

October  
1984  
\$2.95

# THE Color Computer



For Users of TRS-80™ Color Computers **MAGAZINE**

## At Home With The Color Computer

- Organized Stocks
- Easy Shopping
- Indexed Magazines

## Education

- Cross Traffic by Dale Lear
- Isaac Asimov: Robots and Education



**Jake's ROM Disassembly —  
The Final 4 Sections!**

612024 RWE 1762KK096 245L MAR85  
A ROMEN 10#FE  
1762 KING JAMES PKY  
WESTLAKE OH 44145

\*™ Tandy Corporation

# The HJL-57 Keyboard

Now available for all models,  
including CoCo 2.



## Compare it with the rest. Then, buy the best.

If you've been thinking about spending good money on a new keyboard for your Color Computer, why not get a good keyboard for your money?

Designed from scratch, the HJL-57 Professional Keyboard is built to unlock ALL the potential performance of your Color Computer. Now, you can do real word processing and sail through lengthy listings...with maximum speed; minimum errors.

At \$79.95, the HJL-57 is reasonably priced, but you can find other CoCo keyboards for a few dollars less. So, before you buy, we suggest that you compare.

### Compare Design.

The ergonomically-superior HJL-57 has sculptured, low profile keycaps; and the three-color layout is identical to the original CoCo keyboard.

### Compare Construction.

The HJL-57 has a rigidized aluminum baseplate for solid, no-flex mounting. Switch contacts are rated for 100 million cycles minimum, and covered by a spill-proof membrane.

### Compare Performance.

Offering more than full-travel, bounce-proof keyswitches, the HJL-57 has RFI/EMI shielding that eliminates irritating noise on displays; and four user-definable function keys (one latchable), specially-positioned to avoid inadvertent actuation.

### Free Function Key Program

Your HJL-57 kit includes usage instructions and decimal codes produced by the function keys, plus a free sample program that defines the function keys as follows: F1 = Screen dump to printer. F2 = Repeat key (latching). F3 = Lower case upper case flip (if you have lower case capability). F4 = Control key; subtracts 64 from the ASCII value of any key pressed. Runs on disc or tape; extended or standard Basic.

### Compare Installation.

Carefully engineered for easy installation, the HJL-57 requires no soldering, drilling or gluing. Simply plug it in and drop it right on the original CoCo mounting posts. Kit includes a

new bezel for a totally finished conversion.

### Compare Warranties.

The HJL-57 is built so well, it carries a full, one-year warranty. And, it is sold with an exclusive 15-day money-back guarantee.

### Compare Value.

You know that a bargain is a bargain only so long as it lasts. If you shop carefully, we think you will agree...The HJL-57 is the last keyboard your CoCo will ever need. And that's real value.

### Order Today.

Only \$79.95, the HJL-57 is available for immediate shipment for either the original Color Computer (sold prior to October, 1982) or the F-version and TDP-100 (introduced in October, 1982), and the new 64K CoCo. **Now also available for CoCo 2.**

Call Toll Free

**1-800-828-6968**

In New York 1-800-462-4891



PRODUCTS

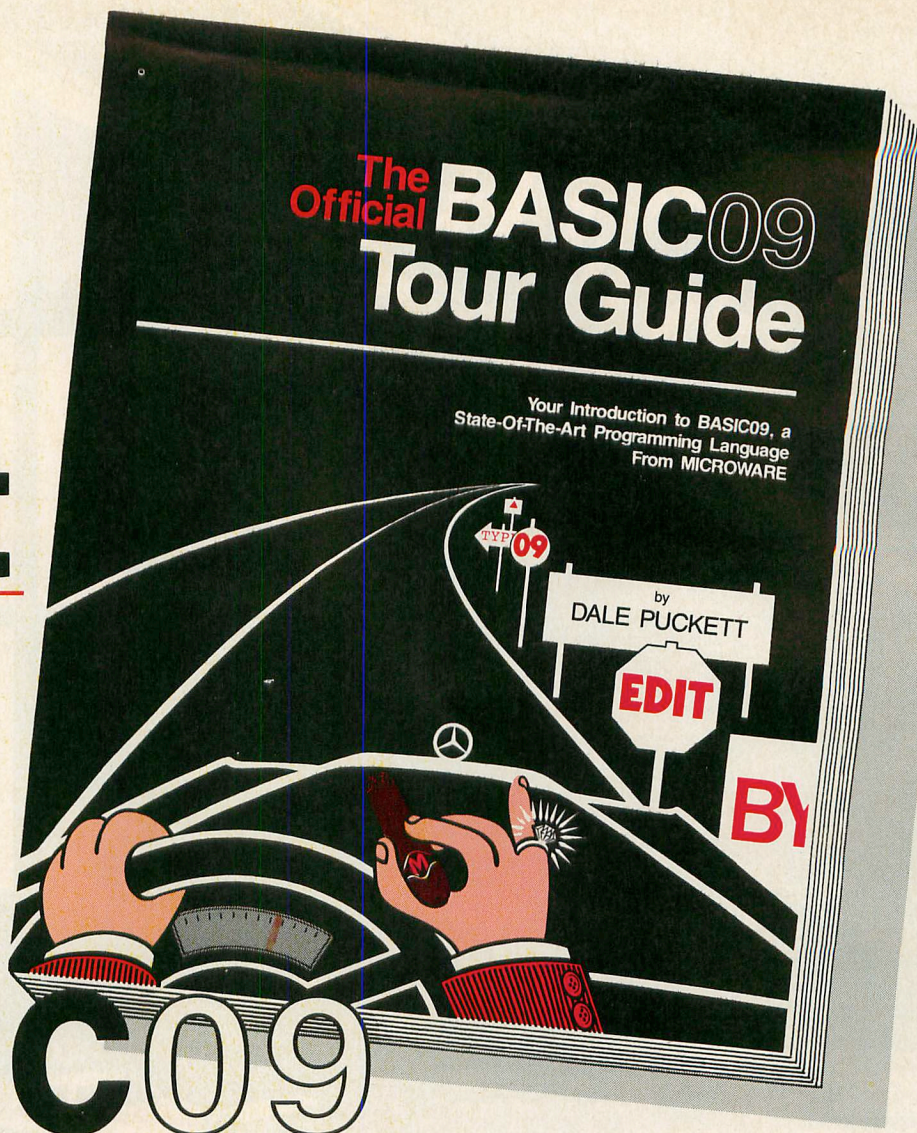
Div. of Touchstone Technology Inc.  
955 Buffalo Road • P.O. Box 24954  
Rochester, New York 14624

Telephone: (716) 235-8358

Ordering Information: Specify model (Original, F-version, or CoCo 2). Payment by C.O.D., check, MasterCard or Visa. Credit card customers include complete card number and expiration date. Add \$2.00 for shipping (\$3.50 for Canada). New York state residents add 7% sales tax. Dealer Inquiries Invited.

Circle No. 33 on Reader Service Card

# Get the most out of BASIC09



The **OFFICIAL BASIC09 TOUR GUIDE** is skillfully written in a friendly and easy-to-read style. Just perfect for those new to computers and to BASIC09. It's also a *valuable reference book* for programmers, engineers, students and hobbyists, providing an in-depth look at BASIC09 plus an overview of the OS-9 operating system. Comprehensive reference sections on BASIC09 and OS-9 commands are also included.

The book "maps" out your route through the Mercedes of Basics . . . BASIC09 and puts you in the driver's seat in no time. Fasten your seatbelt, sit back and enjoy the ride to perfecting your programming skills.

## MICROWARE . . .

The **OFFICIAL BASIC09 TOUR GUIDE** comes from the people who wrote BASIC09. As the leader in 6809 system software, we at MICROWARE care about our users and want to help you get the most from our products.

### It's Easy to Order.

Phone orders are accepted from MasterCard or VISA cardholders or for COD shipment. You can also order by mail using the coupon below. Quantity discounts are available to educational organizations and dealers. For further information contact Microware.

MICROWARE SYSTEMS CORPORATION  
P.O. Box 4865  
Des Moines, IA 50304, U.S.A.  
Phone (515) 279-8844  
Telex 910-520-2535

Please send \_\_\_\_\_ copies of the **Basic09 Tour Guide** book at \$18.95 each. Add \$2.00 for UPS shipping in the U.S. or \$5.00 for overseas air mail per book. Iowa residents add 4% sales tax.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

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

I have enclosed a check  
 Charge to my bank card:  
MasterCard  VISA   
Card Number \_\_\_\_\_  
Expiration \_\_\_\_\_

*microware*<sup>®</sup>  
*microware*

Specialists in system software for 68-family microprocessors since 1977.

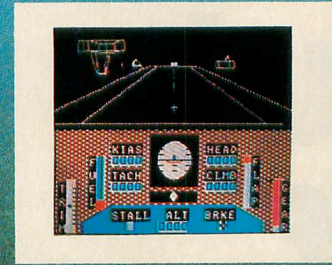
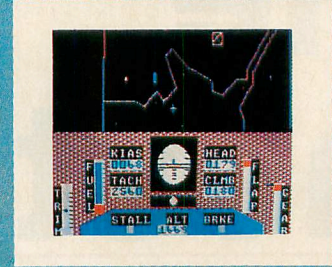
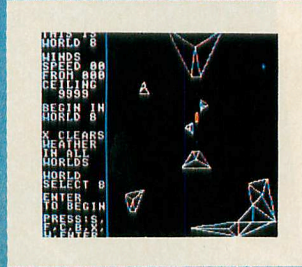
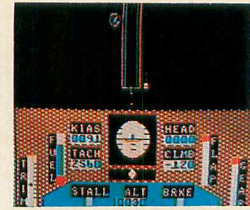
OS-9 and BASIC09 are trademarks of Microware and Motorola.

Circle No. 87 on Reader Service Card

New From Tom Mix. . .

# Worlds of FLIGHT

Not A Game — A Very Realistic Flight Simulation



WORLDS OF FLIGHT (WOF) is a "view" oriented flight simulation for the TRS-80 Color Computer, written entirely in Machine Language. "View" oriented means that the pilot may determine his or her position by actually viewing the surrounding landmarks as opposed to using instruments which sense navigational references. This is a major departure from "instrument only" simulations which can be achieved through BASIC programs. Most instrument maneuvers and procedures may be practiced. The craft is a light-weight, single-engine airplane with low wings. A nose wheel which is both steerable and retractable is also modeled. Some aerobatics are possible including sustained inverted flight, aileron rolls, spins and stalls.



## The Experts Say:

C.L. — "As a pilot I found "Flight" to be an outstanding simulation.

M.H. — "No one has created a more realistic flight simulator for the Color Computer."

D. HOOPER, pilot for major airline — "An outstanding flying experience. Very realistic."

JOYSTICKS REQUIRED

32K MACHINE LANGUAGE

TAPE \$29.95

DISK \$32.95



**TOM MIX SOFTWARE**

4285 BRADFORD N.E.  
GRAND RAPIDS, MI 49506

•ADD \$1.50 POSTAGE & HANDLING•TOP ROYALTIES PAID•

•MICHIGAN RESIDENTS ADD 4% SALES TAX•  
LOOKING FOR NEW SOFTWARE



**ARCADE ACTION GAMES**



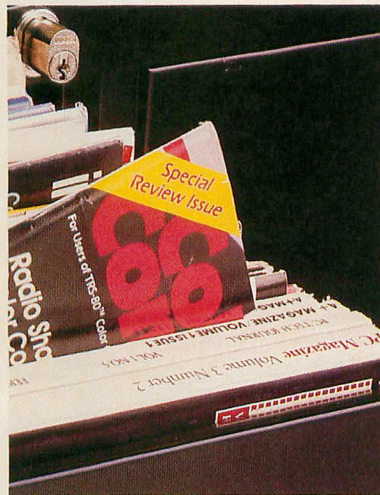
TO ORDER CALL 616/957-0444

# THE Color Computer MAGAZINE

Vol. 2, No. 8  
October 1984



page 15



page 30



page 43

## FEATURES

- 15/Color Computing For Kids** by Jean Plesser (Education)  
Learning to input and output files.
- 
- 21/Sorcerer's Puzzles** by Richard Ramella (Game)  
The Sorcerer's series comes to an end.
- 
- 30/Mag File** by Jean Plesser (Home Management)  
Here's a handy magazine organizer.
- 
- 38/Custom Color** by Dennis Kitz (Hardware)  
A good-bye batch of updates.
- 
- 43/Shopping List** by Richard Hoegberg (Home Management)  
Saving steps in the supermarket.
- 
- 48/Stocks** by John Allsbrook (Business)  
How to manage your fortune.
- 
- 55/Cross Traffic** by Dale Lear (Education)  
A learning game with many levels of possibility.
- 
- 61/Dissecting Your ROM** by Jake Commander (Utility)  
What you never thought you'd see — that last 4 parts!

## COLUMNS

- 13/GOTO School** by Isaac Asimov  
A guest columnist looks at robots and education.
- 
- 96/END OF FILE** by Kerry Leichtman  
Who's a Turkey?

## DEPARTMENTS

- 8/INKEY\$**  
**80/DEFUSR**  
**84/REVIEW**  
**94/NEW: PRODUCT\$**



page 48

Cover and editorial photography  
by Peter Macomber

The Color Computer Magazine (ISSN 0736-9492) is published monthly for \$24.97 one year, \$43.97 for two years, \$57.97 for three years. Additional postage \$12.00 outside of continental U.S. Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016. President: Richard P. Friese; Secretary: Bertram A. Abrams; Treasurer: Selwyn Taubman. Second class postage paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to The Color Computer Magazine, P.O. Box 2599, Boulder, CO 80322.

# VIP Writer

By Tim Nelson

Includes  
VIP Speller  
at no  
additional  
cost!!

## RATED TOPS IN RAINBOW, HOT COCO, COLOR COMPUTER MAGAZINE & COMPUTER USER

The most powerful and easy-to-use word processor is available in the showpiece and workhorse of the **Library: The VIP Writer™**. Because of its undisputed superiority over all Color Computer word processors, it was selected by Dragon Data Ltd. of England and TANO in the U.S., to be the Official Word Processor for their line of Dragon microcomputers.

The result of two years of research, the **VIP Writer™** offers every feature you could desire from a word processor. It is the most powerful, fastest, most dependable and most versatile. With the hi-res display, workspace and compatibility features built into the **Library** the **Writer** is also the most usable.

"... Nearly every feature and option possible to implement on the Color Computer. The design of the program is excellent; the programming is flawless." October 1983 "Rainbow"

"Among word processors for the CoCo, VIP Writer stands alone as the most versatile, most professional program available." May 1984 "Computer User"

"Word processing with VIP Writer is like driving a high-performance vehicle... This Ferrari of a package has more features than Telewriter, Easywriter (for the IBM PC), or Appewriter." October 1983 "Hot CoCo"

The **Writer** will work with you and your printer to do things you always wanted to do. Every feature of your printer can be put to use, every character set, every graphics capability at any baud rate, EVEN PROPORTIONAL SPACING. All this with simplicity and elegance. You can even automatically print multiple copies.

Although all versions feature tape save and load, the disk version provides the Mini Disk Operating System common to the whole **Library**, plus disk file linking for continuous printing.

### Professional features of particular note:

- Memory-Sense with **BANK SWITCHING** to fully utilize 64K, giving not just 24 or 30K, but up to 53K of workspace with the tape version and 50K with the disk version.
- TRUE FORMAT WINDOW allowing you to preview the printed page ON THE SCREEN BEFORE PRINTING, showing centered lines, headers, FOOTNOTES, page breaks, page numbers, & margins in line lengths of up to 240 characters. It makes HYPHENATION a snap.
- A TRUE EDITING WINDOW in all 9 display modes for those extra wide reports and graphs (up to 240 columns!).
- FREEDOM to imbed any number of PRINTER CONTROL CODES anywhere, EVEN WITHIN JUSTIFIED TEXT.
- Full 4-way cursor control, sophisticated edit commands, the ability to edit any BASIC program or ASCII textfile, SEVEN DELETE FUNCTIONS, LINE INSERT, LOCATE AND CHANGE, wild card locate, up to TEN SIMULTANEOUS block manipulations, word wrap around, programmable tabs, display memory used and left, non-breakable space, and headers, footers and FOOTNOTES.
- Automatic justification, automatic pagination, automatic centering, automatic flush right, underlining, superscripts, subscripts, pause print, single-sheet pause, and print comments.
- Type-ahead, typamatic key repeat and key beep for the pros, ERROR DETECTION and UNDO MISTAKE features, 3 PROGRAMMABLE functions, auto column creation, and an instant on-screen HELP TABLE.

Radio Shack Catalog No. 90-0141

32K (Comes with tape & disk) \$69.95

VIP Writer — VIP Speller Combo comes in VIP Writer Binder.

# VIP Speller™

WITH A 50,000 WORD INDEXED DICTIONARY!

By Bill Argyros

Gone are the eyestrain, boredom and fatigue from endless proof-reading. **VIP Speller™** is the fastest and most user-friendly speller for your CoCo. It can be used to correct any ASCII file — including **VIP Library™** files and files from **Scrispit™** and **Telewriter™**. It automatically checks files for words to be corrected, marked for special attention or even added to the dictionary. You can even view the word in context, with upper and lowercase. **VIP Speller™** comes with a specially edited 50,000 word dictionary which, unlike other spellers for the CoCo, is indexed for the greatest speed. The shorter your file, the quicker the checking time. And words can be added to or deleted from the dictionary or you can create one of your own. **VIP Speller™** also comes with the **Library's** mini disk operating system.

Radio Shack Catalog No. 90-0142

32K DISK ONLY \$49.95

Lowercase displays not available with this program.

Window

VIP Writer - When You Need Real Power

When you want the power of a real word machine, when you want up to 85 characters per line with your Color Computer, when you want to make your printer really move, you need VIP Writer.

VIP Writer is a state-of-the-art word processor for the pros. It is packed with commands, features and options, yet it's simple to learn and use. Who else gives you on-line help, and even an Undo command to undo mistakes!

A neat feature is the Preview Window, which you see in use here. This feature allows you to view your text just as it will be printed — centered titles, page numbers, footnotes, even JUSTIFICATION for even left and right-hand margins! No more guess work. VIP Writer is your answer!  
PR 1 LN 1 CH 1 LN 8 PR 51

# VIP Calc™

By Kevin Herrboldt

You can forget the other toy calcs — The real thing is here! No other spreadsheet for the Color Computer gives you:

- 20 ROWS BY 9 COLUMNS ON THE SCREEN AT ONCE
- LOWERCASE LETTERS WITH DESCENDERS
- UP TO 16 CONCURRENT DISPLAY WINDOWS
- FLOATING-POINT MATH
- CHOICE OF SINGLE AND DOUBLE PRECISION
- WORKS WITH BASE 2, 10, AND 16 NUMBERS
- UP TO 512 COLUMNS BY 1024 ROWS
- USER DEFINABLE WORKSHEET SIZE FOR MORE MEMORY
- LOCATE FUNCTION TO FIND CHECK NUMBERS, NAMES, ETC.
- COLUMN/ROW MULTIPLE SORTS
- PROGRAMMABLE FUNCTIONS
- IMBEDDABLE PRINTER CONTROL CODES
- 21 ALTERABLE PRINT FORMAT PARAMETERS
- ON-LINE HELP TABLES
- DOES NOT REQUIRE FLEX OR BASIC

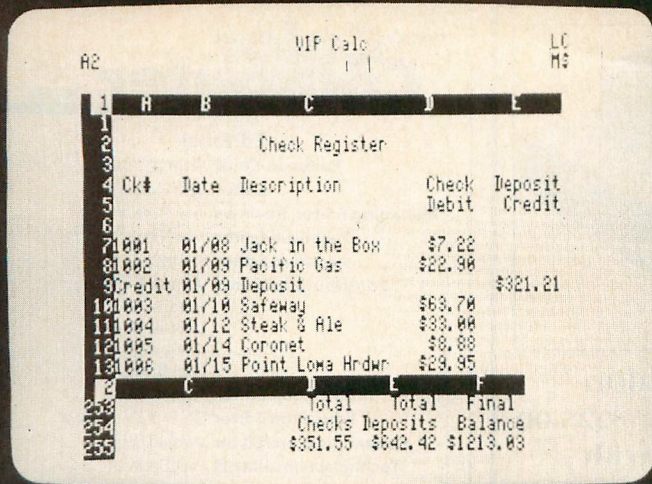
**VIP Calc™** is truly the finest and easily the most powerful electronic worksheet and financial modeling program available for the Color Computer. Now every Color Computer owner has access to a calculating and planning tool better than VisiCalc™, containing all its features and commands and then some, WITH USABLE DISPLAYS. Use Visicalc templates with **VIP Calc™**!

