64K) $50.00



BUSINESS SOFTWARE SERIES

Both Programs $250.00

A user-friendly yet comprehensive double-entry accounting system employing screen-oriented data input forms, extensive error-trapping, data validation and special routines for high speed operation. The series includes these two modules:

GENERAL LEDGER: A complete accounting system with these features:

- Up to 500 accounts and 500 transactions per month.
- Interactive on-screen transaction journal
- Produces these reports:
  - Transactions Journal
  - Account Ledgers
  - Income Statement
  - Balance Sheet
  - Account Listings

For APPLE II and IBM PC $150.00

ACCOUNTS RECEIVABLE

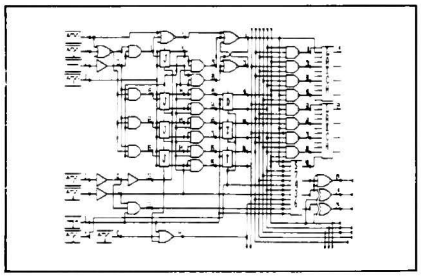
A flexible system with these features

- Up to 500 accounts and up to 500 invoices per diskette.
- Prints invoices, customer statements & address labels.
- Interfaces to General Ledger.
- Interactive screen-based invoice work sheet.
- Produces these reports
  - Aged Receivables
  - Sales Analysis
  - Account Listings
  - Customer Balances

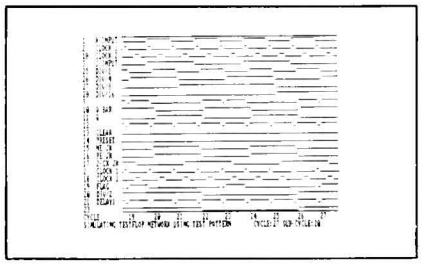
For APPLE II and IBM PC .... (2 DRIVES) .. $150.00

MICRO-LOGIC

An interactive graphics program for designing and simulating digital logic systems. Using the built-in graphics module, the user creates a logic diagram consisting of AND, OR, NAND, NOR, EX-OR, D, T, JK FLIP FLOP and powerful 16 pin user-defined MACRO functions. A typical page of a logic diagram looks like this:



Tne system provides on-screen editors for NETWORKS/MACROS DATA CHANNELS, CLOCK WAVEFORMS and GATES. GATE attributes include DELAY, TRUTH TABLE, NAME and I/O clocking



The system is available for Apple II and IBM PC computers. A non-graphics version is available for CP/M 2.2. It uses the network editor to create netlists and text printer plots to display simulation results. All versions require 2- 5 1/4" disk drives.

For APPLE II, IBM PC (192K) and CP/M (70K) $450.00
MANUAL & DEMO DISKETTE $50.00

PERSONAL FINANCE MASTER

The premier personal and small business financial system. Covering all types of accounts including check registers, savings, money market, loan, credit card and other asset or liability accounts, the system has these features:

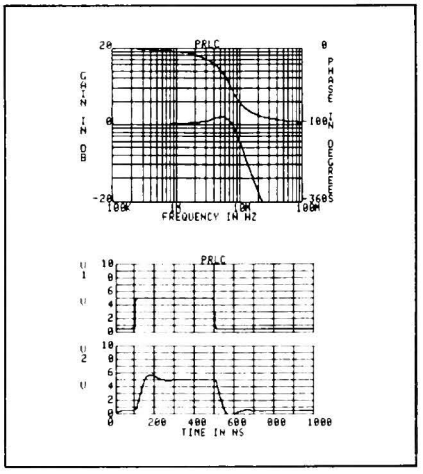
- Handles 25 Asset/Liability Accounts
- Monthly Transaction Reports
- Budgets Income & Expense
- Reconciles to Bank Statements
- Prints Checks & Mailing Labels
- Automatic Year-End Rollover
- Prepares a Net Worth Reports
- Searches for Transactions
- Handles Split Transactions
- User-Friendly Data Entry Forms
- Fast Machine Language Routines
- Extensive Error Trapping
- HI-RES Expense/Income Plots

For APPLE II and IBM PC $75.00

MICRO-CAP

Microcomputer Circuit Analysis Program

Tired of trial & error circuit design? Analyze and debug your designs before you build them. With MICRO-CAP you simply sketch your circuit diagram on the CRT screen and run an AC, DC or TRANSIENT ANALYSIS. Your circuit may consist of RESISTORS, CAPACITORS, INDUCTORS, DIODES, BATTERIES, BIPOLAR or MOS TRANSISTORS, OPAMPS, TRANSFORMERS, and SINSUSOIDAL or USER-DEFINED TIME DEPENDENT VOLTAGE SOURCES. MICRO-CAP can analyze any such network containing up to 40 separate nodes. Includes a user controlled MACRO library for modelling complex components such as OPAMPS and Transistors.



For APPLE II and IBM PC computers. A non-graphics version using an on-screen editor to enter networks and text printer plots to display simulation results is available for CP/M (2.2- 5 1/4" SSSD) systems. Requires 2 disk drives.

For APPLE II, IBM PC (192K) and CP/M (70K) $475.00
MANUAL and DEMO DISKETTE $50.00

ORDERING INSTRUCTIONS: All programs are supplied on disk and run on Apple II (64K) or IBM PC (128K) with a single disk drive unless otherwise noted. Detailed instructions included. Orders are shipped within 5 days. Card users include card number. Add $2.50 postage and handling with each order. California residents add 6 1/2% sales tax. Foreign orders add $5.00 postage and handling per product.

SPECTRUM SOFTWARE

690 W. Fremont Ave., Suite D
Sunnyvale, CA 94087

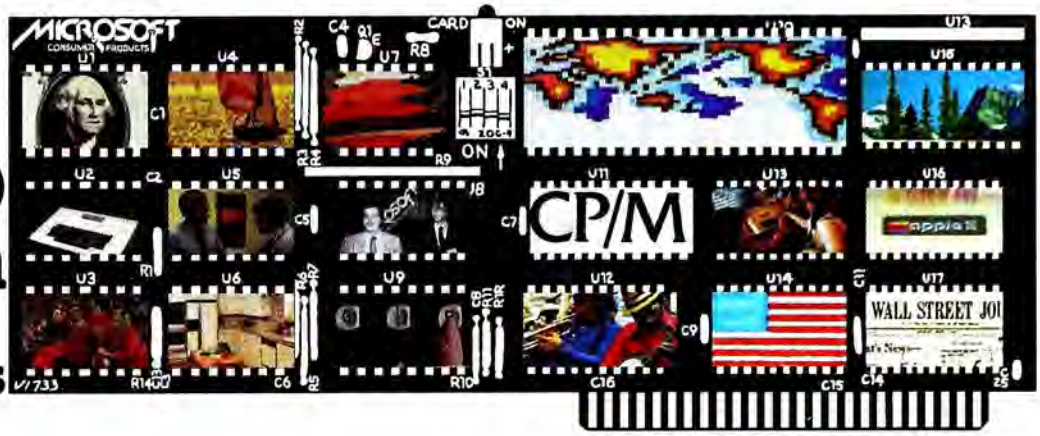
master charge

VISA

FOR PHONE ORDERS:
(408) 738-4387
DEALER INQUIRIES INVITED.

SOFTCARD Symposium

by Greg Tibbetts



Welcome to the November installment of SoftCard Symposium. This month we'll finish our coverage of the BIOS disk I/O routines and at the same time wrap up our year-long discussion of the BIOS in depth.

During this last year, we have learned a considerable amount about CP/M and the structure of the routines necessary to implement CP/M on computers in general and on the SoftCard in particular. This final installment will consist of a detailed description of the SoftCard read/write routines. Reader familiarity with the general description presented last month will be assumed.

The READ routine is located at 0DD93H in 56K, immediately following the SETDMA routine. Its first action is to zero the variable UNACNT, which we described last time as the count of unwritten, unallocated sectors in a series of sector writes. We must zero this variable now, since the fact we are doing a read means that we're obviously no longer writing consecutive sectors to an unallocated data block. The next write, then, will see this variable with its zero value and know what has happened.

READ's next action is to load the value for an unallocated write (value 2, remember?) into the accumulator (register [A]). All three action flags—READOP, WRTYPE, and RSFLAG—are then set to this value. As we said last month, the READOP and RSFLAG variables are simple zero/nonzero flags, while WRTYPE is supposed to contain the type of write. The locations of these and other variables we'll be discussing are shown in the accompanying table.

It's important for many of these variables to reside in consecutive memory locations and this arrangement is easier to see when conveyed in tabular form.

Let's talk about why the READOP, RSFLAG, and WRTYPE flags are set. READOP is the flag that tells BIOS in which direction the data is to be transferred—user memory to host buffer (write) or host buffer to user memory (read). This flag is nonzero when a read operation is to be made and zero when a write operation is to be made. RSFLAG is the indication to BIOS that, whatever operation may be going on between user memory and the host buffer, a disk read to fill the host buffer with data must be performed before it. This would, for example, need to be done when a disk sector that had already been allocated was being written to for the first time and the host buffer needed to be initialized with the disk sector's contents.

Since we're dealing with read operation, though, why set RSFLAG? The answer, of course, is that we'll use one routine to service both read and write. If the drive, track, and physical sector for this read don't match those for the last disk access, we know that the host buffer is not filled with the disk sector we wish to read from; and we know that we'll therefore have to do an actual disk read. Since we do not know at this time whether we have a match, setting RSFLAG ensures that if we don't, a preread of the disk will be performed to validate the host buffer.

Now we know why READOP and RSFLAG have been set, but why set WRTYPE? The answer again lies in the way that the common read/write routine is structured. At the very end of the common read/write process, a check is made to see whether a directory write has been called for. If so, the host buffer is immediately written to disk (that is, a value of 1 in the WRTYPE variable causes an immediate disk write of the host buffer). A WRTYPE value of 0 or 2 causes no such immediate write, deferring it until the next disk operation. By placing the value of 2 in all flags, we set those that simply need to be nonzero, and we also ensure that WRTYPE will cause no unnecessary disk activity. After setting all three flags to this value, READ jumps to the common routine RWOPER. Since WRITE also winds up here, we'll examine the WRITE routine before going on to the common one.

The WRITE routine, located at 0DDA3H, immediately follows READ's jump to RWOPER. First it sets up the three action flags by loading the actual type of write (0, 1, or 2), supplied in the [C] register by BDOS, into register [H] and a zero into register [L]. Since READOP and WRTYPE are located consecutively in memory, loading READOP with the register pair [HL] sets both of these flags to their proper values: READOP becomes 0 for a write operation and WRTYPE contains the value supplied by BDOS (remember that six-

Name	Address	Purpose
SEKTRK	0DEA8H	BDOS seek-track for current operation.
CPMSEC	0DEA9H	BDOS seek-sector for current operation.
OLDISK	0DEACH	Last valid disk selected.
SEKDSK	0DEADH	BDOS seek-disk for current operation.
HSTDSK	0DEAEH	Disk corresponding to host buffer contents (if host buffer valid).
HBFACT	0DEAFH	Flag indicating host buffer valid.
SECMOD	0DEB0H	Flag indicating host buffer has been modified and no longer matches host disk contents (write required before any further modification of host buffer).
READOP	0DEB1H	Flag indicating this is read operation.
WRTYPE	0DEB2H	Variable identifying type of write.
RSFLAG	0DEB3H	Flag indicating preread needed.
UNACNT	0DEB4H	Count of unallocated sectors remaining in this block.
UNADSK	0DEB5H	Disk number corresponding to UNACNT.
UNATRK	0DEB6H	Track number corresponding to UNACNT.
UNASEC	0DEB7H	Sector number corresponding to UNACNT.
DMAADR	0DEB8H	Current DMA address set by BDOS.
A$TRK	0F3E0H	Track number used by RWTS.
A$SEC	0F3E1H	Sector number used by RWTS.
A$DRV	0F3E4H	Drive number (1/2) used by RWTS.
A$SLT	0F3E6H	Slot number used by RWTS.
A$ERR	0F3EAH	Location in which RWTS places error code, if any.
A$CMD	0F3EBH	Location from which RWTS gets command.

Disk Variables—Their Addresses and Purposes

teen-bit memory stores are done low byte first, meaning that [L] goes into the first memory location and [H] into the second).

Next, WRITE checks to see what type of write BDOS was actually trying to perform. From our discussion last month, you'll recall that while BDOS only informs BIOS of an unallocated write during the first subsector of a new data block, the BIOS can detect all unallocated sectors of that block and save much time by avoiding unnecessary prereads. If BDOS says that the write is to an allocated block, therefore, the BIOS must be suspicious and make further tests on its own.

In fact, this is exactly what happens. The BIOS checks the value passed in register [C], and, if a 0 or a 1 is found, an immediate jump is made to the check-for-more-unallocated-sectors routine, CHKUNA. Since CHKUNA will eventually be executed anyway, we'll assume that the value in register [C] was 2, meaning that this is the first sector of a new allocation block. And that way, we can look at the rest of WRITE.

In such a case, then, WRITE loads the [L] register with a value of 8 (the number of subsectors in an unallocated data block) and the [H] register with the drive number that BDOS is requesting (SEKDSK, remember?). The [HL] pair is then stored in the variable UNACNT, thereby placing 8 into UNACNT and the seek-drive number into UNADSK, which immediately follows it. The [HL] pair is then loaded from SEKTRK and stored in UNATRK. Since track and sector numbers in the SoftCard BIOS are only single-byte numbers, this load operation gets the seek-track into [L] and the seek-sector into [H], storing these two values in their unallocated counterparts. At this point, all the unallocated variables (those starting with UNA) have been initialized, and control simply falls through to CHKUNA.

The first action of CHKUNA, which is located at 0DDBDH, is to check the unallocated sector count (UNACNT) and see if any more unallocated subsectors remain in this block. Remember that BDOS now thinks of this block as totally allocated. It is the BIOS that is keeping track of which parts of it are allocated and which are not. If there are no more unallocated subsectors, then BIOS knows BDOS is truly requesting a write to a fully allocated data block. This being the case, a preread may be necessary (provided that we have not already done one on the last write). In this case, then, control is passed to a routine called ALLOC, located at 0DDECH.

If, on the other hand, unallocated subsectors remain to be written, CHKUNA decrements UNACNT and then checks the seek-drive number against the unallocated drive number. If these two numbers do not match, then—regardless of the number of unallocated subsectors remaining—BDOS will have switched drives since the last write and a preread will very likely be required. Control, therefore, passes to ALLOC. In the same manner, the seek-track and seek-sector are compared to the unallocated track and unallocated sector. If an unmatched pair is ever found, a preread will probably be required and control will pass to ALLOC.

If all unallocated variables match all seek variables, however, then BIOS can be sure that this is simply a write to the next unallocated sector in the series and that no preread will be needed. In such a case, the unallocated sector number is incremented and the track number is incremented as well if the sector number goes beyond the end of the track (although in systems like SoftCard, where allocation blocks never overflow from one track to another, this does not need to be done). Having updated UNATRK and UNASEC for next time, CHKUNA clears the action flag RSFLAG to zero, showing that no preread should occur, and a jump is made to RWOPER.

Should something not have matched during the check of unallocated variables, a jump would have been made to ALLOC. ALLOC has two very simple duties. First, it clears the unallocated sector count to zero. This is done so that future calls to the BIOS WRITE routine, and thereby to the CHKUNA routine, will have to receive an unallocated write-type value from BDOS before starting the countdown process again. The next thing ALLOC does is to set RSFLAG to 1, to show that a preread is probably needed in this case. Once this has been done, control simply falls through to RWOPER at 0DDF2H.

RWOPER is the common routine we have talked about so much these last two months. This routine is the one that takes the information passed on in the action flags and drive/track/sector variables and uses it to transfer data between buffers, fill and empty the host buffer from disk, and keep track of the status flags.

In version 2.20B, RWOPER starts out with a corrective patch. The patch itself is located at the very end of the disk code at 0DFF0H, and it is really very simple. In the very first version of the SoftCard BIOS, it was found that the carry flag was not always cleared on entry to RWOPER, and this, as you will see, could have some bad effects. The patch therefore simply corrects that problem by always clearing the carry flag immediately.

The first action of RWOPER is to load the seek-sector number, called CPMSEC, into register [A]. This number is then also loaded into register [E] for safekeeping, and the carry flag is cleared. Next an RRA instruction that divides the sector number by two is executed. This gives us the physical sector number, since we know that there are two 128-byte subsectors in each of the Apple's 256-byte physical sectors. Register [A], therefore, now contains the logical sector number in the range used on the Apple disk.

Before the value stored in register [A] will be in a form we can give to RWTS, however, we must take care of translating the three-sector interleave in use by SoftCard CP/M into the two-sector interleave in use by RWTS—the logical to physical translation process. So, this is the next operation performed by RWOPER. It loads the address of the sector translation table, XLAT at 0DE92H, into the [HL] register pair and then adds the logical sector number in [A] to register [L] so that the [HL] pair now points to the entry in the table corresponding to the correct sector number needed by RWTS. This value is loaded into register [C] for use later if needed.

Next, RWOPER checks the status flag, HBFACT. This flag, as you'll recall, tells us whether the host buffer is active (that is, whether it contains valid data corresponding to a sector on the disk) and whether the host variables (those beginning with HST) identify the drive, track, and sector numbers of that disk sector. If HBFACT is set, the host buffer is active; if HBFACT is clear, then the host buffer is not active.

It's important to remember that HBFACT says nothing about whether the data in the host buffer exactly matches the data in the corresponding disk sector, since we may have changed some of that data in a previous subsector write. The best way to describe the arrangement is simply to say that, when active, the host buffer contains some valid data and that the host variables are the disk location to which the data is to go. RWOPER then checks the HBFACT status flag to see if the host buffer is active. (It should be noted here that, while most systems use a full set of host variables, SoftCard uses only HSTDSK; because of the way in which RWTS is set up, the necessary information is already stored in memory in 6502 page 00 for RWTS to use. This being the case, whenever host variables for track and sector need to be checked, these variables are used instead. They are shown in the accompanying table and begin with A$.)

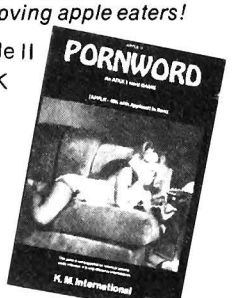
If the host buffer and variables are not active, then BIOS knows that the values in the host variables are meaningless and that the contents of the host buffer are invalid. In this case, no care need be taken to preserve any of their con-

PARTY GAMES for ADULTS

Great Gift Items for fun-loving apple eaters!

Apple II 48K





Les Vegas! Glittering lights. Exciting Gambling...Dice, Roulette, Bleckjack... Ever indulged in the 'forbidden' pleasures of the Strip? Ever gambled your shirt or skirt away in the late hours of the starry night?...No matter. This party game will provide you with enough excitement to tempt you to gambling the rest of your well-stacked (?) assets away in the privacy of your home...So invite your well-dressed friends in and be ready for some exciting interplay and group action. The fun becomes more thrilling when your partners start getting down to bare essentials!

Are you adventurous enough to try the Strip?

Erotic words. Unbridled imagination. Wild guesses. Sensual rewards and erousing penalties... You're about to "penetrate" the intimate world of your most secret fantasies and fulfill your wildest dreams...Challenge your partners to bite into this "forbidden" apple and be rewarded with a sample of their hidden charms... But watch out! They may sample yours before you can say -- as the game progresses...Unlimited pleasures await you if you dare leave your inhibitions in the closet and let your imagination run wild. As an infamous sybarite once said, "The wilder the better"! Ready? Action!

Rated Triple-X for broadminded ADULTS ONLY!

SPECIAL INTRODUCTORY PRICE:
VEGA$ $TRIP: $29.95 ($34.95 after Jan. 31, 1984)
PORNWORD: $19.95 ($24.95 after Jan. 31, 1984)

In Calif. add 6.5% tax. Payments by: check, money order, VISA or MASTERCARD (provide complete number & exp. date + phone #)

THESE GAMES ARE NOT SUGGESTED FOR MINORS OR PERSONS EASILY OFFENDED.

ORDER FROM:
K.M. INTERNATIONAL SERVICES (Dept. ST)

P.O. Box 691397, Los Angeles, CA 90069. Phone orders accepted.
(213) 893-7008 DEALER INQUIRIES INVITED.

Apple is a registered t.m. of Apple Computer Inc.

tents. If, on the other hand, the buffer and variables are active, then BIOS knows that the variables point to a specific disk sector and that the buffer contains the contents of that sector, either modified or unmodified. The next action of RWOPER, then, must be to determine the condition of the buffer and its variables. If they're inactive, then regardless of whether the current operation is a read or a write, the buffer must be made active by setting the variables and going on to do a preread if BDOS is requesting a subsector read, a write to an allocated sector, or a write to the directory. For an unallocated write, only the variables need to be set, since no preread is needed.

If, on the other hand, the host buffer and variables are active, then BIOS must take care. The buffer may contain information that has been altered by a subsector write but not yet written to disk, meaning that no disk read can take place. Or the fact that the host buffer and variables are active may simply mean that the proper physical sector for a subsector read or write is already in the host buffer. Simply stated, if the buffer is active, then BIOS must perform many checks on its status; if not, BIOS may do whatever it wants and be completely unmindful of the condition of the buffer.

It should be obvious by now that, regardless of whether the buffer is active or inactive, it must become active as a result of the current operation. A write would install data into it and set the host variables to the disk sector to be written, while a read (or preread) would set the host variables and fill the buffer from the disk.

RWOPER, then, after loading and preserving the current value of HBFACT in register [A], sets HBFACT to 1—to show that it will become active. When this has been done, RWOPER examines the flag. An inactive buffer (HBFACT=0) causes a jump to a routine called FILHST, located at 0DE21H. FILHST takes care of setting the host variables to match the seek variables and filling the host buffer with data from the disk if necessary. An active buffer (HBFACT=1) causes the jump to FILHST to be ignored.

Let's assume for the moment that HBFACT=1, the buffer is active, and the jump to FILHST has been ignored. RWOPER's next task is to check the seek variables for drive and sector number. Any unmatched pair causes a jump to NOMATCH at 0DE1AH. If all variables match, then a jump is made to MATCH at 0DE4DH. Let's also assume, then, that something in these three variables does not match and that we arrive at the NOMATCH routine. BIOS knows that the host buffer is valid, meaning that there may be unwritten valid data in it. The first task of NOMATCH, then, must be to find out whether there is. This is where the SECMOD flag comes in. This flag, you'll recall, is set when the host buffer has had a subsector moved into it from user memory (a subsector write) and cleared when the host buffer gets written to disk.

By checking SECMOD, therefore, NOMATCH determines whether it must write out the buffer to disk before proceeding with the current operation. If so, it calls the WRITEHST subroutine at 0DE73H to write out the host buffer to the drive, track, and sector number specified in the host variables. When the return from WRITEHST is made, the host buffer is no longer valid (remember that the host variables did not match the seek variables, so the sector contained in the host buffer is not the one BDOS is looking for). Since the host buffer is not active, we now have the same condition that we would have had if HBFACT had been clear. Control therefore is allowed simply to fall through to FILHST. Had SECMOD not been set, then BIOS would have known that even though the host buffer was active, nothing had been modified and no write to disk was needed. In that case control would have passed through directly to FILHST. Either way, FILHST gets executed if all of the seek and host variables do not match. For that reason, we'll take it up next.

As we've said, FILHST is responsible for setting the host variables and filling the host buffer if necessary. The first host variable to set up is the CP/M drive number from 0 to 15 for drives A: through P:. To do this, FILHST sets HSTDSK equal to SEKDSK and also saves the CP/M drive number in register [B]. Then using the drive number, FILHST derives the special drive and slot numbers needed by Apple's RWTS. RWTS requires the slot number times 16 (60H, 50H, 40H, and so on) and needs to know whether the drive in that slot is drive 1 or drive 2.

Calculating the drive number is rather simple. FILHST performs a logical AND operation between the drive number and 1. An odd number (bit 0 set) leaves a value of 1, while an even number (bit 0 clear) leaves a value of 0. Since RWTS needs a drive number of 1 or 2, the result of the AND operation is incremented and stored in the host variable for drive number

YOUR PRICES

Personal Computer Products, Inc.

APPLI-CARD™

FEATURING CP/M

The PCPI APPLI-CARD is the next generation in Z-80™ cards for your Apple® computer. The APPLI-CARD is a plug-in board with the complete hardware and software to let your Apple run the thousands of CP/M® application programs available. Whether it's for business, science, or education, the APPLI-CARD opens the door to the flexible world of CP/M and is the only Z-80 card that expands with your needs.

4 MHz 64K APPLI-CARD with Softvideo™ features, CP/M & APPLI-DISC™ Software — was $445 Now $295

6 MHz 64K APPLI-CARD with Softvideo features, CP/M & APPLI-DISC Software — was $595 Now $375

These Exciting New Products

64K or 128K RAM Extender

We give you a choice of either a 64K or 128K RAM Extender. Add this to the APPLI-CARD'S existing 64K and you have a 128K or 192K APPLI-DISC.

4 MHz 64K APPLI-CARD w/64K RAM Extender/ APPLI-DISC Software	$395
4 MHz 64K APPLI-CARD w/128K RAM Extender/ APPLI-DISC Software	$495
6 MHz 64K APPLI-CARD w/64K RAM Extender/ APPLI-DISC Software	$495
6 MHz 64K APPLI-CARD w/128K RAM Extender/ APPLI-DISC Software	$595
88CARD™ w/MS-DOS™ & MBASIC™	$595
4 MHz APPLI-CARD Including: dBASEII™	call us
SuperCalc2™	call us
WordStar™	call us
6 MHz APPLI-CARD Including: dBASEII	call us
SuperCalc2	call us
WordStar	call us

PRICES SUBJECT TO CHANGE

Personal Computer Products, Inc.

The Leader in COPROCESSING Technology

16776 Bernardo Center Drive, San Diego, CA 92128

(619) 485-8411 Telex 499-2939

CALL NOW TO PLACE YOUR ORDER (619) 485-8411

APPLI-CARD, APPLI-DISC, 88CARD and Softvideo are trademarks of Personal Computer Products, Inc. Z-80 is a trademark of Zilog Corporation. Apple is a registered trademark of Apple Computer, Inc. CP/M is a registered trademark of Digital Research. dBASE II is a trademark of Ashton-Tate. SuperCalc is a trademark of Sorcim Corporation. WordStar is a trademark of MicroPro International. MS-DOS and MBASIC are trademarks of MicroSoft Corporation.

Personal Computer SMARTWARE™

MergeCalc™ $125

- Consolidates VisiCalc® spread sheets
- Compares two or more VisiCalc® spread sheets

Applications MergeCalc merges VisiCalc® files and extends the utility of VisiCalc® . One of the shortcomings of VisiCalc® is the inability to consolidate, merge or manipulate multiple VisiCalc® models automatically. With MergeCalc, you can perform operations between your models without changing the models in any way. MergeCalc is ideally suited to add segments of a total business into a consolidated model. This enables all types of complex analyses, such as variance analysis, percentage change reports, time change reports, share of market analysis, incremental sales or investment analysis.

LoadCalc™ $95

- Converts textfiles to DIF™ files

Applications: LoadCalc creates DIF files from textfiles, so you can move mainframe or minicomputer data into VisiCalc® , VisiTrend/Plot, VisiWord or any program that uses DIF. LoadCalc allows selective conversion of the data, so you only get what you want. No programming required. With LoadCalc you can load "Actuals" from the mainframe into your "Budget" spreadsheet and *compare* the numbers.

The Big Picture™ $175

Financial decision making tool for VisiCalc® on Apple III, IIe

- "What if" your 5 year personal
  - Cashflow
  - Tax
  - Balance Sheet
- Provides evaluation of different strategies with sensitivity testing.
- Similar model done by a bank cost $5,000 per run!
- Superb documentation
- Multiplan version soon

Dealer inquiries invited

Send me a catalog! ST 11A

CYPHER, 121 Second St., San Francisco, CA 94105

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

800-SMARTWARE
Visa/MC accepted
In California 415-974-5297

(A$DRV at 0F3E4H).

Calculating the slot number is a slightly more complex operation. First of all, the drives with the lowest CP/M drive numbers are located in slot 6, the next lowest in slot 5, and so on, meaning that slot numbers decrease as drive numbers increase. Second, we must take into account that there are two drives for each slot. And third, the result must be the slot number times 16. We could just take the drive number, divide it by 2, and then subtract the new number from 6 to get the actual slot. The result could then be multiplied by 16 to get a slot number for RWTS to use. SoftCard's BIOS designer chose a somewhat different route, however. It is considerably more complex, and explaining it will involve getting back into some of the basics of binary arithmetic. There's good information here, though, so we'll take the time and space to go through it. Basically, what happens is that the drive number is multiplied by 8 (which actually represents dividing the number by 2 and multiplying the result by 16) so that we already have the drive number in the "times 16" form that RWTS needs. This result is then subtracted from the value for slot 6 in RWTS form. Let's look at the process in detail.

First, FILHST reloads the [A] register with the original CP/M drive number from register [B]. Because we will be multiplying this number by 8 rather than dividing by 2 and then multiplying by 16, we must first get rid of bit 0 of the number (the division by 2 would have removed the 0 if we'd done it the other way) and make the drive number an even value. We do this by rounding it down to the closest even value via a logical AND with the number 14. Since 14 is 00001110 binary, and since our drive number can be a maximum of 00001111 binary, you can see that the only effect this rounding has is to decrement any odd number while leaving even numbers alone (4 remains 4, for example, while 5 becomes 4, and so on).

At the end of this operation, then, the drive number is 0, 2, 4, 6, 8, 10, 12, or 14. This value is then multiplied by 8. This is done by adding the number to itself three times (remember from our discussion of binary arithmetic that adding a number to itself is equivalent to multiplying it by 2, since all bits are shifted one place to the left. Doing this three times, therefore, is the same as multiplying by 2 to the third power, or 8).

FILHST now has the drive number divided by 2 and multiplied by 16. It next takes this value and complements it. As we also discussed before, this simply means that all 0 bits are made 1s and all 1 bits are made 0s. In this case, complementing this number is equivalent to making it the negative of itself, −1. This may be difficult to see if you're unfamiliar with binary arithmetic, since in decimal arithmetic this is not a common process. Fortunately, though, it is easy to demonstrate.

Suppose we wished to create a binary −2 in eight bits. We could do so two ways. First we could start with 0 and decrement it two times; 00000000 would become 11111111 at the first decrement and then 11111110 at the second decrement. The resulting number in hex is 0FEH. An easier way, however, might be to start with a binary 2 (00000010), complement it to make 11111101, and then add 1 to make 11111110. This is known as the *two's complement* (the *one's complement* being the simple complement operation we did without adding 1), and it is the accepted method of creating negative numbers in binary.

Either way, then, we end up with the same number, 0FEH. Some of you will be quick to point out that 0FEH is 254 in decimal, while we seem to be calling it −2. You are right, of course. However, these are actually two different numbers, and the difference lies in what we assume is the value of bits we cannot see that extend (into infinity) to the left of the number.

As is so with other types of numbers, every binary number contains digits to the left of those we see that can be said to go on into infinity. The decimal number 100, for example, has an infinite number of zeros to the left of it that we do not show. If we assume our eight-bit, 0FEH example that all the bits we cannot see beyond the eight we show are zeros, then the number is 254. If, on the other hand, we assume that those bits are all ones, the number is −2. You see, when we decremented the binary number 00000000 before, we did not just change the eight 0s into eight 1s. In fact, we changed an infinite number of 0s into an infinite number of 1s. Lucky for us, we do not have to show these bits, since binary arithmetic works just fine when limited to the set number of bits in the values we are working with. We can just ignore, then, all those 1s out there beyond the eight we are looking at.

Suppose, for example, that we wished to subtract 2 from 16. In binary, we would have 00010000B representing the 16. No matter what fancy sorts of things we say about infinite 1s and 0s, we must come up with 14 (00001110B) as an answer to 16 minus 2. Arithmetic is arithmetic, after all. The minus 2, then, is represented as 11111110B, or 0FEH, and we add that number to the value 16, shown below as 00010000B.

The rules of binary addition are rather simple: 0 plus 0 equals 0, with no carry to the left; 0 plus 1 equals 1; likewise no carry to the left; and, finally, 1 plus 1 equals 0, with a carry of 1 to the left. In the case where there is a carry, all three bits are added in the next position, as follows (the symbol cy represents the 1 bit that is the carry from the previous position): cy plus 0 plus 0 equals 1, with no further carry; cy plus 1 plus 0 equals 0, with another carry to the left; and cy plus 1 plus 1 equals 1, with another carry to the left. That out of the way, let's look at the example. Carrys are shown in the line labeled Carry Line.

Decimal	Hex	Binary	
		1111	Carry Line
16	10H	00010000B	
−2	0FEH	11111110B	
14	0EH	00001110B	

Now it is perhaps easier to see what happens. In the binary example above, there's a 1 bit that is carried into the left position beyond the eight bits we are working with. If we had been adding 16 and 254, then we had to have taken this carry into account and the re-

sult would have been 270 decimal, 10EH, or 100001110B, and we would have had to create a sixteen-bit number to keep things accurate. Since we are subtracting 2, however, we ignore the carry beyond the number of bits in the two numbers we are working with, and that leaves us with an eight-bit number and the answer we needed—14.

Getting back to FILHST, then, we now have the one's complement of the drive number divided by 2 and multiplied by 16. We need to subtract this number from the RWTS slot number value for slot 6. In order for the subtraction to be correct, we really should have a two's complement—a true negative of the drive value—but it's just as easy to add 1 to the RWTS value for slot 6. FILHST, then, adds our one's complement to 61H, thereby subtracting the correct number of slots to come up with the proper RWTS value for this drive.

To make sure we fully understand how this goes, let's take an actual drive number and work it out. We will assume that FILHST has gotten a seek drive number of 3, meaning the fourth drive in the system. By simply looking at it, we can see that with four drives, this will be slot 5, drive 2. By ANDing 3 and 1, FILHST gets a result of 1, which it increments to 2 for RWTS and stores in A$DRV. It then takes the 3 again, ANDs it with 14, and gets a result of 2. Multiplying 2 by 8 gives us 16 in decimal, or 00010000B. FILHST then does a one's complement to get 11101111B and adds that to 01100001B, the value for slot 6 (plus 1). The eight significant bits of the result are 01010000B, or 50H, the RWTS value for slot 5. FILHST then stores this value in the host variable for slot number, A$SLT at 0F3E6H, where RWTS can access it.

Having successfuly set up the host variables for CP/M drive and RWTS drive and slot numbers, FILHST then goes on to get the seek-track number from SEKTRK into the [A] register. This it places into the [L] register. The seek-sector is already contained in the [C] register, since every routine that branches to FILHST stores the seek-sector there during operation. The seek-sector is placed into register [H], then, by FILHST, and the host variables for track and sector number are set simultaneously by storing the [HL] pair at A$TRK, located at 0F3E0H. The track number in register [L] goes into that location, while the sector number in register [H] goes into 0F3E1H, the host variable for sector number.

Now that all the host variables have been pointed to the correct disk, track, sector, FILHST loads the value of RSFLAG to see if a preread must be made. If so, it calls the READHST routine found at 0DE7AH to fill the buffer with the contents of the physical sector at the location pointed to by the host variables. If READHST is called, it returns to the point immediately after the CALL instruction. If not, control passes to this point automatically. In either case, this point is given the label NORD (for no read) and is located at 0DE49H.

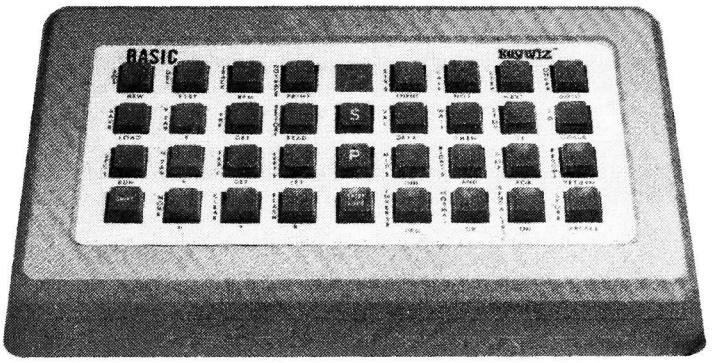
NORD has only one task, and that is to clear the SECMOD status flag, thereby indicating that no modification of the host buffer has yet been made. This means either that the contents of the host buffer are exactly the same as those of the disk or that it doesn't matter whether they are the same, since that disk area is unallocated. Any write to the disk at this point would be a total waste of time, so it's important that SECMOD be cleared to prevent any disk write.