There's nothing left out of **VIP Calc™**. Every feature you've come to rely on with VisiCalc™ is there, and then some. You get up to 5 TIMES the screen display area of other spreadsheets for the Color Computer and Memory-Sense with **BANK SWITCHING** to give not just 24, or 30, but UP TO 33K OF WORKSPACE IN 64K!!! This display and memory allow you the FULL SIZE, USABLE WORKSHEETS you require. You also get: User definable worksheet size, up to 512 columns by 1024 rows! \* Up to SIXTEEN VIDEO DISPLAY WINDOWS to compare and contrast results of changes \* 16 DIGIT PRECISION \* Sine, Cosine and other trigonometric functions, Averaging, Exponents, Algebraic functions, and BASE 2, 8, 10 or 16 entry \* Column and Row, Ascending and Descending SORTS for comparison of results \* LOCATE FORMULAS OR TITLES IN CELLS \* Easy entry, replication and block moving of frames \* Global or Local column width control up to 78 characters width per cell \* Create titles of up to 255 characters per cell \* Limitless programmable functions \* Typamatic Key Repeat \* Key Beep \* Typeahead \* Print up to 255 column worksheet \* Prints at any baud rate from 110 to 9600 \* Print formats savable along with worksheet \* Enter PRINTER CONTROL CODES for customized printing with letter quality or dot matrix printer \* Combine spreadsheet tables with **VIP Writer™** documents to create ledgers, projections, statistical and financial reports and budgets. Both versions feature Tape save and load, but the disk version also has the Mini Disk Operating System of the entire **Library**.

Radio Shack Catalog No. 90-0143

32K (Comes with tape & disk) \$69.95

32K does not have hi-res displays, sort or edit.



# VIP Database™

"ONE OF THE BEST" JULY 1984 "RAINBOW"

By Tim Nelson

This high speed MACHINE LANGUAGE program fills all your information management needs, be they for your business or home. And it does so better than any other database program for the Color Computer, featuring machine code, lowercase screens and mailmerge capabilities. Inventory, accounts, mailing lists, family histories, you name it, the **VIP Database™** will keep track of all your data, and it will merge **VIP Writer™** files.

The **VIP Database™** features the **Library** Memory Sense with BANK SWITCHING and selectable lowercase displays for maximum utility. It will handle as many records as fit on your disk or disks. It is structured in a simple and easy to understand menu system with full prompting for easy operation. Your data is stored in records of your own design. All files are fully indexed for speed and efficiency. Full sort of records is provided for easy listing of names, figures, addresses, etc., in ascending or descending alphabetic or numeric order. Records can be searched for specific entries, using multiple search criteria. With database form merge you may also combine files, sort and print mailing lists, print "boiler plate" documents, address envelopes - the list is endless. The math package even performs arithmetic operations and updates other fields. Create files compatible with the **VIP Writer™** and **VIP Terminal™**. Unlimited print format and report generation with the ability to imbed control codes for use with all printers.

As with all other **Library** programs, the **Database** features the powerful Mini Disk Operating System.

Radio Shack Catalog No. 90-0140

32K DISK \$59.95

64K Required for math package & mail merge

# VIP Disk-ZAP™

RAVED ABOUT IN THE APRIL 1983 "RAINBOW!"

By Tim Nelson

Your database file disk, form letter disk, or BASIC program disk goes bad. An I/O error stops loading, or even backing up of the disk. Weeks, even months of work sit on the disk, irretrievable. Now catastrophic disk errors are repairable, quickly and with confidence, using the **VIP Disk-ZAP™**. It is the ultimate repair utility for simple and quick repair of all disk errors. Designed with the non-programmer in mind, the **VIP Disk-ZAP™** will let you retrieve all types of bashed files, BASIC and Machine Code programs.

This high-speed machine code disk utility has a special dual cursor screen display to look at the data on your disk. You are able to: Verify or modify disk sectors at will \* Type right onto the disk to change unwanted program names or prompts \* Send sector contents to the printer \* Search the entire disk for any grouping of characters \* Copy sectors \* Backup tracks or entire disks \* Repair directory tracks and smashed disks \* Full prompting to help you every step of the way \* 50-plus page Operator Manual which teaches disk structure and repair.

Radio Shack Catalog No. 90-0144

16K DISK \$49.95

Lowercase displays not available with this program.



To Order Direct



## 1-800-328-2737

Order Status and Software Questions call (805)968-4364

MAIL ORDERS: \$3.00 U.S. Shipping per product (\$5.00 CANADA; \$10.00 OVERSEAS). Personal checks allow 3 weeks.

*SoftLaw*

132 Aero Camino 805/968-4364  
Goleta, California 93117 U.S.A.

TRS-80 is a trademark of Tandy Corp. VisiCalc is a trademark of VisiCorp.

©1983 by Softlaw Corporation

# VIP Terminal™

RATED BEST IN JANUARY 1984 "RAINBOW"

By Dan Nelson

From your home or office you can join the communication revolution. The **VIP Terminal™** opens the world to you. You can monitor your investments with the Dow Jones Information Service, or broaden your horizons with The Source of CompuServe, bulletin boards, other computers, even the mainframe at work.

For your important communication needs you've got to go beyond software that only lets you chat. You need a smart terminal so that you can send and receive programs, messages, even other **VIP Library™** files. **VIP Terminal™** has "more features than communications software for CP/M, IBM and CP/M 86 computers." Herb Friedman, Radio Electronics, February 1984.

**FEATURES:** Choice of 8 hi-res lowercase displays \* Memory-Sense with BANK SWITCHING for full use of workspace \* Selectively print data at baud rates from 110 to 9600 \* Full 128 character ASCII keyboard \* Automatic graphic mode \* Word mode (word wrap) for unbroken words \* Send and receive **Library** files, Machine Language & BASIC programs \* Set communications baud rate from 110 to 9600, Duplex: Half/Full/Echo, Word length: 7 or 8, Parity: Odd/Even or None, Stop Bits: 1-9 \* Local linefeeds to screen \* Save and load ASCII files, Machine Code & BASIC programs \* Lowercase masking \* 10 Keystroke Multiplier (MACRO) buffers to perform repetitive pre-entry log-on tasks and send short messages \* Programmable prompt or delay for send next line \* Selectable character trapping \* Send up to ten short messages (KSMs), each up to 255 characters long, automatically, to save money when calling long distance.

All versions allow tape load and save of files and KSMs, but the disk version also has the Mini Disk Operating System.

Radio Shack Catalog No. 90-0139

32K (Comes with tape & disk) \$49.95

(Tape comes in 16K but without hi-res displays)

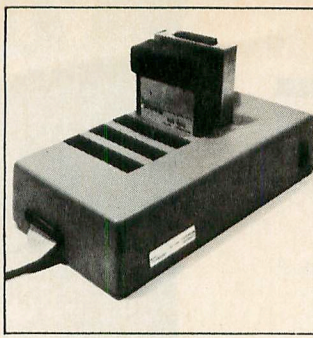
Available  
By Express Order  
At Your Local  
**Radio Shack®**  
Store!

Radio Shack is a registered trademark of Tandy Corporation.

# NEW! BT Companion

## Expansion Interface Units

Basic Technology offers you the most features and best quality for the money! Compare these features:



	BT COMPANION	TRS-80 Multi-Pak
• Power ON Indicator Light	YES	NO
• Cold Start Reset	YES	NO
• Gold Socket Connectors	YES	NO
• Gold Edge Connector	YES	NO
• Socketed Integrated Circuits	YES	NO
• Manual Cartridge Selector	Pushbutton	Slide Switch
• Keyboard/Program Selection	YES	YES
• Cartridge ON Indicator	YES	NO
• Extension Cable	YES	NO
• Number of Expansion Slots	5	4
• Warranty	180 days	90 days
• User's Manual w/schematics, parts layouts and parts lists	YES	NO

Also for the Color Computer:

BT-1010 Parallel Printer Interface	.....	\$ 79.95
BT-1020 Real Time Clock/Calendar	...	\$109.00
BT-1030 Versatile Interface Port	.....	\$ 69.95

Add \$5 s & h. Check, money order, VISA, MC (Account # and exp. date). COD charge \$2 (req. certified check or M.O.). Mich. residents add 4% sales tax.

**basic** Dept. C P.O. Box 511 Ortonville, MI 48462  
**TECHNOLOGY** (313) 627-6146

**BT Companion**  
**New Price . . \$225.00**  
**BT-1000 with**  
**built-in power**  
**supply . . . . \$250.00**  
**With power supply**  
**and 8k RAM \$275.00**

**CALL TODAY**  
**or send for**  
**FREE BROCHURE!**

Circle No. 81 on Reader Service Card

# THE Color Computer

## Editorial

**Editor-in-Chief** KERRY LEIGHTMAN

**Editor** DEBRA MARSHALL

**Managing Editor, Reviews** LYNN ROGNVOOG

**Technical Editor** JAMIE TIETJEN

**Assistant Editor** KRISTI KING

**Contributing Editors** WILLIAM BARDEN JR.

JAKE COMMANDER

DOUG MOSHER

DENNIS KITSZ

STEVE BJORK

**Information Editor** TERRY KEPNER

**Education Editor** DR. PAUL KIMMELMAN

**Communications Editor** WAYNE DAY

**Technical Consultants** PAUL DETWILER

STEVE ODNEAL

**Operations Manager** KAREN DANIELS

**Office Manager** JANIS HUDGENS

## Art & Production

**Art Director** SUSAN CRAMER

**Ass't Art Director** J.L. PATTERSON

**Illustrator** ROD MCCORMICK

**Contrib. Photographer** CHARLEY FREIBERG

## Advertising Sales

**Director of Advertising** DAVID EZEQUELLE

**Advertising Coordinator** JOANNE MOELLA

**Account Managers** ROBERT ETTENSON

MICHAEL FEDERLE

## Circulation

**Subscription Director** CHET KUMUSZKO

**Direct Mail Manager** ERIC A. BERNHARD

**Renewal & Billing Manager** SHANE BOEL

**Telemarketing Manager** AL ARVONIA

**Media Manager** ANN PICHETTE

**Special Subscription Sales** DANIEL ROSENWEIG

## Consumer Computers & Electronics Magazine Division

**President** LARRY SPORN

**V.P., Publishing Director** J. SCOTT BRIGGS

**V.P., Circulation** CAROLE MANDEL

**V.P., General Manager** EILEEN G. MARKOWITZ

**V.P., Licensing and Special**

**Projects** JERRY SCHNEIDER

**V.P., Creative** HERBERT STERN

**Creative Director** PETER J. BLANK

**Editorial Director** JONATHAN D. LAZARUS

**Licensing Director** JEAN LAMENDORF

**Marketing Manager** RONNI SONNENBERG

## Ziff-Davis Publishing

**President**, RICHARD P. FRIESE; **President, Consumer Magazine Division**, ALBERT S. TRAINA; **Executive Vice President, Marketing and Circulation**, PAUL H. CHOOK; **Senior Vice President**, SIDNEY HOLTZ; **Senior Vice President**, EDWARD D. MUHFELD; **Senior Vice President**, PHILIP SINE; **Vice President**, BAIRD DAVIS; **Vice President**, GEORGE MORRISSEY; **Vice President**, RORY PARISS; **Vice President**, WILLIAM L. PHILLIPS; **Treasurer**, SELWYN TAUBMAN; **Secretary**, BERTRAM A. ABRAMS

The Color Computer Magazine (ISSN 0736-9492) is published monthly for \$24.97 one year, \$43.97 for two years, \$57.97 for three years. Additional postage \$12.00 outside of continental U.S. Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016. Second class postage paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to The Color Computer Magazine, P.O. Box 2599, Boulder, CO 80322.

**Editorial and Advertising Offices:** The Color Computer Magazine, Highland Mill, Camden, Maine 04843 (207) 236-9621, and One Park Avenue, New York, NY 10016 (212) 503-3500. Business offices: Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016.

**Permissions:** Material in this publication may not be reproduced in any form without permission. Requests should be directed to Jean Lamendorf, Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016.

The Color Computer Magazine is an independent publication, not affiliated in any way with Tandy Corporation. TRS-80 and Color Computer are registered trademarks of the Radio Shack division of Tandy Corporation. Entire contents Copyright © 1984 Ziff-Davis Publishing Company. All rights reserved; reproduction in whole or in part without permission is prohibited.

U.S.A. newsstand distribution by Curtis Circulation Company.

**112 W. WISCONSIN AV.**  
**KAUKAUNA, WI 54130**  
**(414) 766-1851**

**STOCK ITEMS SHIPPED SAME DAY!**

- ELITE CALC \$54.95
- ELITE WORD \$54.95
- ELITE FILE \$67.00
- TOM MIX CALL FOR PRICE

**THE COMPLETE TRS-80® LINE**

**\$289.00**

**THE COSMOS CONNECTION IS A COMPLETE SERIAL TO PARALLEL INTERFACE FOR THE COLOR COMPUTER TO THE GEMINI — 10X and 15X PRINTERS.**

**THE COSMOS CONNECTION \$60.00**

**THE GEMINI-10X PACKAGE READY TO PLUG IN TO YOUR COLOR COMPUTER ONLY \***

**\$325.00 GEMINI - 10X PACKAGE \*\***

10X - \$289.00  
 15X - \$445.00  
 Delta 10 - \$484.00  
 Delta 15 - \$597.00

- NO AC REQUIRED
- SWITCHABLE BAUD RATE
- AT: 600
- 1200
- 2400
- HIGH QUALITY CONSTRUCTION
- COMPACT
- 90 DAY WARRANTY

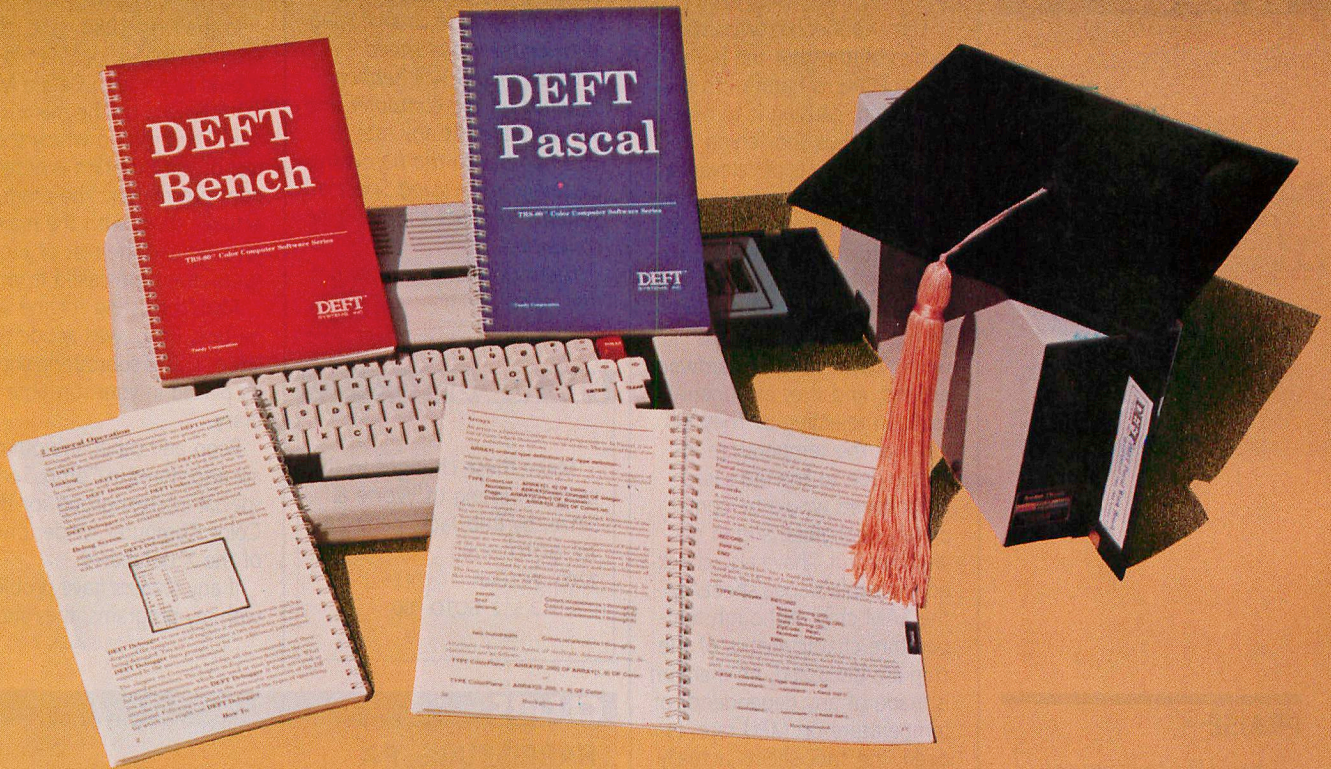
**stair**  
 MICRONICS · INC.  
 THE POWER BEHIND THE PRINTED WORD.

**VISA** \*Plus - U.S. ORDERS Add \$10.00 Shipping & Handling  
 \*Plus - CANADIAN ORDERS Add \$25.00 for Shipping & Handling  
 \*\*FREE - Shipping & Handling in U.S. with Package Orders  
 \*\*Plus - CANADIAN ORDERS Add \$15.00 for Shipping & Handling with Package Orders

TRS-80 IS A TRADEMARK OF TANDY CORP. PRICES AND SPECIFICATIONS SUBJECT TO CHANGE.



# Graduate With DEFT Pascal



As a result of the programming language requirement of the Advanced Placement (AP) Tests, Pascal has become the standard language used in High Schools and Colleges today. On the Color Computer, DEFT Pascal is the standard.

## DEFT Bench \$49.95

### DEFT Edit

Full screen editor

### DEFT Linker

(see DEFT Pascal)

### DEFT Lib

create and maintain  
program object libraries

### DEFT Debugger

debug Pascal machine  
programs **symbolically**

### DEFT Macro/6809

supports entire 6809  
instruction set,  
lets you define your own  
instructions

## DEFT Pascal \$79.95

### DEFT Pascal Compiler

complete Pascal language,  
generates machine  
language object

### DEFT Linker

combines multiple program  
objects into one binary  
program

## DEFT Pascal Workbench \$119.95

(DEFT Pascal And DEFT Bench Together)

All DEFT software and programs developed with DEFT software are BASIC ROM independent and use all of the memory in your Color Computer without OS-9. All you need is DEFT software and a TRS-80 Color Computer with Extended Disk BASIC, at least 32K of RAM and One Disk Drive. Software licensing arrangements are available for schools. Dealer inquiries welcome.

For Product Questions Call

1-301-253-1300

For Credit Card Orders Call Toll Free 24Hrs

1-800-368-3238 Operator 8

In Virginia

1-800-542-2224 Operator 8

DEFT Products are also available through these fine dealers:

THE PROGRAM STORE  
computer plus  
DELKER Electronics  
OWL-Ware

Follett Library Book Co.  
DATAMAN International  
Spectrum Projects  
CINSOFT

**DEFT**<sup>TM</sup>  
SYSTEMS, INC.

Quantity of Each: — DEFT Pascal — DEFT Bench  
— DEFT Pascal Workbench

Method of Payment (check one)  Check Enclosed  
 VISA  Master Card  COD

Account Number

Card Expiration Date  /

Signature \_\_\_\_\_

Name \_\_\_\_\_

Street \_\_\_\_\_

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

**DEFT Systems, Inc.**  
Suite 4, Damascus Centre  
Damascus, MD 20872

All orders are shipped UPS within 24 hours of receipt. Add 3% for shipping and handling; Maryland residents add 5% for State Sales Tax; add \$2.00 for COD.

# INKEYS

**INKEYS**  
COLOR COMPUTER  
HIGHLAND MILL  
CAMDEN, ME 04843

## PRaise

I would like to praise one of your advertisers — Micro Data Systems who wrote and distributes the CoCo Professional Tax Preparer. It is one of the easiest and friendliest programs I have ever used.

I received the package within a couple of weeks of ordering, and had a minor problem that I reported the next day. I received an updated set of disks within five days with a memo. I found another minor problem on the update, but received the new updated version as promptly.

When I had a problem with this set, I wrote another letter and received a telephone call in the evening from Robert De Freitas, President of Micro Data Systems, who explained that my problem was in my use and not in the program. He was correct, and I really appreciated the quick response and helpful attitude.

I can recommend this excellent program and it is a pleasure to know that there are companies that stand behind their products and really care about their customers.

R.W. Reed  
Dolton, IL

## HIGH SPEED HARM

Terry Kepner has twice stated in his column that the high-speed POKE is harmful to the SAM chip, causing it to overheat and thus shortening its life. This claim is of relevance to users of our product Fastape, since the high-speed mode is central to the program's operation.

I have discussed this claim with a number of persons whom I believe to be hardware experts, and they are unanimous in rejecting it. They tell me that the temperature increase due to the increased clock speed would be completely negligible, and in no way harmful. I have also checked Motorola's spec sheets on the SAM chip. Although temperature characteristics of the chip are discussed, no mention is made of any dependency of temperature on MPU rate. Indeed, the spec sheets actually highlight the ability of the SAM to function at different clock speeds, far from suggesting that such operation is harmful. The high-speed POKE itself is a function explicitly programmed into the SAM chip.

Arthur J. Flexser  
Spectro Systems

*We asked Dennis Kitz to shed some light on this, and here's what he said:*

*The SAM chip was designed to use the high-speed POKEs. High-speed POKEs are switches that drop alternate cycles out of the master clock. On the Color Computer, an over-sized capacitor was used on the SAM clock, possibly in order to cut down on rfi.*

*High-speed POKE users will notice an increase of temperature, especially those using early computer versions (pre-1981). However, the SAM is rated to 125 degrees centigrade. This increased temperature is normal and not harmful. Dennis has never seen a SAM fail from overheating.*

*The over-sized capacitor, however, might cause software failure, as the CPU access and clocking might not occur fast enough, because the clock lines*

*may overlap more than usual at higher temperatures. This happens because of switching at twice the usual speed.*

*Whether this will happen depends on the computer and the software. At any rate, it isn't harmful to the hardware. Certainly, folks using Spectro Systems' product shouldn't be concerned.*

*There Dennis — did we get that right?*

— Eds.

## FIX (05,84)

Make these changes to the program listing of Worte & Satze, by Bob Jack, page 24:

```
70 GOTO 2200
2200 PCLEAR 1: FILES
      3,512:GOTO 80
```

## VITAMIN C FIX

In the May 1984 issue, the program listing for Vitamin C should begin with Define Macros followed by the main routine. The order in which the rest of the program is entered does not matter. The program actually starts with the main routine, and the rest of the subroutines are called from it.

Also, the listing for the subroutine, Beep, was accidentally left out. This subroutine should be placed in your run-time library.

Beep and other subroutines are also stored in CompuServe's special interest group for the Color Computer, under one of the X databases.

If any readers have problems with my programs, they should

## CLUBS

### HARRISBURG, PA

Hug-A-CoCo meets every second Wednesday in the Motorola Office Building, 3540 N. Progress Avenue, Harrisburg, PA 17110, at 7 p.m. for about two hours. There are no dues at this time. All visitors are welcome. Please contact George Lurie at 657-2789 for more information.

### NEW JERSEY

The Color Computer Users Group in Monmouth/Ocean County meets the second Friday of each month at 7:30 p.m. at 1401 Highway 71, Belmar, NJ. For information call John Stewart at 280-2727 or (201) 774-7426.

### WESTERLY, RI

The Users Group in the Westerly, R.I. area meets at the YMCA every other Tuesday. Meetings are held from 7:00 — 9:30 p.m. For more information call 596-0957 or 596-1485.

### PETOSKEY, MI

The Petoskey Area Club in northern Michigan meets the first Tuesday and third Wednesday of the month at 7 p.m. Those interested write: Petoskey Area CoCo Club, 670 Liegl Dr., Alanson, MI 49706 or call (616) 347-0607 after 4 p.m.

## NAME CHANGE

The Los Angeles Color Computer Users Group has changed its name to Color America Users Group. This non-profit organization currently has over 300 members. Meetings feature guest speakers, Q&A sessions, special interest groups and software vendors. Color America has a BBS for modem users with dozens of programs for downloading and an on-line interactive story. The BBS may be reached at (818) 334-2864. Also available is a lending library of hardware, software and books. Color Computer owners residing in Los Angeles or Orange counties should call (818) 331-7903 to receive a free newsletter. Color America wants to exchange newsletters and public domain software with other users groups.

1983 unit sales	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Average	Best	Worst
Bach	136	139	119	161	130	104	84	121	95	115	75	161	1440	144	161	75
Chalone	120	170	152	170	182	102	89	157	162	129	64	158		144	182	64
Dolan	188	157	103	112	161	122	99	145	145	103				144	188	97
Feagan	105	94	127	115	157	97	61	132	113					144	174	61
Graham	135	135	183	116	151	104	86	149						144	183	63
Harpel	134	102	190	161	180	85								144		
Jordan	105	109	188	171	120									144		
Latour	112	128	124	129										144		
Lucido	158	110												144		
Phelps	167													144		
Prats														144		
Schaeferle														144		
Taylor														144		
Torres					131									144	193	78
Turner				127	131									144	190	88
Wehlen			145	142	154									144	190	75
							137	125	106	60	151	1495	125	154	60	
	2312	2166	2387	2321	2401	1699	1439	2276	2242	2011	1318	2631	25203	2100		

# DYNACALC<sup>®</sup> FOR COCO DOS

NO OTHER OPERATING SYSTEM NEEDED!

## THE BEST OF BOTH WORLDS!

available from



COMPUTER SYSTEMS CENTER  
13461 Olive Blvd.  
Chesterfield, MO 63017 USA  
(314) 576-5020

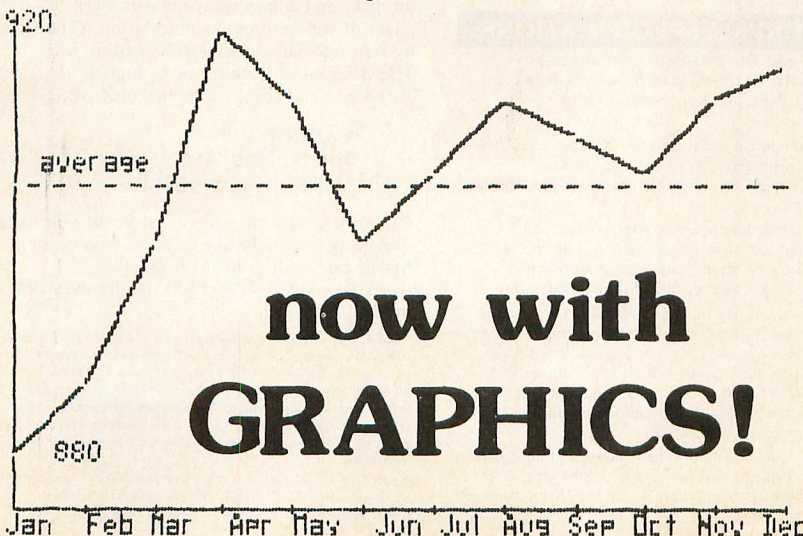
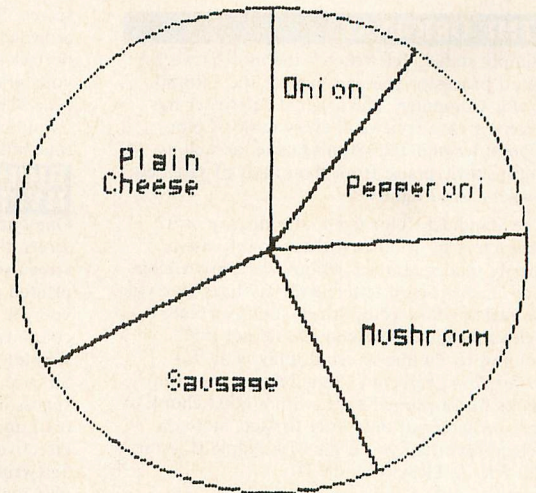


or your local DYNACALC dealer

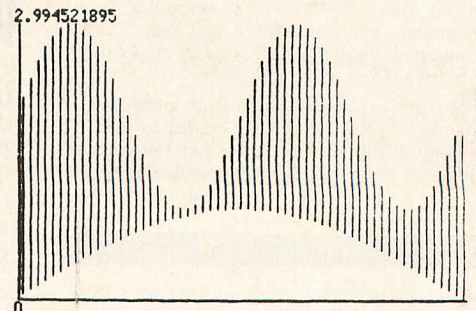
Price \$150 postpaid in US & Canada.  
Outside North America add \$10 postage.

**NOW ONLY \$99.95**

DYNACALC Reg. U. S. Pat. Off.



now with  
**GRAPHICS!**



CANADA  
MICRO R.G.S. INC.  
751, CARRE VICTORIA, SUITE 403  
MONTREAL, QUEBEC, CANADA, H2Y 2J3  
Regular Tel. (514) 287-1563  
Canadian Toll Free 800-361-5155

# Telewriter-64™

## the Color Computer Word Processor

- 3 display formats: 51/64/85 columns × 24 lines
- True lower case characters
- User-friendly full-screen editor
- Right justification
- Easy hyphenation
- Drives any printer
- Embedded format and control codes
- Runs in 16K, 32K, or 64K
- Menu-driven disk and cassette I/O
- No hardware modifications required

### THE ORIGINAL

Simply stated, Telewriter is the most powerful word processor you can buy for the TRS-80 Color Computer. The original Telewriter has received rave reviews in every major Color Computer and TRS-80 magazine, as well as enthusiastic praise from thousands of satisfied owners. And rightly so.

The standard Color Computer display of 32 characters by 16 lines without lower case is simply inadequate for serious word processing. The checkerboard letters and tiny lines give you no feel for how your writing looks or reads. Telewriter gives the Color Computer a 51 column by 24 line screen display with *true lower case characters*. So a Telewriter screen looks like a printed page, with a good chunk of text on screen at one time. In fact, more on screen text than you'd get with Apple II, Atari, TI, Vic or TRS-80 Model III.

On top of that, the sophisticated Telewriter full-screen editor is so simple to use, it makes writing fun. With single-letter mnemonic commands, and menu-driven I/O and formatting, Telewriter surpasses all others for user friendliness and pure power.

Telewriter's chain printing feature means that the size of your text is never limited by the amount of memory you have, and Telewriter's advanced cassette handler gives you a powerful word processor without the major additional cost of a disk.

...one of the best programs for the Color Computer I have seen...

— Color Computer News, Jan. 1982

### TELEWRITER-64

But now we've added more power to Telewriter. Not just bells and whistles, but major features that give you total control over your writing. We call this new supercharged version Telewriter-64. For two reasons.

### 64K COMPATIBLE

Telewriter-64 runs fully in any Color Computer — 16K, 32K, or 64K, with or without Extended Basic, with disk or cassette or both. It automatically configures itself to take optimum advantage of all available memory. That means that when you upgrade your memory, the Telewriter-64 text buffer grows accordingly. In a 64K cassette based system, for example, you get about 40K of memory to store text. So you don't need disk or FLEX to put all your 64K to work immediately.

### 64 COLUMNS (AND 85!)

Besides the original 51 column screen, Telewriter-64 now gives you 2 additional high-density displays: 64 × 24 and 85 × 24!! Both high density modes provide all the standard Telewriter editing capabilities, and you can switch instantly to any of the 3 formats with a single control key command.

The 51 × 24 display is clear and crisp on the screen. The two high density modes are more crowded and less easily readable, but they are perfect for showing you the exact layout of your printed page, *all on the screen at one time*. Compare this with cumbersome "windows" that show you only fragments at a time and don't even allow editing.

### RIGHT JUSTIFICATION & HYPHENATION

One outstanding advantage of the full-width screen display is that you can now set the screen width to match the width of your printed page, so that "what you see is what you get." This makes exact alignment of columns possible and it makes hyphenation simple.

Since short lines are the reason for the large spaces often found in standard right justified text, and since hyphenation is the most effective way to eliminate short lines, Telewriter-64 can now promise you some of the best looking right justification you can get on the Color Computer.

### FEATURES & SPECIFICATIONS:

**Printing and formatting:** Drives any printer (LPVII/VIII, DMP-100/200, Epson, Okidata, Centronics, NEC, C. Itoh, Smith-Corona, Terminus, etc).

Embedded control codes give full dynamic access to intelligent printer features like: underlining, subscript, superscript, variable font and type size, dot-graphics, etc.

Dynamic (embedded) format controls for: top, bottom, and left margins; line length, lines per page, line spacing, new page, change page numbering, conditional new page, enable/disable justification.

Menu-driven control of these parameters, as well as: pause at page bottom, page numbering, baud rate (so you can run your printer at top speed), and Epson font. "Typewriter" feature sends typed lines directly to your printer, and Direct mode sends control codes right from the keyboard. Special Epson driver simplifies use with MX-80.

Supports single and multi-line headers and automatic centering. Print or save all or any section of the text buffer. Chain print any number of files from cassette or disk.

**File and I/O Features:** ASCII format files — create and edit BASIC, Assembly, Pascal, and C programs, Smart Terminal files (for uploading or downloading), even text files from other word processors. Compatible with spelling checkers (like Spell 'n Fix).

Cassette verify command for sure saves. Cassette auto-retry means you type a load command only once no matter where you are in the tape.

Read in, save, partial save, and append files with disk and/or cassette. For disk: print directory with free space to screen or printer, kill and rename files, set default drive. Easily customized to the number of drives in the system.

**Editing features:** Fast, full-screen editor with wordwrap, block copy, block move, block delete, line delete, global search and replace (or delete), wild card search, fast auto-repeat cursor, fast scrolling, cursor up, down, right, left, begin line, end line, top of text, bottom of text; page forward, page backward, align text, tabs, choice of buff or green background, complete error protection, line counter, word counter, space left, current file name, default drive in effect, set line length on screen.

Insert or delete text anywhere on the screen without changing "modes." This fast "free-form" editor provides maximum ease of use. Everything you do appears immediately on the screen in front of you. Commands require only a single key or a single key plus CLEAR.

...truly a state of the art word processor...  
outstanding in every respect.

— The RAINBOW, Jan. 1982

### PROFESSIONAL WORD PROCESSING

You can no longer afford to be without the power and efficiency word processing brings to everything you write. The TRS-80 Color Computer is the lowest priced micro with the capability for serious word processing. And only Telewriter-64 fully unleashes that capability.

Telewriter-64 costs \$49.95 on cassette, \$59.95 on disk, and comes complete with over 70 pages of well-written documentation. (The step-by-step tutorial will have your writing with Telewriter-64 in a matter of minutes.)

To order, send check or money order to:

Cognitec  
704 N. Nob Ave.  
Del Mar, CA 92014

Or check your local software store. If you have questions, or would like to order by Visa or Mastercard, call us at (619) 755-1258 (weekdays, 8AM-4PM PST). Dealer inquiries invited.

(Add \$2 for shipping. Californians add 6% state tax. Allow 2 weeks for personal checks. Send self-addressed stamped envelope for Telewriter reviews from CCN, RAINBOW, 80-Micro, 80-U.S. Telewriter owners: send SASE or call for information on upgrading to Telewriter-64. Telewriter-compatible spelling checker (Spell 'n Fix) and Smart Terminal program (Colorcom/E) also available. Call or write for more information.)

Apple II is a trademark of Apple Computer, Inc.; Atari is a trademark of Atari, Inc.; TRS-80 is a trademark of Tandy Corp; MX-80 is a trademark of Epson America, Inc.

## INKEYS

write to me at 8371 White Rd.,  
Burbank, OH 44214.

R.A. Jack  
Burbank, OH

```
*  
* BEEP (X, Y);  
*  
* X = TONE (1-255)  
* Y = LENGTH (1-65536)  
*  
BEEP PSHS A,B,U,X,Y  
LDA $FF01 * ENABLE SOUND  
ANDA #5F7  
STA $FF01  
LDA $FF03  
ANDA #5F7  
STA $FF03  
LDA $FF23  
ORA #508  
STA $FF23  
LDY 0,U * GET TOTAL SOUND LENGTH  
BP1 LDX #520 * GET SINGLE SOUND LENGTH  
BP2 LDA $FF20  
ORA #5FC * SET VOLUME  
STA $FF20  
BSR BP3  
LDA $FF20  
ANDA #503  
STA $FF20  
BSR BP3  
LEAX -1,X  
BNE BP2  
LEAY -1,Y  
BNE BP1  
LDA $FF23 * DISABLE SOUND  
ANDA #5F7  
STA $FF23  
PULS A,B,U,X,Y  
RTS  
BP3 BSR BP4  
BP4 LDD 2,U * GET TONE  
BP5 INCB  
BNE  
RTS
```

## GRAY FLANNEL

Mr. Barden's article "Gray Flannel" (June, 1984) pointed out the lack of a hard disk on the Color Computer. However, there is a hard disk available for the Color Computer in various sizes from 5 to 20 megabytes offered by Software Support Inc. Also, he never mentioned the 80-column video board available for use with a monitor. These two devices, combined with available software, could put the Color Computer miles ahead of other Radio Shack computers and may even rival the IBM pc for less than half the price.

Gregory A. Law  
Warner Robins, GA

## FIX (05,84)

In Dennis Kitz's' Color Burner, the Basic Driver (Listing 1) on page 57 should have Line 34 altered: within the line the statement POKE &H3D00, E-1 should be changed to POKE &H3D00, (E-1)\*4



## The Handicapper

Now available for all Color Computers, MC-10's and Model 100's! Use the power of your computer to improve your performance at the track! The Handicapper is two separate programs for thoroughbred and harness horses that apply sound handicapping techniques to rank the horses in each race. Factors include speed, distance, class, track condition, post position, past performance, jockey or driver ability and other attributes. Handicap a race in just a few minutes or a whole card in less than an hour! Easy enough for the beginner, sophisticated enough for the veteran horseplayer. Complete instructions and betting guide. State computer type, Basic version and memory size. Thoroughbred or Harness Handicapper, \$24.95 each on tape, \$27.95 on CoCo disk. Both programs only \$39.95 tape or disk.

## Greyhound Handicapper

NEW GREYHOUND HANDICAPPER! Written by a former greyhound trainer, this program puts the most sophisticated techniques at your disposal. Quickly and easily rates the dogs using speed, class, favorite box, kennel performance, breaking ability and other factors. Also shows recommended quinella, exacta and trifecta plays. List rankings to screen or printer. For CoCo only, 16K Ext. Bas. \$24.95 on tape, \$27.95 on disk.

## Tax Relief

Were your taxes a mess this year? Then you need Coco-Accountant II. This 32/64K home and small business accounting program will keep track of your finances and make income tax time a breeze. Spend a few minutes with your canceled checks, credit card slips and payroll stubs. Coco-Accountant II will list and total expenditures by month, account or payee/income source. It provides a year-to-date summary by account and figures your net cash flow. It even prints a spreadsheet showing your year at a glance!

Special functions flag deductible expenses and payments subject to state sales tax. It even computes the sales tax you paid. A separate feature will balance your checkbook and print a monthly reconciliation statement. Most functions list to screen or printer. The 32K tape version stores 450 entries in a file, 32K disk stores 500 and 64K tape or disk stores 900 entries. Only \$24.95 on tape, \$27.95 on disk.

Add \$1.50 for shipping and send orders to:

**Federal Hill Software**  
825 William St.  
Baltimore, MD 21230



301-685-6254

## BULLETIN BOARDS

### N.W. JERSEY

The Colorama of North West Jersey BBS will be up seven days a week, 24 hours a day. We are running a Colorama BBS system. We feature a news section, an upload and a large download section. A want ad section, a shop at home service and E-Mail are also available. Contact Colorama, 252 Rt. 46, P.O. Box 337, Vienna, NJ 07880.

### PENINSULA BBS

The Peninsula Color Computer Board is up 24 hours a day, seven days a week. It takes uploads, downloads, graphics general messages, etc, and is free. This is a service of the Tidewater Color Computer Sig. Phone data number: (804) 868-0922; voice number: (804) 868-3975.

### GREENVILLE OS-9

The first OS-9 BBS in the Greenville, S.C. area can be contacted at (803) 288-0613, and operates from 10 p.m. - 7 a.m., Monday through Sunday. The BBS name is DLOAD OS-9. We have upload/download, E-Mail, merchandise, and we support the OS-9 Users Group. We have both RS Basic and Basic09 programs for download. The BBS is sponsored by The Soft Shop, P.O. Box 878, Mauldin, S.C. 29662. We are trying to organize a Color Computer Club for Wednesday nights for the Mauldin area. Interested people should leave a message on the BBS or call the Shop.