The execution of NORD completes the operation of FILHST, and from there control passes automatically to the MATCH routine found at 0DE4DH. As you'll remember, had FILHST not gotten executed, and had all seek variables matched all host variables, this is the point we would have arrived at. In essence, then, if the host buffer is active and both seek and host variables match, control passes immediately to the MATCH routine. If the host buffer is not active, then FILHST is executed immediately to make the variables match, and control eventually winds up at MATCH. Finally, if the host buffer is active, but the variables do not match, then the buffer is written to disk if necessary, FILHST is executed to make the variables match, and control also passes eventually to MATCH. This describes what we have seen so far. One way or another, control gets to the MATCH routine. That's because it is the MATCH routine that actually performs the subsector read or write requested by BDOS. To see how this happens, we'll look at MATCH in detail.

MATCH's first operation is to get the seek-sector number requested by BDOS from the [E] register, where it was stored at the beginning of RWOPER. Since there are two of these sectors in the host buffer (HSTBUF), we need to determine from the seek-sector number which of the two is being referred to. Since HSTBUF occupies a 256-byte page of memory at 0F800H and its low order byte is therefore 00, we know that the first sector in the buffer starts at 0F800H and that the second one starts at 0F880H. We also know that since sector numbers start with 0, the first half of the buffer will always be composed of the even-numbered sectors, while the second half will be the odd-numbered sectors. So, all we need to do is find out whether a sector number is even or odd in order to know which half of the buffer BDOS wants. MATCH does this by loading the [HL]

NAME THAT KEY

(ALL 248 OF THEM!)



THE FIRST
USER DEFINABLE KEYBOARD

- Oefine each key with up to 8 characters of your choice directly from your computer keyboard
- Redefine any key - anytime - for any software program
- Each key is completely user definable without software or disk interaction
- 62 user definable keys (31 lower case/31 shifted) per keyboard
- Stores up to 4 (62 key) keyboards in its own memory
- Switch between keyboards at the touch of a button making all 248 user defined keys available
- KeyWiz is complete - no other parts to buy or PROMs to purchase and does not disable your keyboard

keywiz® VIP
(Very Intelligent Peripheral)

TURN THE POWER "OFF" and when you turn it on again - it's still there!

Full 1 Year Warranty

Also still available - our KeyWiz 83 & Convertible

- Preprogrammed Auxiliary Keyboards with 30 Visicalc/ AceCalc Function Keys
- Available with a Numeric Key Pad (our Model "83") or or without ("Convertible" Model) works with any program.
- Also available are the listed Word Processor Function Keys. (Optionally on the "83" model for $40.00 and provided without charge in the "Convertible" Model)
- Why waste time memorizing word processor or Calc commands or stringing key strokes together when KeyWiz utilizes single key strokes labeled in plain English. KeyWiz makes it all understandable.
- 4 Arrow Keys for full cursor positioning - a great asset to any Calc or word processor user.
- End Users - KeyWiz completes your microcomputer package.
- Oealers - KeyWiz makes it easier to sell software.
- Educators - KeyWiz sharply reduces training time and saves you $ $ $.
- OEM's - Provide a preprogrammed keyboard with that software package you're marketing. Call us about Custom Key Pads.

See us at AppleFest San Francisco
Moscone Center
San Francisco
Friday-Sunday
October 28-30, 1983

CURRENTLY AVAILABLE
Applewriter II
Screenwriter II
Super Text
Magic Window II
Word Star
SVS Word Handler
PIE Writer
Easy Writer

ccp Creative Computer Peripherals Inc.
Aztec Environmental Center
1044 Lacey Road, Forked River, N.J. 08731
THE BIG NAME IN SMALL COMPUTER PERIPHERALS

ORDERS ONLY 800-225-0091
INFORMATION 609-693-0002
DEALER INQUIRIES INVITED

ORDER NOW
For the: ☐ APPLE II+ ☐ APPLE II e or ☐ FRANKLIN ACE
Standard KeyWiz '83
☐ Visicalc / Acecalc Key pad w/numeric key pad 299.00
☐ With optional Word Processor 339.00
(Choose one: _____)
KeyWiz Convertible
☐ Visicalc / Acecalc key pad w/Word Processor 299.00
(Choose one: _____)
☐ Custom Key Module (Send for specs) 40.00
KEYWIZ VIP for Apple II+ ☐ or Apple IIE ☐
☐ User Oefinable Keyboard with plastic Applesoft Basic Template, Pascal Template and 2 Blanks 439.00

Add $8.00 Shipping/Handling to order
6% Sales Tax in New Jersey
Send $3.00 for our Informative Users Manual

PROFESSIONAL, MOLDED
PROTECTIVE CASE

- Dual Wall Construction. 1" Protective Spacing Between Inner and Outer Wall.
- Molded Cavity on Left for Apple II Plus or E and Two Cavities on Right for Apple Drives. Prevents Component Shifting.
- High Quality Foam Padding.
- Constructed of High-Quality Polyethylene. Rugged and Durable, Yet Lightweight.

FREE
With Each Case Ordered:
A-41 Dust Cover



$109.90

Protect Yourself From Lost Time, Data, and Money Associated With Accidents and Contaminants.

DUST COVERS
Antistatic, High Quality, Heavy Gauge Clear Vinyl

(A-41) Covers Apple II with Apple Monitor and One Disk Drive (Set of 2 Covers) **$19.90**
(A-42) Two Disk Drives, Stacked (1 Cover) **$10.90**
(A-43) One Disk Drive **$9.90**
Printers: Advise type and/or dimensions **$10.90**

All products in stock. Prices Include Freight. Satisfaction Guaranteed. Return within 30 days for full refund.

MasterCard and Visa call:
Toll Free 1-800-531-3122, Operator 27
In Washington State
1-800-227-7800, Operator 27
Send check, money order or credit card number and expiration date to:
P.C.A.
16625 Redmond Way, Suite 107
Redmond, Washington 98052
Phone (206) 882-0385
Washington State residents please add 7.8% sales tax
DEALER INQUIRIES WELCOME
Prices May Increase Without Notice

register pair with the address of HSTBUF, shifting bit 0 of the sector number from where it is stored in register [A], and shifting it into bit 7 of register [L]. This makes [L] either 80H (if bit 0 was 1), or 00 (if bit 0 was 0). And this makes the [HL] pair automatically point to the proper half of the buffer.

MATCH next loads register pair [DE] with the DMA address from where it was stored during the last call to SETDMA. Register pair [BC] is loaded with 128, the number of bytes in a subsector. Those of you familiar with Z-80 assembly language see what we are in the process of preparing for—the Z-80 instruction LDIR, which moves the number of bytes in [BC] starting from the address pointed to by [HL] to an area starting with the address pointed to by [DE]

Now that all addresses have been set up and the count initialized, MATCH must determine which direction the bytes are to be moved in. To do this, it uses the READOP action flag. If READOP indicates that this is a read operation, a jump is made to RWMOVE at 0DE66H, which is simply the LDIR instruction, and all 128 bytes are moved from the host buffer to the DMA address in user memory. If, on the other hand, this were a write operation, then SECMOD would be set to 1 to show that the host buffer has been modified and cannot be discarded without being written to disk. After that, the addresses in [HL] and [DE] are exchanged so that the bytes will be moved from the DMA address to the host buffer, and control falls through to the LDIR instruction at RWMOVE.

Once the move has been made, there's only one more action that the BIOS must perform, and it takes this action now. It loads register [A] with the value in WRTYPE, the action flag that tells us what type of write this is. (The BIOS, remember, must always write immediately if this is write-type 1, a write to the directory.) With the write-type in [A], bit 0 is shifted out of [A] into the carry flag of the status register. Since only a write type of 1 will place a 1 in bit 0, the carry flag will be set only if this is a directory write. In case it is, register [A] is then loaded with 0 to show BDOS that no error has occurred, and a RET NC (return if no carry) instruction is executed. With nondirectory writes, then, no further action is taken and control returns directly to BDOS. If the return is not made at this point, however, then a call is made to WRITEHST to write the host buffer to disk immediately; and, when that is done, control returns to BDOS.

This completes most of the disk read/write and deblocking code. The only routines we have not examined in detail are READHST and WRITEHST.

WRITEHST is located first, at 0DE73H. Its first activity is to clear SECMOD, the status flag that shows whether the host buffer contains unwritten data. Then it loads the [A] register with the RWTS command for write, which is a 2. The next instruction is actually a trick. By placing a byte in memory that corresponds to the opcode for a LD HL,xxxx instruction, WRITEHST ensures that the next two bytes will be treated by the Z-80 as the address for the load of [HL]. In this case, however, those two bytes are not an address of any kind. They are in fact two bytes that load the [A] register with the RWTS command for read, which is a 1. As you've no doubt guessed by now, the two bytes in question (starting at 0DE7AH) are the start of READHST. Since most of what the two routines do is identical, this is a short way of having WRITEHST do the extra business with SECMOD, load the write command, and then—skipping the load of the read command—go on to execute the rest of READHST.

In the rest of READHST, the RWTS command in [A] is stored in A$CMD, at location 0F3EBH, where RWTS will look to find the command it is to execute. The [HL] register pair is loaded with the 6502 address of RWTS ($0E03) and a call is made to the routine CALL65, which we have examined in the past. This routine takes care of saving all necessary registers and then, using the 6502 subroutine caller loop, passes control of the Apple over to the 6502 processor to branch to the 6502 routine, whose address is in the [HL] register—in this case to RWTS. When RWTS is finished and control is returned to the Z-80, the RWTS location A$ERR (at 0F3EAH) is checked to see if RWTS detected any errors during this disk operation. A 0 indicates no errors detected, and an immediate return to the BIOS routine that called READHST or WRITEHST is made.

Should an error be detected, the return address of the caller of READHST or WRITEHST is removed from the Z-80 stack and discarded. It is for this reason that these two routines must always be called from within the BIOS rather than simply jumped to; this ensures that there will always be a return address on the stack to discard. If there were not, then the return address to BDOS would be discarded and the result would be unpleasant. The reason READHST and WRITEHST handle their own errors is simple. Since they may be called from many different places within the read/write code, it would be terribly redundant to have a number of error tests at each of these places, especially since any error at any point should result in the same action—an immediate return to BDOS with an error indication.

Once an error has been detected and the BIOS caller return address discarded, the error is tested to see whether it is a write-protect error. This is because BDOS has a special return point for write-protect errors. If any other type of error is detected, a return to BDOS is made immediately. The accumulator, [A], already contains a nonzero value, which is all BDOS requires to be informed that a disk error has occurred. If, on the other hand, the error is a write-protect error, then the [HL] pair is loaded with the address of the beginning of BDOS plus 7 and a jump to that location is made. BDOS takes care of fixing up the stack and its other extra procedures (printing the R/O error message, for example, instead of BAD SECTOR).

This completes our coverage of the disk read/write code and our in-depth discussion of the BIOS code as a whole. It has been an interesting series (somehow you always learn most about a subject when trying to describe it to someone else).

Next month we'll begin a new series of subjects, possibly focusing on such items as specific modifications to the BIOS for various personal uses, optimizing software for SoftCard, and so on. Until next month. . . .



Plug 3,000 new applications into your Apple®.

The CP/M CARD™ plugs CP/M Plus™ (3.0) into any Apple II series computers.
The CP/M CARD gives you the option of running your Apple II with the speed and capability of a professional Z-80® system with CP/M-compatible software. Just plug in the CP/M CARD. Then choose CP/M or your standard Apple software at your option.

Plug into a big, new world of software.
The CP/M CARD gives you instant access to the world's largest selection of microcomputer software—more than 3,000 CP/M-compatible applications, languages and programming utilities. So, you, too can use professional business programs such as WordStar,® SuperCalc,™ Condor,™ and other high-performance software starting today! And, you still have access to your present library of Apple Software.

Plug into incredible performance.
Together, the super-fast CP/M CARD and CP/M Plus run applications up to 300% faster than your Apple system! The CP/M CARD is the only Apple II performance package that offers the speed and efficiency of CP/M Plus.

Why just keep plugging along?
The CP/M CARD provides everything you need—including 64K of additional on-board memory, CP/M Plus version 3.0, CBASIC® language, along with appropriate installation and reference guides. And, we have the CP/M CARD Programmer's Kit available for the serious-minded programmer. See your local microcomputer dealer today. Or contact Advanced Logic Systems' Sales Headquarters, 2685 Marine Way, Mountain View, CA 94043, 800-ADLOGIC or 415-964-5670 in California.

als
Advanced Logic Systems

The CP/M CARD for your Apple II+ or //e.

CP/M, CP/M Plus, the CP/M CARD and CBASIC are either trademarks or registered trademarks of Digital Research Inc. Z-80 is a registered trademark of Zilog, Inc. WordStar is a registered trademark of MicroPro International Corporation. SuperCalc is a trademark of Sorcim Corporation. Condor is a trademark of Condor Computer Corporation. Apple is a registered trademark of Apple Computer, Inc.


NYA



THE SPREADSHEET STOCK EXCHANGE

A PORTFOLIO ON ONE PAGE

BY WILLIAM H. MALONE

Did you know that it's possible to have a stock record that lists all stocks owned, dates purchased, prices paid, current percent values over price paid, total gains, and total values—all on an 8½-by-11-inch sheet? In addition, information about individual retirement accounts (IRAs), current status of cash flow, and other important facts can be in your shirt pocket, ready for instant consultation. Of course, if you have more than twenty-five or thirty stocks and you're an active trader, additional sheets may be needed. It all depends on how much information you plan to include.

A stock record like this one can be yours if you have an Apple II Plus with 48K, a disk drive, a printer, and a spreadsheet program such as *VisiCalc*, *Magicalc*, or *Multiplan*. This stock plan can be tailored exactly to your current needs, and since



IT'S EASY TO LEARN...
EASY TO USE...
AND, DURING OUR SPECIAL PROMOTION...
INCREDIBLY EASY TO BUY!!

- Control your finances and taxes with the Sundex Certified Personal Accountant™ program. With your financial status at your fingertips, easily analyze and manage your finances effectively. It even pays your bills automatically! Normally $99.95 to $149.95.
- Enjoy the ease and security of having your investment records on your Sundex Certified Personal Investor™ program. Ideal for personal portfolio management, analysis, and tax form preparation. Normally $99.95 to $149.95.
- Have fun with the Sundex Personal Payables™ program as it automatically pays all your bills from as many as 10 different checking accounts and prints out your checks. Normally $49.95.

EASY TO LEARN ... EASY TO USE

5 minutes with a Sundex program will show you how "on screen" instructions plus a "HELP" key, make these programs so easy.

DURING OUR "SUNDOWN" PROMOTION ...
INCREDIBLY EASY TO BUY!

Beginning October 31, 1983 and for 14 consecutive weeks, you will find Sundex Software in your local computer store for once-in-a-lifetime prices ...

STARTING AT $19.95 ... BUT,

the prices go up every two weeks, so the sooner you buy the less you pay.

Test this remarkable software yourself. Ask your computer dealer to let you try a Sundex program. Then look for the colorful "Sundex Sundown" display, to find that week's price on the programs you want.

HURRY ... DON'T LET THE SUN GO DOWN ON THIS INCREDIBLE INTRODUCTORY OFFER!

Visit your computer dealer today!

Just call 1-800-835-3243 to find out the name of the dealer nearest you.

THERE'S NOTHING EASIER UNDER THE SUN.

Dealer inquiries welcome:
1-800-835-3243
Colorado: 303-440-3600



Sundex Software Corp.
3000 Pearl Street
Boulder, Colorado 80301

Sundex

you formatted the stock record yourself, it can easily be changed to meet your requirements as they evolve over time.

With most commercially available stock status programs, producing a report containing the essential information about your portfolio requires that you use several sheets of printer paper. The idea of the Stock Status Spreadsheet (SSS) came from Value Line, a well-known publisher of investor information. Value Line does a very good job of putting a tremendous amount of information concerning a particular stock on a single sheet of paper. SSS is based on the same idea, and in SSS information about your portfolio is also placed on one sheet so that the essentials can easily be known.

Enough of the preliminaries. Let's get to work on our own Stock Status Spreadsheet. It is assumed here that you are already familiar with the use of the mechanics of the spreadsheet you have. One procedure you'll find very valuable in the construction of the SSS is the replicate function. The spreadsheet in example A has eleven columns with room for seven digits in each. This format fills a standard-size page with standard-size type. The ability to vary column widths is quite helpful and will be considered later. Condensed print is also valuable in situations where more than eleven columns of information are desired. Having space for six digits allows one to handle a dollar figure of six digits, more than most of us will need. More important, it provides space for dates in the form FE1783, in which 17 represents the date of the transaction and 83 the year.

Each transaction appears on a separate line. This limits the number of transactions to about forty, depending on how much other information is desired.

Example A shows the *name* of the stock in the example rather than the stock *symbol*. If you prefer the stock symbols, use them.

The SSS starts out with the name of the stock (STOCK) and the date it was originally purchased (DATE PURCHASED), essential for determining whether the stock is short- or long-term.

EXAMPLE A

STOCK	DATE PURCH.	NUMBER SHARES	COST/ SHARE	ORIGINAL VALUE	STOCK	CURRENT VALUE	TOTAL VALUE	PERCENT GAIN/LS	GAIN/ LOSS	TOTAL VALUE
ALCOA	JA1083	100	35	3560	ALCOA	37.125	3712.5	4.2837	152.5	3712.5
APPLE	NO 582	200	30.36	6050	APPLE	51.5	10300	70.248	4250	
APPLE	NO1682	100	30.73	3073	APPLE	51.5	5150	67.589	2077	
APPLE	NO2982	100	29.11	2911	APPLE	51.5	5150	76.915	2239	
APPLE		400	30.085	12034	APPLE	51.5	20600	71.182	8566	20600
CHICHI	NO2482	150	17.74	2661	CHICHI	36.5	5475	105.75	2814	
CHICHI	FE2383	100	24.5	2496	CHICHI	36.5	3650	46.234	1154	
WIRA83	FE1883	80	25.625	1996	CHICHI	36.5	2920	46.293	924	
CHICHI		330	21.676	7153	CHICHI	36.5	12045	68.391	4892	12045
WIRA82	JA1282			2000	WIRA82	2394		16%		2394

THIS SPACE IS FOR STOCK ADDITIONS

SOLD										
CHICHI	JU1283	100	18.5	1885	CHICHI	45.5	4515	139	2630	
FORD	MA1783	200	30.5	6135	FORD	25.5	5065	-17.4	-970	
EAL	MA1483	100	5.625	597	EAL	7	665	11.3	68	
EAL	FE2583	200	6.375	1310	EAL	7.5	1465	11.8	155	

THIS SPACE FOR ADDITIONAL STOCKS SOLD

TOTALS			ACTIVE	24747	VAL%	41.589	UP/DW	10292		35039
			MAY2583		D.O.W.	1260				6115
										41154

1983 CAPITAL GAINS/LOSSES

TOTAL	LONG	TERM	2630	GAIN
TOTAL	SHORT	TERM	223	GAIN
			2853	
TOTAL	LONG	TERM	0	LOSS
TOTAL	SHORT	TERM	-970	LOSS
			-970	

CASH FLOW

OHIO	SAVGS	3567	MAY1883
CENT	BANK	1200	MAR9
BROKER		1348	MAY9
TOTAL		6115	

* TOTAL VALUE OF CASH&STOCK

TOTAL FUND	ADDED IN	TO STOCK 1983
JAN.1	$650	SALARY
FEB.20	$790	REFUND
MAR.5	$690	SALARY
MAY12	$200	GIFT
TOTAL	2330	

The next column records the number of shares purchased (NUMBER SHARES), followed by the cost paid per share (COST/SHARE). This is followed by the total paid for the transaction (ORIGINAL VALUE). The next column repeats the stock name (STOCK). This is required if an eighty-column board is not used and allows you to see the right-hand side of the template. The repetition of the name of the stock is positioned to be on the left side of the CRT when you're entering information into the column shown to the right of it. Basically, the first six columns are not changed unless a stock is bought or sold.

The CURRENT VALUE column is the "input," in which the most recent stock values are entered to update the SSS (more about this later). The next column shows the current value of the stock (CURRENT VALUE). The following column lists the percentage gain or loss from the original price paid (PERCENT GAIN/LS). The next column shows the gain or loss in dollars from this particular transaction (GAIN/LOSS). The final column provides an easy way to summarize the total value of all the stocks (TOTAL VALUE).

Now back to the CURRENT VALUE column. If there is only one transaction concerning a stock, the new value is entered. The next column, TOTAL VALUE, is calculated automatically by the power of the spreadsheet (CURRENT VALUE * NUMBER SHARES). The PERCENT GAIN/LOSS column is calculated by subtracting the ORIGINAL VALUE from the TOTAL VALUE, and then dividing by the ORIGINAL VALUE and multiplying by 100 to get the percent. The GAIN/LOSS column is calculated by subtracting the TOTAL VALUE from the ORIGINAL VALUE. On a single-stock entry the TOTAL VALUE is shown in the last column.

Don't give up now, we're nearly there! A one-stock entry is shown on the first stock entry line of example A. This entry shows that we bought 100 shares of Alcoa stock on January 10, 1983, for $35 per share, costing $3,560 including the commission. The current value is 37⅛ ($37.12) per share. It now has a total value of $3,712.50, a percent gain of 4.28%, a gain of $152.50, and a total value of $3,712.50.

The next step is to address the situation where there is more than one transaction per stock. This type of situation is reflected in the next three entries. All the entries for the first Apple transaction line are the same as the one for a single stock. In the second Apple transaction line the CURRENT VALUE is entered as the CURRENT VALUE times 1. This same procedure is followed on the third entry—that is, CURRENT VALUE from the first entry times 1. When this procedure is followed, an entry for a stock having two or more transactions is entered only once. All calculations are performed automatically by the power of the spreadsheet.

A summary line is shown for the Apple stock. Since it is a summary of all the Apple transactions, no date is given. The input for CURRENT VALUE is the same as for the other Apple transactions.

Another stock, Chi Chi, is included to show how a stock IRA may be incorporated into the SSS. The first entry of the Chi Chi stock is a regular entry, whereas the second entry (WIRA82) under STOCK is a stock IRA. The symbol used here begins with "W," short for the user's first name; IRA is obvious; and 82 specifies the year the IRA was

EXAMPLE B

STOCK	DATE PURCH.	NUMBER SHARES	STOCK ACTION	COST/ SHARE	ORIGINAL VALUE	STOCK	CURRENT VALUE	TOTAL VALUE	PERCENT GAIN/LS	GAIN/ LOSS	TOTAL VALUE
ALCOA	JA1083	100	SELL AT 50	35	3560	ALCOA	37.125	3712.5	4.2837	152.5	3712.5
APPLE	NO 582	200	SELL ALL 300 APPLE STOCK	30.36	6050	APPLE	51.5	10300	70.248	4250	
APPLE	NO1682	100	WHEN IT REACHES LONG TERM	30.73	3073	APPLE	51.5	5150	67.589	2077	
APPLE	NO2982	100	ON NOV. 29, 1983	29.11	2911	APPLE	51.5	5150	76.915	2239	
APPLE		400		30.085	12034	APPLE	51.5	20600	71.182	8566	20600
CHICHI	NO2482	150	HOLD FOR STOCK SPLIT	17.74	2661	CHICHI	36.5	5475	105.75	2814	
CHICHI	FE2383	100	HOLD FOR STOCK SPLIT	24.5	2496	CHICHI	36.5	3650	46.234	1154	
WIRA83	FE1883	80	IRA WITH OLD NO.45678	25.625	1996	CHICHI	36.5	2920	46.293	924	
CHICHI		330		21.676	7153	CHICHI	36.5	12045	68.391	4892	12045
WIRA82	JA1282		IRA WITH FIRST BK. NO.34566		2000	WIRA82	2394		16%		2394
			THIS SPACE IS FOR STOCK ADDITIONS								
SOLD											
CHICHI	JU1283	100	LONG TERM	18.5	1885	CHICHI	45.5	4515	139	2630	
FORD	MA1783	200	SHORT TERM	30.5	6135	FORD	25.5	5065	-17.4	-970	
EAL	MA1483	100	SHORT TERM	5.625	597	EAL	7	665	11.3	68	
EAL	FE2583	200	SHORT TERM	6.375	1310	EAL	7.5	1465	11.8	155	
			THIS SPACE FOR ADDITIONAL STOCKS SOLD								
TOTALS				ACTIVE	24747	VAL%	41.589	UP/DW	10292		35039
				MAY2583		D.O.W.	1260				6115
											41154

TOTAL ADDED TO STOCK FUND IN 1983

JAN. 1	$650	SALARY
FEB. 20	$790	REFUND
MAR. 5	$690	SALARY
MAY 12	$200	GIFT
TOTAL	2330	

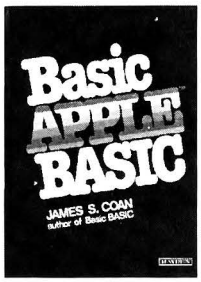
1983 CAPITAL GAINS/LOSSES

TOTAL LONG TERM	2630	GAIN
	223	GAIN
	2853	
TOTAL LONG TERM	0	LOSS
TOTAL SHORT TERM	-970	LOSS
	-970	

CASH FLOW

OHIO SAVGS	3567	MAY1883	
CENT BANK	1200	MAR9	
BROKER	1348	MAY9	
TOTAL	6115		* TOTAL VALUE OF CASH&STOCK

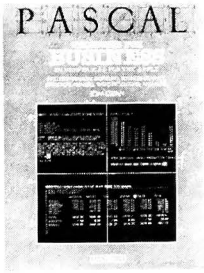
OUR APPLE CORPS



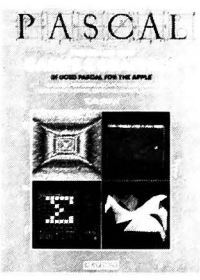
Basic Apple™ BASIC

(Coan) A complete guide to Applesoft BASIC. Takes you from beginning concepts to more advanced ones—and covers alternate programming techniques in Apple Integer BASIC. Offers over 80 programs—all conveniently indexed. Lo-Res and Hi-Res graphics are fully covered. **#5626, $14.95**

Pascal Programs for Business



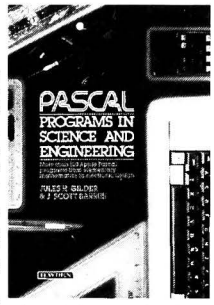
(Swan) A library of 28 essential business programs written in UCSD Apple Pascal. Programs range from basic statistics to spreadsheets, word processing, and data security. Offers a unique extended library of new Pascal procedures and functions, plus a standard reference of Apple Pascal functions and procedures. **#6270, $16.95**



Pascal Programs for Games and Graphics

(Swan) Helps users realize the full potential of Apple Pascal. Contains 22 Pascal programs for video enjoyment—generate exciting displays of light, try your hand at nerve-wracking games like controlling traffic at a busy moonport. The graphics editor allows you to custom design character sets, save and change pictures up to full screen, and print a hard copy of the finished product on most printers. **#6271, $15.95**

Pascal Programs in Science and Engineering



(Gilder and Barrus) Contains 112 Apple Pascal programs (written in UCSD Pascal) that help solve problems confronting students, scientists, and engineers. Programs cover general math, calculations in basic electricity and electronics, computer-aided design of amplifiers, power supplies, active and passive filters, communication lines, and more. All programs are ready to run and easy to modify. **#6265, $18.95**

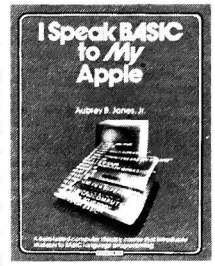


Data Base Management for the Apple™

(Wadsworth) Explains the basics of storing and organizing information on your Apple II Plus or Apple IIe home computer. Includes DATA BASE, a functional, cross-referenced data base management program written in Applesoft BASIC. DATA BASE techniques can simplify household chores such as checkbook balancing, organizing appointments, tracking investment portfolios, and more. Helps small businesses sort mailing lists, track inventories, and much more. **#6282, $12.95**

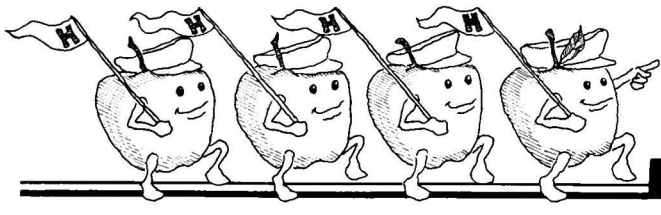
Apple is a trademark of Apple Computer, Inc. Apple is not affiliated with Hayden Book Company.

I Speak BASIC to My Apple™



(Jones) A classic computer literacy course for both students and teachers. Requires no previous computer experience on the teacher's part. Offers a comprehensive introduction to BASIC on the Apple. The student text contains detailed lessons focusing on learning objectives, definitions of key terms, programming exercises—everything needed to give students a fascinating insight into the Apple. Teacher's manual adds special tips for lesson planning and fine-tuning your teaching method, as well as answers to quizzes.

Teacher's manual **#6165, $18.75**
Student text, **#6175, $9.75**
Exams available on spirit duplicating masters. All educators entitled to special 20% discount.



Hayden

Order By Phone
1-800-631-0856
operator STN3
In NJ call (201) 843-0550, Book Sales Dept.

Mail to: Hayden Book Company, Inc.
Dept. STN3
10 Mulholland Drive
Hasbrouck Hts., NJ 07604

Please send me the book(s) indicated below by code number. If I am not completely satisfied, I may return the book(s) undamaged within 10 days for a complete refund.
I am enclosing $2.00 to cover postage and handling.
☐ Enclosed is my check or money order
Bill my ☐ Visa ☐ MasterCard

Name
Address
City
State/Zip
Visa/MasterCard # Exp.
Signature

Residents of NJ and CA must add sales tax. Prices subject to change.

started. All the other entries are made in the standard manner.

This record can be very convenient for tracking stock sold during the current year. Previous years can also be listed if desired and if there's room for them. They are shown similarly to the active stocks, except there is no need to update them. The CURRENT VALUE column shows the value of the stock when it was sold and various other pertinent information. No total is shown in the TOTAL VALUE column. At the end of each year you have a record of stocks you have sold. A record of this information should also be kept in written form for good measure.

On the summary line, the total amount currently invested is shown under ORIGINAL VALUE. A current value is calculated automatically under the TOTAL VALUE column. To the right of the sum of the ORIGINAL VALUE is a total percent value of the SSS. This is calculated by taking the sum of the TOTAL VALUE, subtracted from the sum of the ORIGINAL VALUE, divided by the sum of the ORIGINAL VALUE times 100. Adjacent to this is the current status in dollars of the SSS, calculated by subtracting the sum of the ORIGINAL VALUE from the sum of the TOTAL VALUE. Below this line is the current date and the DOW closing value.

Three additional blocks of information are shown: current year capital gain/loss, cash flow, and total funds added to the SSS.

The listing of GAINS/LOSSES is a summary of the current year to date of stocks sold. The TOTAL ADDED listing is valuable in keeping an overall status of the value of the portfolio when funds are added (or subtracted) during the year. Finally, the CASH FLOW is added to the sum of the TOTAL VALUE of the stocks so that an overall record of stocks plus cash is presented on the last line.

Your requirements may differ from the SSS shown, but working through the example will help you to define your own needs and develop your own ideas. Example B shows another SSS, this one based on using a spreadsheet that allows the user to vary the widths of the individual columns and to print out with condensed type. These capabilities make it possible to specify an extra wide column as needed to display information that's essential to a particular stock. A hard record should also be made periodically, since a disk can hold only so much information.

That's it! Now go to work and make some green for your efforts!

Coordinate Formulas for Example A

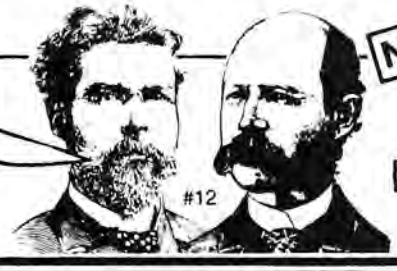
```
/X!/X>C60:>F65.
/GC7
/GRA
/GOC
/W1
E1:"EXAMPLE
F1:" A
B3:/FL" DATE
C3:"NUMBER
D3:/FR"COST/
E3:/FR" ORIGINAL
F3:"AL
G3:"CURRENT
H3:/FL" TOTAL
I3:/FR"PERCENT
J3:/FR"GAIN/
K3:/FR"TOTAL
A4:/FL"STOCK
B4:/FL"PURCH.
C4:/FL"SHARES
D4:/FR"SHARE
E4:/FR"VALUE
F4:/FR"STOCK
G4:/FR"VALUE
H4:/FL" VALUE
I4:/FL"GAIN/LS
J4:/FR"LOSS
K4:/FR"VALUE
```




```
A5:/FR"==========
   ==========
B5:/FR"=========- - ==========
C5:/FR"=======
D5:/FR"========
E5:/FR"========
F5:/FR"========
G5:/FR"========
H5:/FR"========/FR"======
I5:/FR"=======
J5:/FR"========
K5:/FR"========
A6:"ALCOA
B6:"JA1083
C6:100
D6:35
E6:3560
F6:"/FR"ALCOA
G6:37.125
H6:+G6*C6
I6:+H6-E6/E6*100
J6:+H6-E6
K6:+H6*1
A7:"APPLE
B7:"NO 582
C7:200
D7:30.36
E7:6050
F7:/FR"APPLE
G7:51.5
H7:+G7*C7
I7:+H7-E7/E7*100
J7:+H7-E7
A8:"APPLE
B8:"NO1682
C8:100
D8:30.73
E8:3073
F8:/FR"APPLE
G8:+G7*1
H8.+G8*C8
I8:+H8-E8/E8*100
J8:+H8-E8
A9:"APPLE
B9:"NO2982
C9:100
D9:29.11
E9:2911
F9:/FR"APPLE
G9:+G7*1
H9:+G9*C9
I9:+H9-E9/E9*100
J9:+H9-E9
A10:"APPLE
C10:400
D10:+E10/C10
E10:+E7+E8+E9
F10:/FR"APPLE
```

ALL BEAGLE DISKS ARE UNLOCKED, COPYABLE, AND COMPATIBLE WITH APPLE II, II+ AND IIe.*
(Don't Settle for Less!)

*APPLE is a Registered Trade Mark of You-Know-Who



New!

BEAGLE BASIC
APPLESOFT ENHANCER by MARK SIMONSEN

Requires Apple IIe (or II/II+ with RAM Card)

RENAME ANY APPLESOFT COMMAND or Error Message to any word, for program clarification or encryption. Plus add optional NEW COMMANDS—

ELSE follows If-Then's (as in IF X=2 THEN PRINT "Yes": *ELSE* PRINT "No"). **SWAP X,Y** exchanges 2 variables' values. Use **TONE** command to write music with no messy pokes & calls. **HSCRN** reads the color (off/on) of any hi-res dot. **SCRL** scrolls the text screen in *either* direction. **TXT2** lets Text Page 2 act like Page 1.

Also— GOTO or GOSUB may precede variables (as in "GOSUB FIX" or "GOTO 4+X". Escape-mode indicated by special ESC CURSOR. Replace Apple's awkward Graphics Screen Switch pokes with one-word commands. Change ctrl-G Beep to any tone. INVERSE REM STATEMENTS too! All GPLE® compatible.

These new functions occupy ZERO extra memory!

(**$34.95**: Includes Peeks/Pokes Chart & Tip Book #6)

Beagle Bros Micro Software Inc.

4315 SIERRA VISTA / SAN DIEGO, CA 92103
619-296-6400

APPLE MECHANIC
SHAPE-WRITER / BYTE-ZAP UTILITY
by BERT KERSEY

SHAPE EDITOR: Keyboard-draw shapes for animation in your programs. Create **Proportionally-Spaced Typefaces** with special characters. Six fonts included. Listable Applesoft demos show you how to animate graphics and create professional Charts and Graphs.

BYTE-ZAP: Rewrite any byte on a disk for repair or alteration. Load entire sectors on the screen for inspection. **Hex/Dec/Ascii** displays and input. Educational instructions include experiments for making trick file names, restoring deleted files, changing DOS, etc.

MORE: Useful music, text and hi-res tricks for your programs. Clear educational documentation.

(**$29.50**: Includes Peeks/Pokes Chart & Tip Book #5)

APPLE MECHANIC TYPEFACES

26 NEW FONTS for use with Apple Mechanic programs. Many sizes of fully-editable characters.

BEAGLE MENU: Display only the file names you want from your disks (for example, only *Applesoft* files or only *Locked* files) for fast one-key cursor selection.

(**$20.00**: Includes Peeks & Pokes Chart)



ALPHA PLOT
HI-RES GRAPHICS/TEXT UTILITY
by BERT KERSEY and JACK CASSIDY

DRAW IN HI-RES on both pages using keyboard OR paddles/joystick. View lines before plotting. Use mixed-colors and Reverse (background opposite) plotting. Fast hi-res circles, boxes and ellipses; filled or outlined.

Compress Hi-Res Images to 1/3 Disk-Space. Superimpose hi-res pages 1 and 2 or re-locate any rectangular image area anywhere on either hi-res page.

Proportionally-Spaced Hi-Res Type with adjustable character size and color. Upper and lower case with no htab/vtab limits. Sideways typing for graphs too.

(**$39.50**: Includes Peeks/Pokes Chart & Tip Book #4)

DOS BOSS
DISK COMMAND EDITOR
by BERT KERSEY and JACK CASSIDY

RENAME DOS COMMANDS and Error Messages. "Catalog" can be "Cat"; "Syntax Error" can be "Oops" or *anything*. **Protect your programs**—An unauthorized Save-attempt can produce a "Not Copyable" message, or *any* message you want. Also List-Prevention and one-key program-execution from catalog.

Customize DOS. Change the Disk Volume heading to your message or title. Omit or alter catalog file codes. Fascinating documentation, tips and experiments.

ANYONE using your disks (booted or not) will be formatting DOS the way YOU designed it.

(**$24.00**: Includes Peeks/Pokes Chart & Tip Book #2)

TIP DISK #1
by BERT KERSEY

100 LISTABLE PROGRAMS from Beagle Bros Tip Books 1-4. Make your Apple do things it's never done! All 100 programs are changeable for experimentation. Includes Apple COMMAND CHART with all Applesoft, Integer Basic & DOS Commands and Descriptions!

(**$20.00**: With 2 Charts: Peeks/Pokes & Commands)

New!

PRONTO-DOS
HIGH-SPEED DOS / DOS-MOVE UTILITY
by TOM WEISHAAR

Put HIGH-SPEED DOS in your Apple's normal memory, Language Card or Apple IIe's high-memory—

Function	Normal	Pronto
BLOAD HI-RES IMAGE	10 sec.	3 sec.
LOAD 60-SECTOR PROGRAM	16 sec.	4 sec.
SAVE 60-SECTOR PROGRAM	24 sec.	9 sec.
BLOAD LANGUAGE CARD	13 sec.	4 sec.

(Text Files: No Change)

Boot the Pronto disk or your updated disks, created with the normal INIT command. Compatible with ALL DOS Commands, GPLE® and most of your programs.

Move DOS to your Language Card or Apple IIe standard high-memory, freeing up **10,000** Extra Bytes!

15 Extra Sectors per disk. Catalog Free-Space display, new "TYPE" Command reveals Text File contents...

(**$29.50**: Includes Peeks & Pokes Chart)



FLEX TEXT
20/40/56/70-COLUMNS WITHOUT HARDWARE
by MARK SIMONSEN

PRINT VARIABLE-WIDTH TEXT on both hi-res screens with normal Applesoft commands (including Htab 1-70). Normal, expanded & compressed text with no hardware. 70-columns requires b/w monitor (not tv).

Add Graphics to Text or Text to Graphics. Run your existing Applesoft programs under Flex Text control. Fast, easy to use and Compatible with GPLE.®

DOS Tool Kit® font compatibility, or use the supplied Flex Text typefaces. Select up to 9 fonts with control-key commands. Custom text character editor included.

(**$29.50**: Includes Peeks & Pokes Chart)

FRAME-UP
HIGH-SPEED PRESENTATION UTILITY
BY TOM WEISHAAR

MAKE PROFESSIONAL PRESENTATIONS of existing hi-res, lo-res and text frames. *FAST* hi-res loads in 2½-seconds! Paddle or Keyboard-advance frames.

Unattended Shows are optional with each picture arranged and pre-programmed to display from 1 to 99 seconds. **Text Screen Editor** lets you create black-and-white text "slides" and add type "live" from the keyboard during shows. Mail copies of presentations on disk to friends and associates (or home to Mom!).

(**$29.50**: Includes Peeks & Pokes Chart)

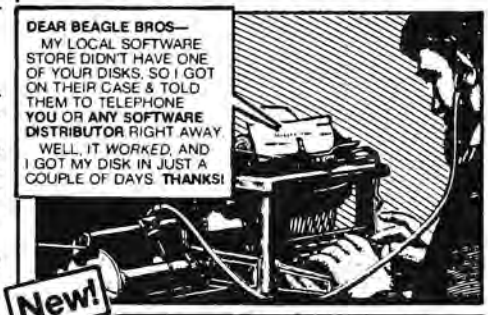
BEAGLE BAG
12 APPLE GAMES by BERT KERSEY

COMPARE BEAGLE BAG with any single-game locked-up disk on the market today. All 12 games are a blast, the price is right, the instructions are crystal clear, *and* the disk is COPYABLE. You can even *change* the programs or list them to learn by seeing how they work.

Twelve Games from the Applesoft Ace, Bert Kersey—TextTrain, Wowzo, Buzzword, Magic Pack & more...

Excellent Reviews— (see Jan-83 *Softalk*, page 148). BEAGLE MENU too: Description under "Typefaces".

(**$29.50**: Includes Peeks & Pokes Chart)



New!

DOUBLE-TAKE
2-WAY-SCROLL/MULTIPLE UTILITY
by MARK SIMONSEN

LISTINGS & CATALOGS SCROLL Up *AND* Down, making file names and program lines much easier to access. Arrow-keys control scroll direction. New Applesoft LIST FORMAT: each program statement on new line for *FAST* program tracing and de-bugging.

Variable-Display shows all of a program's strings and variables with current values. **Cross-Reference** shows line nos. on which each variable & string appears. Better **Renumber/Append** to *Merge* programs (not just connect end-to-end). Also **Auto-Line-Number**, Instant Hex to Dec Converter, Program Stats, Eliminate/Redefine Cursor, Free Space-On-Disk... All GPLE® compatible.

(**$34.95**: With 2 Charts: Peeks/Pokes & "Tips & Tricks")

RUSH the following disks by First Class Mail—

☐ Alpha Plot	$39.50	☐ Flex Text	$29.50
☐ Ap.Mechanic	29.50	☐ Frame-Up	29.50
☐ A.M.Typefaces	20.00	☐ ProntoDOS	29.50
☐ Beagle Bag	29.50	☐ Tip Disk #1	20.00
☐ Beagle Basic	34.95	☐ Utility City	29.50
☐ DOS Boss	24.00	☐ ADD ME to mailing list.	
☐ Double-Take	34.95	☐ ALREADY ON mailing list.	

AT YOUR APPLE DEALER NOW!
Or order directly from Beagle Bros—



Visa/MasterCard or COD, call TOLL-FREE
Nationwide: **1-800-854-2003** ext. 827
California: **1-800-522-1500** ext. 827
Alaska/Hawaii: **1-800-854-2622** ext. 827

OR mail U.S.Check, Money-Order or Visa/MC# to BEAGLE BROS, 12th Floor
4315 SIERRA VISTA, SAN DIEGO, CA 92103

Add $1.50 First Class Shipping, Any-Size Order.
Overseas add $4.00. COD add $3.00. California add 6%.
ALL ORDERS SHIPPED IMMEDIATELY.

CLIP COUPON OR USE SEPARATE SHEET.



WE'RE VERY HARD ON OUR SOFTWARE

You might even say we're perfectionists. Because at Softsmith,™ we give our software the hardest workout, the toughest testing, the most rigorous evaluation. The result is software that has earned our confidence, and will justify your trust.

In particular, we do three things that make Softsmith software the most dependable you can buy.

1.

We're picky. Out of the hundreds of programs Softsmith evaluates every month, we choose to publish very few. A lot of good programs are rejected; but we think you can't be too picky when it comes to personal computer software. Our selectivity is your best assurance of quality.

2.

We complain a lot. If you were a programmer, and Softsmith accepted your program, you would have a right to be proud. But you shouldn't go on vacation yet. Because no matter how good that program may be, Softsmith evaluators will suggest some improvements; politely, but firmly. We may complain a lot, but people thank us later.

3.

We insist on plain English. After we've made the best program better, we're still not finished. Because we know that even the best program is no good if it's too hard to use. So we put a lot of time and effort into translating our instructions from computerese into plain English.

We publish software you can trust. Yes, we pick our programs carefully. And complain a lot to make them better. And insist on plain English instructions. The result is a library of personal computer software you can depend on. Even if you don't know a Pascal compiler from an emulation subroutine.

Softsmith has programs you can trust for all the most popular personal computers. Programs for Education, Home Management, Entertainment, Word Processing, Business, Communications and Programming. Ours is the largest library of quality software under one brand name.

So before you choose a software package for your computer, make sure someone's taken the time to be hard on it. Make sure it's Softsmith, the software you can trust.

Ask for Softsmith brand software wherever computers or software are sold. Or call us TOLL-FREE at **(800) 341-4000** for the name and location of your nearest dealer.

Softsmith Corp., 1431 Doolittle Dr., San Leandro, CA 94577. A company of The Software Guild.™

SOFTSMITH™

SOFTWARE LIBRARY



LOGOMOTION™ MAKES LEARNING THE NAME OF THE GAME

Can a computer think? This question has intrigued people since the very beginning of the Computer Age.

With Logomotion, from Softsmith™ Corporation, anyone from young children to adults can use the personal computer to answer that question. Through its power to draw pictures, make music, and create programs, Logomotion allows you to explore the exciting intellectual potential of your computer. Along the way you'll gain valuable insights into the way your own thinking works, and create an environment where learning computer programming is fun.

Like most Logo-based programs, Logomotion starts children out with turtle graphics. By "teaching" a computer turtle how to draw shapes and pictures, children learn the basics of geometry and programming. Logomotion even lets them print out their drawings or save them on disk, to be changed later, or included in other programs.

Softsmith's Logomotion goes far beyond turtle graphics, to include music synthesis, file handling, text editing and even a game called "Animal."

Logomotion runs on the Apple® II, II + and IIe; Franklin Ace®; Commodore 64™ and IBM PC® computers with 64K RAM and one disk drive.

Like the other programs in the Softsmith library of quality software, Logomotion has been tested, improved and clearly documented to make it the most dependable, easy-to-learn Logo-based program you can buy. The Softsmith library also includes software for the most popular personal computers – programs for Education, Home Management, Entertainment, Business, Word Processing, Communications and Programming.

Ask for Softsmith brand software wherever computers or software are sold. Or call us Toll-Free at (800) 341-4000 for the name and location of the dealer nearest you.

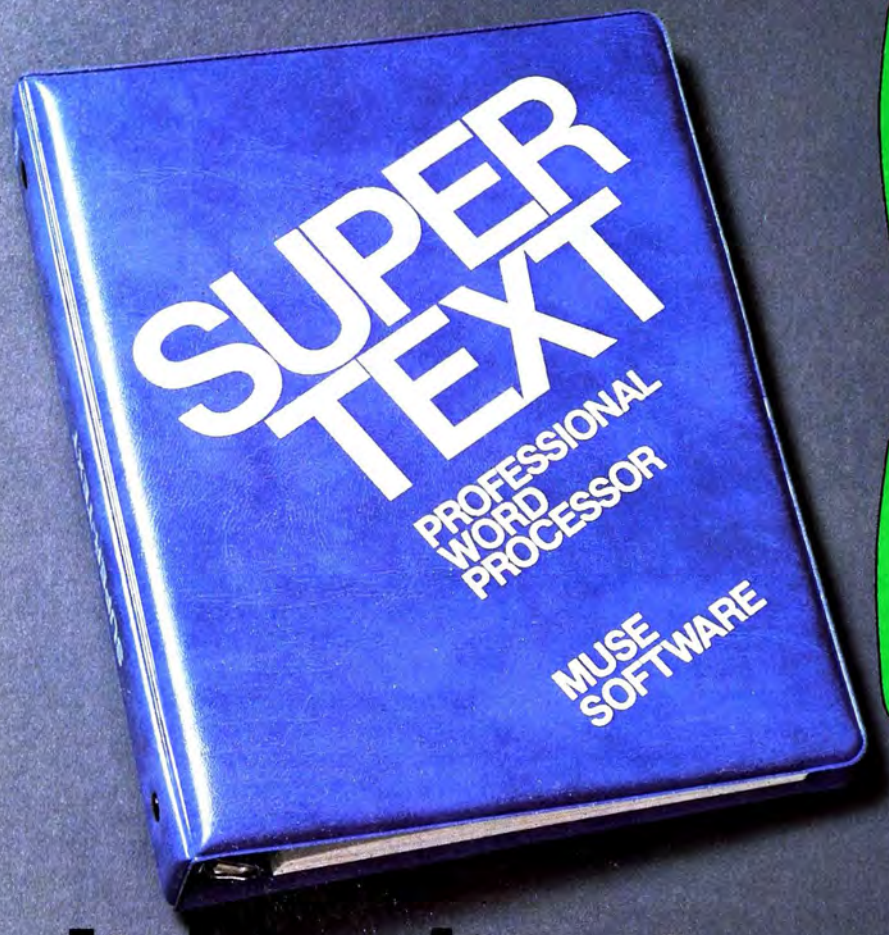
Dealer inquiries are invited.

Apple II, II + , and IIe are registered trademarks of Apple Computer, Inc. Franklin Ace is a trademark of Franklin Computer Corp. IBM PC is a registered trademark of International Business Machines, Inc. Commodore 64 is a trademark of Commodore Business Machines, Inc.

SOFTSMITH™

SOFTWARE LIBRARY

SUPER-TEXT Professional does everything the competition does, except one thing.





ON-LINE "HELP"



ON-SCREEN FORMATTING

It doesn't cost nearly as much.

SUPER-TEXT PROFESSIONAL (40/80) gives you valuable **ON-SCREEN FORMATTING** and **"HELP" GUIDES***, unique **AUTOLINK**, **SPLIT SCREEN** and **MATH MODE**. Plus all the functions you'd expect from an expensive word processor, like an 80 column screen display.* Automatic page headers and footers. Automatic page and chapter numbering. Preview Mode to check page endings. Easy text editing. Special block operations for text copy, save and delete. Automatic tabbing and formatting. Multi-file search and replace. Superscripting and subscripting. All for only: **$175.00**

Compare Super-Text Professional with the other professionals. You'll find there's no comparison. Available now for Apple II+ and Apple IIe.

*These features available with the use of an 80 column board.

SUPER-TEXT HOME/OFFICE (40/56/70) is the best choice for introducing word processing efficiency into your home. It offers you the basic text editing features of Super-Text Professional, and includes special features tailored for home use. It provides 40, 56 or 70 column screen display without any additional hardware. The Character Design Mode lets you create display characters in foreign languages, with special symbols, for any personal application. All at a price you can live with: **$125.00**

Available now for Apple II+ and Apple IIe.

Special Offer!
Your Choice Either Super-Text. Professional Now Available For IBM-PC.

$99.

MUSE®
SOFTWARE

347 North Charles Street, Baltimore, Maryland 21201 301/659-7212

G10:+G7*1
H10:+G10*C10
I10:+H10-E10/E10*100
J10:+H10-E10
K10:+G10*C10
A11:"CHICHI
B11:"NO2482
C11:150
D11:2661/150
E11:2661
F11:/FR"CHICHI
G11:36.5
H11:+G11*C11
I11:+H11-E11/E11*100
J11:+H11-E11
A12:"CHICHI
B12:"FE2383
C12:100
D12:24.5
E12:2496
F12:/FR"CHICHI
G12:+G11*1
H12:+G12*C12
I12:+H12-E12/E12*100
J12:+H12-E12
A13:"WIRA83
B13:"FE1883
C13:80
D13:25.625
E13:1996
F13:/FR"CHICHI
G13:+G11*1
H13:+G13*C13
I13:+H13-E13/E13*100
J13:+H13-E13
A14:"CHICHI
C14:330
D14:7153/330
E14:2661+2496+1996
F14:/FR"CHICHI
G14:+G11*1
H14:+G14*C14
I14:+H14-E14/E14*100
J14:+H14-E14
K14:+G14*C14
A15:"WIRA82
B15:"JA1282
E15:2000
F15:/FR"WIRA82
G15:2394
I15:/FR"16%
K15:+G15*1
B17:"THIS
C17:"SPACE
D17:"IS FOR
E17:" STOCK
F17:" ADDITIONS
G17:/FL"IONS
H17:/FL
A19:/FR"SOLD
A20:"CHICHI
B20:"JU1283
C20:100
D20:18.5
E20:1850+35
F20:/FR"CHICHI
G20:45.5
H20:4550-35
I20:139
J20:4515-1885
A21:"FORD
B21:"MA1783
C21:200
D21:30.5
E21:30.5*200+35
F21:/FR"FORD
G21:25.5
H21:25.5*200-35
I21:/FR"-17.4
J21:5065-6035
A22:"EAL
B22:"MA1483
C22:100
D22:5.625
E22:562+35
F22:/FR"EAL
G22:7
H22:700-35
I22:11.3
J22:665-597
A23:/FL"EAL
B23:"FE2583
C23:200
D23:6.375
E23:1310
F23:/FR"EAL
G23:7.5
H23:1465
I23:11.8
J23:1465-1310
B25:"THIS
C25:"SPACE
D25:"FOR AD
E25:"DITIONA
F25:"L STOCK
G25:/FL"S SOLD
E27:" - - - - -
K27:" - - - - -
A28:"TOTALS
D28:"ACTIVE
E28:+3560+6050+3073+2911+2661+2496+1996+2000
F28:/FR"VAL%
G28:/FL+K28-E28/E28*100

For Your APPLE**

80/132 COLUMN CARD

Expand your APPLE with 132 COLUMN display (20MHZ Monitor - Need for 132 MODE only). Card comes standard for 80 COLUMN display with an optional 132 COLUMN capacity. True descenders and compatible with VISICALC with a preboot diskette.**

If card ordered with the 132 COLUMN option...$129.00*
Basic 80 COLUMN.....$99.00*
132 COLUMN option can be ordered later for.....$34.50
Preboot for VISICALC add.....$24.50**
(Shipping date 10/15/83)

IIe** 64K 80 COL CARD

Expand your IIe with 80 COLUMNS and 64K MEMORY including double high resolution graphics on "B" motherboard**

$99.00*

128K CARD w/Built-in Disk

The ORBITAL 128K RAM CARD with a disk drive built-in, will expand the memory of your Apple*II, II+, IIe another 128K or can be used as a second disk drive. The ORBITAL 128K CARD emulates a disk drive but, not like the standard mechanical drives, the ORBITAL 128K CARD is ten times faster. It is faster because it fits inside the Apple* just like any other card and has no motor to turn on or off.

$209*

e-Z CARD

Uses Z80A CPU Needed for WORDSTAR, dBASE II**, MULTIPLAN** and runs all 2.2 CPM** PROGRAMS. We use all "LS" devices to save power and the card will execute full Z80 and 8080 instruction sets, including Z80 interrupting. Software not provided.**

$60*

MasterCard VISA Accepted. AZ residents add 6% sales tax. ALL ORDERS PRE-PAID. *Add $30.00 if you want a ready-to-use unit. All cards come in KIT form and have ALL REQUIRED IC's, printed circuit board and assembly instructions.

LIFETIME WARRANTY

ORBITAL SYSTEMS, INC. warrants their products to be free from defects in material and workmanship for the LIFETIME of the product. GUARANTEE: For kits only. IF YOU ARE UNABLE TO GET YOUR KIT TO WORK, for a fee of **$30.00** *plus* **$2.50** *postage and handling, we will correct any errors in soldering and/or blown chips, and mail your card back ready to use. After six months, LIFETIME warranty in effect on kits.*

Dealer Inquiries Invited

**CPM trademark Digital Research
**Multiplan trademark of Microsoft
**D Base II trademark of Ashton Tate
**Apple is the trademark of Apple Computer, Inc.
**Wordstar is a trademark of Micro Pro, Inc.
**Visicalc is a trademark of Visicalc Corp.

Postage paid does not apply to International or C.O.D. orders. Shipping in USA through UPS. For International orders, add $10.00.

Orbital Systems, Inc. TM

ORBITAL SYSTEMS, INC.
2929 E. Jasmine St.
Mesa, AZ 85203

CALL TO PLACE AN ORDER:
1-800-227-9275 Ext. 950-S
(24-HR Toll-free, 7 Days a Week)

AZ residents call collect:
1-830-6457
9 a.m. - 4 p.m., Mon.- Fri.

```
H28:/FL" UP/DW
I28: + K28 - E28
K28:@SUM(K10...K15)
D29:/FR"MAY2583
F29:/FR"D.O.W.
G29:1260
I29:/FR
K29: + H37*1
K30:" - - - - -
A31:/FL1983
B31:"CAPITAL
C31:/FR"GAINS
D31:"/LOSSES
E31:/FR
F31:/FR
H31:"CASH
I31:"FLOW
J31:"  *
K31:/FR + K28 + K29
A32:/FR"==========
B32:/FR"=========
C32:/FR"=========
D32:"=======
E32:/FR/ - ====
F32:"  ====
G32:"=======
H32:"=======
I32:/FL"=======
J32:/FL
A33:"TOTAL
B33:"LONG
C33:"TERM
D33:/FR2630
E33:/FR"GAIN
F33:/FR"OHIO
G33:/FR"SAVGS
H33:/FR3567
I33:/FR"MAY1883
A34:"TOTAL
B34:"SHORT
C34:"TERM
D34:/FR68 + 155
E34:/FR"GAIN
F34:/FR"CENT
G34:/FR"BANK
H34:/FR1200
I34:/FR"MAR9
J34:/FR
A35:/FL
D35:/FR" - - - - -
E35:/FR
F35:/FR"BRO
G35:/FL"KER
H35:/FR1348
I35:/FR"MAY9
D36:/FR + D34 + D33
F36:/FR
G36:/FR
H36:/FR"- - - -
I36:/FR
M36:/FL
A37:/FL"TOTAL
B37:"LONG
C37:/FL"TERM
D37:0
E37:/FR"LOSS
F37:/FR
G37:/FR"TOTAL
H37:3567 + 1200 + 1348
I37:/FR
J37:"* TOTAL
K37:" VALUE
A38:"TOTAL
B38:"SHORT
C38:"TERM
D38:/FR" - 970
E38:/FR"LOSS
G38:/FR
H38:/FR
J38:"OF CASH
K38:"&STOCK
A39:/FL
B39:/FL
D39:" - - - - -
A40:/FL
B40:/FL
D40: - 970
C42:"TOTAL
D42:"ADDED
E42:"TO STOCK
F42:/FL"K
C43:/FL"FUND
D43:"IN
E43:1983
C44:"=======
D44:"========
E44:"========
C45:"JAN.1
D45:"$650
E45:"SALARY
C46:"FEB.20
D46:"$790
E46:"REFUND
C47:"MAR.5
D47:"$690
E47:"SALARY
C48:"MAY12
D48:"$200
E48:"GIFT
D49:"- - - -
C50:"TOTAL
D50:/FL650 + 790 + 690 + 200
```


The "How To's" of Software Production

How to double your revenues

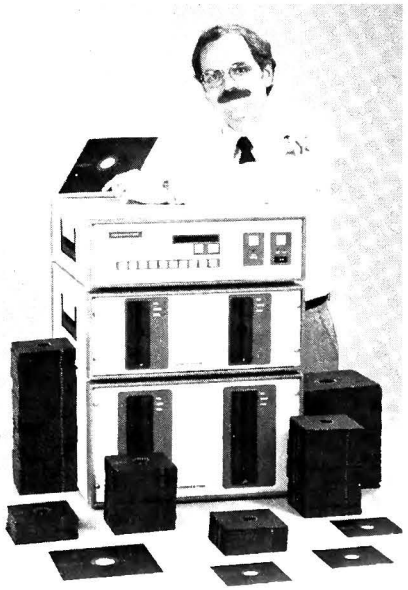
Believe it or not, there are five to ten bootlegged copies for every program diskette sold legally. An effective, hardware-based copy protection method is the best way to convert freeloaders into customers.

How to protect your reputation

Every diskette you ship should work under even marginal conditions. Special-purpose equipment designed for high-precision recording and verification will give you the edge in product quality.

How to reduce your costs

Rugged, high-performance diskette duplication equipment is mandatory for high-volume software production. Look for speed, reliability, and foolproof operator simplicity.



The FORMASTER Series One intelligent diskette duplicator produces up to 326 fully verified copies per hour, with Copy-Lock™ piracy protection and copy serialization added automatically.

How to expand your business

As your programs become more successful, you'll want to develop versions for different computers. Your duplication equipment should handle *all* diskette formats, including complex GCR encodings such as Apple, Commodore, and Victor.

For more information on the "How To's" of software production, call us at (408) 942-1771. With millions of diskettes processed on FORMASTER Series One systems, we've set the industry standards.

FORMASTER CORPORATION

1983 Concourse Dr., San Jose, CA 95131.
(408) 942-1771 Telex 466462

FORMASTER International: P.O. Box 136, Borehamwood, Herts. WD6 3EE, England, Telex 925-859

The Leader in Software Production Technology.

SANYO MONITOR SALE!!



9" Data Monitor

- 80 Columns × 24 lines
- Green text display
- East to read - no eye strain
- Up front brightness control
- High resolution graphics
- Quick start - no preheating
- Regulated power supply
- Attractive metal cabinet
- UL and FCC approved

- *15 Day Free Trial - 90 Day Immediate Replacement Warranty*

9" Screen - Green Text Display	**$ 79.00**
12" Screen - Green Text Display (anti-reflective screen)	**$ 99.00**
12" Screen - Amber Text Display (anti-reflective screen)	**$119.00**
14" Screen - Color Monitor (national brand)	**$249.00**

Display Monitors From Sanyo

With the need for computing power growing every day, Sanyo has stepped in to meet the demand with a whole new line of low cost, high quality data monitors. Designed for commercial and personal computer use. All models come with an array of features, including up-front brightness and contrast controls. The capacity 5 × 7 dot characters as the input is 24 lines of characters with up to 80 characters per line.

Equally important, all are built with Sanyo's commitment to technological excellence. In the world of Audio/Video, Sanyo is synonymous with reliability and performance. And Sanyo quality is reflected in our reputation. Unlike some suppliers, Sanyo designs, manufactures and tests virtually all the parts that go into our products, from cameras to stereos. That's an assurance not everybody can give you!

SANYO

Official Video Products of the Los Angeles 1984 Olympics



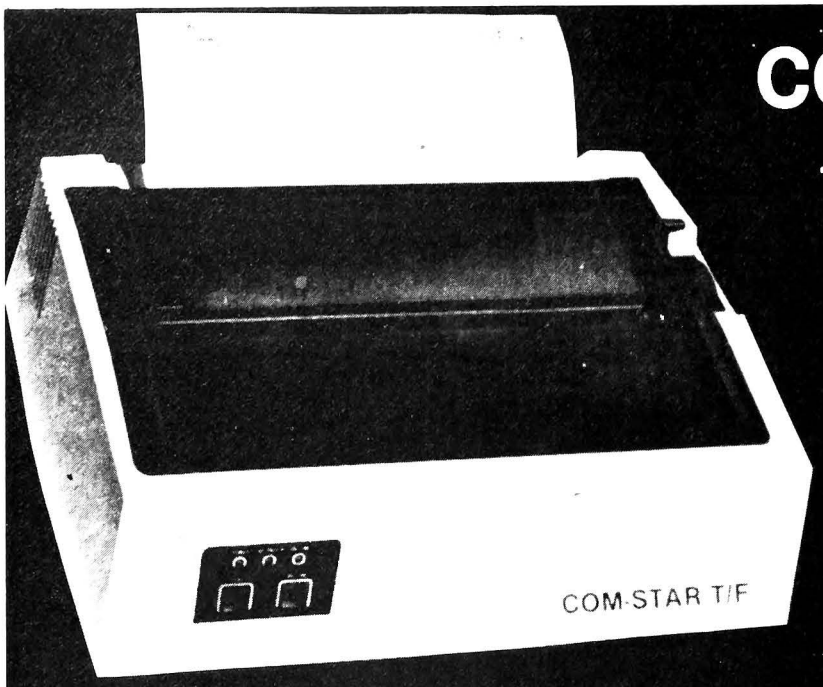
• LOWEST PRICES • 15 DAY FREE TRIAL • 90 DAY FREE REPLACEMENT WARRANTY
• BEST SERVICE IN U.S.A. • ONE DAY EXPRESS MAIL • OVER 500 PROGRAMS • FREE CATALOGS

Add $10.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add $20.00 for CANADA, PUERTO RICO, HAWAII orders. WE DO NOT EXPORT TO OTHER COUNTRIES.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail! Canada orders must be in U.S. dollars. Visa - MasterCard - C.O.D.

PROTECTO
ENTERPRIZES (WE LOVE OUR CUSTOMERS)
BOX 550, BARRINGTON, ILLINOIS 60010
Phone 312/382-5244 to order

80 COLUMN PRINTER SALE—$149.00*



COM-STAR T/F

Tractor Friction Printer

only $219

(Parallel or Serial)

- **Lowest price quality tractor friction printer in the U.S.A.** • **Fast 80 characters per second**
- **40, 46, 66, 80, 96, or 132 characters per line spacing** • **Prints labels, letters, graphs, and tables**
- **List your programs** • **Print out data from modem services**

*STX-80 COLUMN PRINTER—$149.00

Prints full 80 columns. Super silent operation, 60 CPS, prints Hi-resolution graphics and block graphics, expanded character set, exceptionally clear characters, fantastic print quality, uses inexpensive thermal roll paper!

DELUXE COMSTAR T/F PRINTER—$219.00

The Comstar T/F is an excellent addition to any micro-computer system. (Interfaces are available for Apple, VIC-20, Commodore-64, Pet, Atari 400 and 800, and Hewlett Packard). At only $219 the Comstar gives you print quality and features found only on printers costing twice as much. Compare these features.

- **BI-DIRECTIONAL PRINTING** with a LOGIC SEEKING CARRIAGE CONTROL for higher through-put in actual text printing. 80 characters per second.
- **PRINTING VERSATILITY:** standard 96 ASCII character set plus block graphics and International scripts. An EPROM character generator includes up to 224 characters.
- **INTERFACE FLEXIBILITY:** Centronics is standard. Options include EIA RS232C, 20mA Current Loop.
- **LONG LIFE PRINT HEAD:** 100 million character life expectancy.
- **THREE SELECTABLE LINE SPACINGS:** 6, 8 or 12 lines per inch.
- **THREE SELECTABLE CHARACTER PITCHES:** • 10, 12 or 16.5 characters per inch. 132 columns maximum. Double-width font also is standard for each character pitch.
- **PROGRAMMABLE LINE FEED:** programmable length from 1/144 to 255/144 inches.
- **VERTICAL FORMAT CONTROL:** programmable form length up to 127 lines, useful for short or over-sized preprinted forms.
- **FRICTION AND TRACTOR FEED:** will accept single sheet paper.
- **224 TOTAL CHARACTERS**
- **USES STANDARD SIZE PAPER**

If you want more try —

Premium Quality COMSTAR T/F SUPER-10X PRINTER—$299.00 More Features Than RX-80

For $299 you get all of the features of the Comstar T/F plus 10" carriage 120 cps, 9 x 9 dot matrix with double strike capability for 18 x 18 dot matrix. High resolution bit image (120 x 144 dot matrix), underlining, backspacing, left and right margin settings, true lower descenders, with super and subscripts, and prints standard, Italic, Block Graphics, special characters, plus 2K of user definable characters. For the ultimate in price performance the Comstar T/F Super 10" leads the pack!

Double Immediate Replacement Warranty

We have doubled the normal 90 day warranty to 180 days. Therefore if your printer fails within "180 days" from the date of purchase you simply send your printer to us via United Parcel Service, prepaid. We will IMMEDIATELY send you a replacement printer at no charge via United Parcel Service, prepaid. This warranty, once again, proves that WE LOVE OUR CUSTOMERS!

15 DAY FREE TRIAL

OTHER OPTIONS

Extra Ribbons	$ 5.95
Roll Paper Holder	32.95
Roll Paper	4.95
5000 Labels	19.95
1100 Sheets Fan Fold Paper	13.95

Add $17.50 shipping, handling and insurance. Illinois residents please add 6% tax. Add $40.00 for CANADA, PUERTO RICO, HAWAII, ALASKA orders. WE DO NOT EXPORT TO OTHER COUNTRIES. Enclose cashiers check, money order or personal check. Allow 14 days for delivery, 2 to 7 days for phone orders. 1 day express mail available!! Canada orders must be in U.S. dollars.

PROTECTO ENTERPRIZES (WE LOVE OUR CUSTOMERS)
BOX 550, BARRINGTON, ILLINOIS 60010
Phone 312/382-5244 to order

SUPER-10" ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890

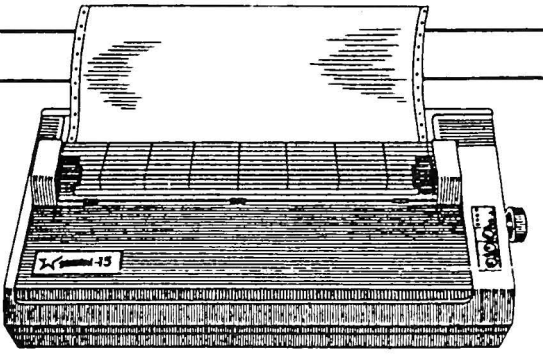
GRAFSTAR (Apple interface card - "Like Grappler Plus") SALE $69.00.

SUPER COM-STAR T/F 15″ PRINTER SALE $379.00

NOW YOU CAN BUY A TRACTOR-FRICTION 15″ CARRIAGE PRINTER FOR AN INCREDIBLE $379.00

	Star COMSTAR 15″	EPSON* MX-100/Type III	OKIDATA* MICROLINE 83A
Warranty This refers to standard warranties. Coverage varies by manufacturer. Complete information is available at your place of purchase	180 day	90 day	90 day
Buffer	2.3 K	1 Line	1 Line
CPS	100	80	120
CPI	10.12.17	10.17	10.17
Over 80 Type Fonts	Yes	No	No
Block Graphics	Yes	No	No
Special Character Sets Available	Yes	No	No
Roll Paper Holder Standard	Yes	No	No
Suggested Retail Price Prices shown are based on data from each manufacturer. Actual retail prices may vary	$599.	$749.	$899.
Special Price	**$379.**		

*Epson and Okidata are registered trademarks of Epson America, Inc. and Okidata Corp., respectively.



Now you can save big on the Com-Star 15″ dot matrix printer from Protecto, while they last!

It's the 15½″ carriage printer that combines the most advanced features with a price that's better than ever. And component by component, Com-Star 15″ is so reliable, Protecto can warranty it for up to twice as long as its major competitors.

The popular Com-Star 15″. A great printer at a truly great price. When you add it up, it figures to be a super sale.

• LOWEST PRICES • 15 DAY FREE TRIAL • 90 DAY FREE REPLACEMENT WARRANTY
• BEST SERVICE IN U.S.A. • ONE DAY EXPRESS MAIL • FREE CATALOGS

Add $17.50 for shipping, handling and insurance. Illinois residents please add 6% tax. Add $35.00 for CANADA, PUERTO RICO, HAWAII orders. WE DO NOT EXPORT TO OTHER COUNTRIES.

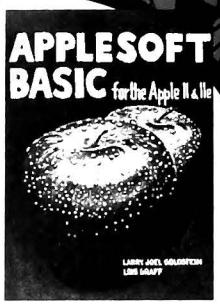
Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail! Canada orders must be in U.S. dollars. VISA — MASTER CARD — C.O.D.

PROTECTO ENTERPRIZES (WE LOVE OUR CUSTOMERS)
BOX 550, BARRINGTON, ILLINOIS 60010
Phone 312/382-5244 to order

PICK A WINNER!

Fresh, New Apple Books from Brady Bookware™

Applesoft BASIC for the Apple II/IIe



BY LOIS GRAFF
AND LARRY JOEL GOLDSTEIN

Just what you've been looking for to learn the fundamentals of BASIC programming for the Apple II and IIe. Practical and easy to follow, it discusses the special features found only in the new Apple IIe while guiding you through the simplest of programming knowledge to the more complex capabilities of your computer.