# THE COLORSOFT™ BUSINESS SYSTEM

INTEGRATED BUSINESS SOFTWARE DESIGNED FOR THE COLOR COMPUTER  
WRITTEN FOR USE BY THE NON-ACCOUNTING ORIENTED BUSINESSMAN  
CONCISE USERS MANUAL WITH SAMPLE TRANSACTIONS TUTORIAL  
PROFESSIONALLY WRITTEN AND FULLY TESTED  
HIGHLY USER FRIENDLY AND MENU DRIVEN  
AFTER THE SALE SUPPORT

**SMALL BUSINESS ACCOUNTING (Version 2.0)** This sales-based accounting package is designed for the non-accounting oriented businessman. It also contains the flexibility for the accounting oriented user to set up a double entry journal with an almost unlimited chart of accounts. This package includes Sales Entry, transaction driven Accounts Receivable and Accounts Payable, Journal Entry, Payroll Disbursement, and Record Maintenance programs. Screen and hardcopy system outputs include Balance Sheet, Income Statement, Customer and Vendor Status Reports, Accounts Receivable and Payable Aging Reports, Check Register, Sales Reports, Account Status Lists, and a Journal Posting List. The number of accounts is limited only by the number of disk drives. .... \$89.95

**ACCOUNTS RECEIVABLE (Version 2.0)** This package is designed to meet the requirements of most small business users. The system includes detailed audit trails and history reports for each customer, prepares invoices and monthly statements, mailing labels, aging lists, and an alphabetized customer listing. The user can define net terms for commercial accounts or finance charges for revolving accounts. This package functions as a standalone A/R system or integrates with the Small Business Accounting package to build a complete accounting/receivables system. .... \$59.95

**PAYROLL (Version 2.0)** This integratable package is designed for maintaining personnel and payroll data for up to 200 hourly and salaried employees with 8 deductions each. This system calculates payroll and tax amounts, prints checks and maintains year-to-date totals. These amounts can be automatically transferred to the SBA package for financial reporting. It computes each pay period's totals for straight time, overtime, and bonus pay and determines taxes to be withheld. Additional outputs include mailing list, listing of employees, year-to-date federal and/or state tax listing, and a listing of current misc. deductions. This system is suited for use in all states except Oklahoma and Delaware. .... \$69.95

All programs require a minimum of 32K and 1 disk drive but will take advantage of 64K and multiple drives. Each package features a hi-res 51 x 24 black on green screen. 16K versions available without hi-res screen. Specify 16K or 32K versions when ordering. Future integrated packages will include: Inventory Control, Sales Analysis, Accounts Payable.

INCLUDE \$5.00 Shipping/Handling Per Order

Write for Free Catalog

## BRANTEX, INC.

COLOR SOFTWARE SERVICES DIV.

BUSINESS SOFTWARE GROUP  
P.O. BOX 1708  
GREENVILLE, TEXAS 75401



TELEPHONE ORDERS  
(214) 454-3674  
COD/VISA/MASTERCARD

ATTENTION DEALERS: WE OFFER THE BEST DEALER PLANS AVAILABLE

# GOTO SCHOOL GOTO SCHOOL GOTO SCHOOL

BY BILL McHENRY & SVEN BONNICHSEN

*Ed. Note: "Will robots ever be really useful in education?" we wondered one afternoon. The only person to ask, of course, was the original robot storyteller: Isaac Asimov. Here's what he had to say.*

In the coming age of the robot it is conceivable, from the optimist's point of view, that education will be so greatly enhanced children will be reluctant to have the learning process end. People will continue to learn throughout life, and their minds will stay pliable, with active imaginations.

The robot's role in education will not be as a teacher replacement, but as a slave. In ancient Greek times, when slaves were commonplace, a well-to-do family would assign a slave to care for its son when he was away from home. When he went to school (girls weren't subjected to education), the slave went with him to assure his safe arrival, and, later on, to bring him safely home.

Such a slave was called a "pedagog" (the English version of a Greek word meaning "boy-leader"). Eventually, since a teacher is also a "boy-leader" (mentally, if not physically) the word came to be applied to him and the original connotation was lost.

But children still must go to school today, and the process can be dangerous (considering traffic, and monstrous people who prey on children). Indeed, the housewife or househusband who must chauffeur the children back and forth, pedagog fashion, is a common case these days.

We have no slaves to whom this tedious task can be assigned. Surely the day is coming when robots will be sufficiently advanced to be programmed to undertake such a task. It may well become a common sight, as the 21st Century advances, to see a robot with a youngster, or a group of youngsters, in tow. The robot (rather like a collie herding sheep) can see to it that they remain together, that none wander off, that they cross streets safely, do nothing dangerous, and engage in no serious scuffling.

## The Metal Pedagog

Within the schools, other robots may monitor the corridors and maintain order when classes change. (To libertarians this may seem a distressing limitation on the rights of children to be hooligans, but those who observe the state of American schools today will become reconciled to limitations in this direction.)

A robot is not forever limited to such rather mechanical tasks. As time passes, robot models will undergo major alterations and improvements. New models will have more capacious memories and be capable of more human-like abilities.

Their behavior may become sufficiently versatile to enable them to play games with the children. (My first robot story, written back in 1939, was about a robot nursemaid, who could hear but was not advanced enough to speak; she was still far more fun than a dog would be.) Robots, in real life, should soon become capable of speech — perhaps even sooner than my fictional robots — and they might then enter into new education roles.

Robots can learn precisely what children are expected to learn in school. In those subjects like mathematics, history, geography, and so on, where much of the content is factual rather than judgmental in nature, the robot can drill the youngster, and correct his mistakes. He can go over homework, note the weaknesses and endeavor to strengthen the youngster at those points.

The child might well react favorably to a "teacher" who deals with him only, and who will adjust himself to the needs of one student. The child might prefer an endlessly patient robot to a perhaps captious human teacher. He might also prefer being corrected in private to being embarrassed before

fellow students (as one is bound to be under ordinary school conditions).

As time goes on, there may be a general progression of education from the school to the home, from public to private, from group to individual. As computers become more pervasive in society, as libraries are more intensely computerized, youngsters may find it increasingly interesting and desirable to study subjects on their own, to follow the pull of their curiosity as it leads them through the dense thickets of knowledge that have accumulated in the vast libraries of humanity over the millennia.

Through those thickets the robot, with a more certain memory and an inability to grow tired or bored, can act as guide — as a metal pedagog, or boy-leader, in yet another sense. He will be there to remind and suggest, to answer questions, or to undertake a library-search that would be too tedious and time-wasteful for a human brain.

This is not to say that all education will become "robotized." It can't. There remain judgmental subjects, the necessity of insight and intuition, imagination and creativity, all of which are peculiarly human and which robots are not likely to comprehend in the foreseeable future, if ever. There remains the necessity of engaging in human interaction and in group endeavors, for which robots cannot substitute. In fact, as robots take over the tedious drills and simple teaching of data, schools will have more time for the truly human aspects of education and human teachers will become more skilled and efficient in handling them.

Through the wise use of the metal pedagogs, humanity may enter a new golden age in which there will be a burst of human creativity such as the world has never seen, and in which people will develop new art forms, new ideas, new ways of advancing scientific research, thanks to minds that will stay young and unendingly *curious* throughout life. ■



## LAST NIGHT WE EXCHANGED LETTERS WITH MOM, THEN HAD A PARTY FOR ELEVEN PEOPLE IN NINE DIFFERENT STATES AND ONLY HAD TO WASH ONE GLASS...

### **That's CompuServe, The Personal Communications Network For Every Computer Owner**

And it doesn't matter what kind of computer you own. You'll use CompuServe's Electronic Mail system (we call it Email™) to compose, edit and send letters to friends or business associates. The system delivers any number of messages to other users anywhere in North America.

CompuServe's multi-channel CB simulator brings distant friends together and gets new friendships started. You can even use a scrambler if you have a secret you don't want to share. Special interest groups meet regularly to trade information on hardware, software and hobbies from photography to cooking and you can sell, swap and post personal notices on the bulletin board.

There's all this and much more on the CompuServe Information Service. All you need is a computer, a modem,

and CompuServe. CompuServe connects with almost any type or brand of personal computer or terminal and many communicating word processors. To buy a Starter Kit, see your nearest computer dealer. To receive our informative brochure or to order direct, call or write:

### **CompuServe**

Consumer Information Service  
5000 Arlington Centre Blvd., Columbus, OH 43220  
**800-848-8199**  
In Ohio call 614-457-0802.

An H&R Block Company

Circle No. 69 on Reader Service Card



# Color Computing for Kids

## Inputting and outputting cassette files.

Summer's over and school's back in session. Boo! Yuck! Did I have to remind you? That's O.K. — you can slowly ease back into the daily grind of scheduling, organizing, memorizing, reading, researching, studying, and collecting another school year's worth of data.

By now you all know that *data* is information, and to help you manage all the new data you'll be acquiring we're going to use our computers in much the same way we would a notebook with section dividers. You'll need to have a cassette recorder that is properly connected to your computer and at least two blank cassette tapes to begin. Always keep your program on a separate tape from your files!

Think of the cassette recorder and a tape in the same way a notebook functions. We use a notebook as a device to hold the data we wish to collect. We can fill the notebook with folders or dividers and insert specific information into each section, or we can use the notebook for only one kind of file. We can add to our notebook, remove sections of it at any time, and even put entirely new files in it if we want to. The computer's cassette recorder is an electronic notebook, in that it will hold a cassette tape that may have several sections of data, or may contain only one file. We can change tapes at any time, remove or delete sections of data, and even create new files whenever we like.

Beginning a school year usually means a fresh start in a new notebook. So while you're at it, let's take advantage of the computer age and start an electronic notebook as well. You may not be able to open it on your desk at school, but I think you'll soon see the advantages of cassette files. And if you have a printer you'll soon be able to fill one of those "old-fashioned" notebooks with the best-looking, most accurate and up-to-date alphabetical lists you've ever seen.

**FILE NOISES.** Programs and data are stored, or *encoded*, on cassette tapes using electronic signals transmitted from the computer. The signals are called *bits* and a bit is either "on" or it is "off."



A combination of eight bits is called a *byte* and a byte comprises a character — a letter, number, symbol, or space. When a computer is given a command to output data to tape, memory locations are examined and the "on" bits (also called *switches*) sound tones which become the electronic signals recorded on the cassette tape. The beginning of a program or file that is encoded on the tape is a label so the computer can find that data for future use. After you have saved a program or file on tape, rewind it, pull out the jacks on the side of the cassette recorder, and press the recorder's play button. You will hear the signals your computer understands as data.

Let's go over that once more: all the information a computer handles is in the computer in the form of electronic signals, or bits. Eight bits make one byte of memory, and each byte represents a character that humans understand as a letter, number, symbol or space. Therefore, the computer translates all output that goes to your TV screen or your printer so you can understand it, but all output to another electronic device remains in the form of electronic signals.

**OUTPUTTING.** To create a file on tape we must first write a program that will tell the computer what to do. We can have as many Basic statements as we need or want, but before any data can be sent to the cassette recorder we must first open a line of communication be-

tween the recorder and the computer. This is done with an OPEN statement that looks like this: OPEN "O", #-1, "NAME". The Basic command OPEN tells the computer to open a file, and "o" represents an Output file. The computer in this way knows it will be sending data. #-1 is a device number given to the cassette recorder so the computer knows where to send data. "NAME" represents the name of the file; you can replace NAME with any eight characters (or less), within the quotation marks (" "). When the computer opens and names a file it automatically labels the tape so it can find the file for future use. You'll see the recorder operate briefly when this statement is executed by the program.

---

**"Printed instructions cut down on human error and give us mortals a small sense of security in knowing what to do and when to do it."**

---

The next step is to record or print the data onto the tape. This is done with a PRINT statement that also must have a device number. Examples are: PRINT #-1,A\$; PRINT #-1,X; OR PRINT #-1,"WORDS OR SENTENCES OR NUMBERS". The question mark can be used instead of the word PRINT to save typing time.

One last bit of information about printing to tape: the computer executes all or part of the PRINT#-1 statements before they are actually printed to tape. A part of memory stores the data until the memory is full or the data is complete, then the encoding is done. So if you don't see the recorder running when the record and play buttons are pushed in, be patient; it's more efficient for the computer to do a lot of printing at one time.

After all the data is printed to the tape you must be sure to close the file. It's the same as going into your notebook; you open it, put something in, and then close it. To close a file you use this statement: CLOSE #-1. You don't need to use the file name because there can be only one file open at a time.

**FOR THE USER.** The program listing at the end of this article will output a list of data to tape, input a file from tape, and if you choose, alphabetize the list for you. For the rest of this article we'll work with the program a section at a time. You can enter the line numbers in the order I explain them to you or study them now and find a good typist to help you out later.

I try to make all my programs *user friendly*, which means easy for anyone to use. To do this many Print statements must be added to give the user instructions. Program Lines 20 - 90 and 210 - 245 print instructions on the screen for the user to follow. You *don't* have to use

these lines; your program will run just fine without them — but they cut down on the chance of human error and they give us mortals a small sense of security in knowing just what to do and when to do it. You can try the program without these lines, add them another time, or even rewrite them if you like. As I wrote them, they tell you when to press the play and record buttons on your cassette recorder, and to put a tape in the recorder and adjust it past the *leader* (the leader is a strip at the beginning of a cassette tape on which you can't record. It's often a different color).

**THE MENU.** I've written this program so you can use it to output files as well as input them. If you could run it from the beginning your only choice would be to create a file, then input the same file from tape. What you'll *want* to do is create files and store them away until you need the data from one of them. That's like opening your notebook, finding the correct section and removing only the information you need.

A program menu lets you easily go to the portion of a program you need. Here's what our program menu does:

Lines 6 - 10 print the menu options on the screen.

Line 12 asks you to input the letter for the option you want. If you select i, to input a file, the program will jump to Line 200 for the Input routine. If you select E the program will jump to Line 500 and end the program. If you select o for outputting a file, the computer will simply go to the next program line, which is the output section.

I used Lines 195, 345 and 490 to direct the program back to the menu after each option. This makes working with several files easier. Anytime you want to give the user of your programs choices, use a menu. You can have as many options as you like when paired with the appropriate GOTO or THEN statements.

**OUTPUTTING.** Now for the main function of our program — creating a data file:

Line 100 contains two statements separated by a colon (:). The first statement clears the screen (CLS) and the second statement opens a file called "LISTS".

Line 110 prints a blank line and then a line telling the user to give his list a name.

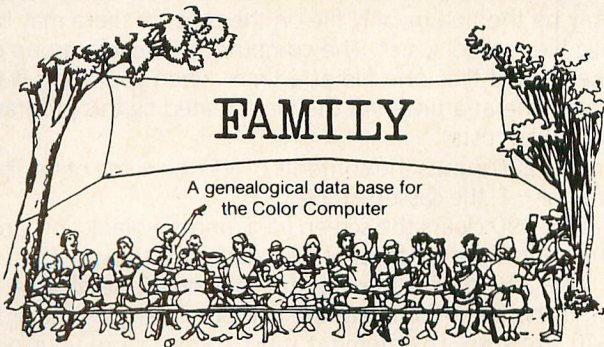
Line 120 is an Input statement that will store whatever name you type in the variable N\$.

Line 130 tells the computer to PRINT N\$ to tape.

Line 140 prompts the user to enter his list, and Line 150 stores whatever is typed in L\$ after the user has pressed Enter.

Line 160 checks to see if L\$ contains "xx". If it does, the user has told the computer his list is complete and it is the end of his file (EOF). The computer will then GOTO Line 190. If L\$ contains anything other than "xx" the computer will just read the next line.

# PETROCCI FREELANCE ASSOCIATES



## FAMILY

A genealogical data base for the Color Computer

Maintains data on 255 people in first eight generations of your family tree. Prints 3 charts; 5 generation pedigree - graphic display of lineage; Family group charts; ancestors by reference number. Easy to use.  
32K EXT ..... 14.95

## GOLF HANDICAPPER



Calculating Golf Handicaps is a complex procedure! This program makes it fast and easy! And even better, The program analyzes your game -calculates best and average score for each hole on you favorite course; calculates average scores on all Par 3, 4 & 5 holes; calculates average score for each 11 yardage increment.

### USES USGA RULES

32K EXT ..... 24.95

## \*\*\*\*\* EDUCATION \*\*\*\*\*

### HEART LUNG CIRCULATORY

Graphic/Text Education

32K ..... 24.95

### MEDICAL TERMINOLOGY

32K EXT ..... 19.95

### STRESS EVALUATOR

32K EXT ..... 24.95

### STROKING PROFILE

32K EXT ..... 24.95

### PROBLEM SOLVING ABILITY TEST

32K EXT ..... 24.95

### VOCABULARY TUTOR

Create word lists save test results all data prints

32K EXT DISK ..... 29.95

### WEATHER PRO

Area Forecaster

32K Ext

Voice version compatible w/Colorware's Real Talker  
Voice 29.95 Non-Voice 24.95

WEATHER WATCH 24.95

Weather Statistics

### CHALKBOARD MATH

Grades 3-5 ..... 19.95

FLASHER MEMORY GAME  
GRAPHIC FUN 32K EXT ... 13.95

PRESCHOOL PACKAGE .. 24.95  
ABC's, 123's Shapes, Big Bigger

ALPHABET SONG ..... 11.95

GUILLONTINE ..... 9.95  
Spelling Game

## BOWLING SECRETARY

(New Super Second Edition)

Now includes handicap routines for both men and women, pin spotting, selection of up to 15 players per team, plus the standard team standings, individual average, high and total pins, team won/lost, high series, cumulative total team points.

Printer Output & Screen Display

32K EXT - 24.95 Std. 16K Version Still Available

## DATA FLEX

\*Tape Data Base Systems\*

Dataflex makes personal, professional or school record keeping easy & convenient.

**EDUCATORS TAKE NOTE!** Dataflex is perfect system for teaching data base use to students. Organizes, Searches, Appends, Edits, Deletes and Prints Data. Sorts data by any of six fields.

32KT ..... 24.95

### PHILATELIC

#### MANAGEMENT SYSTEM

\*Organizes stamp collection and keeps track of valuation

\*Formatted Printout of Data

\*Searches by up to combination of five fields

\*Allows entry of Catalog #,

Country, Seller, Cost, Acquisition Date, Description, Condition, Location, Current Price.

32K DISK ONLY ..... 29.95

#### Master Graphics Tool Kit

32K EXT ..... 39.95

### Text Master Graphics

32K EXT ..... 19.95

### Super Disk Utility

32K EXT ..... 29.95

All Programs 16K Tape

Unless Otherwise Specified

All Programs Available on Disk - Add \$5.00

Special Sale Prices - Retail Only

Include \$1.50 for handling for each program  
Arizona residents add 7% sales tax  
Quantity Discounts to Dealers



### PETROCCI FREELANCE ASSOCIATES

651 N. Houghton Rd

Tucson, AZ 85748

602-296-1041



### Magazine Index System

32K DISK ONLY ..... 29.95

#### Ferret

Adventure Game

Decoder ..... 14.95

Print Spooler 64K ..... 9.95

Real Estate

Investment ..... 24.95

Stock Manager ..... 34.95

#### Shortwave Log Book

32K DISK ONLY ..... 29.95

#### Astrocast

Astrology Calculation

32K ..... 29.95

#### Astrology Chart Print

32K

Specify DMP100 or Epson MX80 ..... 21.95

Line 170 tells the computer to print the contents of L\$ to tape and Line 180 sends the computer back to Line 150 to get the next item on the list. Remember, when you finish entering items on the list, type "xx" so the computer will know when to GOTO Line 190.

Line 190 tells the computer that all the data has been entered and it can now Print the file to tape, then close the file.

**"We can create shelves of new files, but they'll all be worthless if we can't input them back into computer memory."**

That's all you need to output data to tape. You can use this program to compile lists of your classes or subjects, spelling or vocabulary words, school supplies or your new school wardrobe, schedules of your activities, names and dates for history, states (or countries) and their capitals for social studies, phone numbers, addresses, books, collections, and...well, if you can type it on the keyboard you can now put it on tape.

**GETTING IT BACK.** We can create shelves full of cassette files, but they'll all be worthless if we can't input them back into the computer's memory to use again. The program lines that give us access to our cassette files are:

Line 270 Opens an Input line ("I") to device #-1 (the cassette recorder) and looks for a file called "LISTS". "LISTS" may be the first or only file on the tape, or there may be five files called "LISTS". The computer will read a group of like-named files one file at a time, when you direct it to do so one at a time. All the files created by this program are called "LISTS".

Line 280 inputs the contents of N\$ (the name of the list) from #-1, the cassette tape.