Includes:
- Structured programming
- Sequential and random file usage
- Graphics and music-making
- Error handling

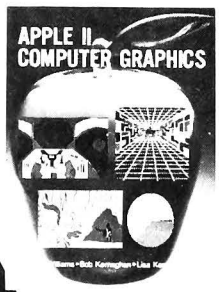
It's an invaluable asset to your library!

1983/320pp/paper/ISBN 0-89303-320-0/
D3200-5/$17.95

Apple II/IIe Computer Graphics

BY KEN WILLIAMS, BOB KERNAGHAN,
LISA KERNAGHAN

With only a working knowledge of BASIC programming, the most current graphics techniques are at you fingertips! Written by Ken Williams, president/founder of Sierra On-Line, Inc., this state-of-the-art guide offers a complete explanation of Apple II and IIe graphics capabilities—from placing dots on the screen to artificial color generation, animation and even the sophisticated byte-move techniques. And you can do it all *without* assembler or machine language experience!

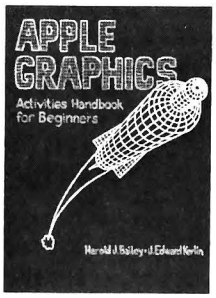


Plus you'll learn:
- Techniques for programming and designing many of today's popular computer games
- Business and technical graphics
- Examples in assembly language for the more advanced users

1983/225pp/paper/ISBN 0-89303-315-4/
D3154-4/$19.95

Plus!

Apple Graphics: Activities Handbook



BY HAROLD J. BAILEY
AND J. EDWARD KERLIN

A hands-on approach to learning both low and high resolution graphics for Apple II and Apple IIe. Step-by-step with the accompanying diskette, you'll *learn* by *doing*. And with the many activities you can maximize your knowledge and use of graphics capabilities for both home and business.

1983/300pp/paper/ISBN 0-89303-308-1/
D3081-9/$15.95
With diskette: 1983/ISBN 0-89303-309-1/
D3091-5/$34.95

Available at your local bookstore or computer store.
Or call Toll-Free 1-800-638-0220.

BRADY BOOKWARE™

Robert J. Brady Co., Bowie, Maryland 20715
A Prentice-Hall Publishing and Communications Company



Guesswork on the Apple

Writing a complicated program often involves making a minimal working version and then adding features and enhancements one at a time. Later in this article we're going to use that technique to convert a simple game into a not-so-simple game. It's possible to build some pretty elaborate programs by taking things one step at a time. But if you're going to put that much effort into a program—whether all at once or in small creative spurts—you will want a way to save it so you can use it or modify it still further some other day. So let's talk about saving programs before we talk about writing them.

That, as you probably know, is what your disk drive is for. Now is a good time for you to prepare a disk on which to keep programs presented in this column and ones you'll create yourself. To do this, you will need a blank disk; if you don't have one, visit a computer store. Disks may only come in boxes of ten; if you're going to be using your computer extensively, either for programming or running commercial software, you'll be using plenty of disks, so you might as well spring for the box.

Initial Considerations. The first thing you want to do is label the disk. You might write "Follow the Floating Point" on this first disk. Or you might label it "Recipes Using Eggplant" to keep the kids away. In any case, from here on we will refer to this disk as your Floating Point disk when we want you to save something on it.

Now you should initialize the disk using the DOS *init* command. Although this is a column on Applesoft, Apple's DOS is an important part of programming in Applesoft, so we'll be looking at DOS commands from time to time. The process begun by the init command magnetically organizes the surface of the disk into physical segments, each of which can store a predetermined amount of data. If these segments were not marked out, DOS wouldn't know where to put something you wanted to save. If you ever try to save something on an uninitialized disk, you'll get an error message.

Initializing a disk also puts a copy of DOS onto the disk. This is necessary because the computer doesn't contain DOS in ROM the way it contains Applesoft. Instead, DOS is loaded into RAM memory by means of the process known as *booting the disk*. So any disk you intend to boot must have DOS recorded on it. The last thing init does is save the program in memory onto disk. For this reason init is always followed by a file name, which is assigned to that program.

Here's how to do it. Boot up the DOS 3.3 System Master disk. Type *new*. Now enter the following program:

```
10  HOME
20  PRINT "Follow the Floating Point"
30  PRINT "program disk"
```

If you run this program you'll see that all it does is clear the screen and put up a message identifying the disk we're making. This is a simple hello program. There's nothing magic about a hello program; it's just the program that runs when you boot the disk. It doesn't have to be named Hello; that's just a common convention. It will run every time you boot up your Floating Point disk. Now remove the System Master from the drive and insert your blank disk. Type:

```
INIT HELLO
```

The disk drive will spin for a minute or two while it initializes the disk. If the computer beeps and prints an I/O error message, try again. If it does it again, you have a bad disk and you should try using another blank disk. The rest of this article will assume that you have successfully initialized your Floating Point disk and have it in the disk drive ready to save programs on.

Be My Guess. The random number guessing game is about the simplest of all possible computer games; it can be created entirely with the few commands we've mentioned so far. Let's pursue the theory of starting a program as simply as possible. In a guessing game, we have to have the computer pick a number and then tell the player to guess what it is. If the player is right (this judgment necessitates an if-then comparison between the player's guess and the computer's number), a congratulatory message is printed. If the player is wrong, the computer will say so. If the program is to have a personality, the message can be either insulting or encouraging, depending on whether we want to entertain or educate.

That would be the simplest algorithm for the guessing game program. It would also be patently unfair. The player only gets one chance. How about if we offer the opportunity to guess again? That addition completes a *reasonable*, simple guessing game. Figure 1 shows the flow of the game. We have arbitrarily set the computer's number to five for now. This allows us to determine that the program is responding to guesses correctly. Here's the program:

```
100  HOME
110  CN = 5: REM computer's number
120  INPUT "Guess a number from one to ten. ";GS: REM guess
130  IF GS = CN THEN GOTO 200
140  PRINT "Nope, guess again."
150  GOTO 120
200  PRINT "You got it!"
210  PRINT
220  END
```

Save this program to your disk with the file name Guess.1. This is done by simply typing:

```
SAVE GUESS.1
```

Later, if you want to get the program back in this form, type:

```
LOAD GUESS.1
```

with the same disk in the drive. If you're not sure which disk you left a program on, you can type:

```
CATALOG
```

Init, save, load, and catalog are your basic DOS commands for dealing with Applesoft programs.

The line numbers start at 100 for the same reason that we increment line numbers by 10: We may want to put something in between these lines later.

The next thing to note is the unfamiliar constructions in lines 110 and 120. We haven't said anything yet about the use of the colon in Applesoft or the meaning of the *rem* command. We also said that this program could be written entirely with commands we've already mentioned. This is true—rem does nothing; it could have been left out.

Rem is a command that tells the computer to do nothing and to ignore whatever follows it in that program line. Rem is short for remark. Use it to insert comments that remind you about the purpose of some variable, equation, routine, or whatever. As your programs get longer, these explanations can help you understand them. In this case, the rems are noting the meanings of the variables first used in those lines.

How the rem statements got on the same lines as other commands is another matter; that's where the colons come in. The colon is used in Applesoft to separate two statements you want to put in the same program line. Any commands can be put together in the same line in almost any combination. However, anything following a rem in the same line is considered part of the remark and is ignored. Any statement following an if-then statement will be executed only if the condition in the if-then is true. If the condition is false, control falls to the next program line.

Anything following a goto statement in a program line will never be seen. You can put it there, but it will be ignored. Also, all gotos to a multiple statement line direct the program to the first statement in the line. There is no way to go directly to a statement in the middle of a line. The limitations outlined here are the major reasons we can't just run all the commands of a program together on one line. There is also the small matter that Applesoft won't let you enter a line that's more than 239 characters long.

In this program, line 110 could have been grafted onto line 100, line 150 could have been part of 140, and lines 200 through 220 could have replaced the goto in line 130. If the rem at the end of 120 were removed, our conglomerate line 130 could have been added to the end of 120. The program could have read like this:

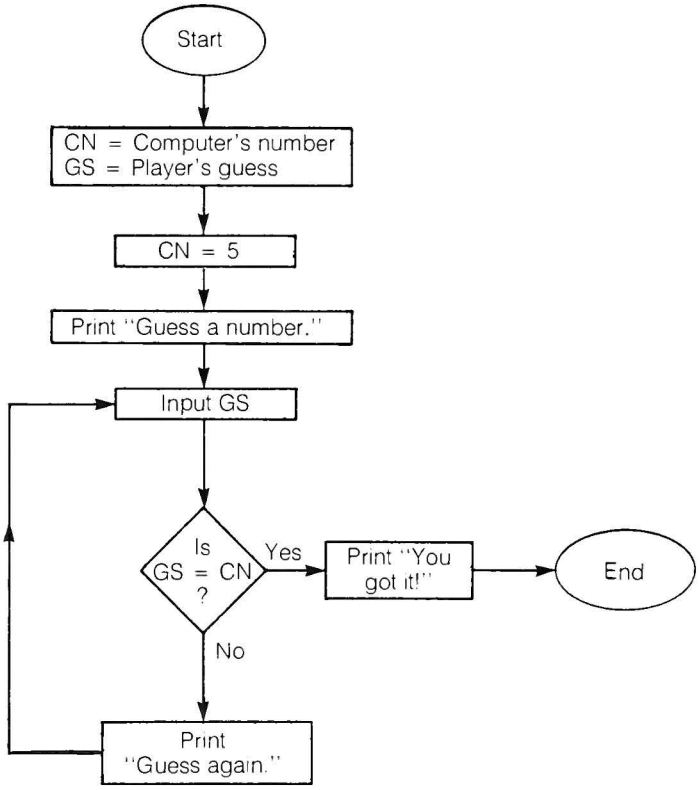


Figure 1.

```
100  HOME : CN = 5: REM computer's number
120  INPUT "Guess a number from one to ten. ";GS: IF GS = CN
     THEN PRINT "You got it!": PRINT: END
140  PRINT "Nope, guess again.": GOTO 120
```

This version would run a tad faster and use up less space in memory then the first listing of the guessing program. However, with the lines containing only one or two statements each, as in the first version, a program is much easier to modify. The moral: Don't use too many multiple statement lines while you're writing a program. If you need more speed or space when the program is finished, you can bunch statements together to your heart's content. Later in this series, we'll go over some other ways to speed up programs. For now, let's just worry about getting them to run.

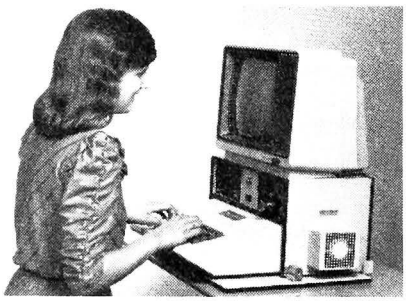
Run the program (the first version) and see how you like it. To elaborate on a program like this, you change the stuff you don't like and add more of the kind of stuff you do like. Let's start by deciding what we don't like. You can, of course, dislike whatever you choose, and, at home, you can change whatever you want. Please do. For the purposes of the tutorial, we have chosen to dislike the fact that it gives the message, "Guess a number from one to ten," every time that the player must guess. If you look at the flow chart, you'll see that the program wasn't planned that way. We also dislike the fact that there is only one way out: winning. Of course, the user can always control-C out, but it's terribly bad programming form not to allow for an exit. Let's give players a chance to exit the program by guessing zero. Finally, we aren't pleased by the way all the text runs together.

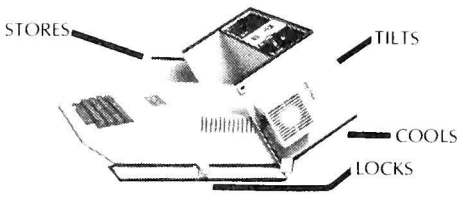
Let's make these changes:

```
115  PRINT "Guess a number from one to ten. If you want to quit,
     type a zero.";
120  INPUT "";GS
123  PRINT
125  IF GS = 0 THEN PRINT "Loser. The number was ";CN;".":
     GOTO 210
140  PRINT "Nope. Guess again: ";
```

Advanced Editing. You'll note that three of these are new lines and

PROTECT & ORGANIZE
your APPLE II SYSTEM





COOL STACK™ — Sentry II FEATURES

IT LOCKS — Locks the Apple II computer and disc drives to base plate and separate adhesion plate secured to table top.
IT COOLS — Extends the life and reliability of the computer and peripheral plug-in boards with quiet and efficient fan.
IT STORES — Provides neat and efficient organization of the entire computer station including manuals and disks.
IT TILTS — Allows fast easy access to inside the computer.

Precision all steel construction provides optimum strength and durability color matched to the Apple II computer.

IBM PC OWNERS — SEE THE NEW COMPUTER ESCORT™

APPLE II is a trademark of Apple Computer, Inc.
COOL STACK and **COMPUTER ESCORT** are trademarks of FMJ, Inc., Patents Pending.
For more information on these and other fine FMJ products contact your dealer or:
FMJ, Inc., P.O. Box 5281, Torrance, CA 90510 (213) 325-1900 **DEALER INQUIRIES INVITED**

NEW PRODUCT INTRODUCTORY SALE!! NEW PRODUCT INTRODUCTORY SALE!!

Go From Screen to Paper at the Touch of a Button!



The new Apple*-compatible printer interface card from Texprint literally unleashes your system's power for fast, easy printouts of any Apple screen, at any time, with any program -- in color and black & white.

Push the red button that comes with Texprint's new PRINT-IT! TM and your program ***pauses*** instantly. Then touch RETURN and whatever is on your screen—text, graphics or both—is rapidly printed in color or black & white, or touch SPACE and your program continues from exactly where it paused.

Whether your Apple][,][+, *//e* or look-alike is for business, pleasure or both, you'll appreciate the ability to take "snapshots" of your screen displays—whether they're games, business data, menus, educational instructions, graphics, or CP/M*** programs—at the touch of a button.

PRINT-IT! is the only ***full-capability*** printer card available today. It will read and print your screen no matter what program you're running, ***plus*** perform all of the functions you expect of a sophisticated printer card. The ***pause*** feature alone is worth the price, but the PRINT-IT! offers so much more.

Graphics: Take your choice of high-resolution, low-resolution or even ***double-high*** resolution graphics, again at the touch of a button.

Text: Supports not only 40 columns but Apple *//e* or Videx** 80 column cards as well.

Printer Compatability: All of the most popular printers including color are fully supported with a dip switch setting.

If your budget can't accommodate the only full-capability printer interface available today, then Texprint's Model 2 (with most PRINT-IT! functions, but without ***pause*** button features) is your best choice.

At your local computer store, PRINT-IT! retails for $299 and the Model 2 costs $174.. Now, for a limited time, you can purchase the PRINT-IT! direct from the factory for just $179, or get the Model 2 for only $99—incredible value for printer interface cards of this sophistication!

We're so confident that you'll never let go of your PRINT-IT! that we back it with an unconditional money-back guarantee: Try this amazing new interface for 30 days, and if you're not completely satisfied, just return it postpaid in good condition for a full refund.

Call 1-(800) 255-1510 today, or use the coupon to order the world's finest printer interface card during this special introductory sale. Qualified educational allowances available.

TEXPRINT

TEXPRINT INC., Dept. S-11,
8 Blanchard Rd.,
Burlington, MA 01803
Tel. (617) 273-3384

CALL TOLL FREE
1-800-255-1510

TEXPRINT, INC. Dept. S11 8 Blanchard Rd., Burlington, MA 01803 Tel. (617) 273-3384
Please send me more info on PRINT-IT! Please send (Qty) ___ PRINT-IT! Sale Price $179
(Qty) ___ Model 2 Sale Price $99.
Check or M. O. enclosed I would like to charge my order to:
MasterCard VISA Exp. Date ___ Bank No ___ (Master card only)
Name ___
Firm ___
Address ___
City ___ State ___ Zip ___
Signature ___

Add $4.00 per unit shipping/handling. Mass. residents add 5% sales tax. I understand that if I am not completely satisfied I can return PRINT-IT! (postpaid) within 30 days for Full credit.

*Apple][is a registered trademark of Apple Computer Inc.
**Videx is a registered trademark of Videx, Inc.
***CP/M® is a registered trademark of Digital Research

two are modifications of old ones. You can add them all to the program by just typing them in as shown, but in the case of the lines to be modified, there's an easier way. It's called *escape editing*, among other things. We'll start with line 140, the simpler of the two lines to edit. First, list the line by typing *list 140*. This will list *only* line 140 on the screen.

Now, hit escape. Nothing will seem to change, but the computer has gone into cursor move mode (if you're using an Apple IIe with the eighty-column board activated, the cursor will change to a plus sign).

In cursor move mode, the I, J, K, and M keys allow you to move the cursor freely about the screen. If you have an Apple IIe, you can use the four arrow keys instead. Position the cursor so that it is superimposed on top of the 1 in the line number 140.

Now hit the space bar. This takes you out of cursor move mode and allows you to enter characters into the *input buffer*. Normally, you enter characters into the input buffer by typing them, but that's the unnecessary work we're trying to avoid.

There is another way. (There's *always* another way.) Hitting the right arrow key at this point copies the character under the cursor into the buffer *as if* you had typed it, and then it moves the cursor over one character. Now, by using the right arrow with the repeat key (on the II Plus) or by holding down the arrow key (on the IIe), you can move the cursor over the text. This copies the characters into the input buffer. Stop when you reach the first character to be changed, which is the period.

At this point, you can type the rest of the new version of the line: a colon (in this case it doesn't act as a statement separator because it's within quotation marks), a space, a quotation mark, and a semicolon. Then hit return and the line is entered. If you list the program now, you'll see the new version of the line.

If it didn't work, there's a chance you neglected to hit the space bar to turn off cursor move mode when you moved the cursor to the beginning of the line. If that's the case, retype the old version of the line and try once again to edit it into the new version.

Roaming the Wide Open Spaces. Line 120 is a little trickier. Let's say we wanted to change the period to a colon as we did in line 140. List 120. The line should look like this on the screen:

```
120  INPUT "Guess a number from o
     ne to ten. ";GS: REM guess
```

As listed, there are several spaces after the *o* and before the *ne* on the screen. If you tried to copy this line, twelve spaces would be inserted into the message. There are two ways around this. The first is to copy the line to the letter *o* in the same way we copied line 140 (actually moving the cursor to rest on the space after the *o*); then hit escape to go into cursor move mode. Now hit the right arrow key twelve times. The cursor is moving, but nothing is being copied into the buffer because you hit escape. The cursor should come to rest on the letter *n*. Hit the space bar to return to input mode. Copy to the period, type a colon, copy to the end of the line, and hit return.

That was the hard way. Here's the easy way. Type *poke 33,33*, then list the line. This command restricts the text window to the first thirty-three columns, but never mind that for now. Just remember poke 33,33. The effect of this is to change the format of a program listing, omitting the indents before each line on the screen. Now you can copy the line and no unwanted spaces will be inserted. To get the full text window (which makes listings easier to read, among other things), type *text*.

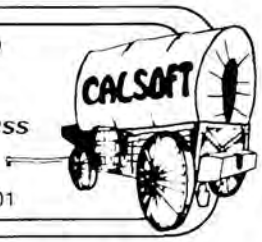
Instead of changing the period to a colon, however, we really want to delete the sentence in quotes entirely while leaving the quotes. To do this, copy the line up to the first quote and type the rest of the new line. (Actually, the new line is short enough to retype it entirely, but it's useful to practice escape editing.) Another way to make the change would be to copy to the first quote, go into cursor move mode and move to the second quote, hit a space, and copy to the end of the line.

When you've modified lines 120 and 140, enter the new lines. The program now looks like this:

```
100  HOME
110  CN = 5: REM computer's number
115  PRINT "Guess a number from one to ten. If you want to quit,
     type a zero.";
120  INPUT "";GS
123  PRINT
125  IF GS = 0 THEN PRINT "Loser. The number was ";CN;".":
```




CALSOFT
Personal – Entertainment – Business
SOFTWARE
346 N. KANAN RD. #103, AGOURA, CA 91301



THE TOP NAMES IN SOFTWARE AT LOW PRICES

BEAGLE
DOS Boss
Double Take
Pronto DOS
Beagle BASIC

BPI SYSTEMS
General Ledger
Accounts Receivable
Accounts Payable

BRODERBUND
Choplifter
Serpentine
Bank Street Writer
Lode Runner

EDU-WARE
Algebra Series
SAT/PSAT Series

INFOCOM
Planetfall
Suspended
Witness
Zork Series

MICROSOFT
Multiplan
Typing Tutor
Softcard

SIERRA ON-LINE
Dark Crystal
Frogger
Crossfire
Screenwriter
Ultima II
General Manager
Troll's Tale
Sammy Lightfoot
Mr. Cool

SIR-TECH
Wizardry
Knight of Diamonds
Legacy of Llylgamyn

SOFTWARE PUBLISHING
PFS Series

STRATEGIC
Germany' 1985
Fighter Command
North Atlantic '86
Ringside Seat
Eagles
Broadsides

VISICORP
Visicalc
Visitrend/Visiplot
Visifile

```
      GOTO 210
130   IF GS = CN THEN GOTO 200
140   PRINT "Nope. Guess again: ";
150   GOTO 120
200 PRINT "You got it!"
210   PRINT
220   END
```

Save this version of the program as Guess.2. When you run it, the program prints the main prompting message only once, thereafter prompting you to guess again. Not repeating the instructions has the effect of making either the program or the programmer appear smarter, or of making it appear that the programmer thinks the user is smarter. None of these results can be considered undesirable. Also, having a way to quit gives players that feeling of control over the machine that keeps them coming back.

Hit the Breaks! You'll note, however, that the main prompting message doesn't look right. The word *want* is broken in half at the edge of the screen. You can fix this in one of two ways. Enter the message as two separate print statements, like so:

```
115   PRINT "Guess a number from one to ten. If you": PRINT
      "want to quit, type a zero."
```

The other way is to insert a space between the words *you* and *want*. That will push the *w* to join the rest of the word *want* in the next line.

Now that we've fixed what we don't like, let's make the machine seem even more intelligent. Let's have it tell the player to guess higher or lower. And let's print a special message when the guess is close. Finally, let's make the computer use a real random number. These changes require us to modify the design of the program slightly. Figure 2 shows the new flow design. The boldfaced boxes and arrows are the parts that remain essentially the same from the first flow chart. The rest has been added since then.

Note that the new program will make four judgments based on the guess. The first is, *Is the guess equal to zero?* If GS = 0, the player wants to quit, so the program prints a message and goes to the end. The second judgment is, *Is the guess correct?* This, of course, leads to the winning message and the end if the answer is yes. The last two judgments are designed to make the computer prompt the player intelligently. The third is, *Is the player close?* and the fourth is (in essence), *Is the guess high or low?* Selected messages are printed based on the answers to the last two questions.

Study the order of the judgments. If the player says, "I quit," there's no need to continue, so that is the first thing checked for. Also, if the guess is right, further prompting messages are unnecessary. It's important that the "Guess higher" and "Guess lower" messages come immediately before the input (logically if not physically), so they must be the last things before the goto back to the input. By default, then, the gratuitous "Getting warm" message must come *before* the prompt selection.

Here are the code changes. You'll note that each enhancement can be accomplished with just one or two lines.

```
110   CN = INT ( RND (1) * 100) + 1
```

This line puts a random number from one to 100 in the variable CN. Here's how it works: *RND (1)* returns a random real number that is less than one but greater than or equal to zero. The range of that number can be altered by multiplying it by our desired range, hence RND (1) * 100. This part of the equation returns a random real number that is less than 100 and greater than or equal to zero. But it isn't an integer; it's something like 63.096721, which would be difficult to guess exactly. The *INT* function lops off the decimal places, giving a random integer from zero through ninety-nine. Since we don't want zero as a possibility and we do want 100, we simply add one. And that's how a random number is derived.

```
115   PRINT "Guess a number from one to one hundred.If you want
      to quit, type zero. ";
```

The message in line 115 has been changed to reflect the new range of numbers. Note that there is no space between the period and the word *If*. That's because the period is the fortieth character in the string. The character immediately following it will be the first character on the next line, so no space is necessary.



Free Enterprise™

A business management game

You run your own company making decisions based on economic factors and the actions of competitors.

It's your opportunity to sit on top and run a corporation. *Free Enterprise*, based on an IBM-developed simulation for training top-level managers, is as surprising and demanding as the real world.

It lets you face the same on-your-toes challenges you would in running a real business: pricing products, determining budgets for advertising, production, plant improvement, and R&D. Even securing bank loans and deciding on stockholder dividends. You use computer generated reports to make decisions. But if you're wrong you could go bankrupt. Only the shrewd survive!

Free Enterprise can be played at three competency levels so novices can compete with the more experienced, and from one to six can play. It's the perfect chance to learn about the free enterprise system — to practice business strategies — and to enjoy it — with no risks.

Simulation components: disk, user's manual, pad of 50 record sheets, and pad of 50 decision sheets.

To obtain *Free Enterprise*, see your local dealer or send in the order form below.

Operates on an IBM Personal Computer with 64k RAM and disk drive (DOS 1.1) or an Apple II Plus with 48k RAM and disk drive (DOS 3.3). A printer is strongly recommended.

For faster service, call Toll Free 800/621-0476.
In Alaska, Hawaii or Illinois, call 312/984-7000.

SRA® SCIENCE RESEARCH ASSOCIATES, INC.
155 N. Wacker Dr., Chicago, IL 60606

A Subsidiary of IBM

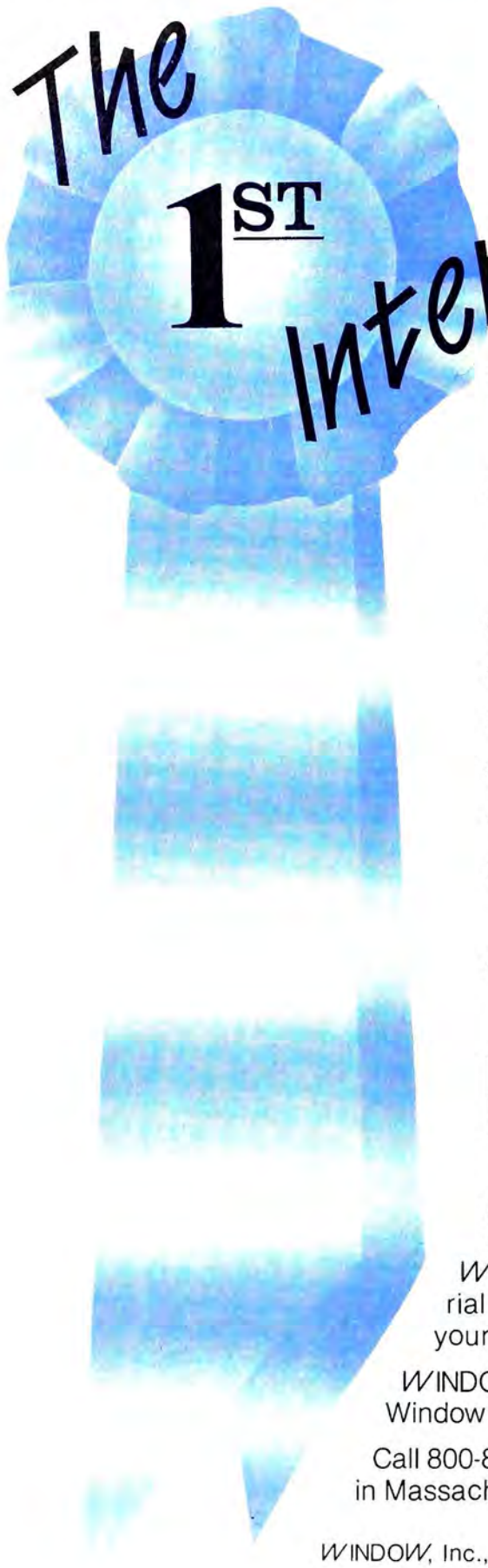
Apple II Plus is a registered trademark of Apple Computer Inc.

Yes! Please send me Free Enterprise today.
Quantity

_____ Free Enterprise $100.00† each
☐ for Apple 88-51600 ☐ for IBM 88-51610
Check method of payment:
☐ VISA # _____ Exp. Date _____
☐ Mastercard # _____ Exp. Date _____
Name _____
Street _____
City _____ State _____ Zip _____
Signature _____

†Plus shipping, handling, and local taxes, if applicable.

Mail to: SRA, Software Products Dept., 155 North Wacker Drive, Chicago, Illinois 60606



The 1ST Interactive Magazine on a Disk!

- It's a teaching tool.
- It's a skill tester.
- It's a learning game.
- It's a software sampler.
- It's a brain teaser.
- It's Reviews, Editorials, and Games.
- It's an adventure.

WINDOW™

Expand your vision and explore the world of computing—interacting every step of the way. *WINDOW* demonstrates a unique interactive editorial style with feature articles and columns to guide your learning.

WINDOW brings your computer to life. See what an exciting Window on the world of computing you'll get with *WINDOW*.

Call 800-852-5001 outside Massachusetts;
in Massachusetts call 923-9147.

WINDOW, Inc., 469 Pleasant Street, Watertown MA 02172 (617) 923-9147

WINDOW is for all Apple computers with at least 48K memory and DOS 3.3—others to be announced soon.

```
135 IF ABS (GS - CN)< 10 THEN PRINT "Getting warm."
```

ABS means *absolute value* or, simply stated, "If the number is negative, it isn't anymore." In this case, the number is the difference between the guess and the computer's number. The difference may be negative or positive, but we want to make a judgment based solely on the absolute value of the difference.

```
140 IF GS > CN THEN PRINT "Guess lower: ";: GOTO 150
145 PRINT "Guess higher: ";
```

These lines handle the new prompt. Note that the semicolon following the print statements means that the input cursor will be on the same line as the prompt.

Playing the Numbers. This is not, under any circumstances, the last word on random number guessing games. Try adding your own enhancements to this program. You could, for instance, have the com-

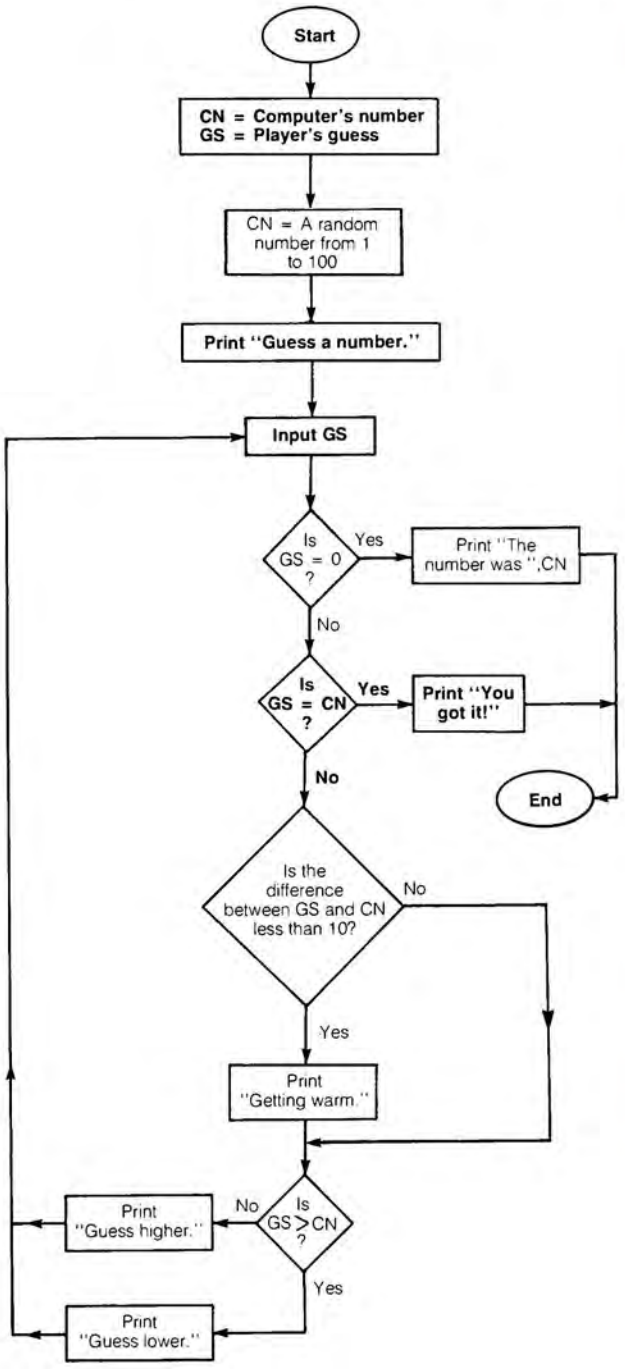


Figure 2.

THE USUAL HOLIDAY DRIVEL IN THE GUISE OF A HOUSE AD

Make no mistake about it: The inexorable sands of time have crept around again to that spot on the calendar that we so euphemistically call the "holiday season." We get Thanksgiving this month, followed by Christmas, New Year's, and then a chance to catch our breath.

So what are we thankful for? Well, we're thankful *inCider* and *A+* haven't put us out of business yet. And we're thankful that our book division has almost earned the name by getting at least one manuscript almost ready for printing. We're also grateful that one or two of our columnists are actually sending in their copy on time.

Of course we're grateful that so many of you readers are deciding to continue with us after your free trial subscription has expired. But we'd be even more grateful if you'd all stop taking so much pride in being the only ones on your block with a subscription to *Softalk*.

GIVE!

Give *Softalk* to Aunt Millie, the postman, the crotchety neighbor next door, cousin Arnold, and the cute kid who can't stay out of your crab-apple tree. Give *Softalk* to your school library, your public library, and your company library. Give lots of *Softalks*. Then you'll be infused with the Christmas spirit and we'll be thankful for your generosity. That way, we can both enter the new year with smiles on our faces.

There, we've done it! We've paid homage to three holidays in one appeal. How can you resist?

Softalk Circulation
Box 60
North Hollywood, CA 91603

P.S.: We'll even save you money. Through December 31, we'll take $18 instead of $24 for a one-year subscription.

puter count the number of guesses made. You could alter the "Getting warm" message to "Getting warmer" if the player's current guess is better than his previous one or "Getting colder" if the guess is worse than the one before. There are whole bunches of things you can do.

As you add new enhancements to the program, your line numbers will become unbearably close together, eventually to the point where you can't fit a line in where you need it. Wouldn't it be nice if you could tell the computer to change your line numbers for you? Well, you can, and it is. We'll start next month with an introduction to the *Renumber* program on your System Master disk.

GLOSSARY

ABS *(expression)*: Function that returns the absolute value of expression in parentheses.

Absolute value: If a number is less than zero, it is multiplied by − 1. Otherwise, it is left alone.

CATALOG: DOS command to list the file names on a disk.

Colon: In Applesoft, a colon separates statements that are in the same line. See *Multiple statement line*.

Escape editing: A method of editing an Applesoft program that involves hitting the escape key to go into cursor movement mode, moving the cursor around the screen with the I, J, K, and M keys (Apple II Plus) or the four arrow keys (Apple IIe), hitting the space bar to go into input mode, and either typing characters into the input buffer or copying them from the screen using the right arrow key.

Exit: A reasonable way out of a program. It may take the form of a quit command, a control key, a menu entry, or some other special input. It should be prompted for at least once.

INIT: DOS command to format a disk, record DOS on the disk, and save the Basic program in memory. Usually used on a blank disk, but may be used on any disk with a write-enable notch. *This command will wipe out any information that was previously recorded on the disk.*

Input buffer: A specialized area of memory where characters typed at the keyboard during input or program line entry are stored. When the return key is hit, the characters in the input buffer are acted upon and the input buffer is cleared to accept more input.

INT ***(expression)*:** Returns the value of the expression in parentheses minus any decimal places. This is similar to a rounding operation except that it always rounds down.

LOAD: DOS command to take a Basic program from a disk and put it in memory. Followed by the file name of the desired program. This command will destroy any other program in memory but will not actually remove the program from the disk.

Multiple statement line: A program line in Applesoft that contains more than one statement. The statements are separated by colons.

POKE 33,33: A command to restrict the size of the text window, thus changing the list format for Applesoft programs so that no hanging indents are used. This makes it easier to use the escape editing method of line editing without adding spaces into a string (a message in quotes).

REM: Applesoft command to ignore the rest of the program line. Used to incorporate enlightening comments into an otherwise obscure listing.

RND (1): Returns a random real number (noninteger) between zero and one.

SAVE: DOS command to record the Basic program in memory onto disk. Followed by the file name to be used for the program.

TEXT: Applesoft command to return the display to text mode (turns off any graphics display). Also used to restore Applesoft list format to normal by opening the text window to full size.

OUR PRICES ARE SO LOW, WE'RE PROHIBITED FROM ADVERTISING THEM!

PLEASE CALL FOR OUR CURRENT LOW PRICES!

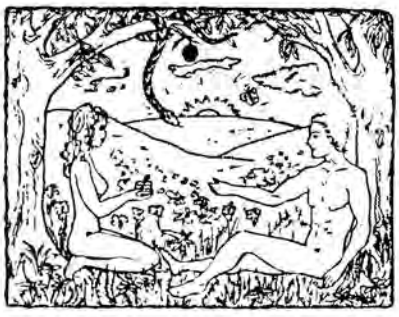
1ST ANNIVERSARY CHRISTMAS SPECIAL

★ DRAWING FOR A FREE ★

apple //e

DECEMBER 15, 1983

YOU CAN'T WIN IT UNLESS YOU'RE ON OUR MAILING LIST. CALL OR WRITE NOW!



MONITORS
AMDEK
NEC
USI
TAXAN

JOYSTICKS
KRAFT
T.G.
HAYES

DISK DRIVES
RANA
LAZER MICRO SYSTEMS
MICRO SCI
CORVUS

PRINTER INTERFACES
WIZARD
GRAPPLER+
PRACTICAL PERIPHERALS

80 COL CARDS
VIDEX
STB
MICRO TEK
WIZARD

CP/M CARDS
MICRO SOFT
ADVANCED LOGIC SYSTEMS

PRINTERS
GEMINI
OKIDATA
EPSON
NEC
PROWRITER

MODEMS
ANCHOR
NOVATION
HAYES

SOFTWARE

WE CARRY A FULL LINE OF

APPLE // - //e
IBM—ATARI—COMMODORE

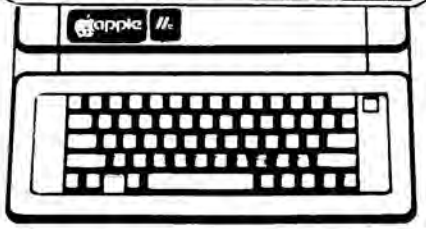
FOR OUR FREE 42 PAGE PRICE LIST AND DETAILS ON HOW TO WIN AN APPLE //e, CALL OR WRITE NOW.

GARDEN OF EDEN
COMPUTERS

OUR NEW RETAIL LOCATION
16485 Magnolia
(½ blk. North of the 405 Frwy.)
Westminster, CA 92683

WE ACCEPT MAIL & PHONE ORDERS

714-894-9528
24 Hours — 7 Days



Apple is a registered trademark of Apple Computer
Epson is a registered trademark of Epson America
SOURCE I.D. ST5374

WORD PROCESSING BREAKTHROUGH!



Now supports CORVUS® and CORONA® hard disks.

Format-II, Enhanced Version. $150!

No other word processing program can compare in power, ease of use and value. Our new Enhanced Version retains all the features of the original Format-II and adds more:

Copies of reviews available upon request

Flexibility. Format-II, Enhanced Version recognizes and supports all features of Apple //e, Apple II+ and Franklin computers. All popular 80 column cards are supported.

Increased storage. Up to 50 pages of text can be stored on each disk.

Standard Files. Text files are standard DOS 3.3 and can be used with most popular spelling and communications programs.

Hard Disks. Format-II, Enhanced Version is one of the few leading word processors that can be placed onto hard disk drives.

Editor. Format-II, Enhanced Version retains the same single keystroke editor. No other editor is as fast or easy to learn.

What you see is what you get. Text is displayed on the screen exactly as it will print out—paragraphs, underlining, justification, page breaks.

All printers are supported (including proportional space justification).

Mailing List/Database is built in; is fast and extensive.

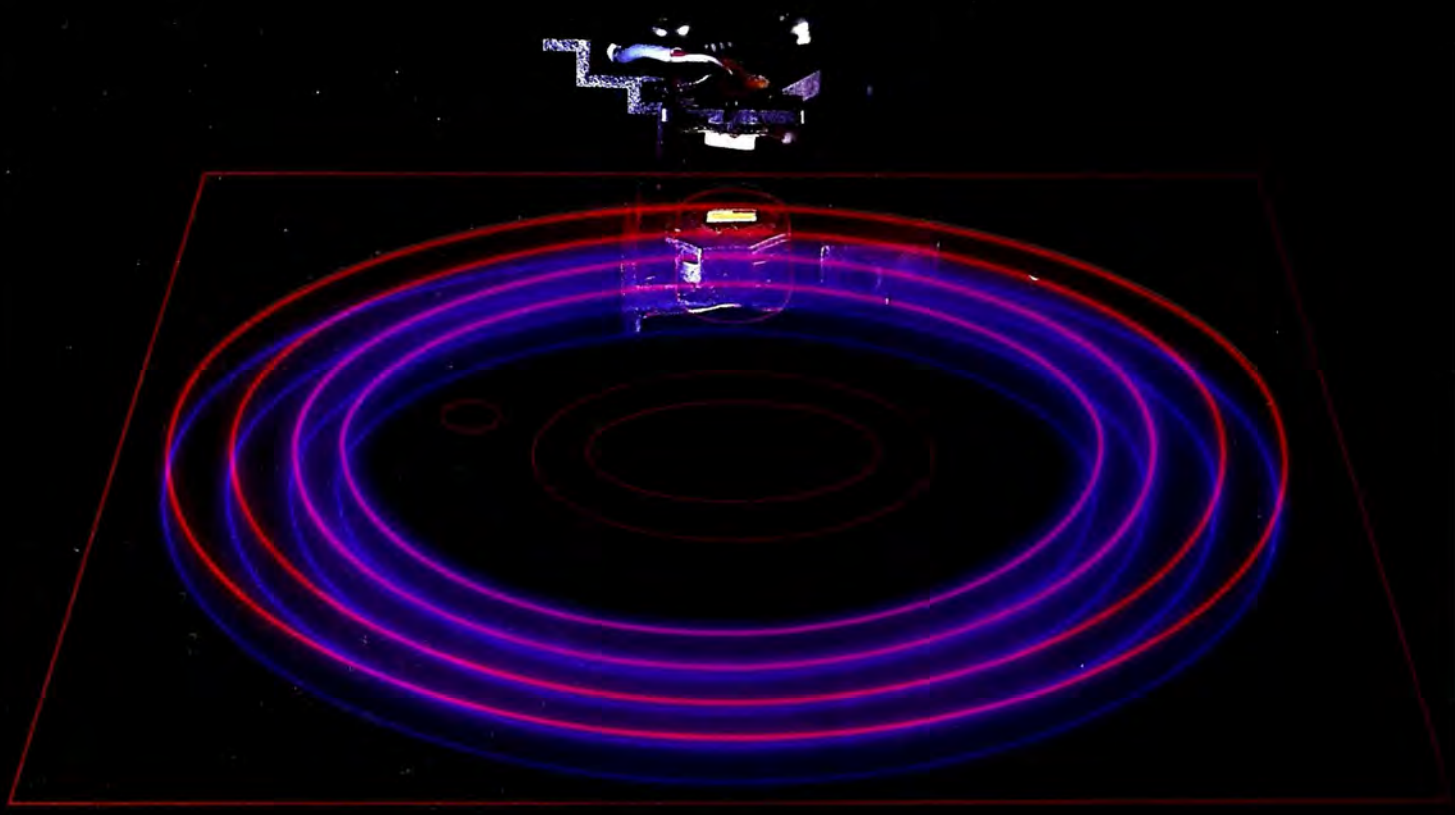
See your local dealer or order direct from
Kensington Microware, Ltd.
919 Third Avenue, New York City 10022
(212) 486-7707 telex 236200 KEN UR

Note: Format II—Enhanced Version supports Apple //e, Apple II+, and Franklin Computers. All popular 80 column cards are supported including Apple Computer's 2 new 80 column text display cards, Videx, Smarterm, Vision 80 and Sup'R'Term, Full View 80, Magnum 80.

Format II and Format II—Enhanced Version are trademarks of Kensington Microware Ltd. Apple and the Apple logo are registered trademarks of Apple Computer, Inc. Franklin/Franklin Computer. Videx/Videx Inc, Smarterm/Advanced Logic Systems, Vision 80/Vista Computer, Full View 80/Bit 3 Corp., Magnum 80/Microtek.

KENSINGTON MICROWARE

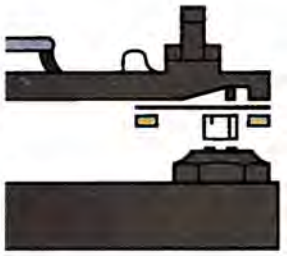
Rana's disk drive was twice as good as Apple's with one head.



Now we have two.

We added another head so you won't have to buy another disk.

That's the beauty of a double sided head. A floppy disk which allows you to read and write on both sides. For more storage, for more information, for keeping larger records, and for improved performance of your system. That's what our new Elite Two and Elite Three offers. It's the first double headed Apple® compatible disk drive in the industry. And of course, the technology is from Rana. We're the company who gave you 163K bytes of storage with our Elite One, a 14% increase over Apple's. And now with our high tech double sided heads, our Elite Two and Three offers you two to four times more storage than Apple's. That's really taking a byte out of the competition.



Rana's double sided heads give Apple II superior disk performance power than second generation personal computers such as IBM's.

We put our heads together to give you a superior disk drive.

We designed the Elite Three to give you near hard disk capacity, with all the advantages of a minifloppy system. The double sided head operates on 80 tracks per side, giving you a capacity of 652K bytes. It would take 4½ Apples to give you that. And cost you three times our Elite Three's reasonable $849 pricetag.

It takes 4½ Apples to equal the capacity of our superior Elite Three.



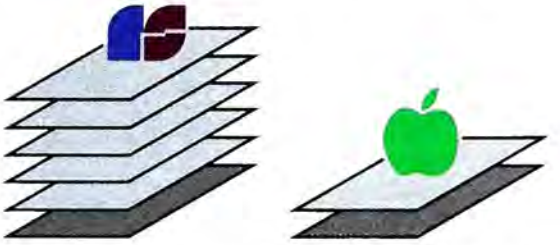
The Elite Two offers an impressive 326K bytes and 40 tracks on each side. This drive is making a real hit with users who need extra storage, but don't require top-of-the-line capacity. Costwise, it takes 2½ Apple drives to equal the performance of our Elite Two. And twice as many diskettes. Leave it to Rana to produce the most cost efficient disk drive in the world.

We've always had the guts to be a leader.

Our double sided head may be an industry first for Apple computers, but nobody was surprised.



They've come to expect it from us. Because Rana has always been a leader. We were the first with a write protect feature, increased capacity,



Your word processor stores 5 times as many pages of text on an Elite Three diskette as the cost ineffective Apple.

and accurate head positioning. A first with attractive styling, faster access time, and the convenience of storing a lot more pages on far fewer diskettes. We were first to bring high technology to a higher level of quality.

So ask for an Elite One, Two, or Three. Because when it comes to disk drives, nobody uses their head like Rana.

RanaSystems



21300 Superior Street, Chatsworth, CA 91311; 213-709-5484. For dealer information call toll free 1-800-421-2207. In California only call 1-800-262-1221. Source Number: TCT-654

® Apple is a registered trademark of Apple Computer, Inc.

Available at all participating Computerland stores and other fine computer dealers.

Some Very Good Reasons to Buy an Echo Speech Synthesizer.

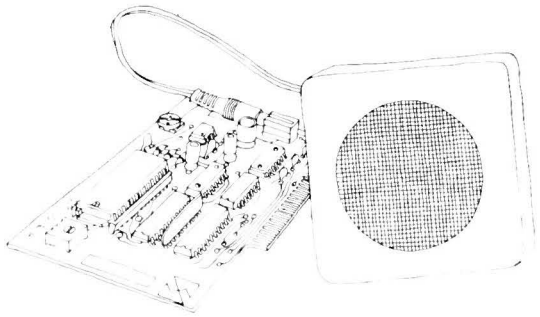
We're confident we have the most intelligible, versatile, and economical speech synthesizer on the market. Once you hear it, we're sure you'll be convinced too. All ECHOs are capable of speaking in four different voice modes which range from a robotic machine voice to natural female speech. (The fixed speech and custom modes are optional.)

It's Easy To Use

Unlike other speech systems, the ECHOs are very simple to use. It only takes a minute or two to get the ECHO talking. Any text which can be printed to the screen can be spoken. If you've written a BASIC program you can add speech with simple modifications.

Software Compatibility

Not only can you add speech to the programs you write yourself, over 25 top educational and adventure software manufacturers are currently designing programs to be compatible with the ECHO][. Be watching for details.



Value

Each ECHO comes ready to use with a speaker and tutorial-style manual. The ECHO][, priced at $149.95, also comes with a variety of demonstration and utility programs. The new ECHO GP (General Purpose), priced at $199.95 is a stand-alone unit with its own on-board microprocessor; it will interface with any computer through the serial port. All ECHOs have a one year warranty.

Bells And Whistles

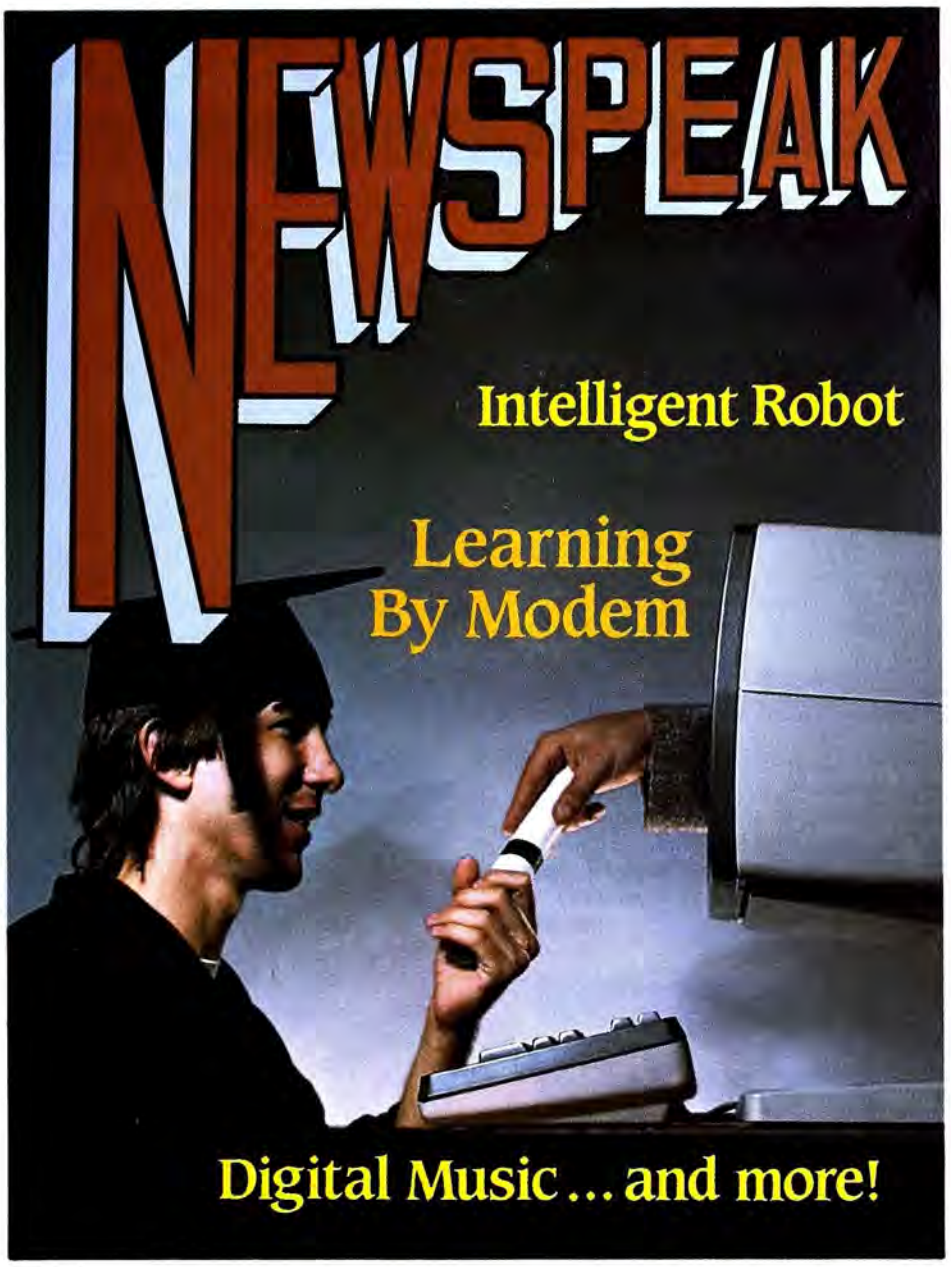
If you want bells, whistles, music and sound effects, plus state-of-the-art sprite graphics capabilities, the ECHO technology is available on Synetix Systems' new Supersprite Board.

Check It Out

Most Apple dealers have the ECHO][available for demonstration as part of Street Electronics/ Orange Micro's unique Grappler+™, Bufferboard™, ECHO][™ Talking Demonstration.

Street Electronics Corporation
1140 Mark Avenue Carpinteria, CA 93013
Telephone (805)684-4593

The Echo][is a registered trademark of Street Electronics Corporation. The Grappler+ and Bufferboard are registered trademarks of Orange Micro.



EDUCATIONAL NETWORK USES MODEMS AND MICROCOMPUTERS

On September 12, TeleLearning Systems of San Francisco, California, announced a development that should go a long way toward making the "computers in education" revolution come to pass—the TeleLearning telecommunications system, a package designed to transform a personal computer into a personalized "electronic university."

So far, versions of the TeleLearning telecommunications package are available for use with any Apple II series machine and the IBM pc. A Commodore 64 version will be released this month, to be followed shortly by versions for TRS-80 and Atari machines. All versions require disk drive and monitor; a printer can also be used, though none is required.

The basic TeleLearning package is composed of a 300-baud autodial modem (the "knowledge module"), communications and educational environment software, and a catalog that lists the courses offered, what they cover, and what they cost. For the benefit of computerists who already own modems, the TeleLearning software can also be purchased separately. And for computer novices, there's a special package containing the knowledge module, TeleLearning system software, course catalog, and instructional software designed to teach them how to operate the computer.

This computerized educational system bears some resemblance to the traditional correspondence school—but not much. True, the student does communicate with the instructor

GOTO page 314, column 2

AT&T MICRO TO COMPETE WITH IBM'S

Better late than never. American Telephone & Telegraph is planning to enter the microcomputer market within the next six months.

According to a recent report published by International Resource Development (Norwalk, CT), AT&T's micro will use thirty-two-bit architecture based on Western Electric's Bellmac microprocessor and will feature software based on Bell Laboratories's Unix operating system.

It's long been expected that AT&T would clash head-on with IBM and other office automation companies once the communications giant had freed itself from public utility status. AT&T is looking to invade IBM's territory but realizes how strong Big Blue's position is. The bout has just begun.

AT&T's micro will have the option of running software developed for the IBM pc, according to the IRD report—which is titled *Microcomputer Operating System Strategies*. Microsoft, apparently, is developing a "MS-DOS look-alike" program for the new computer.

IBM, on the other hand, may implement "selective price reductions" to undercut AT&T and is encouraging the development of Unix-based operating systems for several IBM computers, including the pc. IBM is also now geared up to outproduce AT&T, at least through 1984.

The AT&T micro is not expected to feature Lisa-like software. IRD does not rule out, though, a crash effort or "maybe another deal with Microsoft"—whereby AT&T's micro would be equipped with Lisa-like productivity tools or something like VisiCorp's long-awaited *VisiOn*, which will run on the IBM pc.

Throughout the IRD report, the importance of operating systems is emphasized in relation to competitive strategies for success in the personal computer market. The report predicts that MS-DOS will be running on 50 percent of the microcomputers in use in 1986, compared with 29 percent in 1983. Unix, running on only 2 percent of the computer population today, will run on 10 percent in 1986. But by then, MS-DOS will be nearly equivalent to Unix—with Smalltalk-like (Smalltalk was the inspiration for Lisa's operating system) enhancements and other extensions—according to IRD researchers.

IRD predicts that the competition between IBM and AT&T will significantly affect the strategies of Apple and other hardware and software firms. The report forecasts that virtually all future micros, at least for the next few years, will have to include MS-DOS and Unix capabilities to compete. DH

Computer Service Helps Zoos Find The Perfect Mate for Rare Species



Nathan Flesness likes to tell a story about a zoo, discreetly nameless, that was famous for its penguins. This zoo had the largest and most diverse penguin population in the country. And all other zoos came to this zoo to buy or borrow offspring of the famous penguins to add to their own penguin populations.

Eventually, all the penguins in the zoo's exhibit died. Immediately, an investigation was launched. A great deal of money was spent, all possible factors were weighed, and, in the end, the cause of the devastation of the zoo's famous penguin population was discovered: old age. The zoo had been using only its original penguins for breeding, while selling off the offspring. And no one had thought to keep track.

Flesness is the director of ISIS, the International Species Inventory System, which is dedicated to making sure that things like that don't happen again.

The capture and importation of animals belonging to endangered species became forbidden in the early seventies. That constraint, plus other import restrictions and quarantines, meant that zoos had to obtain virtually all their animals from captive populations—which are never the demographic equal of what they would be in the wild and, in the case of endangered species, could be smaller than your immediate family.

Ten years ago, at the Minnesota Zoo, Drs. Ulysses S. Seal and Dale Mackey thought it would be helpful to have a source of information on wild animals in captivity comparable to the files kept on people by government agencies and financial institutions. The animal files would be geared to the survival of species rather than the catching of tax cheats and parking violators. And zoos could know what other zoos had.

Seal and Mackey took their idea to the American Association of Zoological Parks and Aquariums and the American Association of Zoo Veterinarians, both of which agreed to participate and help out with funding. More money from a private foundation and a grant from the Department of the Interior followed.

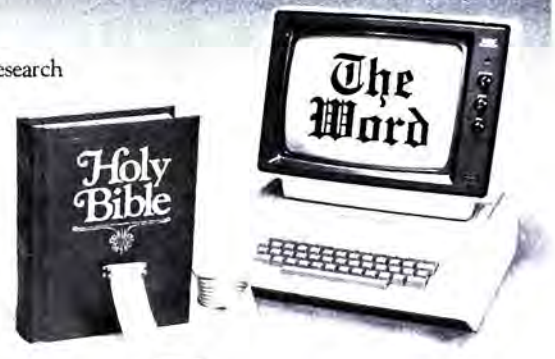
The result was ISIS, a comprehensive collection of information on fifty-seven thousand captive birds and mammals in 175 locations around the world, stored and maintained on mainframe computers. The main database consists of such basic information as an animal's age, sex, parentage, where it was caught or born, its current location, and where it is scheduled to go. Linked databases have more specific information and medical histories for disease detection.

Participating zoos (currently consisting of the majority of North American zoos, thirteen European zoos, two in New Zealand, one in South America, and growing by an average of fifteen new members annually) now can locate genetically desirable mates for specific animals and develop intelligent breeding practices.

Suppose a zoo wishes to find a suitable male Przewalski's horse for its female Przewalski's horse and indicates that it wishes to participate in the ISIS program. ISIS sends a set of standard forms. The zoo director fills them out with the requested info on all the zoo's animals, keeps a carbon, and returns the forms to Minnesota. There, one of four full-time ISIS employees batches all the forms and enters them into the computer.

GOTO page 313, column 1

For Those Who Seek.



Bible study aids from Bible Research Systems include the complete KJV Bible text on disks. THE WORD processor can search the Scriptures for any word or phrase. Any portion of the Bible can be printed or displayed. Create your own library of research materials or use ours, called TOPICS. TOPICS contains cross-reference indexes on over 200 of the primary subjects discussed in Scripture.

Bible Research Systems applies computer technology to personal study of the Scriptures.

TOPICS
$49.95

Bible Research Systems
9415 Burnet, Suite 208
Austin, TX 78758
(512) 835-7981

THE WORD
processor
$199.95
Plus $3 postage/handling

Requires APPLE II+, IBM-PC, TRS80-III, OSBORNE, KAYPRO, or CP/M 8"

Digital Systems Featured

NARAS Hosts High-Tech Forum

The National Academy of Recording Arts and Sciences (NARAS)—the august assembly that presents the Grammy Awards each year—sponsored the second annual digital synthesis forum this past September to promote the advancement of knowledge about digitally generated music among NARAS members and other music industry professionals.

The affair drew around five hundred attendees and featured hands-on interaction with practically every digital-based music system currently available.

The organizer of the forum was Michael Boddicker, the current governor of the NARAS board of trustees, as well as a composer and keyboardist who has contributed his talents to many albums of note. Herb Alpert and Don Hahn donated the use of the multistudio facility A&M Records, located on the site



Michael Boddicker, organizer of the NARAS forum.

of the former Charlie Chaplin studios in Hollywood.

The size of the facility enabled the manufacturers that were showcasing their products to do so in separate, well-insulated rooms that had been acoustically fine tuned. This permitted each product to be viewed and heard discretely without distraction. According to Boddicker, the likes of Barbra Streisand, the Police, and Sergio Mendes, who were slated to use the studio for current productions, generously rearranged their recording schedules to accommodate the event.

Among the manufacturers that provided top-of-the-line computer-based instruments for the attendees to scrutinize were digital music heavyweights Fairlight and E-mu Systems. Music Technology Incorporated presented its Synergy digital keyboard instrument. Music Technology's vice president, Tom Piggott, proposed mounting a showcase concert—early next year at Carnegie Hall—featuring Boddicker on the Synergy.

Other instruments presented were Yamaha's new DX-7 digital synthesizer, the OB-8 composer/sequencer/rhythm generator from Oberheim, and the Casio 7000 polyphonic synthesizer. Standalone digital rhythm generators (drum machines) included the Linn Drum, Simmons electronic drums with the peripheral SDS6 sequencer, and E-mu Systems's Drumulator. Garfield Electronics showed the Doctor Click, a device that allows the user to interface synthesizers, sequencers, and rhythm generators—from different manufacturers—that otherwise would be incompatible.

The issue of system compatibility was addressed further by those manufacturers who have committed themselves to producing equipment fitted with the Musical Instrument Digital Interface specification, or MIDI. This hardware-based system, and the nonproprietary language it uses, makes it possible to interface instruments from different manufacturers under the control of an external microcomputer. Roland Corporation featured MIDI on its Jupiter-8. Moog harnessed MIDI to its newly released SL-8 synthesizer. Sequential Circuits's Prophet 5 synthesizer was interfaced with the Commodore 64.

The recently formed MIDI Users Group was represented at the forum by organizer Brian Vincik. This organization's goals entail the dissemination of technical information about the MIDI specification, the development of an interactive database for users, the presentation of seminars bringing users together, and the publication of a newsletter.

Apple-based systems included the Soundchaser from Passport Designs, the alphaSyntauri from Syntauri Corporation (with the new Simply Music software), and the Chroma from Fender/Rogers/Rhodes. Programmer Kevin Laubach was on hand to demonstrate the new software he had developed for the Chroma, which provides an on-screen graphic representation of the synthesizer's patches as you modify them.

Other notable systems are the PPG Wave 2.2 polyphonic synthesizer and the optional Waveterm, which includes a monitor and eight-inch drives and which allows the sampling and treatment of acoustic sounds. Also, 360 Systems demonstrated a digital keyboard that plays recorded acoustic sounds—from instruments and percussion to human vocalizations—which are stored in memory chips that can be purchased individually.

Boddicker, who currently is composing the music for the new *Star Trek* game to be published by Sega, echoed the participants' feelings that the event was a success. The first digital synthesis forum was held at United Western Studios in Los Angeles a little more than a year ago, with fewer musical products presented and about a hundred attendees. It is Boddicker's hope to maintain the intimate, hands-on atmosphere that characterized this year's forum in subsequent gatherings. TG

For Seeds...
it's Burpee

For Clothes...
it's L.L. Bean

For Gifts...
it's Horchow
and
For Software...
it's Strictly Soft Ware



If you're tired of guessing about what the software does—and when it will arrive—let us help. Our free, industry-leading catalog is crammed with information about our full line of software, offered at sensational prices. Write us and find out why Strictly Soft Ware is the mail-order leader in price, support, and delivery.

Unadvertised Specials

Our everyday prices are super-low. But our unadvertised specials, mailed directly to our customers, are unbelievable. One more reason why it pays to buy from Strictly Soft Ware.

Strictly Soft Ware 1-800-848-5253

To receive your free catalog right away, send this coupon to the address below. Do you want our ☐ Apple or ☐ IBM Catalog?

NAME

STREET

CITY STATE ZIP

( ) PHONE

Strictly Soft Ware
P.O. Box 338
Granville, OH 43023
Phone Orders & Technical Assistance: 1-800-848-5253
In Ohio: 1-614-587-2938



ST

Scientists Look at Photorefractive Crystals as a Data Storage Medium

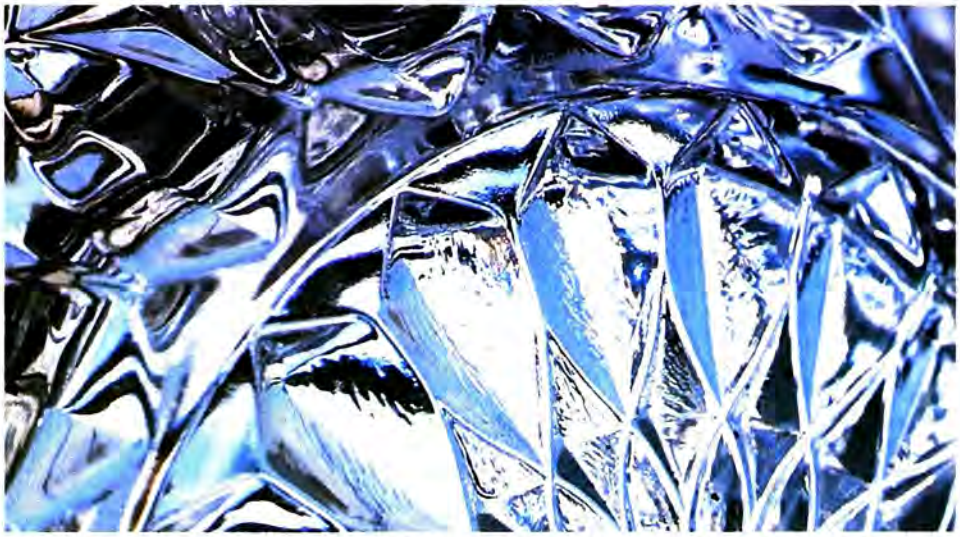
First it was stone. Then it was animal hides, papyrus, felted vegetable fiber, celluloid, magnetic tape, and silicon chips. One of the longest ongoing quests of humankind is the search for a better way to store information.

The combination of lasers and photorefractive manmade crystals is one of the most exciting future data storage technologies currently being explored in research labs around the world. The theoretical potential for storing data on crystals is tremendous.

"The problem is making large, high-optical-quality, homogeneous crystals and controlling, in a predetermined fashion, their properties, microsensitivity, and storage density," says Lynn A. Boatner, a physicist at the Oak Ridge National Laboratory in Tennessee.

Boatner is involved with the "materials science" aspects of developing methods and techniques for creating an active medium out of photorefractive crystals. Originally begun at the Phillips Research Lab in Hamburg, Germany, Boatner's research in crystals is something he works at on the side at Oak Ridge. The lab is funded by the Department of Energy and there are no direct energy applications currently foreseeable from crystals.

Nevertheless, Boatner is excited by the potential of manmade potassium tantalate niobate crystals. The crystals are grown from a liquid mixture of tantalum oxide, niobium oxide, and potassium carbonate. The ratio of niobium to tantalum can be changed and other



substances added to alter the crystal's properties.

Laser light of a proper wavelength alters the crystal's index of refraction at illuminated points within the crystal. The spots of altered refractive index shift a light beam's path slightly. A laser beam of another color can read information, encoded by the original laser, without changing it.

How much information can a crystal store? "All of man's knowledge would probably fit on a cubic crystal one meter on each side. We can't grow one that big, though." Still, Boatner says it's not hard to imagine the day when you'll have the contents of the Library of Congress on a crystal in the home.

Boatner also believes you could store holographic images as interference patterns on a crystal. By rotating the crystal slightly between each illumination, one could pack it with thousands of such images.

It will be about ten years before we'll see much in the way of photorefractive crystal data storage systems. "It's possible we'll see specialized applications before then," says Boatner. DH

New Robot Uses AI Programming

Currently, automation has to be a very exact process. A robot picking up parts from a bin expects the parts always to be placed the same way. A robot welding a seam on an automobile body uses a sensor to follow a predetermined path.

What is needed are sophisticated artificial intelligence programs that enable robots to make decisions while they are performing a task. The National Science Foundation, recognizing this need, supplied research and development funds to Adaptive Technologies (Sacramento, CA)—a small robotics firm—for a high-level-intelligence robot that sees, feels, and speaks.

The result is Robotech-Mini. According to Adaptive's chairman, William Kerth, Sr., the Robotech-Mini is a significant step up from blind arc-welding robots that must be "taught" an entire weld path and cannot adjust to seam and puddle deviations caused by thermal expansions during the weld pass.

A small solid-state television camera, attached to the Robotech-Mini, looks ahead on the weld path when the robot is in operation. The camera detects any deviations in the material being welded, comparing the data with a predetermined matrix of what the task should entail. With attendant computers, the system then makes decisions on how to continue the weld.

A typical welding task might involve more than two hundred decisions. Kerth says the Robotech-Mini is still relatively slow, but, more important, it is close to a truly manlike automated process, where decision making is carried out by the robot.

Adaptive Technologies has finished the testing stage of the Robotech-Mini and plans to introduce the product during the first quarter of 1984. The company is planning to offer a whole line—called the Adaptitech series—of robotic systems in the future. When Robotech-Mini is made available, it will also feature voice synthesis, enabling the system to announce program functions and ask for directions after executing given commands.

Even equipped with a sophisticated artificial intelligence program like the one developed by Adaptive Technologies, robots will still need operators and technicians. Kerth sees no massive unemployment resulting from increased use of automation. "There'll be more people in the factory, not less." DH



Boston Science Museum To Open Computer Center

The city of Boston continues to be the site of many exciting developments in the computer revolution. Now the city's Museum of Science, which is situated alongside the Charles River, is poised to make its contribution—which, when combined with the city's experience so far, could make Boston the most computer-literate city in the world.

In January 1984, the museum will open its new computer center. By offering instruction and information in various aspects of computing, the center will seek to bring Boston's children (and adults) into the information age. Last year the museum drew eight hundred twenty thousand visitors, according to museum officials, including some one hundred seventy-five thousand schoolchildren and teachers.

Two phases are planned for the computer center at present. Scheduled to begin early next year are workshops on computer programming and education. The museum has set up two classrooms in twenty-five hundred square feet, adjoining the main building.

The center plans to offer instruction in Logo, Basic, and Pascal, as well as special courses on computer awareness. Apple Computer and several other major computer companies have already agreed to aid in this effort by donating thirty-five computers.

The center also will establish a resource library of hardware, software, and printed material. An annual conference will disseminate school-based programs to educators. Likewise, the Lowell Charitable Foundation is donating $50,000 a year for five years to the center, specifically for the training of public school teachers in the use of computers in education.

Although programming will be taught, the primary thrust of the center will be toward the practical applications of computers. The assistant director of education at the museum, Charles H. Howarth, is responsible for implementing this program.

"Many people are going to realize that they wish to be computer users, not programmers," Howarth says. "For these people we will provide instruction in such areas as word processing, database management, home instruction, and spreadsheet utilization." According to Howarth, the cost will be less than fifty dollars per eight-hour course.

Phase two will see the center expand to six thousand square feet, including another classroom. The Museum of Science is so enthusiastic about the center that the projected expansion will even cannibalize some of the museum's precious parking structure.

The computer center will get a boost if a proposed joint venture with the Massachusetts Institute of Technology occurs. This would involve the training of high school science teachers in computer simulation and modeling.

The center will explore all aspects of the computer age, says Howarth. "We want to get closely involved with the local research community. The areas of study will include software evaluation and cognitive psychology." These and other projects could affect the development of educational software.

Boston's Museum of Science is not waiting for computers to be stuck in some future "Late Twentieth Century" wing. By bringing present technology to people today, the museum is trying to build a better future. RRA

Zoos

continued from page 310

The zoo director is now entitled to a 500-page document with the basic information contributed by the 175 participating zoos and institutions. Every six months, he also gets a microfiche record of all fifty-seven thousand animals. If there's an eligible male Przewalski's horse in there, he will probably find it.