Line 290 clears the screen (CLS), prints a blank line, and then prints the contents of N\$ followed by the word "LIST".

Line 310 checks the tape for the end of the file (EOF(-1)). If the file is complete the computer will jump to Line 340. An EOF(-1) statement must come before your primary INPUT #-1 statement in a program or your computer may hang up looking on tape for another entry that doesn't exist. If this does happen to your computer, just press the Reset button on the back of the computer and then correct your errors.

Line 320 will input one element of your file from the tape (#-1) — the contents of L\$.

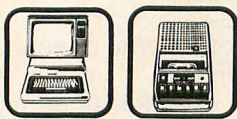
Line 330 tells the computer to PRINT L\$, then go back to Line 310 for another item. The computer will not actually begin printing your list until the section of memory that is holding the input information is full, or until the file is closed.

Line 340 closes the file. Printing or sorting data will now begin.

If you have more than 16 lines of data to print on your screen the lines will scroll upward as they print. This will happen faster than you can read them, but don't get frus-

**PROGRAM LISTING**

**LISTS**



**16K Extended Color Basic  
Tape Loader**

```

2 REM -- LISTS
4 CLS: PRINT: PRINT
6 PRINT "PRESS <O> IF YOU WANT T
0"
7 PRINT " CREATE A CASSETTE FIL
E."
8 PRINT: PRINT "PRESS <I> IF YOU
WANT TO"
9 PRINT " INPUT A FILE FROM TAP
E."
10 PRINT: PRINT "PRESS <E> TO EN
D PROGRAM.
12 INPUT M$: IF M$="I" THEN 200
ELSE IF M$="E" THEN 500
15 REM --TO OUTPUT TO TAPE
20 CLS: PRINT
30 PRINT "TO CREATE A CASSETTE F
ILE:"
40 PRINT " 1. ADJUST TAPE PAST
LEADER."
50 PRINT " 2. PRESS PLAY & RECO
RD."
    
```

```

60 PRINT " 3. PRESS <ENTER> AFT
ER EACH"
70 PRINT " ITEM YOU TYPE."
80 PRINT " 4. TYPE XX WHEN FINI
SHED."
90 PRINT: INPUT "PRESS <ENTER> T
O BEGIN"; R$
100 CLS: OPEN "O", #-1, "LISTS"
110 PRINT: PRINT "NAME OF YOUR L
IST--"
120 INPUT "---->"; N$
130 PRINT #-1, N$
140 PRINT: PRINT "ENTER YOUR LIS
T:"
150 INPUT "---->"; L$
160 IF L$="XX" THEN 190
170 PRINT #-1, L$
180 GOTO 150
190 CLOSE #-1
195 PRINT: INPUT "PRESS <ENTER> TO
CONTINUE"; C$: GOTO 2
200 REM -- FILE INPUT FROM TAPE
210 CLS: PRINT: PRINT "TO INPUT
YOUR LIST FROM TAPE:"
220 PRINT: PRINT " 1. REWIND FI
LE TAPE."
230 PRINT " 2. PRESS <PLAY> ON
CASSETTE."
240 PRINT " 3. PRESS <ENTER> WH
EN READY"
245 INPUT R$
250 PRINT: PRINT "DO YOU WANT TH
E LIST TO BE"
    
```

```

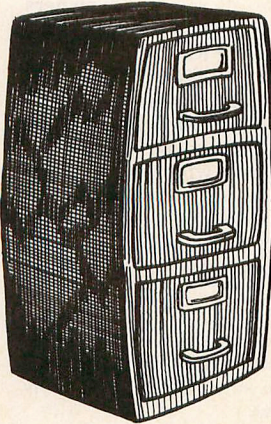
260 INPUT "ALPHABETIZED (Y/N)";
A$
270 OPEN "I", #-1, "LISTS"
280 INPUT #-1, N$
290 CLS: PRINT: PRINT N$; " LIST
:"
300 IF A$="Y" THEN 350
310 IF EOF(-1) THEN 340
320 INPUT #-1, L$
330 PRINT L$: GOTO 310
340 CLOSE #-1
345 PRINT: INPUT "PRESS <ENTER> TO
CONTINUE"; C$: GOTO 2
350 REM-- ALPHABETIZING ROUTINE
360 DIM IL$(50), AL$(50): A=1
370 FOR X= 1 TO 50
380 IF EOF(-1) THEN 410
390 INPUT #-1, L$: IL$(X)= L$
400 NEXT X
410 CLOSE #-1
420 FOR Y= 1 TO X: FOR Z= 1 TO X
430 IF IL$(Z) < IL$(A) THEN A=Z
440 NEXT Z
450 AL$(Y)= IL$(A)
460 IL$(A)= "ZZZZ"
470 NEXT Y
480 FOR P= 1 TO X: PRINT AL$(P):
NEXT P
490 PRINT: INPUT "PRESS <ENTER>
TO CONTINUE"; C$: GOTO-2
500 END
    
```

trated: press the shift key and the @ key at the same time and the printing will stop. When you're ready to continue just press any key.

**ALPHABETIZE IT.** A computer alphabetizes faster than you can say "A, B, C," so why not pull all those lists in alphabetical order? I covered alphabetizing in the March, 1984 article, and again in April. It's not difficult to understand, but it takes time, so if you can go back to these articles do so; if not, follow the logic as best you can.

Lines 250 and 260 find out if you want the list to be alphabetized before it is printed. Line 300 checks if the answer is yes (A\$="Y"); if so, the program will jump to the alphabetizing section. The name of the list has already been printed.

I introduced dimensioning statements and arrays in February, 1984 and we'll work with them again next month. The variables for the alphabetizing section of our program are:



**IL\$()** = the list as it was input. I've allowed for 50 items.

**AL\$()** = the list after it has been alphabetized.

**A** = a number used to compare two items for the smallest (<) value. Remember: A is the smallest valued letter and Z is the greatest.

**X** = a For...Next loop variable for up to 50 items. The X loop inputs the L\$ list from tape.

**Y** = a For...Next loop variable to sort the data into the alphabetical array (AL\$).

**Z** = a For...Next loop variable to search the items in the input list (IL\$) until the smallest is found. It is then placed in the AL\$ array and its place in the IL\$ array is replaced with "ZZZZZ".

**P** = a For...Next loop variable to print all the items in the alphabetical (AL\$) array.

**LAST BUT NOT LEAST.** You can use the alphabetical portion of the program without understanding it completely. Give it your best shot, then go on to something else. Time and practice are really the best teachers. I want you to enjoy your computer time, and you'll learn a little more each time.

For all you lucky computerists with printers — change program Lines 290, 330, and 480 to PRINT # -2 (the device number for your printer) and you'll get printed copies of all your lists; then you can keep them in notebooks, and... isn't that where we began? ■

## PRODUCTS FOR THE TRS-80 COLOR COMPUTER®

### EDITTRON™

**Full-Screen BASIC Program Editor  
WILL SAVE YOU TIME!**

Let **EDITTRON** cut your programming time in half! You will appreciate the absolute ease at which this Full-Screen Editor allows you to **INPUT, EDIT, and DEBUG** your BASIC programs.

**EDITTRON** performs these functions:

- | CURSOR-CONTROL         | SCREEN-EDITING      |
|------------------------|---------------------|
| ★ Directional Movement | ★ Change Characters |
| ★ Screen Scrolling     | ★ Extend a Line     |
| ★ Home the Cursor      | ★ Kill a Line       |
| ★ Limit the Cursor     | ★ Insert Characters |
| ★ Down Page            | ★ Delete Characters |
| ★ Up Page              | ★ Move a Line       |
| ★ Search a Line        | ★ Split a Line      |
| ★ Call a Line          | ★ Copy a Line       |
| ★ Find a String        | ★ Merge Two Lines   |
| ★ Repeat Find          | ★ Auto-Numbering    |

**Other Features Include:** Auto-Repeating keys, Key Tone, user-friendly Prompts and Error Messages, and comprehensive, easy-to-read Documentation.

**EDITTRON** is a 3K, fully position-independent Machine Language program that requires a minimum 16K of RAM, and Extended Color BASIC.

**CASSETTE.....\$ 30      DISKETTE.....\$ 35**

## MACHINE LANGUAGE UTILITIES

**FUNCTION**—Gives you 10 user-definable Function keys, each can be up to 100 characters in length. (16K)

**COMPRESS**—Removes unnecessary spaces and unwanted remarks from your BASIC programs. (16K)

**AUTO-NUM**—Automatically generates sequential line numbers for easier BASIC program entry. (4K)

**ROM-BOOT**—Gives access to your full 64K of RAM, allowing you to use the upper 32K of memory. (64K)

**HI-BASIC**—Runs your program from the upper 32K of RAM, freeing-up the lower 32K for data, graphics, etc. (64K)

**DISK**—One for \$15, Two or more for \$10 each.

**CASS.**—One for \$12, Two or more for \$8 each.

## HARDWARE PRODUCTS

**ROMs**  
 BASIC ROM 1.1 .....\$45<sup>00</sup>  
 BASIC ROM 1.2 .....\$35<sup>00</sup>  
 E.C.B. ROM 1.1.....\$60<sup>00</sup>  
 D.E.C.B. ROM 1.1.....\$35<sup>00</sup>

**RAMs**  
 4164—64K RAM .....\$6<sup>00</sup>  
 Set of Eight.....\$50<sup>00</sup>  
 4116—16K RAM .....\$1<sup>00</sup>  
 Set of Eight.....\$8<sup>00</sup>

**I.C.s**  
 6809E-1 MHz MPU ..\$25<sup>00</sup>  
 68B09E-2 MHz MPU ..\$30<sup>00</sup>  
 6821—1 MHz PIA .....\$8<sup>00</sup>  
 68B21—2 MHz PIA ..\$10<sup>00</sup>  
 6883—SAM.....\$25<sup>00</sup>  
 6847—VDG.....\$20<sup>00</sup>  
 1 MHz Set of Four ..\$65<sup>00</sup>  
 2 MHz Set of Four ..\$70<sup>00</sup>  
 6822—H.D. PIA.....\$15<sup>00</sup>  
 74LS02—NOR Gate ..\$1<sup>00</sup>  
 74LS138—Decoder..\$2<sup>00</sup>

**SERIAL SWITCHERS**  
 These bi-directional switchers allow you to expand your serial port to two or three peripherals or to connect one peripheral to two or three computers. They are a compact 2 x 3 x 1 1/2 inches and are available with a mounted pilot light.  
**2 Ports** .....\$25<sup>00</sup>  
**3 Ports** .....\$30<sup>00</sup>  
 Add \$5<sup>00</sup> for Pilot Light

**MISC**  
 VT-8302 Pilot Light Kit .....\$7<sup>00</sup>  
 VT-8401 Cooling Fan Kit ..\$25<sup>00</sup>  
 6' TV Cable w/RFI Filter ..\$15<sup>00</sup>  
 Clip-on Heatsink, 40-Pin ..\$1<sup>00</sup>  
 RAM Button, 16/32/64K.....\$3<sup>00</sup>  
 IC Extractor, 16/24-Pin ..\$3<sup>00</sup>  
 Cable DIN, M/F, 4/5/6-Pin ..\$1<sup>00</sup>  
 Chassis DIN, F, 4/5/6-Pin ..\$2<sup>00</sup>

**TERMS:** Cashier's checks and money orders for immediate delivery • Personal checks allow 2 weeks • Orders over \$100 save 10% • California residents add 6% • Orders under \$25 add \$2 shipping • C.O.D. add \$4



4418 E. Chapman Ave., Suite 284  
 Orange, CA 92669  
 (714) 639-4070

**VIDTRON**

TM

★ FREE ★  
 CATALOG

PROFESSIONAL PROFESSIONAL PROFESSIONAL PROFESSIONAL

P  
R  
O  
F  
E  
S  
S  
I  
O  
N  
A  
L

P  
R  
O  
F  
E  
S  
S  
I  
O  
N  
A  
L

**REAL EIGHTY-COLUMN DISPLAY!**

# ULTRA TERM +

Works with either the WORD-PAK from PBJ or  
Color Power II CP|M unit from Color Power Unlimited.  
Specify WORD-PAK or Color Power when ordering.

PROFESSIONAL PROFESSIONAL PROFESSIONAL PROFESSIONAL

This program is the **ultimate** in coco communicating!! **Ultra Term +** is used with a plug-in 80 column board\* that gives you **True** 80 columns, not the graphics display that is unreadable at 80 columns. This is truly a **Professional Package** that is so easy to use that once you have used it, you'll wonder why other packages are so difficult to use, (except for Color Term + Plus + that is!) After using a terminal program that cannot give you **True** mainframe terminal emulation, you will find **Ultra Term +** indispensable! **Ultra Term +** even has a host mode that allows you to echo characters like full duplex mainframes do! There are also 10 macro keys which will allow you to save passwords, phone numbers, modem programming information, etc. + PLUS + you can save them to tape (Rom Pack, Tape Versions) or disk (Disk Version). Also, like all **Professional** terminal programs you can save your current parameters. This saves you set up time when moving from one system to another. + Plus + when used with the parallel printer port\*\* you can print either what is coming in, or print what you saved in your space buffer (64K systems only support the space buffer option) if you like. And what about documentation? Every feature is explained in detail and indexed for fast look up! There is also a comprehensive help section to aid those unfamiliar with telecommunications. Although this program was designed for the Professional a total novice can use it with ease. Check all the features listed below and then you decide who has the world's smartest terminal!

Baud Rates: 110-4800 (communicate)  
600-9600 (printer).  
Screen Format: 80 x 25 w/true upper &  
lower case.  
Select half, full duplex or echo.

Select odd, even, mark, space or no parity.  
Send all 128 characters from keyboard.  
Select 7 or 8 bit words.  
Select 1 or 2 stop bits.  
Send a true line break.  
Select all caps if needed.  
Automatic capture of incoming files.  
X on/X off capabilities.  
Merge text or programs in buffer.  
53,000 character buffer (64K).  
Split buffer option (64K).  
10 macro keys.  
Four buffer send modes (dump, prompted, manual & time delay).  
Buffer size indicators (bytes used & bytes remaining).  
Buffer editor w/auto key repeat.  
Scroll forward & reverse to view buffer & print viewed screen option.  
Selectable printer formats (line feeds, etc.).  
Selectable trapping of incoming characters.  
Print while receiving data\*  
Spool received data while receiving more (64K).  
Buffer editor has these features:  
Move forward and reverse through buffer. Insert, type over, delete lines or characters.  
Block deletion or start to end of buffer delete.  
Save and load macros.  
Save and load parameters.  
Use 1-4 disk drive (w/SAVE, LOAD, DIR. & granule display).  
Easy to use MENU driven format.  
Comprehensive users manual.  
Works with **ALL** Radio Shack™ Disk Systems and **all** models of color computers.

Still not convinced? How about a 15 day, money back guarantee? If you don't like the package for any reason, we will refund your money upon return of a like-new package. † Who out there is offering

you this kind of deal? And customer support was never better. Simply fill out your registration card and send it back to us and you will be notified when new features, improvements, etc. become available because all registered owners will receive **Free** upgrades for a \$5.00 shipping and handling fee).

As with all good Professional programs, **Ultra Term +** is all machine code. This program has been tested by those both familiar and unfamiliar with communications programs. And when you call for some technical support, you **won't** get an answering machine during our business hours (10-5 CST M-Sat.) under normal circumstances. Technical help is usually available all day.

Note: Color Term + PLUS + should have all of the same capabilities described above by the time you read this ad, but call first to make sure. **Ultra Term +** is ready to ship **now**.

**PRICE: Ultra Term +** - \$55.95  
(Disk/Tape)

**Color Term + Plus + (V5.0)**  
\$45.95 (Disk/Tape)

**Word-Pak** (Includes a software driver so you can use your basic programs with no modification in most cases!)...**\$139.95** + \$3.00 S&H

**Y-Cable**...**\$29.95** (Required if expansion port not used with disk drives)

Complete Package **Ultra Term +**, Word-Pak & Y Cable [subtract \$20.00 if not needed] is only **\$210.00**

\***Ultra Term +** supports the 80 column board made by PBJ, Inc. If you already have the board, simply order the program, but those of you who don't can get a good deal.

\*\*Parallel Printer Port from PBJ, Inc.

†Less \$10.00 restocking charge.

\*Canadians\*  
Kelly Software Distributors Ltd.  
P.O. Box 11932  
Edmonton, Alberta.  
(403) 421-8003



Double Density Software  
920 Baldwin Street  
Denton, Texas 76201  
Phone 817/566-2004.  
Dept. Z



# SORCERER'S PUZZLES

BY RICHARD RAMELLA

Sunflower and Poke are sent away —  
and Bob's very happy!

"I've been up all night," said Bob, the twisted major domo in Sorcerer Goldberg's service.

"Doing what?" asked Sunflower as she and Poke entered the main hall carrying pails brimming with giant strawberries. Using the growing power given them by the Sorcerer, they had the night before cast a strawberry spell over the land south of the castle. It worked.

"Shortcake time!" chortled Poke.

"I've been packing your miserable belongings," answered Bob. "Everything you own is in those two bags in the corner."

"By whose authority?" Sunflower demanded.

"The Sorcerer's!" Bob cackled. "He said you're leaving today, and that's fine with me. Maybe now we can get some apprentices who appreciate poor old Bob."

The apprentices put down the strawberries and marched to the Sorcerer's study. Sorcerer Goldberg noted the entrance by peeking over the top of the book, *Wizardry Made Simple*.

"What's this about our leaving?" Poke asked.

"It's true," the Sorcerer said.

"Why do we have to go? We love it here," said Sunflower.

"There comes a time when little birdies become too big for the nest," the Sorcerer said. "You have all the skills I can give you. Now you go out in the real world and try them. I have for you a set of tasks."

The apprentices brightened. "We remain in your service?" Poke asked. "We get to come back when we finish?"

"Yes, as long as you wish, to answer the first question. And to answer the second: Perhaps."

"What do we do?" Sunflower asked.

"You're going to fly to a land called Allemar. It's by the sea."

"How do we fly?" wondered Poke.

The wizard circled a finger, and a brilliant magenta frame appeared in the air. "Stay within the frame." (See Listing for "Frame Up").

"And when we get to Allemar?" Sunflower asked.

"Read the instructions," said the Sorcerer.

And with that the apprentices and their baggage were taken up in the magenta frame. It sailed out the window. From far below the Sorcerer genially waved goodbye.

By the next morning the frame set down on the outskirts of Drahcir, the capital of Allemar. Inside Poke's baggage was found this note from the Sorcerer:

*Return to me bearing The Magic Pie and the jewel arrangement called 3-Ring Circus.*

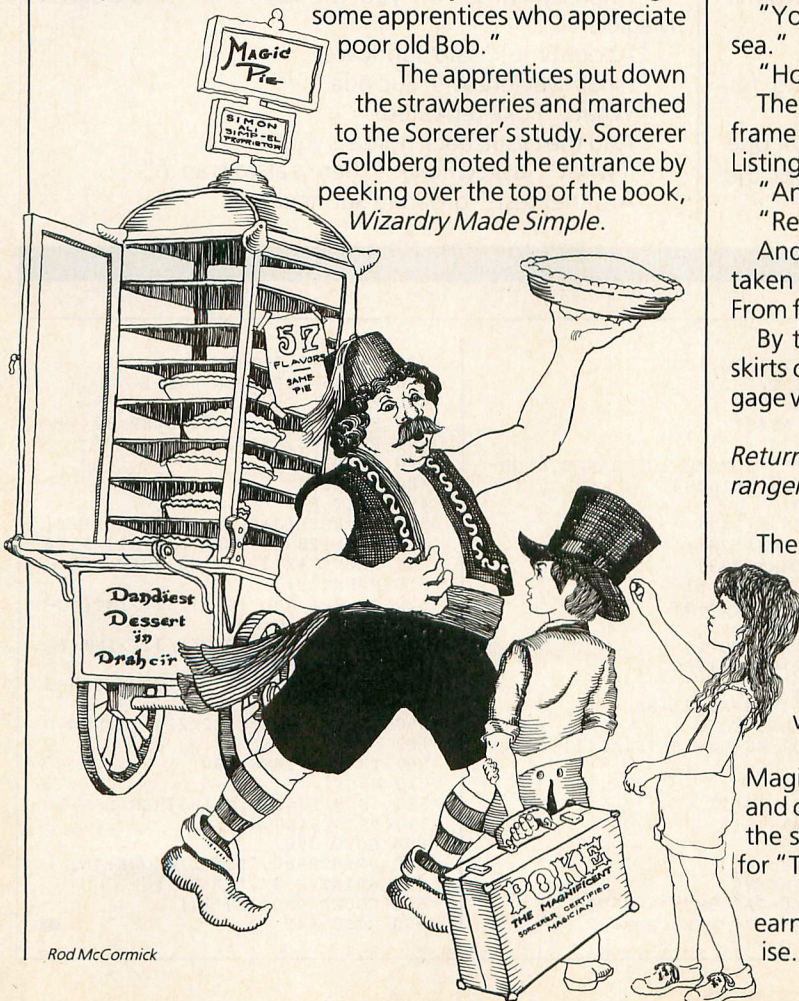
The apprentices wandered into Drahcir, a pleasant city.