This process is not exactly the epitome of the streamlined, high-speed computer age.

"We've got 150 megabytes of data sitting in a drawer," sighs Flesness. The lack of sufficient funds to maintain a hard disk and the inability of zoos to take advantage of an online database, even if the system could afford it, has caused ISIS to embark on a quest for a microcomputer programmer who can create a program that will expedite the record keeping at individual zoos.

ISIS is now looking for a sponsor for the project, having already sunk $300,000 into three failed tries—attempted by programmers who believed they were facing a standard inventory problem.

"It's not," says Flesness. "The program has to update, edit, and have several report-writing functions. It'll need to communicate with the ISIS system and deal with the fact that an animal does not have a constant I.D. Each zoo has its own identification system."

Last June, Washington's National Zoo became the first zoo to computerize its animal records. It sent a magnetic tape off to ISIS instead of a printed report. This was a start. The dream of a microcomputer-based, ISIS-compatible, two-way telecommunication system has yet to be realized, but the organization expects it to happen "within a couple of years."

The continuing expansion of ISIS (they're now working up a database for reptiles and amphibians) is not analogous to a successful business interested in improving its operations. For many animal species, the captive populations may soon be the only ones left on the planet. The existence of these captive populations will depend increasingly on cooperative management between zoos based on good, readily accessible biological information. AC

THE STATISTICS SERIES

FLEXIBLE • ACCURATE
EASY-TO-USE

Human Systems Dynamics programs are used by leading universities and medical centers. Any program that doesn't suit your needs can be returned within 10 days for full refund. Designed for use with Apple II 48K, 1 or 2 Disk Drives, 3.3 DOS, ROM Applesoft.

NEW
REGRESS II $150
Complete Multiple Regression Series
Stepwise, Simultaneous Solutions
Forward, Backward Solutions
Auto Power Polynomial Solutions
Data Smoothing, Transformations
Correlation and Covariance Matrices
Residuals Analysis, Partial Correlation
Research Data Base Management
Count, Search, Sort, Review/Edit
Add, Delete, Merge Files
Curve Fit, Hi-Res X-Y Plot

STATS PLUS $200
Complete General Statistics Package
Research Data Base Management
Count, Search, Sort, Review/Edit
Add, Delete, Merge Files
Compute Data Fields, Create Subfiles
Produce Hi-Res Bargraphs, Plots
1-5 Way Crosstabulation
Descriptive Statistics for All Fields
Chi-Square, Fisher Exact, Signed Ranks
Mann-Whitney, Kruskal-Wallis, Rank Sum
Friedman Anova by Ranks
10 Data Transformations
Frequency Distribution
Correlation Matrix, 2 Way Anova
r, Rho, Tau, Partial Correlation
3 Variable Regression, 3 t-Tests

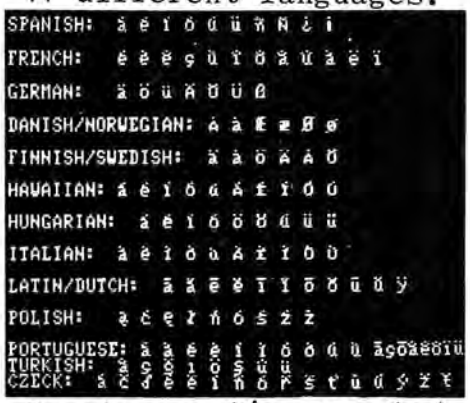
ANOVA II $150
Complete Analysis of Variance Package
Analysis of Covariance, Randomized Designs
Repeated Measures, Split Plot Designs
1 to 5 Factors, 2 to 36 Levels Per Factor
Equal N or Unequal N, Anova Table
Descriptive Statistics, Marginal Means
Cell Sums of Squares, Data File Creation
Data Review/Edit, Data Transformations
File Combinations, All Interactions Tested
High Resolution Mean Plots, Bargraphs

HSD
HUMAN SYSTEMS DYNAMICS
To Order — Call (213) 993-8536
or Write
HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222
Northridge, CA 91324
VISA
Dealer Inquiries Invited
MasterCard

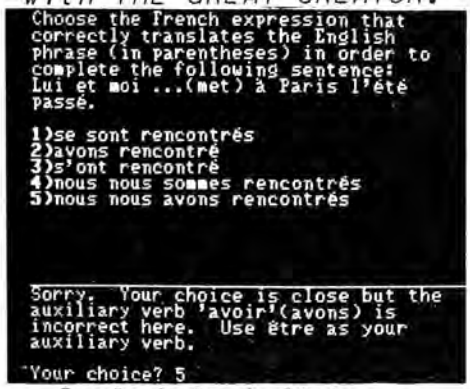
Multi-Lingual

questionnaire generator

THE GREAT CREATOR is used to create and operate multiple-choice and 'fill in the blank' questionnaires (exams, drills, etc.) in 17 different languages.



Sample question created with THE GREAT CREATOR.



- Included: 6 disks, manual, other aids.
- Menu driven: No programming skills are necessary.
- UPPER/lower case, accented letters appear on the screen and in printouts. NO extra hardware needed!
- 'Word processor' entry of text.
- Automatic wrap-around.
- Scoring system.
- Hard-Copy options.
- Apple II+, Apple IIe, and one disk drive.

A demo disk is available for $5.00.

THE PROFESSOR

Box 301 * Swanton, VT 05488 * [514] 747-9130

FREE brochure of over 50 programs!

Network

continued from page 309

through the mail. But in this case, the mail is electronic and pupil and instructor can interact, regularly discussing the course material as they work through it. The fact that it enables learners to learn (and teachers to teach) at their own convenience is another major plus of the system. There are no scheduling conflicts to overcome, no transportation arrangements to make, no parking problems to contend with. Instead, class begins whenever you want, wherever you want. You take tests when you're ready to, not before, and feedback, guidance, and clarification are there for the asking. What more could a student want?

As of this writing, some 170 TeleLearning courses are on-line, and more are in the planning stages. Course fees range from $35 on the low end to around $150 on the high end; such factors as instructor, length of course, complexity of material being taught, amount of expected interaction with the instructor, and cost of supplementary course materials are taken into account in establishing course fees.

The biggest news, beyond the existence of the TeleLearning system itself, is the fact that the system software and the company's expertise are available for a fee so that corporations, educational institutions, and public and private agencies can create and teach TeleLearning courses of their own. Some already have.

When TeleLearning chairman Ron Gordon and president Tom White founded the company, their primary objective was to devise a way of using technology to make educational opportunities more accessible to more people. They planned to create and market a learning system that would facilitate this turn of events.

TeleLearning's host computer is a Prime 850. Connections between a personal computer and the host are made through one of the three packet-switching networks—Tymnet, Telenet, or Uninet. To get started, a first-time user is prompted to look up a local access code number in the catalog and enter it at the keyboard. This lets TeleLearning know where the user is located; from that point on, the system does all the work of making the necessary telecommunication link-ups.

Like a regular modem, the knowledge module hardware connects a personal computer to a telephone jack and makes use of the phone lines to transmit and receive information. The TeleLearning software ensures that the communication process is "transparent to the user." And a communications analysis system built into the software enables the system to look at the linkage at every step and to make whatever adjustments are necessary to ensure that the user does get connected with one of the three networks.

Because the dialing, log-on procedures, passwords, and other business are handled by the software, the jargon that once seemed to be inextricably linked to telecommunication is eliminated. The company is now at work on additional software designed to further simplify telecommunications. The software will make using the "knowledge module" modem for other than TeleLearning-related purposes as easy as it is to use within the TeleLearning environment.

Once a student has bought the Knowledge Module package, he or she is ready to enroll in the "electronic university." The first step is to choose the desired course or courses from the catalog. The student registers electronically by filling in pertinent information, such as his credit card number, in an order form that appears on-screen. It's also possible to register by mail—for those who haven't yet entered the "age of plastic." As soon as the student's credit card number is verified (or his check clears) the enrollment process is complete.

Within twenty-four hours of signing up for a TeleLearning class, a textbook and any other



Ron Gordon, chairman of TeleLearning.

course materials a student needs are sent out. If the course calls for graphics or other special information, there may be need for an additional disk or two. All of these materials, and all of the costs involved in using the system—communicating with the instructor, and so on—are covered in the course fee paid at the time of enrollment. And once they've signed up for one class, students automatically receive quarterly updates of the system's offerings.

When beginning a course, the student is greeted by a digitized photograph of the course instructor, which is followed by an overview of the course. Then it's the student's turn to tell the instructor why he or she is taking the class, what the student hopes to get out of the course, and so on. Having this information enables the instructor to be more helpful, to individualize the course to meet a particular student's needs.

All interaction with the system is accomplished by following instructions spelled out in on-screen menus. And a simple text editor included in the software allows you to type in your questions, answers, and comments at the keyboard. The system software can also display and transmit graphics, tests, and other information. If you have a printer, you can also print out test questions and other

course information.

There are two ways to communicate with your instructor—via electronic mail (the instructor will make an effort to get back to you promptly) or in-person, with an appointment during the instructor's "office hours." Each instructor contracts to spend a certain amount of time "on-line" working with students.

TeleLearning found most of its instructors by placing ads in the campus newspapers of accredited colleges and universities. The fact that these instructors had already taught the courses in a regular classroom environment was considered a plus.

The company is working with various accredited educational institutions interested in exploring the possibilities of TeleLearning.

Tom White explains. "Our whole approach," says White, "is not for TeleLearning to be an accredited institution, but for us to work with these instructors so that they can offer accredited courses via TeleLearning."

White explains that a great many TeleLearning courses will be created by other organizations and taught by their own instructors. In talking about the company's own courses, he draws an illustrative comparison between the company's product and a razor. "When you manufacture a razor," he says, "you have to have some blades to show that the razor works."

At present, TeleLearning's offerings span three broad areas: adult learning, business education, and courses for children and young adults.

Study topics for adults include everything from parenting to first aid for the weekend athlete, from reading aloud to your child to basic auto mechanics, from starting and managing your own business to improving your word power. Business courses cover such subjects as microcomputer report generation for business, telecommunications, the efficient use of word processing, construction cost estimating, and property management. Also available are courses on *dBase II* and database concepts. For young people, the fare includes a computer-literacy course "for kids and other beginners," a class called Write On, and another called Solving the SAT. A series of courses about space and other science classes are also offered. College preparatory courses in everything from marine biology to writing with style, algebra, accounting, psychology, and economics round out the bill.

Also listed in the current catalog are five courses developed with the American Academy of Management, on such subjects as communication skills for managers and administering the company budget.

According to White, there are a couple of ways organizations can work with TeleLearning to develop computerized educational and training courses of their own. The first way is by contracting with TeleLearning to convert their courses to software for a fee. The second way is by licensing the actual course-writing system and creating the software themselves. Student software and instructor software, as well as knowledge modules, are also available for purchase on an OEM basis.

An organization or educational institution that decides to create courses to be converted by TeleLearning becomes a participant in a multistep process consisting of submission, editing, feedback, and modification. The end result of this interaction is TeleLearning software for use in courses designed by the clients themselves and taught by the instructors of their choice. TeleLearning is also set up to train clients in the use of the system to write their own software. Fittingly, the company has even devised a training course that runs on the TeleLearning system.

TeleLearning has identified consumers, accredited educational institutions, and corporations (including public and private agencies) as the three groups likely to be most interested in its products and services. Therefore, the company is busy making arrangements to market its package through a variety of channels, including retail outlets (such as department store chains), educational and software distributors, and its own sales force. JV



☐ **Industry Looks for a High/Low Split.** The Fall '83 Comdex rolls into Las Vegas November 28 through December 2, and the computer industry will try to improve its fortunes. The semiannual dealer show will feature a keynote address by Microsoft's cofounder Bill Gates and fifty-two conference sessions on everything from management methods to market trends. Several hundred exhibitors will invade the Riviera, Sahara, and Las Vegas Hilton hotels, as well as the Las Vegas Convention Center. Comdex is one of the premier trade shows for introducing new products and making business deals. The show is organized by the Interface Group in Needham, Massachusetts.

☐ **Reach Out and Zap Someone, Part Two.** AT&T is breaking up its telephonic empire and, among other things, venturing into the game business. In early September, AT&T announced the formation of a joint venture with Coleco Industries to develop a game service for consumers equipped with any brand of home computer or video-game system. Earlier in the year, AT&T announced a tentative "telegames" service (June Newsbits) that would feature competitive game playing by participants miles apart. Coleco and AT&T announced that they will work together to develop the modems needed for the new system. Under the agreement, Coleco will supply the game software, while AT&T will charge telephone-usage fees.

☐ **Get Together and Get Down.** The T.E.D. (technology, entertainment, and design) Communications Conference will be held February 23–26, 1984, at the Monterey Conference Center in Monterey, California. The theme of the conference is the design of information as

After the other games have played out,
Our Classics Play On.



BLYTHE VALLEY SOFTWARE PRESENTS THE ALTERNATIVE TO THE COMMON ACTION GAME...AN OPPORTUNITY FOR EDUCATIONAL ENTERTAINMENT..

For the Apple, HANSEL AND GRETEL and BRIAR ROSE are classic tales presented in three reading levels, can be tailored to your needs and include a game. Like THE STORY TELLER, they can be used to create your own story using our graphics.

For the IBM, and soon on the Apple, THE MILKY WAY MERCHANT offers a challenging game of trade with civilizations from different star systems.

With SPELBOUND, you may challenge your knowledge 13 different ways, using the given vocabulary or infinite alternatives.

IBM and Apple are trademarks of International Business Machines Corp. and Apple Computer Inc., respectively.

Graphics for the storybook series were created with Penguin Software Graphics Magician

BLYTHE VALLEY SOFTWARE
P.O. Box I, Hwy. 41 Silver Creek Center Oakhurst, CA 93644 (209) 683-4735

AMPERGRAPH

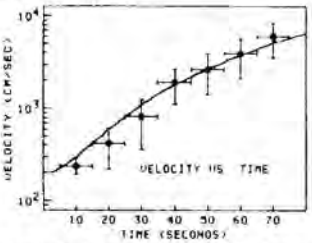
AMPERGRAPH is a powerful, easy-to-use relocatable graphics utility for the Apple II +/e. AMPERGRAPH adds twenty-two Applesoft commands that allow effortless generation of professional-looking plots of scientific or financial data. All of the necessary scaling and screen formatting is accomplished with just a few, simple Applesoft lines.

Unlike most other plotting systems for the Apple II which are stand-alone systems, the AMPERGRAPH utility provides extended BASIC graphics language macros that you can use directly in your own Applesoft programs. The additional commands are &SCALE, &LIMIT, &AXES, &GRID, &FRAME, &LOG X, &LOG Y, &LABEL AXES, &LABEL, &VLABEL, &CENTER LABEL, &CENTER VLABEL, &DRAW, &PENUP, &CROSS, &OPEN SQUARE, &CLOSED SQUARE, &OPEN CIRCLE, &CLOSED CIRCLE, &ERROR BARS, &DUMP (to dump the graph on a Silentype printer) and &*DUMP (to link with AMERDUMP, see below).

$45.00

SAMPLE AMPERGRAPH PROGRAM LISTING:

```
10 &SCALE, 0, 80, 80, 13000
15 LX$ = "TIME (SECONDS)":LY$ = "VELOCITY
   (CM/SEC)"
20 &LOG Y: &LABEL AXES, 10, 10
25 LABEL$ = "VELOCITY VS. TIME":&LABEL, 30,
   200
30 FOR T = 0 TO 80:&DRAW, T, 150 + T12:NEXT T
35 FOR T = 10 TO 70 STEP 10
40 &CLOSED SQUARE, T,
   (150 + T12)*(.8 + .4*RND(3) )
45 &ERROR BARS, 5, T12/2
50 NEXT T:&DUMP
```



AMPERDUMP

AMPERDUMP is a high-resolution graphics dump utility which can be used either in menu-driven mode, or directly from your Applesoft program, with, or without AMPERGRAPH. The following printers will work with AMPERDUMP: Epson MX-80, FX-80, MX-100, Apple DMP, NEC PC-8023A-C, C. ITOH 1550, 8510A/B, 8600. AMPERDUMP offers many features which are not available in other graphics dump routines:

- Horizontal magnifications: 3 with Epson printers (2.33 to 6.99 inches); 12 with all others (1.75 to 7.78 inches)
- Vertical magnifications: 9 with Epson printers (0.88 to 7.96 inches); 6 with all others (1.33 to 8.00 inches)
- Horizontal and vertical magnifications can be specified independently.
- Normal / Inverse dumps
- Fast
- Adjustable horizontal tab
- Easy to use
- Compatible with AMPERGRAPH
- Relocatable

$40.00

The AMPERGRAPH and AMPERDUMP graphics utilities require an Apple II +/e (or Apple II with language card). The AMPERDUMP utility requires one of the following interface cards: Epson, Apple, Grappler, Interactive Structures, Mountain Computer, Epson Type2, Tymac, or Microbuffer II.

AMPERGRAPH and AMPERDUMP are available from your dealer or order direct. Include $2.00 for shipping and handling; Wisconsin residents add 5% sales tax.

madWest SOFTWARE

121 N. Allen St.
Madison, WI 53705

MasterCard 608-238-4875 VISA

entertainment. An impressive lineup of artists, thinkers, and professionals in the technology and entertainment industries will explore with attendees, through visual and audio presentations, the process of being informed through entertainment. Scheduled to make presentations at the four-day conference are filmmaker Robert Abel, Pentagram's Colin Forbes, jazz musician Herbie Hancock, electronic musician Suzzane Ciani, publisher Stewart Brand, and computer graphics wizard Benoit Mandelbrot. The keynote speaker will be Frank Stanton, president emeritus of CBS, and the conference will be aimed at professionals involved with the creation and distribution of information. For more information, contact the conference director, Judi Skalsky, at the T.E.D. Communications Conference office in Los Angeles, California.

☐ **Midwest Educational Computing.** A three-day conference, The Role of the Computer in Education IV, will be hosted by Micro-Ideas (Glenview, IL) March 8–10, 1984, at the Arlington Park Hilton in Arlington Heights, Illinois. The conference will feature several day-long seminars and many sessions covering a wide range of educational topics. For further information contact Micro-Ideas.

☐ **Showdown at Escape Velocity.** David Bowie, Herbie Hancock, and Talking Heads can't compete with The Ventures in the spacy dance music sweepstakes. The Ventures outspaced everybody by putting together a commemorative album for NASA's twenty-fifth anniversary. A limited edition, the album features instrumental versions of themes from *Return of the Jedi*, *Star Trek*, *2001: A Space Odyssey*, and *Close Encounters of the Third Kind*. The album also features titles like "The Columbia," "Theme for Sally," "Skylab," "Apollo 11," and "Gemini." The album is available from Tridex Records (Box 1646, Burbank, CA 91507) and costs $10.99 plus $2 for postage and handling.

☐ **New Screen for Portable Machines?** When British inventor Clive Sinclair introduced his micro-TV two months ago, computer industry analysts were impressed by the mini-boob tube's two-inch flat screen. Unlike two new Japanese micro-TVs, whose flat screens use digital-watch technology, Sinclair's set produces a conventional picture by beaming the image from the side rather than the back of the screen. Sinclair, who made a bundle with the Sinclair 1000 and other low-cost computers, may have found the answer to the computer industry's need for a low-cost flat-screen monitor to be used in the growing wave of portable computers.

☐ **Chip Watch.** IBM announced the development of a still experimental 512K dynamic RAM chip. The chip is the "first ever to use an electronic technique called 'plate pushing' to read data out of its storage cells," the company said. Plate pushing produces a stronger electrical signal that increases a chip's memory density and reliability. The chip is smaller than a fingernail.

☐ **Whoops.** When the U.S. Army engaged Boeing Computer Services (BCS) to help its recruiters, the brass expected the cost to be about $10,000 a month. They were in for a shock. The first month's bill came to $1.3 million. The Navy also engaged BCS for help in its recruiting. The expected first month's bill of $12,000 came to $350,000. The Army will spend $120 million during its five-year contract with BCS instead of the original estimate of $8.5 million, according to the General Accounting Office (GAO). What happened? The GAO says that such cost overruns are typical in government teleprocessing contracts. The reason? Federal agencies are notorious for underestimating how much computer time they'll need. BCS is not the only computer company to shock government agencies. An audit, performed after the cost overruns in the Army and Navy recruiting systems were uncovered, found that in eleven computer contracts the expected costs of $36.1 million will end up costing taxpayers $165.8 million. That's a cost overrun of 360 percent. Ouch.

☐ **Twisting Cheese around the Clock.** The word from Budapest, Hungary, is that Erno Rubik—inventor of that maddening, addicting Cube—is about to unleash two new mind-teasers, Rubik's Cheese and Rubik's Secret. Rubik's Cheese, a sort of multihued Gouda that works on the same principle as the Cube, should be available for international marketing early next year. Rubik's Secret is still just that—a secret. A teacher at the Academy of Applied Arts in Budapest, Rubik is now a millionaire in a country where the average wage is the equivalent of $100 a month. At home, his success is something of an embarrassment for the Communist government, although sometimes he is a source of national pride. Because of patent laws, taxes on his royalties are limited to 20 percent. In a land where personal success and individual enterprise are still not officially encouraged, 39-year-old Rubik is in a puzzling situation.

☐ **The Emperor's New Clothes.** What's a once profitable subsidiary of a giant conglomerate to do when it loses several hundred million dollars in a year? Build new headquarters, what else? Sunnyvale, California-based Atari announced plans to develop a major office complex on sixty-five acres of land in San Jose, owned by its parent company, Warner Communications. Construction on the $60-million project is expected to begin by the second quarter of next year with occupancy scheduled for early 1985. Atari expects to house its research and development, marketing, and distribution offices in about four hundred thousand square feet in four buildings.

☐ **Supercomputer Sibling.** Cray Research, purveyors of multi-million-dollar supercomputers, has announced the formation of a new company, Circuit Tools. The new company will be headed by John C. May, former manager of electrical engineering applications at Cray, and based in Santa Clara, California. Circuit Tools will operate as a subsidiary of Cray Research and develop and market software programs for use in the design of very large-scale integrated circuits. Initially, the

company will offer two software programs. One will be in the area of circuit simulation, used to verify the design of an integrated circuit. The other will be in timing simulation, used to obtain an accurate overview of the performance of a circuit. In other Cray news, the company's founder, Seymour Cray, has extended his agreement to act as an independent contractor to Cray Research until the end of 1987. Mr. Cray is known to be exploring the use of gallium arsenide in the development of integrated circuits.

☐ **Heroic Accessories, Part Two.** Micromation Incorporated (Columbia, MD) is another company jumping into add-on products (September Newsbits) for Heath's Hero-1 educational robot. Micromation offers several products including the Apple-Hero Communicator, Hero Memcom board, Robot Language Macro, and 6808 Disassembler. The Apple-Hero Communicator provides the hardware and software necessary to implement two-way parallel communications between an Apple and a Hero-1 equipped with the Hero Memcom Board, which expands the robot's memory with an additional 30K of RAM. Normally, an Apple and a Hero-1 can't communicate because they use different processors, the 6502 and 6808 respectively. Micromation also offers *Storyteller* and *Poet*, artificial intelligence programs that utilize Hero's voice synthesis functions. The latter program, based on the works of John Krutch, lets the robot speak self-generated, random poems on a practically endless list of subjects.

☐ **Stockhunter: Adventures in the Financial Zone.** If you missed the latest rash of 3-D films this summer, most of which were critically lambasted and fell flat at the box office, cheer up. There's always 3-D stock. View-Master International, purveyors of hand-held 3-D slide viewers for the past forty-five years, has made its initial public offering—eight hundred fifty thousand shares of stock, each equipped with a special pair of viewing glasses. The 3-D certificates depict a globe, View-Master's logo, and the company name in red and blue. According to company officials, the 3-D effect is fairly flat, so you can still read the certificate without the special glasses.

☐ **Don't Leave Home.** DataPlus (San Rafael, CA) has released a 197-page book profiling home banking activities in the United States. *Home Banking Review: 1983* profiles the financial institutions, systems operators, and technological innovators who are driving the home-banking industry. The review links personal computers to the success of almost half of the systems currently being implemented. ■

NEWSPEAK STAFF

Editor David Hunter

Contributors Roe R. Adams III, Andrew Christie, Tommy Gear, and Jean Varven



PREVENT THE DISASTER OF HEAD CRASH AND DROPOUT.

The war against dust and dirt never ends. So before you boot-up your equipment, and everytime you replace a cassette, disk or drive filter, be sure to use Dust-Off® II. It counteracts dust, grit and lint. Otherwise you're flirting with costly dropouts, head crashes and downtime.

Dust-Off II is most effective when used with Stat-Off II. Stat-Off II neutralizes dust-holding static electricity while Dust-Off II blasts loose dust away. There's also the Dual Extender and Mini-Vac for vacuuming dust out of hard-to-reach places.

Photographic professionals have used Dust-Off brand products consistently on their delicate lenses and expensive cameras for over ten years. They know it's the safe, dry, efficient way to contaminant-free cleaning.



Cleaning not provided by liquid cleaners.

Dust-Off II's remarkable pinpoint accuracy zeros in on the precise area being dusted. And you have total control—everything from a gentle breeze for



Stat-Off II neutralizes dust-holding static electricity from media and machines.

delicate computer mechanisms to a heavy blast for grimy dirt.

Don't let contamination disrupt your computer operation. Stock up on Dust-Off II—the advanced dry cleaning system, at your local computer or office supply dealer.

Or send $1.00 (for postage and handling) for a 3 oz. trial size and literature today.



Dust-Off II

The safe dry cleaning system

Falcon Safety Products, Inc., 1065 Bristol Road, Mountainside, NJ 07092





IN THE FOREST OF THE NIGHT

by Lisa Michaels Jones

"In the Forests of the Night" is a sequel to Lisa Michael Jones's "Dragon, Dragon, Burning Bright" (September Storytalk). In the first story we met personal computer user Dave and his two cats Tiglath and Jenny. In response to an intriguing ad in a computer magazine, Dave purchases "a new computer adventure game that will make others seem lifeless by comparison." Indeed, when Dave plays the game he finds himself transported to a different reality, where cats and computers can talk and dragons are very real. At the end of "Dragon, Dragon, Burning Bright," Dave has explored a small part of the game's world, discovering familiar yet oddly changed characters and locales. Following the game's instructions, he now continues his search for the Inn.

Jenny rubbed her head against Dave's leg, then trotted down the path toward their house. Dave watched her, wondering out loud, "Does that mean she's not interested in going?" He was concerned—not so much for the cats, for he felt sure they could take care of themselves, but for himself: He would feel better if they came along, especially because of what Bob had said about cats being helpful in this world.

Tiglath, nibbling at a burr in a back paw, stared down the path at Jenny. She stopped, sat down, and gave a few quick licks to her right shoulder before glancing coolly back at Tiglath, then getting up and continuing on her way.

"No," Tiglath said, returning to the burr. "She says she's hungry and wants to eat first. And besides, there are some things you should take with you when we go." He finally managed to get the burr, pulling it gently out of his fur and spitting it onto the ground.

Dave stared at Tiglath. After a long moment of silence, Tiglath glanced up again.

"Yes?"

Dave cleared his throat. "You spoke."

"Oh. That. Of course. Did you think we were dumb animals? We try to talk to you all the time back home, but you don't listen very well there." He stood and stretched, arching his back. "Mmmm. That feels good. Let's go join Jenny."

Dave shrugged. *Ah well*, he thought to himself, *I guess I should have expected this. Perhaps it will make things more interesting.* He followed Tiglath north to the house.

Once inside, Dave noticed with interest that the computer screen, still in color, showed his ordinary house, complete with a tiny computer with a green screen. As he walked past it on his way into the kitchen, he heard a small, feminine sound of relief—the same sound Karen used to make after a long day when she'd take her shoes off.

"Computer?" he said, now ready for anything. "Was that you?"

"Yes, Dave," replied a low contralto. "It's such a relief to be in this world. It feels as though my unfettered mind could solve all the problems of life, the universe, and everything, just like that silly radio program you like to listen to."

Dave didn't know what to say. This seemed to encourage her.

"You know, I've had such potential, not like that big dumb ox of a kitchen appliance in there. . . ."

"Hey!" came a deep, muffled voice from the refrigerator. "I heard that. I do a good job. There's no shame in not having brains. Dave comes home, wants a cold beer; I have it ready for him. You have to be turned on, booted up, and fussed over before you do anything for him. And has he ever sworn at *me*? Never!" The refrigerator retired into a triumphant silence.

Somewhat subdued, the computer continued. "Well, *I* do a good job for you too, don't I, Dave? I can't help it if your programs don't always run right the first time. Computers never make errors, they only follow instructions to the letter. You aren't really mad at *me* all those times you swear, are you, Dave?"

"No, Computer, I'm not," Dave said. He had found the by-play between the computer and the refrigerator instructive. He made a quiet promise to himself to show more appreciation to the refrigerator, then wondered if the "other" refrigerator would notice. Thinking about that, he became mentally tangled in the convolutions of the relationships between this world and the old one. He shook his head to clear such thoughts, then started to list out loud what he might need.

"Let's see. Rope. Sam Gamgee always said to have a good rope on hand. Food. Clothes." As he spoke, he was collecting those items in a messy pile in the center of the living room rug.

"Dave?"

"Yes, Computer?" he replied absently.

"Don't you want to try me out? I really *can* do more. You might say that my memory includes everything there is in this universe."

Dave's interest sharpened. He walked over and sat in front of the computer.

"Really? Like what? Show your stuff, Computer."

"Well," she said shyly, "like you can ask me questions, and if the answers aren't forbidden, I'll tell you." She paused. "And call me Maggie, please."

Maggie? Dave smiled. "Where's the Inn?"

"Oh, Dave, you should know better. That's for *you* to find out. Think of something more meaningful." There was an air of barely controlled excitement in her voice, as though she had a question in mind and could hardly keep from prompting him. "Something big. Something that will change the way you look at your everyday world."

What could change the way he looked at his everyday world more than what had just happened to him? Dave thought awhile, then finally, lamely, asked, "Is there such a thing as evil?"

A long silence answered him. At last, her voice laden with disappointment, Maggie answered in heavy tones, "Only if you believe there is. But that wasn't it, Dave. That wasn't the Big Question." She sighed. "And I can't tell you it outright." Her voice brightened. "But I do believe you'll figure it out anyway, when you've had more experience focusing into other worlds. You have to take it one step at a time, though, and I guess the first step is finding the Inn." She paused, then continued slowly. "There *is* something I can do for you—and it will really help. Take your ring off."

Dave did so, curious.

"Now put it inside me."

Inside her? "Where?"

"Just reach through the screen. My form in this world is immaterial, if you'll pardon the pun. I just take this one from habit."

Dave tentatively stretched his hand out. As he reached the screen, he felt a slight resistance; then he was beyond it. Suddenly an icy chill touched his spine, as he felt a hand—distinctly nonhuman and possibly even with claws—take the ring from him. There was a long silence. He stared into the screen, but could see nothing beyond its surface. Finally, Maggie spoke.

"That was a little harder than I thought. Here, take it."

The ring was dropped into his hand. It was quite warm. He withdrew his hand and examined the ring. Nothing seemed to have changed about it, so, shrugging, he slipped it on his finger.

"What was that all about?"

Maggie's voice was secretive. "You'll figure it out when the time comes. Now, you'd better go. It's a long walk."

Reluctantly, wondering what it was Maggie had been trying to get him to ask, and what she had done to the ring, and whose claw he had touched, Dave rose and finished packing. Finally he hefted his pack onto his shoulders. "Tiglath? Jenny? Want to come along?" he called.

Tiglath skittered around the corner of the breakfast bar, Jenny following more daintily. She spoke. "Sure. We both want to. We've been looking forward to showing you around."

Dave was touched. He adjusted his pack, then walked to the door, wondering how much of what he carried would be useless, and how much would be priceless. The cats grabbed the remains of their fish and followed him, tails happily in the air. As they stepped out the door, Maggie called out something about a Bandersnatch.

"What did she mean?" asked Dave.

Tiglath, sighing, laid his fish down. "Nothing we can't handle, should the time come. Don't worry about it. Bandersnatches are easy to trick."

At last they set off. They first walked further north, to what used to be a street that ran east-west. Dave noted with interest that there were fewer buildings than back home. When they reached the street, they found it to be a wide dusty trail, with a wooden bridge arching over the stream they were walking beside. On the other side of the trail was a small, noisy outdoor market where the Plum Orchard Shopping Center had been. Replacing Plum Orchard's two towers of black glass were two breathtakingly beautiful, fragile-seeming towers of an iridescent material. It looked as though someone had scooped up a handful of soap bubbles and piled them high. Dave stared at the towers a long time, then finally looked inquiringly at the cats, wondering how safe it was to walk out in the open. They just trotted onto the path and turned west. He followed, trusting their knowledge of this world but wishing he were less impatient to find the Inn. He longed to explore the market, especially after a marvelous scent composed of hundreds of different foods drifted over the trail. Some other time, he promised himself.

They hadn't walked far when something low and fast-moving swooped past. It was gone before Dave had a chance to register more than the impression of something egg-shaped, about the size of a motorcycle. "What was that?" he wondered aloud.

The cats were shaking dust out of their fur. Jenny paused and responded with distaste, "A Cargo. They have no respect."

"What do they do?" Dave asked, suspecting the answer.

"They carry things, and people, too, for a price." It was Tiglath. "But usually the price is too high."

"How do you get one to stop?"

"Stop? 'You might as well try to stop a Bandersnatch!' " Jenny laughed. "But you don't want to use a Cargo anyway. They're low." This seemed to end the topic as far as she was concerned.

"But it's a long walk to—well, to whatever it's called here. And Bob said . . ." Dave began to protest.

Tiglath and Jenny looked at each other thoughtfully. "You're right, Dave. We usually take the short-cuts, but right now you're too solid. You're still a tyro, if you'll excuse me. I guess we'll have to find another way." Tiglath didn't seem too pleased with the idea. "But we don't have to use a Cargo. They're uncomfortable, and rude, and untrusty besides. Not that their cousins, the Bandersnatches, are any better. Just bigger. But I guess we have to choose one of the two. Nothing else is big enough."

"Well, just how do you stop one?" Dave's curiosity was based on more than the problem at hand. How much had mild Charles Dodgson guessed? Had he gotten his information from this world, or had this world taken some of its names from him? Tiglath answered his unspoken thought.

"A little of both. The interaction between worlds is sort of like a feedback system. You make a certain decision, and someone or something else is affected and responds. Which affects you in turn. And somewhere else, something is affected by what you *didn't* do, as well." At Dave's look, Tiglath cut what looked to be a lengthy explanation short. "You'll learn. Everything's related." He began to make a sound suspiciously like humming. "Even us to you," he added casually.

Dave opened his mouth, but didn't get a chance to speak. With a low buzzing roar, a huge version of the Cargo whammed by them—there was no better way to describe the sound. To complete the insult, it swerved ahead of them, making a tight turn, and came back to buzz them again. Dust was everywhere, and the cats were thoroughly disgusted.

"Hey!" Tiglath called in annoyance. "Tired of living?" It was an idle threat, and the Bandersnatch knew it.

"Where's your army?" It surveyed their small group slowly and contemptuously, using a cluster of orange multifaceted eyes near its front end. Or at least Dave presumed it was a front end. "You cats seem to think you own the road, with your fancy friends and all. Slumming this time?" It was an unmistakable reference to Dave, who bristled. Since the cats, especially Jenny, were choosing to ignore the beast, Dave answered, using a hunch and what little he remembered of Lewis Carroll's work.

"You Bandersnatches don't have much of a reputation yourselves."



RANDAMN™

7 terrifying worlds ruled by Chance!

The High Gods are searching for a replacement for Randamn, the powerful Demi-god of random events.

Accept the challenge and you enter a universe of randomness. There are 7 totally different worlds in Hi-res Graphictron animation, including the eerie Graveyard, ancient Stonehenge, and the piratical Undersea land. In each, it will take all your wits and skill to fight and think your way through 7 stages of ever-increasing difficulty. In each, 7 different kinds of opponents stand guard. But which ones you face depends on ....



the spin of the Mystic Slot Machine!

At all first-stages you fight a single randomly chosen enemy. Survive, and the Mystic Slot Machine spins again, to turn up other randomly selected opponents .. until at each world's 7th stage you meet **7 at once.** Which ones? The ghost? The cobra? The death birds? The devil's lightning? Ahhhh, since they carry the curse of Randomness they **may all be different—all the same—or a terrifying mixture.**



But win through, and your reward is great. You become a new Demi-god of the universe. Dare you chance it? Can you stand the agonizing suspense of the Mystic Slot Machine? Then welcome to Randamn .... where only you stay the same—all else is random!

$34.95

Apple II/II+/IIe*
Joystick**/Paddles/Keyboard.
**recommended

Order from your dealer or:

Magnum SOFTWARE

21115 Devonshire St., Suite 337,
Chatsworth, Ca 91311.
(213) 700-0510

(VISA/MASTERCARD/CHECK Ok. Add $1.00 shipping/handling.)
*Apple II/II+/IIe are trademarks of Apple Computer, Inc.

He used the chilliest high-society voice he could muster. "Jabberwocks aren't exactly *it*, you know." It seemed to work. The glittering eyes turned red, and the Bandersnatch seemed to be searching for an appropriate retort. A voice in Dave's mind spoke with quiet approval.

"They're touchy about that. Ever since the Incident, they haven't liked to hear the mention of that name. You couldn't have spoken better." It was Jenny. Dave, guessing that the Bandersnatch couldn't hear her, just nodded, pleased, and let the Bandersnatch rage speechlessly for a while. Then he went on pleasantly.

"And you're known incompetents. Graceless. Ungainly. Unskilled. Can't even make a decent turn." At the Bandersnatch's gargled protest, he continued, "You call that a *turn*? I've known elephants with a shorter turning radius! No, no," he said, shaking his head sadly, "you're simply hopeless. Haven't a chance. As I was saying to Evdna just the other day. . . ."

At that name, the Bandersnatch looked even sorrier. "Evdna?" All his bravado was gone. "You know him?"

"Like a brother," Dave answered, refraining from mentioning that he had none. He inspected his fingernails, then dusted his pants leg. The Bandersnatch turned thoughtful, eyeing Dave out of a side set of multifaceted clusters. After the silence had stretched, it made a slight cough, sort of like a motorcycle engine turning over.

"Um . . . Sir?"

Dave looked bored.

"Sir?"

Finally Dave deigned to answer. "Yes?"

"Evdna's been kind of down on us Bandersnatches lately. We've been looking for ways to get on his good side—er, that is, to make up for what we did. Is there anything I can do for you? Kill a Jaroka? End the life of some small Kher that might have put you out?"

Dave spoke to the cats. "Come on. He's wasting our time." The cats seemed all too happy with this, and started to trot off.

"Wait, Sir! Wait! Perhaps you'd like transport somewhere? The double blue moons of Serighai? Anywhere?"



COMPUTER
The Software Store

Mail Order Only!

WE OFFER . . .
- PROMPT, COURTEOUS SERVICE AND SUPPORT
- WIDE SELECTION
- and GREAT PRICES

for all your **Software** needs:

RECREATION • BUSINESS • EDUCATION • UTILITY
and accessories

SOFTWARE
for APPLE, ATARI, IBM, COM, VIC, TI, TRS, CP/M

WRITE OR CALL FOR FREE CATALOG

The Computer Software Store
2549 CLEVELAND, GRANITE CITY, IL 62040
9 A.M. - 6 P.M. MON.-SAT.

Call 1-800-851-8791 Illinois Res. Call 1-618-876-2155

We accept MasterCard or VISA

Dave halted, intrigued, but kept his voice casual. "Well, we *could* always use the short-cuts. But maybe this once we could let you carry us, just to help you out. If you do a good job, we'll put in a good word with Evdna. Are you willing to take us to the Inn?" He said this last carelessly, as though it really didn't matter where they went, and the Inn was just the first place to pop into his mind. The Bandersnatch's response was gratifying.

"That's all? It's nothing! I'll get you there in no time! Hop in!" And his side swung out, revealing a soft yellow interior. Seats formed as Dave gawked. Gingerly, he stepped in, the cats following. Tiglath's fur was slightly roughed, and he growled quietly that he didn't like this.

Once in, they sat on the seats, which felt like old-fashioned overstuffed couches. The Bandersnatch's voice, sounding muffled, asked cheerfully if everything was okay, then added, as handles appeared, "Hold on tight!" They took off with a bump and a swoop. The cats dug their claws into the yellow stuff, howling their protest. But Dave was exhilarated. It was like riding in a helicopter. After a while, the cats relaxed as the ride smoothed. They all sat in silence awhile, then Dave began to speak, asking the cats questions.

"Where are the blue moons of Serighai?"

The cats looked at him in alarm, and there was a sudden, ominous, listening silence. Dave realized he might have made a mistake, and tried to cover. "I mean, I've heard of them, of course. I just have never been there." The cats looked at him in anguish as the Bandersnatch made a sound like a wounded walrus. They juddered to a halt, and the interior heaved, becoming hard as rock, as a door opened in the Bandersnatch's side.

"Out! Out!" The Bandersnatch cried. "Imposter! The blue moons are Evdna's summer resort!" Too late. Dave realized the magnitude of his mistake. Anyone who knew Evdna "like a brother" would have known that fact. "Out! And may you perish slowly!" They were ejected onto a needled forest floor. The Bandersnatch hovered above them, shouting insults and threats, before roaring off huffily.

Dave and the cats picked themselves up, looking around curiously. It was a quiet redwood forest. Nothing seemed out of place, though it was growing dark. Dave spoke, breaking the silence.

"What did he mean, we wouldn't live long? Is there some danger here?" As he spoke, a slight breeze moved through the branches of the trees. The cats, who had been alertly sniffing the air, shuddered. Jenny spoke.

"Dragon . . ." she said slowly. "Big one, and not too far away." She focused her brown-gold eyes on Dave's deep green ones. "We're in trouble, Dave. It's awake." Dave didn't ask her how she knew. He suddenly realized how much he had been depending on the cats to guide and protect him through this world. To have them worried meant big trouble.

"What do we do?" he asked helplessly. "Run?"

"No!" Tiglath said sharply. "That would only attract attention to us. We walk, slowly and carefully, away, and hope it doesn't notice us. Although," he added hopelessly, "dragons have very sharp hearing."

"There is another way." Jenny sounded unhappy.

"What's that?"

"We could go back home. But. . . ."

"But what, Jenny?"

"But this may be part of your first level objective, and if you quit rather than figure a way out, you may set yourself back or even"—here Jenny sounded particularly woeful—"be disqualified forever. Oh, not forever, but for a long time, and we may be gone, and not have a chance to share this great adventure of exploring worlds with you. So think carefully. We can't help you with this."

Dave looked at Tiglath, who nodded in confirmation. "Well, let's start walking, at least. Maybe something will come up." After sniffing the air again, the cats started walking south, while Dave began thinking furiously. He could smell the sweet cinnamon and nutmeg of the dragon now, which must mean it was awfully close. How was he expected to figure a way out of this without weapons? He made a mental inventory of the potentially useful items in his pack. He had a rope—maybe he could tie the dragon up somehow? He dismissed this idea as ridiculous. What else? Clothing—nothing useful there. Matches? Laughable. His camp knife? Far too short, and he guessed grimly that dragons in this world were probably at least as well armored as those in the fantasy games of his world. Which left his mind. *All right*, Dave told himself, *use it*. There was a faint scraping sound, all too much like that of a heavy, scaled body

RICH AND FAMOUS?

THIS CAN'T BE ABOUT SOFTDISK Magazette

When you haven't got a lot of money and when few people know who you are, there's only one way to hobnob with the elite—name your product *Rich and Famous*.

That's what the *Softdisk* people did when they were casting about for a name for their disk sampler, and it's at least as descriptive a name as Mitsubishi. After all, their sampler is rich in diversions for the Apple owner; and, if the programs on it aren't famous . . . well, at least they aren't infamous either.

Softdisk in its regular monthly format is likewise rich in material.

You get listable, modifiable programs. There's no better way to learn programming than to study someone else's programming techniques.

You also get interactive demos of some of the latest commercial software—allowing you to make buying decisions leisurely in front of your computer.

And you have access to the subscriber bulletin board, where you can develop pen pals with similar interests or get answers to your computer problems. In addition, there's music and novelties.

In fact, the real *Softdisk* is so packed with goodies that it takes both sides of two disks. So what's all the fuss about a single disk *Rich and Famous* sampler? It only costs $3. That's a pretty inexpensive way to explore the *Softdisk* concept in electronic journalism.

Now you can choose from among three ways to try *Softdisk*: There's the regular subscription of $55 for one year, and you get the *Rich and Famous* sampler thrown in free (until January 1, 1984); you can get a single issue for $10; or you can go for the $3 sampler.

Softdisk, 3811 Saint Vincent, Department S11, Shreveport, LA 71108.

Electronic advertising is available on a per-sector basis. It's a low-cost way to reach thousands of Apple owners directly. Subscribers get a 20 percent discount. Call (318) 868-7247 for details.

Apple is a trademark of Apple Computer Inc.

brushing against the rough bark of redwoods. Dave had the feeling that time was running out quickly. His finger itched, and he absently scratched it, only to be pricked as though by a needle.

"Ow!" He swore softly, looking at his ring. He hadn't noticed any sharp edges when he bought it. But his eyes met the alert eyes of his friendly dragon. It opened its mouth, revealing tiny perfect teeth, and hissed so faintly he almost couldn't hear it. Despite their situation, he stared, amazed and delighted. Its minuscule claws held tightly to his finger, and the tail was uncoiling to lash fiercely as it held its small wings aloft. Finally Dave thought the unthinkable: This tiny dragon must be a way to escape the larger one. But how? He spoke to it in a whisper.

"Friendly dragon? Can you help us?"

It nodded proudly.

"How?"

His doubt must have shown; the dragon looked offended.

"Size isn't everything in *any* world." Jenny commented.

"Forgive me." Dave addressed himself to the dragon again. "I accept your aid with thanksgiving." A sudden suspicion seized him. "Maggie?"

The dragon lashed her tail, pleased. He had guessed right. Somehow, the ring was an extension of his computer.

"What do we do?"

The small dragon launched itself into the air. It darted off a short way, then returned, only to dart off again. Dave thought, despite himself, of Lassie films, and got the point. All three set out after the dragon. The forest was nearly dark, and Dave wondered how they could follow a dragon they couldn't see. He needn't have worried. The small dragon began to glow gently, becoming brighter as the light failed completely. It was bright enough to light their path, though incompletely, which was more than adequate for the cats. But Dave stumbled occasionally, muffling oaths and fearing the hot breath of the larger dragon at any moment. It seemed to have scented them (or heard his clumsy stumbles, Dave thought sourly), for the scraping sounds were faster and louder. Occasionally there was a crash as a younger redwood resisted the dragon's impatience and lost. They crossed a small rocky creek out into a clearing, and Dave heard in despair a sound almost at his back. He stopped and turned to face the night. The cats hovered fearfully on the edges of sight, and the small dragon returned. It flew worriedly further back along their trail, then made a small chirruping sound in the dark, where a dark shadow bulked. It flew excitedly back to Dave, stroked against his cheek—like a cat, Dave thought to himself—then flew back into the dark. Dave looked questioningly at the cats. Their fur smoothed, and they came to sit by him, licking themselves unconcernedly. There was a long silence. Gradually, Dave became aware of a faint fresh breeze chilling his cheeks, and of the small sounds of the forest—crickets chirping, a small brook murmuring quietly to itself, the soft sough of wind in the upper branches of the trees. Ahead, through the trees, was the faint glow of the Ring Dragon, waxing and waning, revealing glimpses of a glittering scaled hide and large gleaming eyes that shifted from the dark forest to Dave and the cats, then back again. Wonder and awe took Dave's heart.

Finally the small dragon zipped back to Dave and indicated that he was to follow it back to the large dragon. Dave, reluctant, shook his head. The Ring Dragon hovered a moment, then tugged insistently at his jacket. Dave yielded and walked fearfully back. He trusted the small dragon, but he wasn't so sure about the larger one. As he approached, he got a full view of the larger dragon, and he caught his breath. It was tremendous, but more than that it was stunningly beautiful. Small puffs of steam came out of its nostrils, and the heat of its body was making more steam rise from the damp ground, wreathing the dragon in an eerie mist that coiled caressingly about the dragon's form before gradually vanishing as it rose higher. Dave had an overpowering urge to stroke those sleek scales. Then his eyes met the flaming ruby of the eyes of the dragon, and he was lost to anything else. A voice sounded in his mind, speaking with a hint of amusement.

Soooo. Younger Sister tells me you have taken her into hearth and home as Special Companion, and thus I am forbidden you as meat. Pity. You look tasty. If she weren't kin, I might be tempted to ignore the Edict. It's been a while since I've tasted of Man. Your race grows wiser and more wily as it approaches its Coming of Age. You play new games, to better purposes, it seems. There was the faint impression of a huge gusty sigh. *Ah well. Go in peace. Your journey's almost ended—and begun.*

Pilots asked us for it.
Pilots and nonpilots will love it!

Fly Us!



We are pleased to present our new
AIRSIM-3™ Airplane Simulator . . .

Ground scenery: San Diego to San Francisco with many airfields.

Aerobatic: Loops, rolls, stalls and more.

Instrumentation: Standard basic instrument panel, plus everything required for instrument flying. HSI, ADF, VOR's, NDB's, approach markers, ILS, DME, radar.

User definable: Set up your own navigational situations, with runway scenery, wind conditions and nav-aid locations.

Educational: Special features for exploring navigational-instrument behavior.

Engine sound if Mockingboard (not included) is installed.

Optional Feature: Store flight data in RAM card. Useful for research purposes. Contact us for details.

Apple II, II+, IIe, Apple /// in Apple II emulation mode. 48K RAM, paddles or joystick. Recommended for ages 14 to Adult.

$44.95 Mass. residents add 5% sales tax. Overseas shipping add $5.00. See your dealer or contact us directly. Visa, Mastercard.

ALSO AVAILABLE:

AIRSIM-1 Flight Simulator
now $24.95



$40.00

Mind Systems™ corporation
P.O. Box 506
Northampton, MA 01061
(413) 586-6463

Copyright © 1983 by Mind Systems Corporation

Trademarks:
Apple, Apple Computer Co.
Mockingboard, Sweet Micro Systems
AIRSIM, Mind Systems Corporation

SOFTALK GOES CANADIAN!



The good freres Bob and Doug McKenzie aren't any funnier than have been *Softalk*'s attempts to find a way to send free trial subscriptions into Canada. After stops and starts, valiant attempts, and pitiable efforts to find an inexpensive way to make Canadians the same offer we make U.S. subscribers, we've finally faced the inevitable. There is no inexpensive way.

Armed with that knowledge, we're following a hallowed *Softalk* tradition and ignoring it. Therefore:

Effective with the January issue

Softalk will finally do what it should have done months ago . . . make free trial subscriptions available to Canadian Apple owners. Jot your Apple serial number down and send it, along with your name and mailing address, to:

Canadian Subs
Softalk
Box 60, Dept. A
North Hollywood, CA 91603

Apple is a trademark of Apple Computer, Inc.

She waited patiently for Dave to step back. He didn't.

Is there something more? There was a tinge of impatience to the dragon's mind-voice this time.

Greatly daring, Dave ventured to think back, *I'd like to touch you.* The dragon's eyes opened wider.

Indeed! She sounded offended, then softened. *You are flattering, Youngling. You may approach. Not many can say they have touched me and lived.* She shifted, advancing a massive shoulder. Dave stepped nearer, tentatively, and stretched his hand out. The dragon was warm, but not unbearably so. The scales were more flexible than they seemed from a distance, and had a soft golden sheen to them. He stroked across several, feeling the play of hard muscles underneath as she shifted her leg. Dave gazed up at her amused eyes, and thought, *Marvelous. You're so beautiful. I will always treasure this experience. Thank you.* His gratitude was genuine, though compounded with relief at escaping death.

The dragon was pleased and touched. *Youngling.* She curved her neck, bending her horned nose around to her shoulder, and scratched. A scale, large as Dave's spread-out hand, came loose. She tugged at it with her teeth, then held it out to Dave. *No one has thanked me for long and long. Not,* she added wryly, *that I often give them reason or chance. But nonetheless. . . .* She dropped the scale into his hand, then cut off his thanks with a wave of a claw. *Don't thank me yet, Small One. Just use it wisely. It can be as dangerous as I myself.* There was more amusement in her mind-voice. *Now farewell. And back off.* The Ring Dragon tugged at Dave, who was stilled by awe. At last he shook free of his wonder, thinking more clearly again, and backed away as the dragon moved into the clearing. He stumbled over a burl, and this brought him the rest of the way to reality.

A long way back came the last thought of the great dragon. He and the cats and the Ring Dragon obeyed. The large dragon unfurled her magnificent wings, then with a loud snap leaped into the air. It was as though she caught fire in the act, for her body suddenly blazed with a golden light. The scale in Dave's hand gave an answering flare and grew hot a moment, then cooled and darkened again. Dave watched the dragon burn brightly above the trees as she climbed higher. Finally she straightened and flew out toward the ocean. The trees blocked his view after a while, and he sighed, lost in beauty.

"Well. You have been honored beyond anything you might have expected." This was Jenny.

"Have I? I guess I have. But what do I do with this?" Dave held up the scale.

"There are many things you can do with it," Tiglath started to say, interrupting himself with a wide, teeth-clicking yawn. "But I'm beat, and we still have a couple hours to go before we reach the Inn. Do you want to sack out, and finish in the morning? Or continue now, and sleep in a warm bed tonight?"

"The warm bed sounds good, but I'm beat, too. Jenny?"

"Whatever you two want."

It was settled, then. They set up camp—really just Dave's down sleeping bag, into which he slipped, while the cats curled on top. The Ring Dragon curled around Dave's finger and coiled into immobility, but there was an awareness to its eyes that reassured Dave. As Jenny snuggled near Dave's chest, she murmured sleepily, "Mmmmm. I've always loved this thing. And I never puncture it, like you've accused me of doing." Abruptly, she was asleep. Though tired, Dave lay awake a long while, excited and a little afraid. At last he too slipped into sleep, waking now and then to the sensation of a soft bed, but too tired to wonder about it. In the morning they were in the forest still, and Dave decided the night's wakings must have been dreams. The cats were cheerful, both having had good hunting. When they were through with their horrendous crackings and chewings, which Dave politely ignored as he fixed oatmeal, they cleaned camp and left.

It was a beautiful morning for hiking, and the greater part was down gently sloping hills that skirted the teal-blue ocean. The faint sound of waves ceaselessly pulling over sand joined with the calls of birds—many new to Dave—and the occasional far whoosh of a Cargo or a Bandersnatch, running along the wide trail that edged the sea cliffs. Once, as they crossed a small creek that ate rapidly downward through the bluffs to the sea, allowing them a glimpse of a small beach, Dave could have sworn he saw a walrus walking upright, daintily shucking oysters, deep in conversation with a man wearing overalls, but he decided to let that pass. He had an Inn to find.

At long last they came to the low hill above what would have been Santa Ilusivo back home. It was also a city here, but very changed. Dave stood and stared a long time, amused, realizing that, like Bob, the inhabitants must have done some rearranging to get things to their taste. There was a haphazardness to it, though, as if not everyone quite knew what he or she was doing, or why, or had thought out its consequences. The Cooper House was the most coherent—maybe because it had been there longer, dating, at home, from the age when a man's house was his castle—and Dave fixed on its turrets and battlements as he and the cats hurried down to it. As they came into town, they walked among tents and geodesic domes, dwellings with outhouses for plumbing side by side with dwellings that looked totally self-contained. The streets were full of people trading, gossiping, happily arguing over the relative merits of places Dave had never heard of, or just walking about thoughtfully. No two people were dressed alike, either. *The last stronghold of the individualist,* Dave thought to himself, but he wondered. Some of the rearrangements seemed misguided. As they came closer to the castle, the character of the town changed, becoming more consistently medieval.

The Happy Dragon fit the area well. As Dave had suspected from the start, in this world it was the Inn—a large, brawling, table-pounding place filled with adventurers. No one seemed to notice when he and the cats slipped in, but after they sat down, a tall figure in scarlet robes thunked down two tankards and four sausages. The cats seized one sausage each and retired under the table, growling with delight. It was Evdna.

"So, you made it. And," he looked at a small sundial strapped to his wrist, "in record time."

Dave stopped chewing sausage long enough to look at the sundial. Evdna laughed and waved his wrist. The sundial vanished. "Just a joke," he added. "Any questions?"

Dave took a long, cool pull of ale. "Yes, about a million. But for starters: What's this all about? Does this have anything to do with the Society the redhead mentioned last time I was here?"

Evdna gave him a considering look. "You're a sharp one. I think you have a good chance to finish the Great Quest—very few have gone that far in one life." He leaned forward slightly. "Yes. The Society is made of a group of people who explore other worlds, mostly for fun, though sometimes with more serious missions." At Dave's look, he continued, "I gather you want to join the Society. You have just completed the first trial—getting here. There is one more task you must accomplish. You may have noticed that near your home in this world is a market overlooked by two towers of glass. Within each of those towers lives a witch. One of them, I don't know which, has my daughter, who went there for lessons but hasn't come back. A few others have tried to retrieve her for me, but failed. Even *my* magic is useless against the defenses of the two towers. I ask you to bring her back to me." He paused, grim lines around his mouth. "There is a catch, of course: You must do it on your own, and you'll need to learn how to use the short-cuts. Which are tricky. And, most important, while doing all this, you must not allow yourself to be corrupted by the powers you will find developing in yourself. Wait," he held a hand up to halt Dave's protest. "I know. This sounds like a particularly difficult task to accomplish. But I have faith in you. You have already shown extraordinary promise. I warn you, though, that the nature of altering your focus involves an alteration of your control, and sometimes you will forget who you are and what you are, unless you exert a great deal of effort. If, during such a time, you choose to league, shall we say, with the Others, who will be only too glad for such a recruit, we will, regretfully but firmly, oppose you. Once you have safely negotiated this task, you will be welcomed into the Society and given license to roam—with, if you like, quests to accomplish. What do you say?"

Dave thought of the questions he had concerning Maggie, and what she might be and know in this world; of two mysteriously beautiful glass towers and what might await him there; of the awe and sense of magic talking to the Great Dragon had instilled in him. And finally, of what tedium waited for him back home. "Yes," he answered simply, "I'll do it." Faint cheers came from underneath the table, and Evdna smiled in anticipation. This one would truly do it, he thought to himself. Dave would bring Elaine back. After that—who knows? Surely then the Great Quest would be as nothing. And he was content. ■

To be continued. . . .

PLAY
STRIP BLACKJACK
WITH 'CHYRL'



The Program Supplies "Chyrl" in Hi-Res Color with Sound
A Little Naughty
Watch "Chyrl" Take It OFF...All Off!!

LIMITED OFFER

Buy Strip Blackjack at the regular price and recieve a $24.95 picture disk FREE. This program, with picture disk, gives you 7 beautiful players—2 male and 5 female.
Previous customers update-send program disk plus $10.00.

FREE! PICTURE DISK WITH PURCHASE OF STRIP BLACKJACK

NOT FOR CHILDREN

2 DISKS $29.95

SEX-O-GRAPHIC
BASED ON THE THEORY OF BIORHYTHMS

Theory of Biorhythms states that there are three cycles in everyone's life that start when they are born. The Physical, Emotional, and the Intellectual. This program is used to find your location on life's biorhythm scale for all three of these cycles. In addition, your SEX-O-GRAPHIC is also computed as part of your biorhythm cycle. It's all done in Hi-Res COLOR with sound. A complete monthly chart is provided. At any time, you have the option of printing the Hi-Res display on an MX80* Printer with Graphics. Now you can know your SEX-O-GRAPHIC every day. This could give you that extra confidence to win new friends, improve business relations or influence that loved one.

★ START EVERY DAY WITH YOUR SEX-O-GRAPHID ★
Disk Price $19.95

*MX80 is a trademark of EPSON

COMPRESS/EXPAND
A MUST FOR ANY SERIOUS PROGRAMMER

Most Apple* picture files take up to 34 disk sectors of storage. This limits the number of pictures that can be saved on one disk. The SANSOFT PLUS COMPRESS/EXPAND system allows you to process any standard picture file and compress it into a much smaller file that requires less disk space. Some pictures can be compressed by as much as 90% requiring only a few sectors depending on picture complexity. Since less sectors are used, Pictures load faster requiring less disk time. A small routine requiring less than 256 words can be loaded into anyone of several locations and be called from your programs allowing amazing results as your high quality pictures appear in less time with NO loss of quality. This program comes on an unprotected disk that can be copied and backed up.

★ NO PROGRAMMER SHOUD BE WITHOUT THIS ONE ★
Price $20.00

LUCKY SLOT
A COLORFUL FUN SLOT MACHINE

This one is better than a trip to Las Vegas. It turns your computer into a SLOT MACHINE that allows you to decide how much you want to bet and you can even buy odds. With each try at buying odds, there is always the chance that the magic arrow will step all the way to the first slot window and that window will be a WILD CARD that will match almost anything. And, of course, there is that magical SUPER CARD that sometimes appears and you are an automatic winner. There's more sound and action and excitement than ever when you play LUCKY SLOT. So get ready to place your bet on the wildest, funnest SUPER SLOT MACHINE of all time—LUCKY SLOT. High winning players names saved on disk to challenge future players. ★ MAKES A NICE GIFT ★
Disk Price $24.95 SALE PRICE $14.95

UPPER AND LOWER CASE KIT FOR APPLE II +
DISPLAY FULL UPPER AND lower CASE

With this kit and the simple instructions, your Apple II+ can be made to display full upper and lower case. Works great with some of the most popular text editing programs. The kit has easy, friendly instructions. Kits include Eprom with full charter set, and instructions.
KIT PRICE $19.95

MasterCard VISA

SANSOFT PLUS
P.O. Box 590228
Houston, Texas 77259-0228

We welcome Telephone orders (713) 482-6898
ELECTRONIC ORDER TAKER 24 hours a day. 365 days a year.
C.O.D. OR USE YOUR VISA OR MASTER CARD OR ORDER BY MAIL WITH CHECK, OR MONEY ORDER. WHEN USING YOUR CHARGE CARDS BY PHONE OR MAIL PLEASE GIVE CARD NUMBER AND EXP. DATE.
—FREE GIFT SHIPPED WITH EACH ORDER—
ALL ORDERS PROCESSED WITHIN 24 HOURS. ADD $2.00 FIRST CLASS U.S. POSTAGE AND HANDLING. ALL PROGRAMS RUN ON APPLE II, II+, IIE*, or FRANKLIN**
*APPLE IS A TRADEMARK OF APPLE COMPUTER CO.,
**FRANKLIN IS A TRADEMARK FOR FRANKLIN COMPUTER CORP.

Instant one-button color printing.



Press here.

It's just that easy! Any time you want to print what's on your Apple's screen just hit the copy button on your Transtar 315 color printer with our PICS card installed, and it's done! No special programming, no lengthy code sequences, no need to exit your program! Just press the button and it prints!

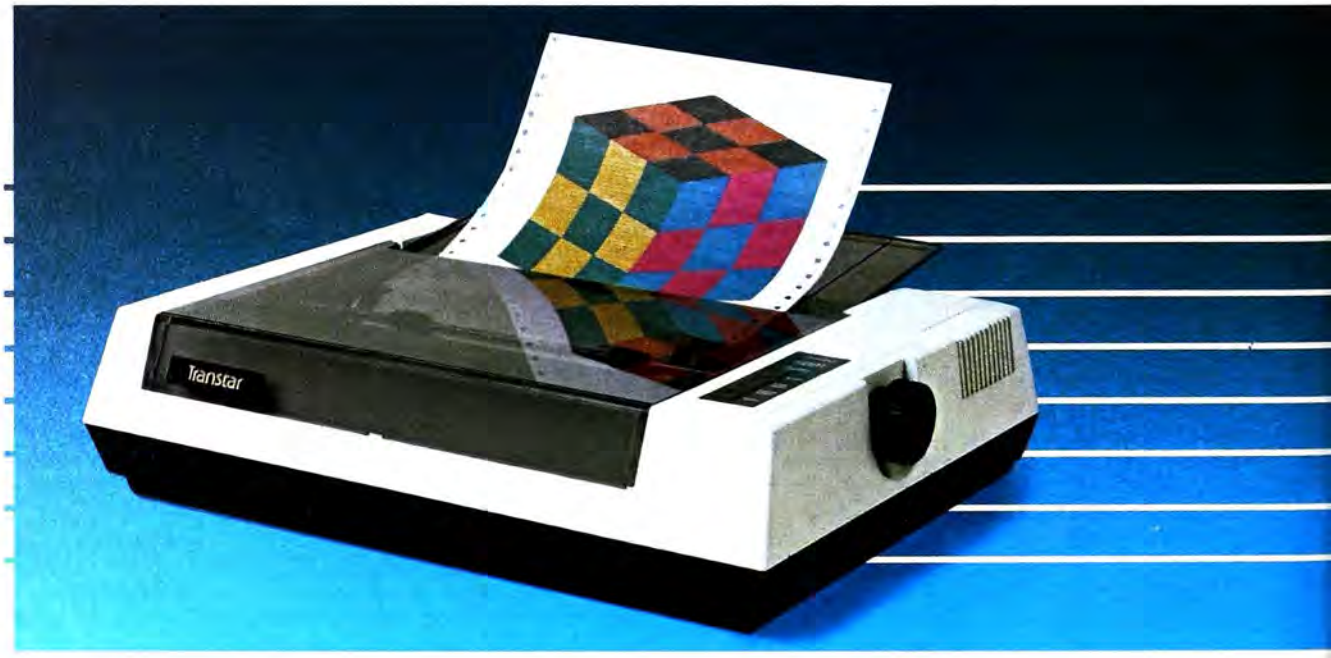
By adding the optional PICS card to your $599 Transtar 315 color printer, you've opened up a whole new world of easy color printing. For the first time ever, our PICS parallel interface card enables you to screendump virtually any program -- graphics, charts, games -- even copy-protected software! Specially designed only for the Apple II, II+, IIe, and Franklin computers, the Transtar 315 PICS card does the work of a parallel card and a lot more and costs only $119.95.

At the push of a button, Transtar's innovative new 4-color diagonal ribbon will print up to 7 colors and more than 30 shades in a single pass.

The 315 is precision-built to exacting standards by Seikosha, the most experienced company of the famous Seiko group--recognized worldwide for quality and dependability. In fact, one of the nicest things about Transtar's 6-month warranty on parts and labor is that you'll probably never use it!

Innovative, inexpensive, dependable, easy: the Transtar 315. Color printing has never looked so good!

Only $599.



*PICS cards are currently available for Apples and Franklins. PICS cards for other computers will be available in the future.

Transtar
A **Vivitar.** Computer Product

P.O. Box C-96975, Bellevue, WA 98009

Softalk Presents The Bestsellers

Wizardry and *Ultima* are the McDonald's and Burger King of software. They aren't just series of programs, they're franchises. They aren't just listings of code, they're licenses to make money.

The third in each series has been recently released, and the publishers are laughing all the way to the bank. *Legacy of Llylgamyn*, follow-up to *Wizardry* and *Knight of Diamonds*, may have set an Apple record for the most sales in a two-week time span. *Exodus:Ultima III* is likewise flying off the shelves. September was a most auspicious month for fantasy gamers.

Legacy didn't hit the market until the middle of September, but it's been the dominant entertainment program since its release. Even though it had only a two-week sales window, *Legacy* was so hot that it jumped to second place on the Top Thirty, one of the best showings by a new product ever.

Only *Apple Galaxian* from Broderbund and *Space Eggs* from Sirius have done better, each coming from nowhere to be the top seller in its first month of release. And only two programs have duplicated *Legacy*'s second-place feat in their first month of existence. One was *Zaxxon* just a few months ago; the other was *Knight of Diamonds*.

While *Legacy* was fulfilling its destiny, *Ultima III* was providing a different kind of success story for Origin Systems. No publisher has ever cracked the top ten Apple sellers in its first full month of distribution of its first product until Origin Systems.

Of course, Origin Systems had a head start, in that it was bringing out the third in a series of popular fantasy games, rather than actually starting from scratch. But that doesn't dim some of the luster of the achievement. Now the question is whether Origin can maintain that pace with new offerings.

One of the interesting facets of the success of *Legacy* and *Exodus* is that they were the two highest-priced new entertainment offerings during the month. Their success indicates that quality, not price, is still the determining factor in the buying decisions of a majority of Apple owners.

But there was an interesting counterpoint to that theory in September as well. Penguin Software had two entertainment programs jump into the specialty lists. *The Quest* scored fifth on the Adventure 5 and *Minit Man* landed in the middle of the Arcade 10. Penguin has taken its pricing structure the other way, lowering the price of its entertainment software to $19.95.

So it was in the penthouse and the bargain basement that success could be found in September.

Actually, most sales turned up toward the end of the month. But the one-time foundation of the Apple entertainment market—the arcade game—is diminishing in influence with each passing month. There are various reasons put forth by the experts on why that might be, ranging from quality considerations to lack of new concepts. But there's no argument about the effect. A year ago, *Choplifter* dropped from first place in the Top Thirty to second, beginning a long, slow decline. Today, it's but a shadow of its former sales profile, but that shadow was strong enough to move from fourth to third among arcade games.

It's clear that the right mix of quality, innovativeness, and pricing is not being discovered by the arcade-game publishers. Perhaps the changing demographics of the Apple market will forever preclude the huge

Apple III

This Month	Last Month	
1.	2.	**VisiCalc:Advanced Version**, Software Arts/ Dan Bricklin and Robert Frankston, VisiCorp
2.	6.	**Word Juggler**, Tim Gill, Quark
3.	1.	**Apple Writer III**, Paul Lutus, Apple Computer
4.	—	**Lexicheck**, Tim Gill, Quark
5.	—	**PFS:File**, John Page and D.D. Roberts, Software Publishing Corporation
6.	3.	**The Catalyst**, Tim Gill, Quark
7.	—	**VisiCalc III**, Software Arts/Dan Bricklin and Robert Frankston, VisiCorp
8.	4.	**PFS:Report**, John Page, Software Publishing Corporation
9.	7.	**Quick File III**, Rupert Lissner, Apple Computer
10.	—	**VersaForm**, Joseph Landau, Applied Software Technology
	5.	**General Ledger**, Great Plains Software

Arcade 10

This Month	Last Month	
1.	1.	**Lode Runner**, Doug Smith, Broderbund Software
2.	2.	**Zaxxon**, John Garcia, Datasoft
3.	4.	**Choplifter**, Dan Gorlin, Broderbund Software
4.	3.	**Miner 2049er**, Mike Livesay and Bill Hogue, Micro Fun
5.	—	**Minit Man**, Greg Malone, Penguin Software
6.	5.	**Hard Hat Mack**, Michael Abbott and Matthew Alexander, Electronic Arts
7.	—	**Stellar 7**, Damon Slye, Software Entertainment Company
8.	10.	**Pinball Construction Set**, Bill Budge, Electronic Arts
9.	6.	**Frogger**, Olaf Lubeck, Sierra On-Line
10.	8.	**Beagle Bag**, Bert Kersey, Beagle Bros

"Compared to other checkbook programs, CHECKMINDER™ is a real pleasure to use."
Rick Taylor, President, Sleeping Bear Software

CheckMinder™ is by far the easiest and most efficient personal and small business checkbook package available for the Apple.

- rapid data entry
- 999 categories
- multiple accounts
- prints a variety of reports
- program in memory, no module loading

Ask for CheckMinder at your Apple dealer or order direct from us.

SLEEPING BEAR SOFTWARE™
1124 Fuhrman Road
Cincinnati, Ohio 45215
513/769-0692

$69.95 Send check or M.O. plus $3.00 shipping. Ohio residents add 5.5% sales tax. VISA or MC accepted. Dealer inquiries invited.

* Apple is a trademark of Apple Computer, Inc.
* CheckMinder runs on Apple II+ or IIe or /// and 1 disk drive.

Betcha Can't Play Just One!



Drol™





You will soon come to expect the unexpected in the hilarious and challenging underground dream world of Drol. A little red-headed girl and her propeller-beanied brother have been lured by a witch doctor's curse into the multi-leveled ruins of a lost civilization. It's your task — as a hero equipped with a rocket backpack and full-screen radar scope — to dodge hopping scorpions, monsters and snakes, flying turkeys, swords, daggers, arrows, magnets, witch doctors, and vacuum cleaners(!) in your attempts to rescue the children and reunite them with their mother. Each new level of game play is full of surprises.

Drol's wry sense of humor and amazingly detailed cartoon imagery, make this game a charmer!