It didn't take long for them to find a pie cart presided over by a man aptly named Simon. This cart was parked outside a jewelry shop owned by a woman named Louise.

"The Sorcerer has made it too simple," Poke whispered as they approached the scene.

"Too simple, eh?" laughed Simon. "Observe this Magic Pie, with alternate slices of green gingleberry and orange pumpkin. You'll have to magically separate the slices before you earn this tasty sweet." (See Listing for "The Magic Pie").

"And if you think that's tough, wait 'til you try to earn the ancient jeweled setting *in my store*," said Louise. (See listing for "3-Ring Circus").



Rod McCormick

They had no trouble winning the incredible Magic Pie and the jeweled setting called the Three-Ring Circus. Now all they had to do was return to the Sorcerer with these items.

Then, a lady named Lucinda Cheal happened on the scene.

She stood there, a smile on her face, a glare in her eye. She was quite beautiful, fearsomely so. "Now, give the pie and the jewels to me," she instructed.

"No," said Sunflower. "We'll be going now."

As the apprentices turned away, a certain dizziness seemed to come over the city, as if a silent earthquake were under way. Poke and Sunflower staggered for a moment, then regained their wits.

Lucinda was gone; and also: "The pie! The jewels! Where are they?" cried Poke.

"It's obvious to me what happened," said the shopkeeper named Louise. "That witch Lucinda took them."

"A witch?" said Poke, "Why didn't you tell us?"

"Where does Lucinda live?" Sunflower demanded.

There was no answer. So, the apprentices set off in a random direction.

Before long they came to a sign that read *THIS WAY TO LUCINDA'S HIDEAWAY*.

An hour later they stood before the entrance of a cave. In front of the cave were two objects: a sign reading *LUCINDA LIVES HERE*, and an old man's face carved from a huge boulder.

"Halt!" said the stone face.

"Halt nothing," said Sunflower. "We're looking for Lucinda. Tell us what you know."

The stone face, which might have been a prince at one time, said, "Lucinda has set traps and tests all over the place down there."

"Let's go confront Lucinda," said Sunflower.

They marched into the gloom of the cave.

"I'm not scared," Poke quavered.

"Me either," said Sunflower.

From somewhere near came soft laughter. The apprentices stood back to back, waiting. The laughter gave way to murmurs. "... will they make it ... all they have to do..."

"Ahh!" cried Sunflower. "Lucinda Cheal!"

And it was — Lucinda, who had earlier stolen the treasures sought by the Sorcerer.

"Beware!" said Poke, "We are mighty sorcerers."

"I should imagine," Lucinda smiled.

A figure stepped from the shadows.

"Sorcerer Goldberg!" said Sunflower.

"Was this all a trick?" Sunflower demanded. "You sent us all the way here to Allemar as nothing more than a test!"

"It's graduation day," said the Sorcerer. "The next-to-last test involves your bravery. If you'd lacked the nerve to confront Sorceress Cheal, then you'd be . . ."

"Lost in the underground forever," Poke realized.

"For a long time," the Sorcerer amended.

The Sorcerer was smiling. "I have an announcement that may interest you two. Lucinda and I are announcing our engagement."

"What!" said Poke.

"I hereby confer on you the rating of Third-Degree Magician."

"About time!" said Sunflower.

"I shall live here with Lucinda."

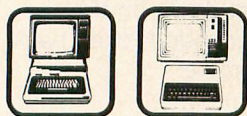
"What!" Poke repeated.

"And the castle back home is yours if . . ."

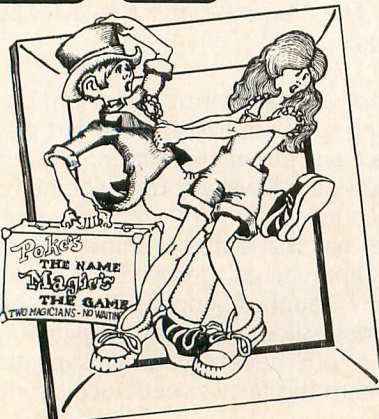
"If what?" asked Poke. "There's always an *if*."

"Another test," groaned Sunflower.

**PROGRAM LISTING 1**  
**FRAME UP**



4K Color Basic



```
120 CLEAR 256
130 CLS
140 PRINT@236, "FRAME UP"
```

```
150 FOR T=1 TO 1000
160 NEXT T
170 CLS0
180 DIM A$(9)
190 J=1024
200 REM*** FOR MC-10 CHANGE LINE
    ABOVE TO: J=16384
210 L=20
220 Z$=CHR$(249)
230 B$=CHR$(128)
240 C$=CHR$(239)
250 FOR X=1 TO 11
260 A$(1)=A$(1)+B$
270 NEXT X
280 FOR X=1 TO 10
290 A$(2)=A$(2)+C$
300 NEXT X
310 A$(2)=B$+A$(2)+B$
320 FOR D=3 TO 7
330 A$(D)=B$+C$+LEFT$(A$(1),8)+C$+B$
340 NEXT
350 A$(8)=A$(2)
360 A$(9)=A$(1)
370 G=139
380 K=272
390 Y$=INKEY$
400 IF Y$="A" THEN K=K-32
410 IF Y$="Z" THEN K=K+32
```

```
420 IF Y$="," THEN K=K-1
430 IF Y$="." THEN K=K+1
440 F=1
450 FOR E=G TO G+256 STEP 32
460 PRINT@E,A$(F);
470 PRINT@K,Z$;
480 F=F+1
490 NEXT E
500 IF PEEK(J+K-1)<>128 OR PEEK(J+K+1)<>128 OR PEEK(J+K-32)<>128 OR PEEK(J+K+32)<>128 THEN 620
510 H=RND(L)
520 IF H=1 AND (G-1)/32<>INT((G-1)/32) THEN G=G-1
530 IF H=2 AND (G-21)/32<>INT((G-21)/32) THEN G=G+1
540 IF H=3 AND G-32>0 THEN G=G-32
550 IF H=4 AND G+32<224 THEN G=G+32
560 IF L=4 THEN 590
570 N=N+1
580 IF N/10=INT(N/10) THEN L=L-1
590 PRINT@480,N;
600 GOTO 390
620 PRINT@480,"FINAL SCORE:"N;
630 PRINT@K-34,"CRASH";
640 SOUND RND(13)*8,1
650 GOTO 640
```





# BUT... CHECKERBOARDS ARE FOR TABLECLOTHS!

## THE LOWERKIT III FROM GREEN MOUNTAIN MICRO

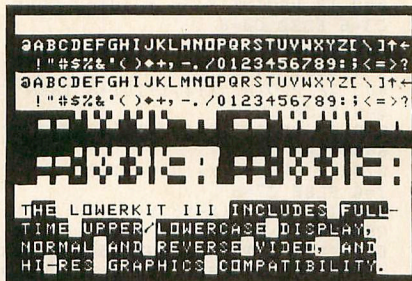
**S**till cloaking your Color Computer in a checkerboard tablecloth? Since 1981, thousands of Color Computer users have uncovered their computer by discovering the Lowerkit — the first and best full-time lowercase and special symbols generation system for your Color Computer.

Why a Lowerkit? Because uppercase-only display is a relic of the user-unfriendly past. And because you can't really read a checkerboard excuse for lowercase display. Sure, software lowercase comes with a handful of commercial programs. But software lowercase gobbles up over 6,000 bytes of your precious memory. Even if you have 64K, you'll give up 10% of it for a simple lowercase display. And software lowercase vanishes when you change programs or turn off your computer.

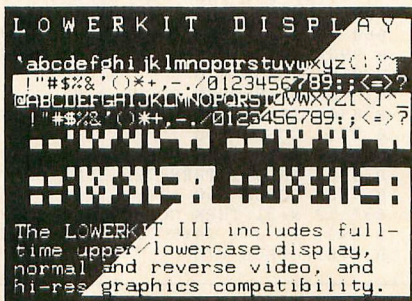
Take 15 minutes. Put the Lowerkit in. A Lowerkit is simple, reliable — and it's always there. You flip on your machine, and Lowerkit's bold lettering greets you.

No tapes, disks or cartridges to load first. No compatibility problems; when you don't want it, you switch it off.

And now, the new Lowerkit III includes a reverse screen switch as well. Big, bright green letters on a black background.



Original Color Computer Display



LOWERKIT III Display (reverse video, too)

Circle No. 31 on Reader Service Card

Three years ago, the Lowerkit made history and set the standard in Color Computer lowercase. For example, game and education programs from Sugar Software have Lowerkit display options. Spectrosystems' ADOS supports the Lowerkit; so does Cer-Comp's TextPro. Cartridge Scripsit looks beautiful with a Lowerkit. Spectrum Projects, Cheshire Cat and many others have developed beautiful alternate character sets which you can download from Micronet, burn into an EPROM, and snap into your Lowerkit.

Pull the checkerboard tablecloth off your Color Computer with a **Lowerkit**. The original. The standard.

## Set New Standards with the New Lowerkit III

- Lowerkit III, assembled and tested, \$79.95
  - Lowerkit III, complete kit of parts, \$49.95
  - Lowerkit III, printed circuit board, \$20.00
- Be sure to specify Color Computer or Color Computer 2.*

## ALSO AVAILABLE FROM GREEN MOUNTAIN MICRO

**Color Burner** with software, \$69.95 / \$56.95 kit

**Micro Language Lab "Learning the 6809"**, \$99 (plus \$3.50 shipping and handling)

**CoCoPort** interface, \$49.95 / \$39.95 kit

**RAM/ROM** pack, \$29.95 / \$19.95 kit

**64K** Color memory upgrade kit, \$49.95 with *NEW* Memory Tester, \$54.95

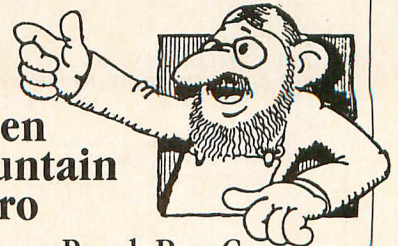
**Color Quaver**, Software Music Synthesizer, \$19.95

**Scroll-A-Roll** software video text display, \$24.95

**TV Buff II\***, improved to handle virtually all monitors, \$14.95

(Add \$2.50 shipping and handling)

\*Specify Color Computer or CoCo II



## Green Mountain Micro

Bathory Road, Box C  
Roxbury, Vermont 05669  
802 485-6112

Hours: 9am-5pm, Monday-Friday

COD/VISA/MASTERCARD

TRS-80 is a trademark of Tandy Corporation

"Yes," said the Sorcerer. He made a magic motion. The walls of the room faded. Above, a burst of energy opened the subterranean ceiling. Sunlight flooded the area.

**SORCERER'S NOTES.** Frame Up is a game, not strictly a puzzle. It runs on any TRS-80 Color Computer, including the MC-10. It is in Color Basic. To play, type RUN and tap Enter. A magenta frame appears. Within it is an orange character. The frame will begin to move — north, south, east or west. The object is to avoid crashing the orange graphic into the frame walls. To avoid this, tap A to take the orange graphic north, z to go south, the comma key for west, and the period key for east. The building score appears at bottom left screen. The game ends with the inevitable crash. Object: highest possible score.

The Magic Pie requires 16K Extended Color Basic. Type RUN and tap Enter. A pie with eight slices appears. There are alternate slices of green ginkleberry and orange pumpkin pie. The object is to put all orange slices above

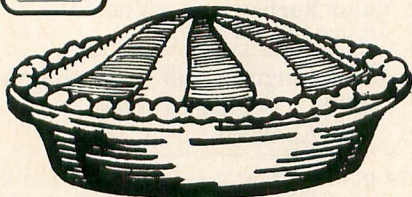
all green slices. Stated another way: the northern hemisphere of the circle is to be orange, the bottom green. Achieve this test in the fewest possible moves. If the entire pie turns to one color, orange or green, the game ends. Score is kept and announced at the end. At the start a small orange circle appears north of the pie. This is a cursor which can be moved clockwise around the pie by tapping keyboard letter M. Tap keyboard letter z to see pie slices exchange colors. On alternate turns, the slices change in different ways. Note the pattern of change. All you need know: Tap M to move the cursor, tap z to exchange colors. Don't let the pie become all one color. The solution is possible in three taps of Z. Children often do this puzzle better than adults.

Three-Ring Circus requires 16K Extended Color Basic. Type RUN and tap Enter. The screen prompts 3-RING CIRCUS IS SETTING UP. Be patient. Then you are prompted: TO SEE YOUR GOAL, TAP A KEY. Do this (any key), and you will see three interlocked rings sharing certain intersections. The

**PROGRAM LISTING 2  
THE MAGIC PIE**



16K Extended Color Basic



```

100 'MAGIC PIE * TRS-80 EXTENDED
    COLOR BASIC 16K *
110 REM * SORCERER'S PUZZLES #8
    RICHARD RAMELLA *
120 CLS
130 PRINT@233,"THE MAGIC PIE"
140 FOR T=1 TO 5
150 PLAY MID$( "CDEFGAB",RND(7),1
)
160 NEXT
170 CLS
180 CLEAR 256
190 A$="129003194032222096192160
127188063160035096064030"
200 P$="T10;CEGAFD"
210 PMODE 3,1
220 PCLS 1
230 COLOR 3,5
240 SCREEN 1,1
250 X=128
260 Y=96
270 CIRCLE(X,Y),85
280 DRAW "M128,96;N;U85;N;D85;N;
L85;N;R85;N;H58;N;G58;N;F58;N;E5
8"
290 CIRCLE(128,96),4,3
300 PAINT(128,96),3,3
310 PAINT(X-55,Y-50),6,3
320 PAINT(X-10,Y+4),8,3
330 PAINT(X-4,Y+10),6,3
340 PAINT(X+4,Y+10),8,3
350 PAINT(X+10,Y+4),6,3
360 PAINT(X+55,Y-50),8,3
370 PAINT(X+2,Y-82),6,3
380 PAINT(X-2,Y-82),8,3
390 A=129
400 B=3

```

```

410 N=1
420 CIRCLE(A,B),5,8
430 PAINT(A,B),8
440 B$=INKEY$
450 IF B$="" THEN 440
460 IF B$="M" THEN CIRCLE(A,B),5
,5: PAINT(A,B),5: N=N+6: IF N>48
THEN N=1
470 IF N>48 THEN N=1
480 A=VAL(MID$(A$,N,3))
490 B=VAL(MID$(A$,N+3,3))
500 IF B$="M" THEN 420
510 IF B$="Z" THEN GOSUB 540
520 IF R=64 OR R=48 THEN 1100 EL
SE IF S=32 AND U=24 THEN 1010
530 GOTO 420
540 K=K+1
550 IF J=0 THEN J=1 ELSE J=0
560 IF PPOINT(X-2,Y-82)=8 THEN C
1=6 ELSE C1=8
570 IF PPOINT(X+2,Y-82)=8 THEN C
2=6 ELSE C2=8
580 IF PPOINT(X+55,Y-50)=8 THEN
C3=6 ELSE C3=8
590 IF PPOINT(X+10,Y+4)=8 THEN C
4=6 ELSE C4=8
600 IF PPOINT(X+4,Y+10)=8 THEN C
5=6 ELSE C5=8
610 IF PPOINT(X-4,Y+10)=8 THEN C
6=6 ELSE C6=8
620 IF PPOINT(X-10,Y+4)=8 THEN C
7=6 ELSE C7=8
630 IF PPOINT(X-55,Y-50)=8 THEN
C8=6 ELSE C8=8
640 IF N=1 THEN GOSUB 850: GOSUB
950: IF J=1 THEN 720 ELSE GOSUB
870: GOSUB 930
650 IF N=7 THEN GOSUB 870: GOSUB
970: IF J=1 THEN 720 ELSE GOSUB
890: GOSUB 950
660 IF N=13 THEN GOSUB 890: GOSU
B 990: IF J=1 THEN 720 ELSE GOSU
B 910: GOSUB 970
670 IF N=19 THEN GOSUB 910: GOSU
B 850: IF J=1 THEN 720 ELSE GOSU
B 930: GOSUB 990
680 IF N=25 THEN GOSUB 930: GOSU
B 870: IF J=1 THEN 720 ELSE GOSU
B 950: GOSUB 850
690 IF N=31 THEN GOSUB 950: GOSU
B 890: IF J=1 THEN 720 ELSE GOSU
B 970: GOSUB 870

```

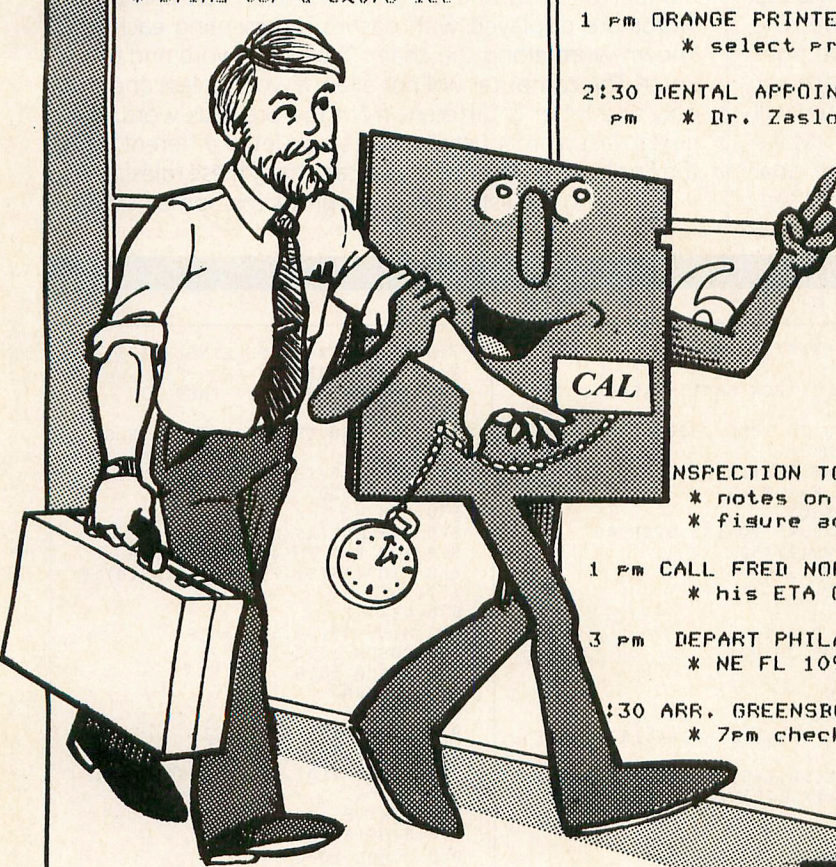
```

700 IF N=37 THEN GOSUB 970: GOSU
B 910: IF J=1 THEN 720 ELSE GOSU
B 990: GOSUB 890
710 IF N=43 THEN GOSUB 990: GOSU
B 930: IF J=1 THEN 720 ELSE GOSU
B 850: GOSUB 910
720 A1=PPOINT(X-2,Y-82)
730 A2=PPOINT(X+2,Y-82)
740 A3=PPOINT(X+55,Y-50)
750 A4=PPOINT(X+10,Y+4)
760 A5=PPOINT(X+4,Y+10)
770 A6=PPOINT(X-4,Y+10)
780 A7=PPOINT(X-10,Y+4)
790 A8=PPOINT(X-55,Y-50)
800 R=A1+A2+A3+A4+A5+A6+A7+A8
810 S=A8+A1+A2+A3
820 U=R-S
830 IF R=64 OR R=48 THEN 1100 EL
SE IF S=32 AND U=24 THEN 1010
840 RETURN
850 PAINT(X-2,Y-82),C1,3
860 RETURN
870 PAINT(X+2,Y-82),C2,3
880 RETURN
890 PAINT(X+55,Y-50),C3,3
900 RETURN
910 PAINT(X+10,Y+4),C4,3
920 RETURN
930 PAINT(X+4,Y+10),C5,3
940 RETURN
950 PAINT(X-4,Y+10),C6,3
960 RETURN
970 PAINT(X-10,Y+4),C7,3
980 RETURN
990 PAINT(X-55,Y-50),C8,3
1000 RETURN
1010 FOR T=1 TO 5
1020 PLAY P$
1030 NEXT T
1040 PRINT@232,"WINNER IN"K"TURN
S."
1050 FOR T=1 TO 5
1060 PLAY P$
1070 NEXT T
1080 SCREEN 1,1
1090 GOTO 1010
1100 SOUND 1,10
1110 PRINT@232,"LOSER IN"K"TURN
S."
1120 SOUND 10,10
1130 SCREEN 1,1
1140 GOTO 1100

```

# WHO? WHAT? WHEN? WHERE?

## Let CAL Help You Prepare...

<p>18</p> <p>2 PM EMPLOYEES' PICNIC/Valley Forge Park * bring tap &amp; extra ice</p>	<p>19</p> <p>9 AM INTERVIEW APPLICANTS: *Nichols *McCoy *Bateman</p> <p>1 PM ORANGE PRINTERS * select proposal covers</p> <p>2:30 DENTAL APPOINTMENT PM * Dr. Zaslow</p>	<p>20</p> <p>10 am ADVERTISING MEETING * Doug/Jim/Barb * Review plans * finalize spring</p> <p>1 PM LUNCH/Jim Evanston</p>
		<p>27</p> <p>10 am CONVENTION OPENS</p> <p>1 PM LUNCH/Fred North</p> <p>3 PM OEM SEMINAR OPENS</p>

JBM's CAL program (\$69) is the fastest, simplest, most comprehensive schedule manager available for OS9\* (all levels).



For more information or to place an order, contact:

The JBM Group, Inc.  
Dept. CC 13  
Continental Business Center  
Front & Ford Streets  
Bridgeport, PA USA 19405  
TEL: 215-337-3138  
TWX: 510-660-3999



VISA/MASTERCHARGE accepted. PA res. add 6% sales tax. US orders, add \$5.00 postage and handling.

\* OS9 is a registered trademark of Microware Corp.

left ring contains blue circles, the right ring green circles, and the middle ring has four orange circles. This is the goal state. Study it as long as you wish, then tap any key to return to the text screen. You are told to type a number from 1 to 20 and tap Enter. The number you choose determines how many times each ring will revolve to scramble the circles. Choose and be patient. You will hear a sound for each hidden move. Next, the rings reappear with the circles within them scrambled. Two items have been added. Beneath the left ring is an orange square. Tap the letter z to move it among the three rings. At screen bottom is a line with an orange square at its left. Tap letter x and see it go back and forth between the ends of the line. The top square is the choice of the circle which will revolve. The square and line determine if the circle will revolve right (clockwise) or left (counterclockwise). Tap the space bar and the colored circles within the larger circle chosen will each move one position in the direction chosen. Make moves which bring the arrangement back to the goal state shown at the start of the program. As you will see,

the middle ring shares intersection positions with the left and right rings. This is the central problem of the puzzle.

Doublets works in Microcolor Basic, Color Basic and Extended Color Basic. The puzzle concept was made up by Lewis Carroll, author of *Alice in Wonderland*. The idea is to change one word into another in a specified number of steps. At each step only one letter of the word may be changed. Example: RAN to MAR in three steps would be RAN MAN MAR. When you type RUN and press the Enter key, the program gives you three prompts. To the first, type the start word and press Enter. To the second, type the finish word and press Enter. To the third, type the number of steps and press Enter. Next, start and finish words are displayed with dashes representing each unknown word along the chain. Type each word and press Enter. The computer will not allow a word unless one and only one letter is different from the previous word. The next to last word must also be a single letter different from the finish word. The computer can check these rules.

Following is a list of Doublets problems, some of them

**PROGRAM LISTING 3  
THREE-RING CIRCUS**



**16K Extended Color Basic**

```

100 REM * 3-RING CIRCUS * TRS-80
    EXTENDED COLOR BASIC 16K *
110 REM * SORCERER'S PUZZLES #8
    RICHARD RAMELLA *
120 CLEAR 500
130 CLS
140 PRINT "3-RING CIRCUS IS SETT
    ING UP."
150 S=TIMER
160 IF S>1000 THEN S=S-1000: A=R
    ND(0): GOTO 160
170 FOR D=1 TO S
180 A=RND(0)
190 NEXT D
200 PRINT
210 QS="T64;CDEFGAB"
220 AS(1)="067065304405830210663
    00609530221273044135306712730820
    953"
230 AS(2)="112065209005780670653
    05209580671273090135811212721280
    958"
240 AS(3)="157065213505721120652
    09709521121272135135215712721730
    952"
250 PMODE 3,1
260 PCLS 1
270 Y=96
280 FOR X=45 TO 171 STEP 45
290 CIRCLE(X,Y),45
300 CIRCLE(X,Y),34
310 NEXT X
320 FOR D=1 TO 3
330 GOSUB 1010
340 NEXT D
350 PRINT "TO SEE YOUR GOAL, TAP
    A KEY."
360 PRINT "THEN TAP A KEY TO RET
    URN TO THIS TEXT SCREEN."
370 Z$=INKEY$
380 IF Z$="" THEN 370 ELSE SCREE
    N 1,1
390 Z$=INKEY$
    
```

```

400 IF Z$="" THEN 390
410 L=10
420 INPUT "HOW MANY MIXERS 1 TO
    20";J
430 IF J>20 THEN J=20
440 PRINT
450 PRINT "PATIENCE..."
460 FOR K=1 TO J
470 PLAY QS
480 FOR Z=45 TO 135 STEP 45
490 X=RND(2)*50
500 GOSUB 800
510 NEXT Z,K
520 L=0
530 FOR D=1 TO 3
540 GOSUB 1010
550 NEXT D
560 Z=45
570 X=50
580 LINE(Z-4,150)-(Z+4,160),PSET
    ,BF
590 LINE(50,180)-(130,180),PSET
600 LINE(X,175)-(X+10,185),PSET,
    BF
610 D=1
620 SCREEN 1,1
630 CLS
640 FOR N=7 TO 56 STEP 7
650 IF MID$(AS(1),N,1)<>"3" THEN
    730 ELSE NEXT N
660 FOR N=14 TO 56 STEP 14
670 IF MID$(AS(2),N,1)<>"8" THEN
    730 ELSE NEXT N
680 COLOR 2,8
690 LINE(0,0)-(256,48),PSET,BF:
    COLOR 5,8
700 DRAW "BM20,5;F40;E20;F20;E40
    ;BM150,5D40;BM170,45;U40;F41;U40
    "
710 PLAY QS
720 GOTO 710
730 Z$=INKEY$
740 IF Z$="Z" THEN LINE(Z-4,150)
    -(Z+4,160),PRESET,BF: Z=Z+45: IF
    Z=180 THEN Z=45
750 IF Z$="Z" THEN LINE(Z-4,150)
    -(Z+4,160),PSET,BF
760 IF Z$="X" THEN LINE(X,175)-(
    X+10,185),PRESET,BF: X=X+80: IF
    X=210 THEN X=50
    
```

```

770 IF Z$="X" THEN LINE(X,175)-(
    X+10,185),PSET,BF
780 IF Z$<>CHR$(32) THEN 730
790 PLAY QS
800 IF X=50 THEN GOSUB 920 ELSE
    GOSUB 830
810 IF L=10 THEN RETURN
820 GOTO 610
830 D=Z/45
840 ES=MID$(AS(D),7,1)
850 FOR F=7 TO 49 STEP 7
860 MID$(AS(D),F,1)=MID$(AS(D),F
    +7,1)
870 NEXT F
880 MID$(AS(D),56,1)=ES
890 GOSUB 1090
900 GOSUB 1010
910 RETURN
920 D=Z/45
930 ES=MID$(AS(D),56,1)
940 FOR F=56 TO 14 STEP -7
950 MID$(AS(D),F,1)=MID$(AS(D),F
    -7,1)
960 NEXT F
970 MID$(AS(D),7)=ES
980 GOSUB 1090
990 GOSUB 1010
1000 RETURN
1010 IF L=10 THEN RETURN ELSE IF
    X=50 THEN FOR H=1 TO 50 STEP 7
    ELSE FOR H=50 TO 1 STEP -7
1020 A=VAL(MID$(AS(D),H,3))
1030 B=VAL(MID$(AS(D),H+3,3))
1040 C=VAL(MID$(AS(D),H+6,1))
1050 CIRCLE(A,B),8,C
1060 PAINT(A,B),C,C
1070 NEXT H
1080 RETURN
1090 IF D=1 THEN MID$(AS(2),21,1)
    =MID$(AS(1),7,1): MID$(AS(2),35
    ,1)=MID$(AS(1),49,1)
1100 IF D=2 THEN MID$(AS(1),7,1)
    =MID$(AS(2),21,1): MID$(AS(1),49
    ,1)=MID$(AS(2),35,1): MID$(AS(3)
    ,21,1)=MID$(AS(2),7,1): MID$(AS(
    3),35,1)=MID$(AS(2),49,1)
1110 IF D=3 THEN MID$(AS(2),7,1)
    =MID$(AS(3),21,1): MID$(AS(2),49
    ,1)=MID$(AS(3),35,1)
1120 RETURN
    
```



## The Joystick that sets you free!

The one-hand operation of this fantastic new joystick will truly set you free and increase the pleasure of playing your favorite video games. The smoothness and responsiveness of this unique joystick that operates completely

without a base is something to be experienced. Available direct from us or from your independent computer retail store. (See below)

**\$49.95** suggested retail

**STOP** changing Printer and Modem Cables! Our **Parallel Printer Interface** provides **Switch Selectable Printer or Modem** operations for both CoCo and MC10. It features switchable baud rates from 300 to 9600. It comes complete with power supply, modem cable and "**Centronics**" type printer cable. For Basic 1.1 and later revisions.

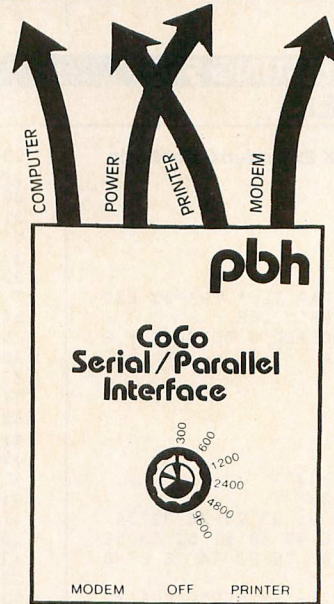
Available direct from us or from your independent computer retail store. (See below)

**Only \$89.95** suggested retail

**pbh Computer Products, Inc.** P. O. Drawer 55868  
Houston, Texas 77055

713/956-0207

When ordering direct from **PBH** please enclose \$3.00 per item for shipping.



### Stocking Distributors

Compukit  
Houston, TX. 77059

Spectrum Projects  
Woodhaven, N.Y. 11421

### Authorized Dealers

TRS TECH  
Computer Services  
Houston, TX. 77033  
Computers & More  
Huntsville, TX. 77340

Computers, Etc.  
Austin, TX. 78745

Chips, Incorporated  
Atlanta, GA. 30340

Endicott Computer  
Software & Accessories  
Huntsville, AL. 35801  
The Computer Store  
Jasper, IN. 47456  
The Software Connection  
Ft. Lauderdale, FL. 33319  
Colorware, Inc.  
Woodhaven, N.Y. 11421

The Photo Shop Radio Shack  
Wilmar, MN. 56201  
Patterson Electronics  
Mountain View, AR. 72560

Cinsoft  
Cincinnati, OH. 45237  
EDC Industries  
Los Angeles, CA. 90042  
Sound Center Radio Shack  
Whiterock, N.M. 87644  
& Los Alamos, N.M. 87544

Computer Associates  
West Fargo, N.Dak. 58078  
Computer Plus, Inc.  
Littleton, MA. 01460  
Turtle Micro Ware  
East Lime, CT. 06333

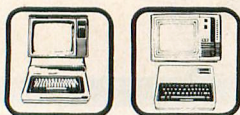
made up by Lewis Carroll himself: APE to MAN in 7, ARMY to NAVY in 9, MOON to BEAM in 5, LIFE to BELT in 6, MARE to RICE in 5, LADY to GIRL in 8, POOR to RICH in 7, TEAR to DROP in 7, PORT to WINE in 6, OIL to GAS in 6, ELM to OAK in 9, CENT to DIME in 5, and PIG to SOW in 6.

Nonpareil works only in Extended Color Basic. To understand the rules more quickly, type RUN and press Enter to see the beginning display. There are eight red-rimmed green boxes, four on top, four on the bottom. They are

numbered. The right three top boxes contain blue circles. The left three bottom boxes contain white circles. Some boxes are connected by red lines. If there is a connection, you may move a circle to an empty box. Example: To start, box five has a circle and box 1 is empty. To move the circle from 5 to 1, tap 51. Pressing Enter is not necessary. To win, exchange white and blue circles in seven moves. Hint: If the program seems to hang up, tap a number key, then press the two-key number sequence you want to move.

And now, the Sorcerer says good-bye!

**PROGRAM LISTING 4  
DOUBLETS**



**4K Color Basic  
4K Extended Color Basic**

```
100 REM * DOUBLETS * TRS-80 COLO
R BASIC OR MICROCOLOR BASIC
110 REM * SORCERER'S PUZZLES / R
ICHARD RAMELLA
120 CLS
130 X$=CHR$(32)+CHR$(32)
140 INPUT "START WORD";A$
150 INPUT "FINISH WORD";B$
160 INPUT "NUMBER OF STEPS";A
170 A=INT(A)
180 DIM C$(A)
```

```
190 CLS
200 C$(1)=A$
210 FOR C=2 TO A-1
220 FOR G=1 TO LEN(A$)
230 C$(C)=C$(C)+"-"
240 NEXT G,C
250 C$(A)=B$
260 H=1
270 CLS
280 FOR D=1 TO A
290 PRINT X$;C$(D)
300 NEXT
310 N=0
320 PRINT @ H*32,"";
330 INPUT C$(H+1)
340 GOSUB 470
350 PRINT @ 19,"";
360 IF N<>1 THEN PRINT "UNACCEPT
ABLE"; ELSE PRINT "GOOD !"
370 FOR T=1 TO 550
```

```
380 NEXT T
390 PRINT @ 19,STRING$(12,32);
400 IF N<>1 THEN C$(H+1)="" : FOR
G=1 TO LEN(A$): C$(H+1)=C$(H+1)
+"-": NEXT: GOTO 270
410 H=H+1
420 IF H+1<A THEN 270
430 GOSUB 470
440 PRINT @ 416,"";
450 IF N=1 THEN PRINT "YOU DID I
T!"; ELSE PRINT "WRONG ENDING...
";
460 END
470 N=0
480 FOR D=1 TO LEN(A$)
490 IF MID$(C$(H+1),D,1)<>MID$(C
$(H),D,1) THEN N=N+1
500 NEXT D
510 RETURN
520 END
```

**PROGRAM LISTING 5  
NONPAREIL**



**16K Extended Color Basic**

```
100 REM * NONPAREIL * TRS-80 EXT
ENDED COLOR BASIC 16K
110 REM * SORCERER'S PUZZLES * R
ICHARD RAMELLA
120 CLS
130 PMODE 3,1
140 PCLS 2
150 SCREEN 1,1
150 -
160 PLAY "T32;02"
170 V$="CABBAGE"
180 Z$="12 15 21 23 25 26 32 34
35 36 37 43 46 47 48 51 52 53 56
65 62 63 64 67 76 73 74 78 87 8
4"
190 A$=CHR$(32)+"XXX000"+CHR$(32)
200 L$=" 035045 095045 155045 21
5045 035145 095145 155145 215145
"
210 FOR X=10 TO 190 STEP 60
220 LINE(X,20)-(X+50,70),PSET,B
230 LINE(X,120)-(X+50,170),PSET,
B
240 NEXT
250 PAINT(0,0),1,4
260 FOR X=60 TO 180 STEP 60
270 LINE(X,45)-(X+10,45),PSET
280 IF X<180 THEN LINE(X+10,70)-
(X,120),PSET
```

```
290 IF X<180 THEN LINE-(X+95,70)
,PSET
300 LINE(X,145)-(X+10,145),PSET
310 LINE(X-25,70)-(X-25,120),PSE
T
320 NEXT X
330 LINE(X-25,70)-(X-25,120),PSE
T
340 LINE(240,70)-(180,120),PSET
350 COLOR 3,2
360 DRAW "BM15,8;E2;D11;L2;R4"
370 DRAW "BM75,7;U1;E1;R5;F1;D3;
G7;D1;R7"
380 DRAW "BM132,5;R8;G5;R4;F2;D
4;G2;L5;H1;U1"
390 DRAW "BM202,12;L10;E7;D12"
400 DRAW "BM20,174;L8;D5;R6;F2;D
4;G2;L5;H1;U1"
410 DRAW "BM80,175;U1;H1;L5;G2;D
10;F2;R6;E3;U2;H3;L5;D1"
420 DRAW "BM132,173;R8;D1;G2;D2;
G2;D3;G1;D3"
430 DRAW "BM196,173;R5;F2;D3;G2;
L5;G2;D3;F2;R5;E2;U3;H2;L5;H2;U3
;E2"
440 FOR X=95 TO 215 STEP 60
450 CIRCLE(X,45),15
460 PAINT(X,45),3,3
470 NEXT X
480 COLOR 1,2
490 FOR X=35 TO 155 STEP 60
500 CIRCLE(X,145),15
510 PAINT(X,145),1
520 NEXT X
530 FOR X=1 TO 2
540 Z$(X)=INKEY$
550 IF Z$(X)="" THEN 540
```

```
560 M(X)=VAL(Z$(X))
570 IF M(X)<1 OR M(X)>8 THEN 540

580 NEXT X
590 Y$=Z$(1)+Z$(2)
600 IF INSTR(Z$,Y$)=0 THEN 530
610 S$=MID$(L$, (M(1)*7)-6,7)
620 F$=MID$(L$, (M(2)*7)-6,7)
630 S1=VAL(LEFT$(S$,4))
640 S2=VAL(RIGHT$(S$,3))
650 F1=VAL(LEFT$(F$,4))
660 F2=VAL(RIGHT$(F$,3))
670 P1=PPOINT(S1,S2)
680 P2=PPOINT(F1,F2)
690 IF P1=6 OR P2<>6 THEN 530
700 CIRCLE(F1,F2),15,P1: PAINT(F
1,F2),P1
710 CIRCLE(S1,S2),15,P2: PAINT(S
1,S2),P2
720 PLAY V$
730 K=K+1
740 IF PPOINT(95,45)=5 AND PPOIN
T(155,45)=5 AND PPOINT(215,45)=5
AND PPOINT(35,145)=7 AND PPOINT
(95,145)=7 AND PPOINT(155,145)=7
THEN 770
750 Z$(2)=""
760 GOTO 530
770 PLAY "T64;03"
780 M$=INKEY$
790 PLAY V$
800 IF M$="" THEN 780
810 PRINT "WINNER IN"K"MOVES."
820 IF K=7 THEN PRINT "BEST POSS
IBLE" ELSE PRINT "BETTER SCORE P
OSSIBLE. . ."
830 END
```

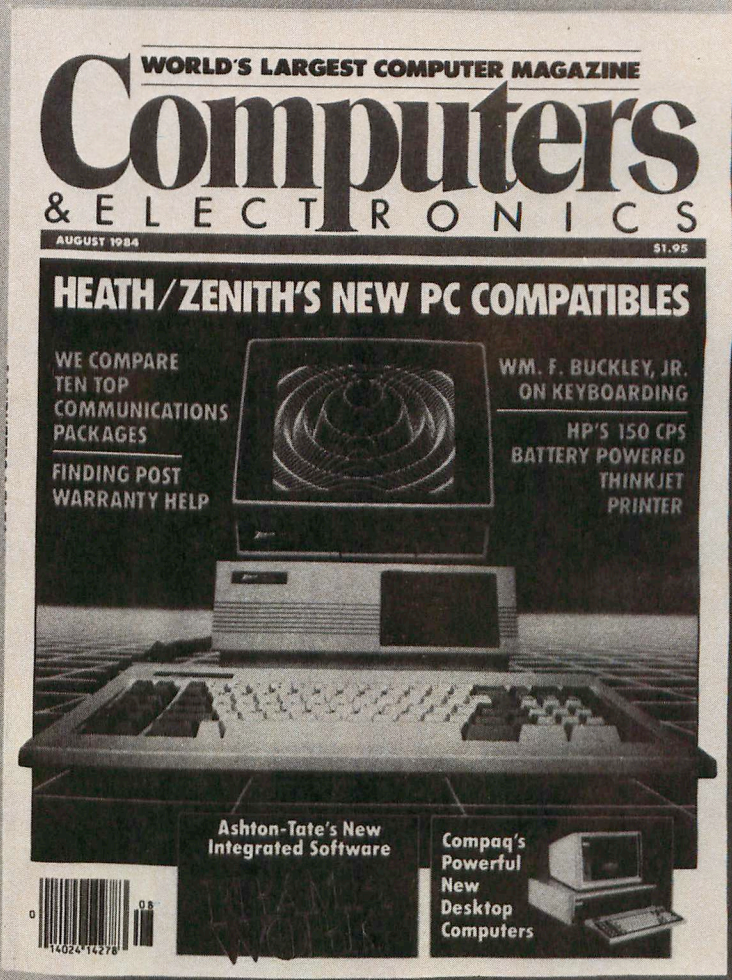
# YOUR LINK TO THE FUTURE OF MICROCOMPUTING

*New hardware that will change the way you do business*

*Novel applications of existing technology*

*Who are the leaders and what are they doing?*

*Technologically advanced—User literate*



## COMPUTERS & ELECTRONICS

is your state-of-the-art link to technology and innovations of micro-computing. No other magazine ties you into the developments and the developers of the future of microcomputing quite like COMPUTERS & ELECTRONICS.