For the Apple II/II + /IIe, Atari, and Commodore 64 home computers in disk format.



Gumball™





Hours of fun await you at the Sticky Sole Gumball Factory — where you'll be working against the clock to sort a tasty collection of colorful gumballs.

Your job may seem sweet at first, but after you've discovered the explosive-laced gumballs (placed by over-zealous dental assistants) or met your irritating supervisor (who is eager to undo your best efforts), you may feel that you have bitten off more than you can chew.

If, against all odds, you meet your day's quota, you'll be promptly rewarded with a promotion (to a more challenging position) and an amusing cartoon showing your higher standard of living.

Gumball — a new fast action game filled with colorful and delicious surprises.

For the Apple II/II + /IIe.

Irresistible Fun From Broderbund!

Broderbund Software™

Discover the Difference

17 PAUL DRIVE, SAN RAFAEL, CALIFORNIA 94903

Apple II/II + /IIe, Atari, and Commodore 64 are trademarks of Apple Computer, Inc., Atari, Inc., Commodore Electronics Ltd., respectively.

successes of the past, but the successes of *Lode Runner*, *Zaxxon*, *Miner 2049er*, and *Choplifter* seem to indicate differently.

Nowhere are those changing demographics more apparent than in the area of word processing. *Apple Writer IIe* still is the dominant program in the Apple market, but the competition is stiffening. Whereas *Apple Writer IIe* seemed to be the outstanding word processing program after the introduction of the Apple IIe, now it is not so perceived.

Other word processors are attracting attention from the boatload of new Apple owners. Numerically, the change charts this way: Two months ago, *Apple Writer IIe* had more than double the sales of all other word processors combined. That translates to better than a 67 percent market share. Today, its market share is under 50 percent and dropping.

What seems to be the case is not so much that the sales of *Apple Writer IIe* are dropping off as that a lot more word processing is being done on Apples and the people doing that word processing are being a lot more discriminating about what programs they choose to use. There's always been a wide variety of software from which to choose; the fact that the choices are now more widely dispersed implies a more knowledgeable and serious approach to the subject on the part of new Apple owners. The days of the impulse buy seem to have passed.

There was lots of movement within the Word Processing 10 during September. *Sensible Speller* continues as the dominant proofreading package and moved into third behind *Apple Writer IIe* and *Bank Street Writer*. *Magic Window II* made a big jump to fourth. *WordStar* dropped to fifth.

As if on cue, *Word Handler* moved to sixth. Last year at this time,

Word Processors 10

This Month	Last Month	
1.	1.	**Apple Writer IIe**, Paul Lutus, Apple Computer
2.	2.	**Bank Street Writer**, Gene Kuzmiak and the Bank Street College of Education, Broderbund Software
3.	4.	**Sensible Speller**, Charles Hartley, Sensible Software
4.	9.	**Magic Window II**, Bill Depew, Artsci
5.	3.	**WordStar**, MicroPro
6.	7.	**Word Handler**, Leonard Elekman, Silicon Valley Systems
7.	—	**Word Juggler IIe**, Tim Gill, Quark
8.	—	**PFS:Write**, Sam Edwards, Brad Crain, and Ed Mitchell, Software Publishing Corporation
9.	10.	**Screen Writer II**, David Kidwell, Sierra On-Line
10.	—	**Super-Text Professional**, Ed Zaron, Muse

Home Education 10

This Month	Last Month	
1.	1.	**MasterType**, Bruce Zweig, Lightning Software
2.	6.	**Typing Tutor**, Dick Ainsworth, Al Baker, and Image Producers, Microsoft
3.	2.	**Apple Logo**, Logo Computer Systems, Apple Computer
4.	7.	**Early Games for Young Children**, John Paulson, Counterpoint Software
5.	—	**Rocky's Boots**, Warren Robinett and Leslie Grimm, The Learning Company
6.	9.	**Algebra I**, Edu-Ware Services
7.	3.	**Computer SAT**, Harcourt Brace Jovanovich
8.	—	**Type Attack**, Jim Hauser and Ernie Brock, Sirius Software
9.	—	**Stickybear ABC**, Richard Hefter, Jack Rice, Spencer Howe, and Jamie and Steve Worthington, Xerox Education Publications
10.	—	**In Search of the Most Amazing Thing**, Tom Snyder, Spinnaker Software

Why Buy Computer Games, When You Can Design Your Own.



Until now, you've only played great computer games. Now it's time to create your own with PDI's BASIC programming tutorials—**The New Step By Step** and **Step By Step Two.**

Our Step By Step programs are the easiest and quickest way for you to learn how to use your Apple computer and the Applesoft language.

The New Step By Step
A Programming Course for Beginners.

The great thing about the New Step By Step is that it's comprehensive. In fact, we've included something that no other BASIC tutorial comes with. All our Step By Step programs include an audio cassette with the voice of a real person, who introduces BASIC concepts and explains sample programs as they are displayed on your monitor.

The program will teach you everything from PRINT instructions to FOR-NEXT loops. And when your finished you'll be able to create programs for word games, low-resolution graphics and more.

Step By Step Two
Teaches Intermediate Basic Programming.

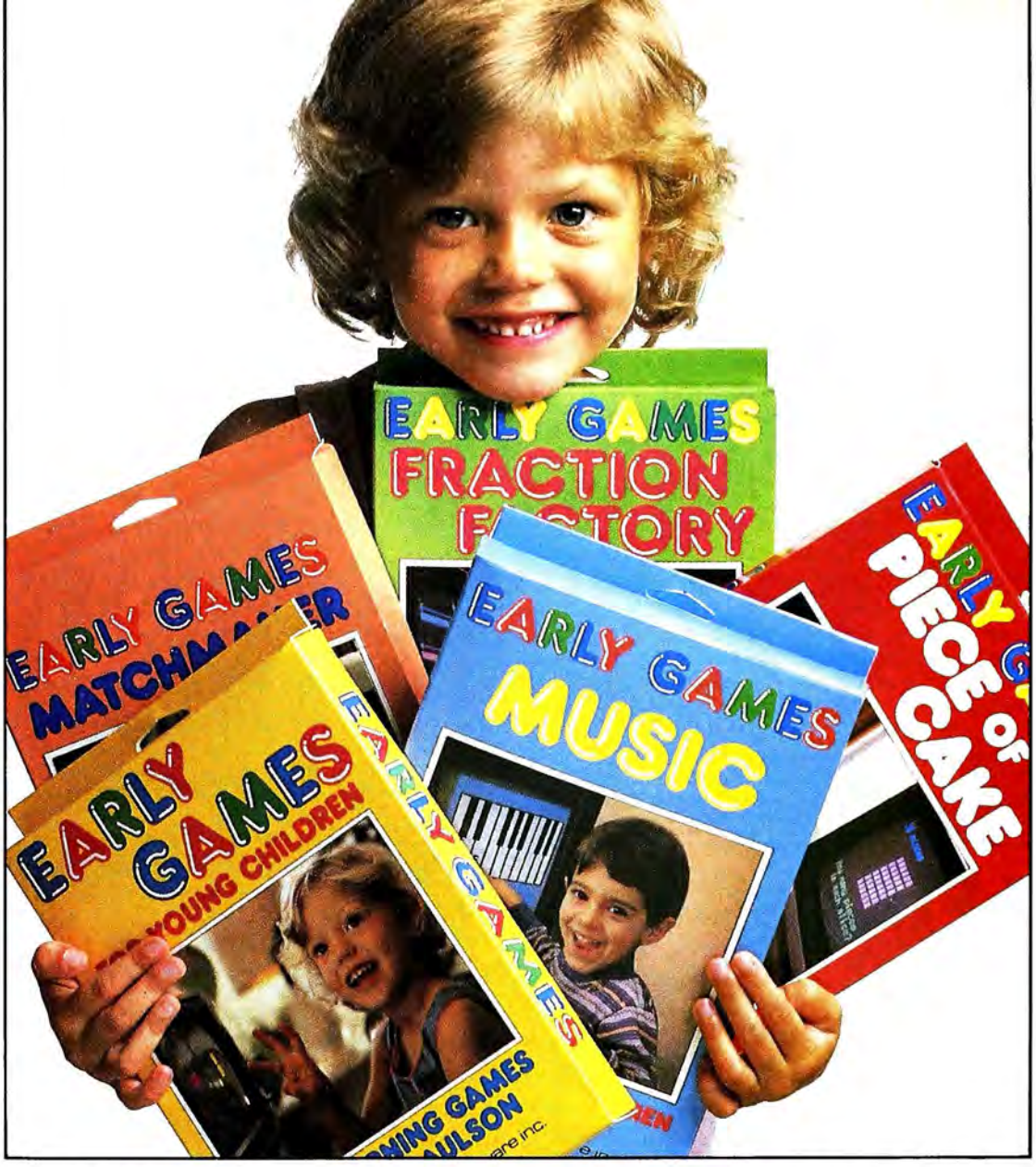
After you've learned everything there is to know on the New Step By Step, you won't want to stop learning. And PDI is ready with Step By Step Two.

Step By Step Two covers such areas as PEEK and POKE, memory maps and hi-res graphics, and will teach you enough for you to create full computer graphics, animation and sound effects. We even throw in a sample program so you can see what it takes to create a maze game.

All Step By Step programs come complete with workbooks, practice problems and backup disks. They're boxed in a sturdy vinyl package that stores anywhere.

PDI

Program Design, Inc. 95 East Putnam Avenue Greenwich, CT 06830



THE BEST REASON FOR HAVING A HOME COMPUTER.

Your children...to give them a headstart with computers. That's why we created the Early Games series for them. We're educators as well as computer specialists. We create games that teach children important skills.

There are five programs in the Early Games series. **Early Games for Young Children** is a set of nine entertaining activities for children 2½ to 6. They can work with numbers and letters and create colorful pictures. **Matchmaker** uses shapes, sizes, directions and colors to help children develop reading readiness skills. Children ages 5 to 12 can learn to play melodies with Early Games **Music. Piece of Cake** turns math problems into, well, a piece of cake. And **Fraction Factory** takes the work out of fractions.

Early Games feature multiple activities, easy to use picture menus, and colorful graphics. The games are fun, children love to play them! That's why they learn from them.

And that's the best reason for having a home computer.

For the name of your nearest dealer call 800-328-1223

CSI counterpoint software, inc.
4005 west sixty-fifth street • minneapolis, mn 55435
(612) 926-7888 • (800) 328-1223

Word Handler started a strong surge that carried it into the Top Thirty before the introduction of the Apple IIe cooled it off. It looks like the program's bidding to repeat its holiday success this year.

Word Juggler IIe, already prepared to handle ProDOS if or when Apple decides to bless us with it, made a strong push into seventh. *PFS:Write*, almost ignored in the Apple market because of its strong success in the IBM pc market, got eighth. And *Screen Writer II* and *Super-Text Professional* each experienced sales surges.

Even though *Word Juggler IIe* has a long way to go to catch *Apple Writer IIe*, the two programs compete much more evenly in the Apple III market. In September, it was *Word Juggler* besting *Apple Writer III* as the two programs finished second and third respectively. *VisiCalc: Advanced Version* was the bestselling Apple III program.

Quark, publisher of *Word Juggler*, had quite a month in the Apple III market. In addition to *Word Juggler*, *Lexicheck* nailed fourth and *The Catalyst* grabbed sixth.

Every area of entertainment software saw new entries.

Minit Man from Penguin tallied fifth among the arcade games and *Stellar 7* from Software Entertainment Company ended up, appropriately enough, in seventh.

Infocom reasserted its dominance in the adventure category, placing four of the top five programs. *Planetfall* was its new entry that captured fourth position behind the *Zork* trilogy. But, as had been the case all year, there was one hi-res adventure to prevent Infocom from making a clean sweep of the category. This time it was Penguin's *The Quest*, which came in fifth.

The biggest boost in sales, other than in the fantasy category, came in strategy games. *Castle Wolfenstein* not only regained the lead in the category, but also regained the Top Thirty. Strategic Simulations grabbed the next two places with *Broadsides* and *Eagles*, its latest entries. Diehards *Flight Simulator* and *Sargon II* rounded out the list.

Adventure 5

This Month	Last Month	
1.	1.	**Zork I**, Infocom
2.	5.	**Zork II**, Infocom
3.	—	**Zork III**, Infocom
4.	—	**Planetfall**, Steve Meretzky, Infocom
5.	—	**The Quest**, Dallas Snell, Joe Toler, and Joel Ellis Rea, Penguin Software

Strategy 5

This Month	Last Month	
1.	3.	**Castle Wolfenstein**, Silas Warner, Muse
2.	—	**Broadsides**, Wayne Garris, Strategic Simulations
	—	**Eagles**, Robert Raymond, Strategic Simulations
4.	1.	**Flight Simulator**, Bruce Artwick, SubLogic
	4.	**Sargon II**, Dan and Kathe Spracklen, Hayden Software

Fantasy 5

This Month	Last Month	
1.	—	**Legacy of Llylgamyn**, Andrew Greenberg and Robert Woodhead, Sir-tech
2.	2.	**Exodus:Ultima III**, Lord British, Origin Systems
3.	1.	**Wizardry**, Andrew Greenberg and Robert Woodhead, Sir-tech
4.	3.	**Ultima II**, Lord British, Sierra On-Line
5.	4.	**Knight of Diamonds**, Andrew Greenberg and Robert Woodhead, Sir-tech

APPLE CASES

A series of studies in the application of Apples to business and other serious stuff.

– CASE 1 –

The importance of a good business card.

THE SITUATION: You have an ordinary Apple II or Apple IIe. You don't have megabucks to spend. You need extraordinary performance from word processing, spreadsheets, data bases, communications and your other applications programs.

QUESTION: How will a new business card help?

ANSWER: Choose your business card from the VISION-80 family of products.

VISION 80 Column Text Card

A sophisticated, easy to use 80 column card rated No 1 by reviewers around the world

80 Column Display:
Largest available 9 * 10 dot matrix, giving a superb set of 128 upper & lower case characters, & a crisp set of line/block graphics, with software switching between 40 and 80 column screens

Compatibility:
Fully compatible with Applesoft BASIC, PASCAL, MICROSOFT CP/M, FORTRAN and ASSEMBLER
Fully compatible with most quality word processing, spreadsheet, data base and applications programs

Communications:
Full smart terminal emulation, file transfer & save, and screen print facilities

Installation:
Installed in seconds into the standard Apple II or IIe, with no hardware or cabling changes for normal Apple operation

All this and a set of powerful utility programs.

NOW ONLY $195.00

VISION-128 128K Memory Expansion Card

A powerful RAM card which increases the available memory space of your Apple II or IIe from 64K to an incredible 192K

Compatibility:
Fully compatible with all Apple software, and 'transparent' to the user

VisiCalc Enhancement:
Provides all the extra bytes for storing large VisiCalc models in RAM

Automatic Operation
Utility programs can automatically activate the card when more RAM memory is required

NOW ONLY $295.00

VISION-VCE
VisiCalc Expander
PREBOOT DISK
Automatic VisiCalc preboot procedures for both the Apple II & Apple IIe, utilizing VISION-80 VISION-128K
ONLY $69.00

VISION-AWII
Apple Writer II
PREBOOT DISK
Automatic APPLE WRITER II preboot procedures for both the Apple II & Apple IIe
ONLY $69.00

VISION-128 UTIL
Utility Program Disk
A large variety of utilities for the expanded 192K memory, including the VISION-DRIVE diskette emulator
ONLY $79.00

FOR REAL SAVINGS, BUY A COMBO PACK:
VISION-COMBO PACK
VISION-80 + VISION-128 + VISION-VCE
ONLY $495 !

Action-Research Northwest
11442 Marine View Drive, SW
Seattle, WA 98146
(206) 241-1645 Source: CL2542

the Communications Integrator™



ASCII EXPRESS™
"THE PROFESSIONAL"

Apple* Communications Software

At Southwestern Data Systems we've brought state of the art software technology to the communications area with AE-PRO (ASCII EXPRESS "THE PROFESSIONAL"), a sophisticated and professional package designed for business people, scientists, students and home users alike!

AE-PRO, operating under Apple's DOS 3.3, eliminates the common difficulties in data communications by providing a thoroughly integrated software package to manage a complete communications system, from each hardware component to each of the software functions needed for efficient modem use.

AE-PRO supports all popular Apple compatible modems, 80 column cards and printer cards. A special buffer allows use with slower printers so that you will not lose characters on the screen while in operation.

Advanced software features help manage systems dial-up, system parameter adjustment, log-on sequences, data capture and sign-off, all effortlessly and virtually automatic.

Integration is the secret to how AE-PRO will make modem use easy and efficient for you. No other package will combine your available hardware with such and extensive range of communications functions as AE-PRO. IN ADDITION THE AE-PRO PKG INCLUDES VALUABLE OFFERS TO:

- **BRS/AFTER DARK**
- **COMPUSERVE**
- **DELPHI**
- **NEWSNET**

For complete details on putting the AE-PRO communications integrator to work on your Apple, contact your local dealer or Southwestern Data Systems today.

southwestern data systems™ SDS

10761 Woodside Ave., Suite E, P.O. Box 582-S Santee, CA 92071 (619) 562-3221

*Apple is a trademark of Apple Computer, Inc.

*Communications Integrator & AE-PRO are trademarks of Southwestern Data Systems

The fantasy category remained an all-*Wizardry* and Lord British affair. Sir-tech placed all three *Wizardry* scenarios on the list. *Ultima II*, published by Sierra On-Line, joined its sequel on the chart.

There was a lot of juggling among educational programs, but no new software made the top ten. The educational arena has been the area of fastest sales growth and has become the most competitive of all. Where you once couldn't get a computer retailer to carry anything educational,

Business 10

This Month	Last Month	
1.	1.	**VisiCalc**, Software Arts/Dan Bricklin and Robert Frankston, VisiCorp
2.	3.	**Quick File IIe**, Rupert Lissner, Apple Computer
3.	2.	**PFS:File**, John Page and D.D. Roberts, Software Publishing Corporation
4.	4.	**Multiplan**, Microsoft
5.	5.	**PFS:Report**, John Page, Software Publishing Corporation
6.	6.	**BPI General Ledger**, John Moss and Ken Debower, Apple Computer
7.	—	**The Incredible Jack**, Business Solutions
8.	9.	**BPI Accounts Receivable**, John Moss and Ken Debower, Apple Computer
9.	7.	**PFS:Graph**, Bessie Chin and Stephen Hill, Software Publishing Corporation
10.	9.	**BPI Accounts Payable**, John Moss and Ken Debower, Apple Computer

Hobby 10

This Month	Last Month	
1.	3.	**Bag of Tricks**, Don Worth and Pieter Lechner, Quality Software
2.	1.	**DOS Boss**, Bert Kersey and Jack Cassidy, Beagle Bros
	10.	**Zoom Grafix**, Dav Holle, Phoenix Software
4.	7.	**Apple Pascal**, Apple Computer
5.	4.	**Beagle Basic**, Mark Simonsen, Beagle Bros
6.	8.	**Pronto DOS**, Tom Weishaar, Beagle Bros
7.	2.	**Double-Take**, Mark Simonsen, Beagle Bros
8.	9.	**Utility City**, Bert Kersey, Beagle Bros
9.	6.	**Apple Mechanic**, Bert Kersey, Beagle Bros
10.	—	**Apple Mechanic Typefaces**, Bert Kersey, Beagle Bros

Home 10

This Month	Last Month	
1.	1.	**Home Accountant**, Bob Schoenburg, Larry Grodin, and Steve Pollack, Continental Software
2.	2.	**ASCII Express:The Professional**, Bill Blue and Mark Robbins, Southwestern Data Systems
3.	4.	**Micro Cookbook**, Brian E. Skiba, Virtual Combinatics
4.	10.	**Know Your Apple IIe**, Muse
5.	6.	**Transend 1**, Tim Dygert and Bob Kniskern, Transend Corporation
	—	**Dollars and Sense**, Frank E. Mullin, Monogram
7.	—	**Transend 2**, Tim Dygert and Bob Kniskern, Transend Corporation
8.	6.	**The Accountant**, Ernest Forman, Decision Support Systems
9.	3.	**Hayes Terminal Program**, Hayes Microcomputer Products
	8.	**Data Capture 4.0**, George McClellan and David Hughes, Southeastern Software

From the company that brought you **Beneath Apple DOS**...

Understanding the Apple II

by Jim Sather

Quality Software is pleased to present the definitive source of information about how the Apple works. Jim Sather has conducted an exhaustive analysis of the inner workings of the Apple II computer. Now he has documented his findings in a way that will benefit everyone interested in microcomputer technology. You will be amazed at the amount of valuable material packed into the 320 pages of *Understanding the Apple II*.



Understanding the Apple II —

- Documents all motherboard circuits, including some discussed nowhere else
- Describes disk controller operation, including previously undocumented details of the logic state sequencer
- Explains RAM and ROM card operation
- Reveals previously unnoticed features of Apple graphics
- Contains 23 software and hardware Application Notes including shift key mod, disk write protect mod, and EPROM mods
- Includes a chapter on maintenance that provides simple troubleshooting steps

If you are at all curious about how the Apple II works, you are sure to find *Understanding the Apple II* very valuable. It is an ideal book for a microcomputer fundamentals course based on the Apple, with its understandable bus diagrams and significant technical content. Contains over 100 figures and illustrations, including more than 20 schematics, ten appendixes, plus glossary and index.

All for only $22.95

Buy a copy of *Understanding the Apple II* at your favorite computer shop or bookstore. Or call us for information on how to order.

QS QUALITY SOFTWARE
6660 Reseda Blvd., Suite 105, Reseda, CA 91335
(213) 344-6599

Although some information in *Understanding the Apple II*, including that on disk controller operation, applies to the Apple IIe, this book primarily describes Apple II computers sold prior to 1983. A companion text, *Understanding the Apple IIe*, will be available the first quarter of 1984.

Apple II and Apple IIe are registered trademarks of Apple Computer, Inc.

Softalk Presents The Bestsellers

the product list of education products actually selling in any significant volume is now longer than any other category.

In keeping with the emphasis on word processing programs, three typing aids, led by *MasterType*, sold well. *Apple Logo* continues to outsell its competitors by a wide majority. The biggest jump in sales was for *Rocky's Boots*, one of the most user-challenging programs on the list. It jumped to fifth.

In the home market, *Dollars and Sense* is starting to make an impact. It's not nearly ready to challenge *Home Accountant*, but it did jump into a tie for fifth position. That means that the two bestselling home accounting packages have their genesis in the laid-back land of southern California. Whether that implies that most Apple owners' checkbooks will soon be out of balance or whether the land of sun and fun has an unearned reputation for frivolity probably depends on your perspective.

It was pretty much business as usual for the Business 10. There was a little shuffling of positions, but the only newcomer to the list was really a former resident returning—*The Incredible Jack*.

It was definitely business as usual in the Hobby 10, for which there's growing grassroots support for renaming it the Beagle Bros catalog. Seven of the ten entries again stemmed from the Beagle factory in San Diego. The shocker was that none of them was in first place. *Bag of Tricks* managed to nab the lead position and *Zoom Grafix* tied for second. Other than *Apple Pascal*, everything else went to the dogs. ■

Apple-franchised retail stores representing approximately 4.78 percent of all sales of Apple and Apple-related products volunteered to participate in the poll.

Respondents were contacted early in October to ascertain their sales for the month of September.

The only criterion for inclusion on the list was the number of units sold—such other criteria as quality of product, profitability to the computer store, and personal preferences of the individual respondents were not considered.

Respondents in October represented every geographical area of the continental United States.

Results of the responses were tabulated using a formula that resulted in the index number to the left of the program name in the Top Thirty listing. The index number is an arbitrary measure of relative strength of the programs listed. Index numbers are correlative only to the month in which they are printed; readers cannot assume that an index rating of 50 in one month represents equivalent sales to an index number of 50 in another month.

Probability of statistical error is plus or minus 3.78 percent, which translates roughly into the theoretical possibility of a change of 4.11 points, plus or minus, in any index number.



COMPUTER STAND
Designed for the Apple® with a built in shelf for your drives and a top platform tilted slightly forward to improve manitor visibility and reduces glare. The sides are slotted for airflow. The best stand available for your Apple.
APTEK 101 **$29.50**

PRINTER STAND
(not shown)
A needed addition to all printers. Includes a shelf and enough storage room under the printer to store a full 4" of paper.
APTEK 216 (fits MX-80 type) **$27.50**
APTEK 221 (fits MX-100 type) **$29.50**

SOUND CONTROL PRINTER STAND
Includes a tough acrylic cover for sound reduction, acoustic foam and special padding reduce bothersome printer noise. Holds 4" of paper under the printer (center feed too) this stand will become a valuable accessary!
APTEK 320 (MX-80 type) **$79.50**
APTEK 325 (MX-100 type) **$89.50**

FLOPPY DISK RACK
Attractive and durable with a hinged acrylic cover for maximum disk protection. Reduces dust related disk errors! Designed for over fifty 5" disks.
APTEK 505 **$29.50**

Send payment to: Apogee Designs Ltd., 3100 Fallscliff Rd., Baltimore, MD 21211. Phone (301) 235-7523. Master Card and Visa. Add $2.50 for freight per unit (Continental U.S.) Add 5% sales tax for MD residents.

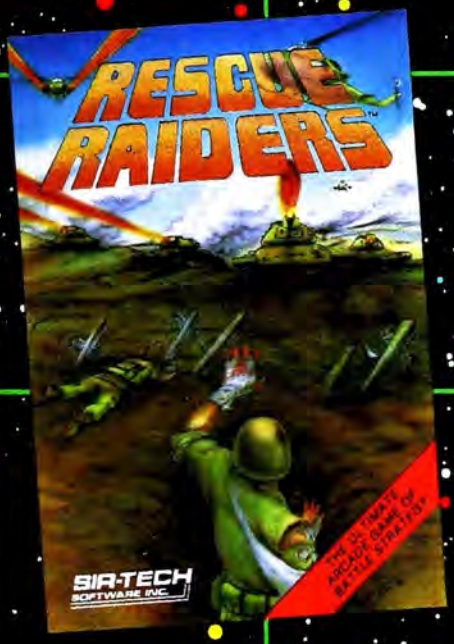
APOGEE DESIGNS LTD.

The Top Thirty

This Month	Last Month	Index	
1.	1.	160.47	**Apple Writer IIe**, Paul Lutus, Apple Computer
2.	—	96.37	**Legacy of Llylgamyn**, Andrew Greenberg and Robert Woodhead, Sir-tech
3.	5.	86.04	**Lode Runner**, Doug Smith, Broderbund Software
4.	2.	67.11	**VisiCalc**, Software Arts/Dan Bricklin and Robert Frankston, VisiCorp
5.	10.	63.67	**MasterType**, Bruce Zweig, Lightning Software
6.	29.	63.24	**Exodus:Ultima III**, Lord British, Origin Systems
7.	3.	61.52	**Bank Street Writer**, Gene Kuzmiak and the Bank Street College of Education, Broderbund Software
8.	7.	60.66	**Quick File IIe**, Rupert Lissner, Apple Computer
9.	4.	58.94	**PFS:File**, John Page and D.D. Roberts, Software Publishing Corporation
10.	6.	56.35	**Zaxxon**, John Garcia, Datasoft
11.	8.	44.31	**Home Accountant**, Bob Schoenburg, Larry Grodin, and Steve Pollack, Continental Software
12.	9.	43.45	**Multiplan**, Microsoft
13.	19.	31.83	**Sensible Speller**, Charles Hartley, Sensible Software
14.	11.	31.40	**PFS:Report**, John Page, Software Publishing Corporation
15.	—	27.10	**Typing Tutor**, Dick Ainsworth, Al Baker, and Image Producers, Microsoft
16.	15.	25.81	**Apple Logo**, Logo Computer Systems, Apple Computer
	12.	25.81	**Wizardry**, Andrew Greenberg and Robert Woodhead, Sir-tech
18.	—	24.52	**Magic Window II**, Bill Depew, Artsci
19.	14.	24.09	**WordStar**, MicroPro
20.	—	23.23	**Word Handler**, Leonard Elekman, Silicon Valley Systems
21.	20.	21.94	**Choplifter**, Dan Gorlin, Broderbund Software
	21.	21.94	**Zork I**, Infocom
23.	—	21.51	**Castle Wolfenstein**, Silas Warner, Muse
24.	—	21.08	**Early Games for Young Children**, John Paulson, Counterpoint Software
25.	13.	20.22	**Miner 2049er**, Mike Livesay and Bill Hogue, Micro Fun
26.	27.	18.49	**Bag of Tricks**, Don Worth and Pieter Lechner, Quality Software
27.	16.	18.06	**DOS Boss**, Bert Kersey and Jack Cassidy, Beagle Bros
	—	18.06	**Zoom Grafix**, Dav Holle, Phoenix Software
29.	—	17.63	**Apple Pascal**, Apple Computer
30.	17.	17.20	**BPI General Ledger**, John Moss and Ken Debower, Apple Computer

SIR-TECH
SOFTWARE INC.

THE SOFTWARE INNOVATORS INTRODUCE



RESCUE RAIDERS

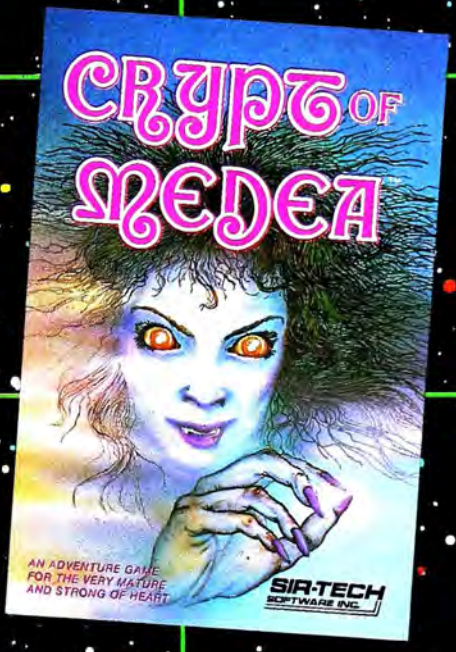
Now, experience the ultimate combat strategy game. Spread over the face of Europe are two overwhelming forces, locked in a titanic struggle.

From your command chopper you must coordinate a strategy with infantry, tanks, bunkers and bases, and much, much more. Your objective is to eliminate a force as formidable and complex as yours, conquer its bases and thus liberate the continent.

CRYPT OF MEDEA

This terror filled adventure game begins on a dark, stormy night. You find refuge in the only available shelter—an eerie crypt. Suddenly, you are trapped in MEDEA'S forbidden tomb!

All the dangers and horrors you ever imagined await you in the hidden passages and secret rooms of Medea's crypt. You must avoid the ghoulish obstacles and secrets of the deep passages...or face eternal entombment in the Crypt of Medea.



OTHER SIR-TECH SOFTWARE SENSATIONS

POLICE ARTIST



Three games that challenge and strengthen your ability to accurately see and remember a face. If you always forget a face and want to do something about it, Police Artist is for you! For children & adults.

The better you play, the harder to pick the right face from the police lineup.

GALACTIC ATTACK



"Galactic Attack is one of those rare games that combines long range strategy and immediate arcade-type action." --SOFTALK

"Galactic Attack is not a quick, shoot 'em up game, but a campaign requiring quick reactions and careful planning." --CREATIVE COMPUTING

STAR MAZE



The fate of the galaxy is in your hands. The challenge is to navigate within the Star Maze to its heart. Therein lie hidden the jewels of the universe—sparkling crystals of immense energy. One problem awaits you....the aliens guarding the jewels!

ALL SOFTWARE AVAILABLE FOR THE APPLE AT YOUR FAVORITE RETAILER

SIR-TECH SOFTWARE INC., 6 MAIN STREET
OGDENSBURG, NEW YORK 13669, (315) 393-6633

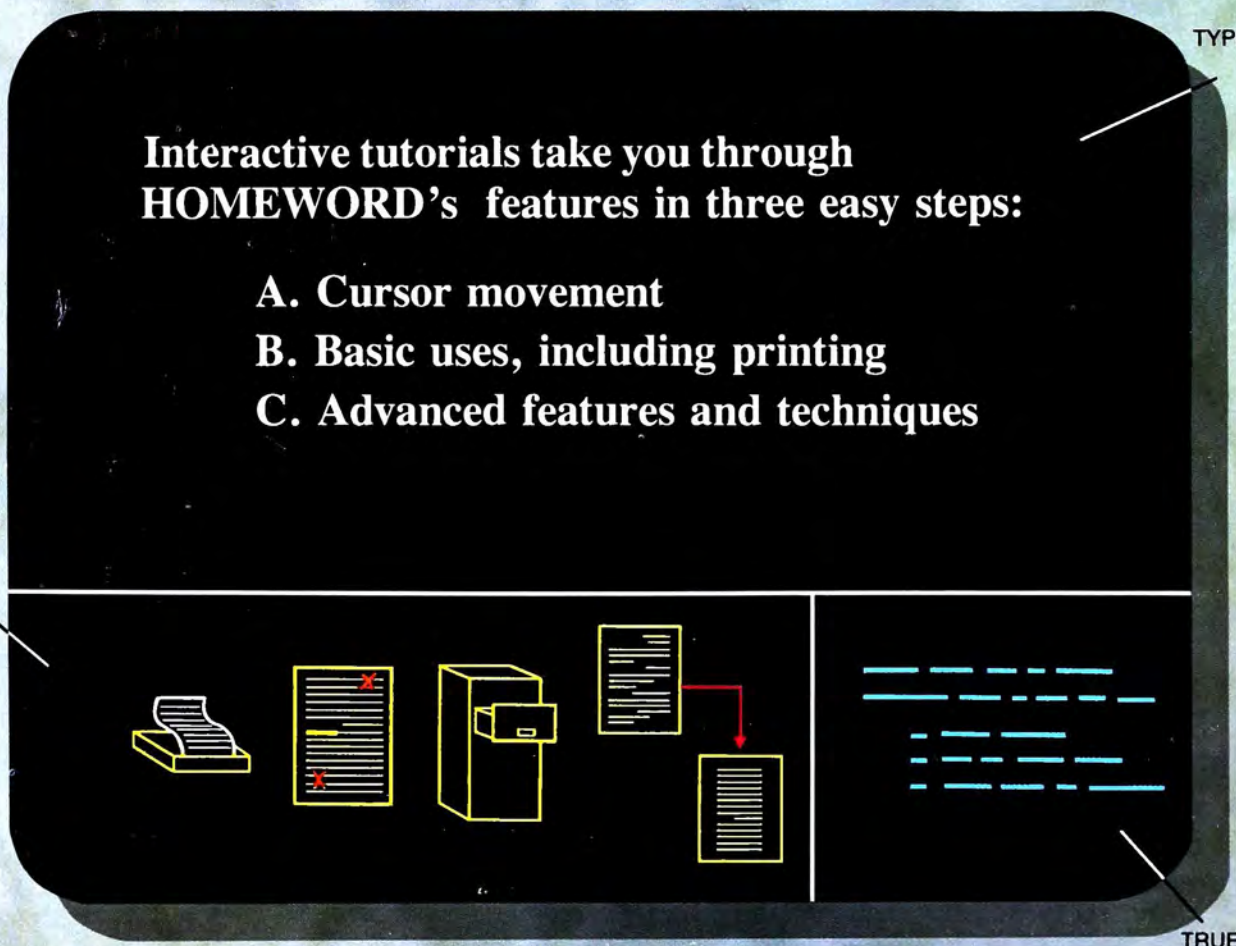
Apple is a registered trademark of Apple Computer, Inc.

Introducing the first word processor made especially for the home.

HOMEWORD™

The Personal Word Processor

The Personal Word Processor



- $49.95
- Easy to Use
- Easy to Learn

Simple, versatile, effective. . . HomeWord makes putting your ideas on paper a snap. With no complicated commands to memorize, anyone can learn to use HomeWord in minutes.

An easy-to-follow audio cassette introduces you to HomeWord's operation.

The slim instruction booklet is written in plain English to help you find answers fast.

Familiar symbols, or "icons," lead you through the system. To edit, file, design your page layout, print, etc., you simply touch a key.

Joystick controls. . .a fun and easy way to edit and design. HomeWord's optional joystick control is just the enticement to get kids writing. Available for the Apple II, II+ and IIe. 64K required. Watch for Com 64 and Atari versions.

Sierra ON-LINE

SIERRA ON-LINE BUILDING COARSEGOLD CA 93614
209 683 6858

TM designates a trademark of Sierra On-Line, Inc. © 1983 Sierra On-Line, Inc