Your subscription to COMPUTERS & ELECTRONICS brings you the latest developments in hardware, software and peripherals—and the impact these products will have on you, today, and in the future! You'll have an open forum with the developers of new worlds of technology and processing! You'll be an active part of today, while blazing new paths towards tomorrow!

Open your link to the future of microcomputing the way you want it—the way you need it!

**SUBSCRIBE TO  
COMPUTERS & ELECTRONICS  
AND SAVE UP TO 37%!**

### Computers & ELECTRONICS

P.O. Box 2774  
Boulder, Colorado 80322

**YES!** I want a direct link to the future of microcomputing.

Please send me COMPUTERS & ELECTRONICS for:

<input type="checkbox"/> 1 year for \$12.97.	<input type="checkbox"/> 2 years for \$22.97.	<input type="checkbox"/> 3 years for \$31.97.
<i>I SAVE 24%!*</i>	<i>I SAVE 32%!*</i>	<i>I SAVE 37%!*</i>

*Savings based on full one-year (12 issue) subscription price of \$16.97.*

Mr./Mrs./Ms. \_\_\_\_\_  
please print full name

Company \_\_\_\_\_

Address \_\_\_\_\_

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

Check one:  Payment enclosed     Bill me later  
 Charge my:  American Express     Visa     MasterCard

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

Add \$5 per year in Canada. Add \$8 per year in all other foreign countries. Please allow 30 to 60 days for delivery of first issue.

82003

Here's a  
cassette-based  
filing system.

# MAG FILE

BY JEAN PLESSER

Your favorite computer magazine arrives with the mail. You have another obligation waiting, but the cover is enticing. You'll just quickly flip through the pages of tantalizing ads; wondrous graphics; handy, creative, inspiring, time-saving, mind-boggling, just-gotta-type-this-one-in programs; the how-to-do-its, what it is, where it is, why it is and all the other stuff computer addicts crave.

Your quick scan turns into an in-depth session with bits and bytes and basically everything your biological computer system can digest. Suddenly reality comes knocking at your subconscious — you're running behind. You make some mental notes:

- I'll read this one when I have time to really concentrate.
- This one is interesting, but it doesn't apply to anything I have going right now.
- Great stuff! I'll use this when I start getting tax records together.
- The kids would enjoy this. I'll type it in as soon as I finish my next project.

You add the magazine to the month's stack, which sits on top of last month's collection, which has intermingled with hold-outs from the last few months. Soon they'll all be added to the collection in the garage or basement.

When was the last time you went to that mountain of material needing just one little program? Or an article on one specific subject? Pulling magazines from shelves, scanning indexes and restacking the same number of discarded magazines quickly reveals the difference between a calm computerist and a raving maniac.

You may even have given up your search or paid a king's ransom to your enterprising offspring to do the searching for you. But chances are you haven't felt the same satisfaction about adding to your magazine library since. Now all of that can change and you can soon go back to feeling smug and confident knowing that you literally do have a wealth of computer information right at your very own fingertips.

**HELP IS ON THE WAY.** I wrote Magfile because I receive and save several computer publications each month. More than once, I've announced that my magazine library was an unwieldy pile of worthless trash.

But, I couldn't really face the trash shredder. Look what I would miss if I could only find it! It was time to get my computer into the act.

Soon I had Magfile and a cassette containing an index of every article in my collection that I might ever want to access. Magfile allows me to add to my file at any time, and searching for a program or subject now takes minutes, not hours.

I smile more these days. After all, I can quickly and calmly answer almost any computer question. I can find one of hundreds of programs. I can research an entire subject. I can review a warehouse of software. I can compare printers and other peripherals to my heart's content. And now you can, too!

**A MINI-DATABASE.** Magfile is simply a mini-database that is designed for auxiliary storage on cassette tape. The tapes contain multiple files that can be indexed by month or by publication. As each file is opened and closed a beginning and an ending marker is encoded or read (depending on whether the file is being output or input) because cassettes cannot store data randomly like disks do.

If you want to add more records to a cassette file that has already been closed, a new file must be opened. New records are then input into the program and encoded on the tape, and the new file is closed.





# TRS - 80 COMPUTER DISCOUNTS



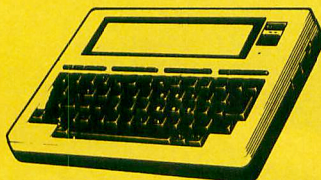
## COLOR COMPUTERS

26-3026 16k color II	139.95
26-3027 16k ext color II	165.00
26-3127 64k color comp II	210.00
26-3029 1st disk drive	289.95
26-3023 2nd disk drive	229.95



## PRINTERS

26-1271 DMP-110	299.95
26-1254 DMP-200	510.00
26-1255 DMP-120	395.00
26-1257 DWP-210	500.00



## MODEL 4 and 100's

26-1067 mod 4 16k	699.95
26-1068 mod 4 1 dr.	1000.00
26-1069 mod 4 64K 2 dr.	1050.00
26-1080 mod 4p	1050.00
26-3801 mod 100 8k	589.95
26-3802 mod 100 24k	719.00

**WE CARRY THE COMPLETE LINE OF  
TRS-80 COMPUTER PRODUCTS  
AT DISCOUNT PRICES**

**CALL FOR  
FREE PRICE LIST**

**800-257-5556**

**in N.J. 609-769-0551**

**Woodstown Electronics**

Route 40 E. Woodstown, N.J. 08098



Cassette files are read sequentially; that is, in the order they were recorded — all records in one file will be read by the computer until the particular one you want is found. This takes much more time than random-access disk files, but your cassette recorder probably fits better into your budget than a disk drive would.

All databases, from small ones for home use to a large corporation's multi-user base, share a common foundation. A database is, put very simply, a collection of data. The data is organized by: number of characters per field; number of fields per record and, oftentimes, number of records per file.

For instance, in a company's customer file, the customer's name would be one field containing perhaps 20 characters and the customer's address would be another field of 25 characters. The house number could be a field of ten characters and the street could be another field of 15. Separating the house number from the street name would allow the user to find customers who lived on certain streets or lived within specific block numbers. Therefore, fields within records are used to separate the data within each record so that it can be pulled out and processed separately. This allows unrelated uses of interrelated data, which serves a large company well. Each department can have access to one database, but can select only the data from each record that their function requires.

A field is allocated a specific number of spaces for characters based on screen size or report spacing or even to economize on computer and auxiliary storage space. There is no standard limit to the number of characters in a field, or number of fields to a record. A record simply contains all the information necessary to satisfy the purpose of the particular file. All of the records together make up a file and one, or many files, make up a database.

Our mini-database, Magfile, establishes fields via input statements. An undetermined number of characters are allowed per field. When you press the Enter key, the data that was just entered is allocated to the specified field. I've specified six fields per record and the number of records per field is up to you.

Now that we've covered the basics of databases, let's concentrate on creating our own...

**H-E-R-E'S MAGFILE.** With just a little of your time, you'll soon have a comprehensive cassette file that will index all the magazine articles and programs you wish. Magfile also allows you to add files whenever you want. Searching for an article or program becomes as easy as pressing buttons and keys.

When you run Magfile, you'll see a menu. Step-by-step instructions are provided for each of the menu options, which are: create a new file, add to a file, and search a file.

● **Creating a file.** When you select this option you'll need a blank cassette for recording the file and, of course, have nearby the magazines you wish to index. Be sure to always set the cassette counter to zero when you're at the beginning of the tape and to bypass the tape's leader. Also, when you have finished a file session always write the beginning and ending counter numbers on the cassette — this information will be very important when you add to or search files.

*"I smile more these days.  
I can quickly and calmly answer  
almost any computer question.  
Finding a program takes minutes."*

Each record in the file is referenced by subject. The topics I use are provided in a data statement and they will be displayed for your use. If you want to change them, make your subject selections logically. You'll be using them when you search for articles.

I use the magazine's index for the information needed for the program's prompts: subject, title of article, author's name, magazine's name, issue date, and comments (this is for notes or your own ideas on the article).

● **Adding to a file.** The routine for adding files is the same as that for creating a new file. The only thing different here is the positioning of the file cassette tape. Using the cassette counter and your cassette notations, carefully position the tape to the end of the previous file. Unlike disk files, cassette files require user participation to correctly position the recording medium when instructing the computer to either read from or print to cassette tape. Once again, disk data can be stored or read by random access, but data that is stored on tape can only be done so sequentially — one record after another.

Variable	Purpose	Variable	Purpose
A\$	Article's title	M\$	Magazine's name
C\$	Category to search	N\$	Notes or comments on article
D\$	Date of magazine	S\$	Subject of article
I\$	INKEY\$	W\$	Author of article
L\$	List of subjects		

Table 1. Variables

# What Does Dugger's Growing Systems Grow?

**We grow C Compilers** (\$120 value)  
generate fast, efficient code  
longs, floats, most operators  
FLEX\* \$75.00  
**new** OS-9\* \$59.95  
COCO DOS \$49.95

**We grow Relocatable Macro Assemblers**  
(\$150 value)  
Assembler, linker, library builder  
symbols up to 32 characters  
"fortran-like" common  
FLEX\* \$75.00  
**new** OS-9\* \$75.00  
COCO DOS \$49.95

**We grow Orchids**  
Odontoglossums  
write for catalog and price list

**We grow HI RES OS-9 "Windows"**  
52 x 24 hi-res display  
**new** cursor control  
multi-window displaying  
OS-9\* \$34.95

**We grow Orchids**  
intergeneric hybrids  
write for catalog and price list


**We grow OS-9 Experts**  
Over 6 years experience with OS-9  
Used in development of major project  
Experts in both levels 1 and 2

**Quality**  
quality at an affordable price  
all products tested and proven

**Solid Authorship Royalties**  
royalties up to 20% of selling price  
Only quality products accepted

**ORDER NOW! YOU OWE IT TO YOURSELF**

All orders add \$3.00 for shipping  
VISA and MC welcomed  
Foreign orders add 15%  
California orders add 6%

For more information write  or call:  
**DUGGER'S GROWING SYSTEMS**  
Post Office Box 305  
Solana Beach, Calif. 92075  
**(619) 755-4373**  
Technical information 6 am to 8 am PDT only  
Dealer inquiries welcome

\*Flex—trademark of TSC, OS-9 trademark of Microware

Circle No. 41 on Reader Service Card

● **Searching a file.** When you select this option you will need to insert your file tape and rewind it to the beginning of all files. The subject headings will be listed for you and you simply need to select the one you're interested in and follow the instructions.

As a file is read, the subject is compared to your selection and if the record corresponds it is displayed for you exactly as recorded. This will continue until you have found the articles you want or when all files have been read.

Note: When searching a file, pay close attention to the cassette counter number that indicates the close of the last file on tape. Searching for a record in a file that doesn't exist will hang-up the program and you'll have to push the Reset button to regain control.

**TO PERSONALIZE MAGFILE.** Magfile was written for computer magazines. You can easily alter it for any type

of publication by changing the data subject categories and the program title. I have used twelve categories and created a subroutine to print them on the screen in two columns. If you change the number of data be sure to alter Line 770 to print at the correct locations.

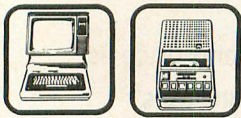
If you want to index one magazine per cassette, simply delete Line 260 and label your cassette accordingly. Newspaper publications and loose articles can be easily bound and indexed also. And, you can certainly choose to index an entire magazine or, to save time and tape, you can index only very pertinent programs and articles.

If you have a printer and want a list of articles for any subject, add this line:

```
605 ?#-2:?#-2,A$:?#-2,W$:?#-2,M$:?#-2,D$:?#-2,N$
```

And remember to turn your printer on when you run the program. ■

## PROGRAM LISTING MAGFILE



### 16K Extended Color Basic

```
10 REM**COMPUTER MAGAZINES ARTI
LES FILE**
20 REM**BY JEAN PLESSER**
30 REM---DISPLAY MENU---
40 CLS:PRINT@37,"**COMPUTER MAGA
ZINES**"
50 PRINT@72,"*ARTICLES FILE*"
60 PRINT@161,"1 = CREATE A NEW F
ILE."
70 PRINT@225,"2 = ADD TO A FILE.
"
80 PRINT@289,"3 = SEARCH FILE.
90 PRINT@417,"SELECT A NUMBER";:
I$=INKEY$
100 IFI$="1"THEN10ELSEIFI$="2"
HEN320ELSEIFI$="3"THEN40ELSE90
110 REM---MENU OPTION #1---
120 CLS:PRINT@64,"TO OUTPUT INFO
RMATION TO TAPE:
130 PRINT@131,"1. REWIND TAPE A
ND SET"
140 PRINT@167,"CASSETTE COUNTER
TO ZERO."
150 PRINT@ 227,"2. POSITION TAP
E TO WHERE"
160 PRINT@263,"RECORDING SHOULD
BEGIN."
170 PRINT@323,"3. PRESS BUTTONS
TO RECORD.
180 PRINT@416,"PRESS ANY KEY TO
CONTINUE"
190 I$=INKEY$:IF I$=""THEN190
200 OPEN"O",#-1,"ARTICLES"
210 CLS:PRINT:PRINT"FILE SUBJECT
S SELECTIONS ARE:"
220 GOSUB 760
230 PRINT@352,"SUBJECT OF ARTICL
E":INPUTS$
235 PRINT@448,"IS ENTRY CORRECT
(Y/N)?":I$=INKEY$
237 IF I$=""THEN 235 ELSE IF I$=
"N" THEN 210
240 CLS:PRINT:PRINT"TITLE OF ART
ICLE":INPUTA$
250 PRINT:PRINT"AUTHOR'S NAME":
INPUTW$
260 PRINT:PRINT"NAME OF MAGAZINE
":INPUTM$
```

```
270 PRINT:PRINT"ISSUE DATE":INP
UTD$
280 CLS:PRINT:PRINT"COMMENTS OR
NOTES ON ARTICLE":INPUTN$
290 PRINT#-1,S$,A$,W$,M$,D$,N$
300 PRINT@448,"ANOTHER RECORD (Y
/N)?":I$=INKEY$
310 IFI$="Y"THEN210ELSEIFI$="N"
HEN810ELSE300
320 REM---MENU OPTION #2---
330 CLS:PRINT@39,"*TO ADD TO FIL
E*"
340 PRINT@98,"1. POSITION THE F
ILE TAPE TO"
350 PRINT@134,"THE END OF PREVIO
USLY"
360 PRINT@166,"RECORDED FILE."
370 PRINT@226,"2. PRESS BUTONS
TO RECORD."
380 PRINT@353,"PRESS ANY KEY TO
CONTINUE"
390 I$=INKEY$:IFI$=""THEN380
400 GOTO200
410 REM---MENU OPTION #3---
420 CLS:PRINT@7,"*TO SEARCH THE
FILE*"
430 PRINT@67,"1. REWIND THE FIL
E TAPE"
440 PRINT@103,"AND SET COUNTER T
O ZERO."
450 PRINT@163,"2. POSITION THE
TAPE TO"
455 PRINT@199,"BEGINNING OF FILE
."
456 PRINT@259,"3. PRESS <PLAY>
BUTTON."
460 PRINT@323,"4. IF THE FILE H
AS BEEN"
470 PRINT@359,"ADDED TO, THE SEA
RCH"
480 PRINT@391,"WILL BE DONE IN S
TAGES."
490 PRINT@448,"PRESS ANY KEY TO
CONTINUE"
500 I$=INKEY$:IFI$=""THEN490
510 CLS:PRINT:PRINT" THE FILE SU
BJECTS ARE:"
520 GOSUB760
530 PRINT@384,"ENTER THE SUBJECT
TO SEARCH":INPUTC$
535 PRINT@448,"IS ENTRY CORRECT
(Y/N)?":I$=INKEY$
537 IF I$=""THEN535 ELSE IF I$=
"N"THEN 510
540 CLS:PRINT@199,"***READING FI
LE***"
550 OPEN"1",#-1,"ARTICLES"
560 IF EOF(-1)THEN640
570 INPUT#-1,S$,A$,W$,M$,D$,N$
```

```
580 IF$=C$THEN600
590 GOTO560
600 CLS:PRINT:PRINTA$:PRINTW$:PR
INTM$:PRINTD$:PRINT:PRINTN$
610 PRINT:PRINT@448,"DO YOU WANT
TO CONTINUE SEARCH"
620 PRINT@480,"Y/N?":I$=INKEY$
630 IFI$="Y"THEN560ELSEIFI$="N"
HEN710ELSE620
640 CLS:PRINT@65,"FILE SEARCH IS
COMPLETE:"
650 PRINT@131,"1 = MORE FILES ON
TAPE--"
660 PRINT@167,"CHECK TAPE COUNT
ER."
670 PRINT@227,"2 = SEARCH IS COM
plete."
680 PRINT@384,"SELECT A NUMBER";
:I$=INKEY$
690 IFI$="1"THEN700ELSEIFI$="2"
HEN710ELSE680
700 CLOSE#-1:GOTO540
710 CLOSE #-1
720 CLS:PRINT@135,"*FILE IS CLOS
ED*"
730 PRINT@289,"DO YOU WANT TO BE
GIN AGAIN"
740 PRINT@323,"(Y/N)?":I$=INKEY
$:IFI$="Y"THEN40ELSEIFI$="N"
HEN750ELSE740
750 END
760 REM---SUB ROUTINE TO READ &
PRINT DATA IN TWO COLUMNS---
770 FORP=98TO274STEP16
780 READL$
790 PRINT@P,L$:NEXTP
800 RESTORE:RETURN
810 CLS:PRINT@130,"BECAUSE THE C
ASSETTE COUNTER"
820 PRINT@161,"POSITIONS ARE IMP
ORTANT TO"
830 PRINT@193,"FUTURE USES OF FI
LE CASSETTE,"
840 PRINT@225,"WRITE THE POSITIO
N NUMBER,"
850 PRINT@257,"WHERE THE FILES E
ND, ON THE"
860 PRINT@289,"CASSETTE WHEN YOU
REMOVE IT."
870 PRINT@416,"PRESS <ENTER> TO
CONTINUE":I$=INKEY$:IFI$=""THEN
870
880 GOTO 710
890 DATATUTORIAL,UTILITY,GAME,SI
MULATION,BUSINESS,HOME,EDUCATION
,MUSIC,SOFTWARE,HARDWARE,LANGUAG
ES,MISC. ■
```

**Program Lines Explanation**

40 - 90 100	Displays the menu of the program options. Continually examines the contents of a variable (I\$) and jumps to the routine selected when a key is pressed.
120 - 180 190	Displays instructions for creating a new file. An INKEY\$ function that holds up the program until you're ready to press a key and begin.
200	Opens "O" file named Articles. This command opens an output file on your tape providing the recorder is connected properly, Play and Record are pressed, and the tape is inserted correctly. The file will be named Articles and will be accessed by this name when you want to search files.
210	Clears the screen and executes the two Print statements.
220	Sends the computer to the subroutine in Lines 760 through 800. The program will return to Line 230 when it reads the subroutine command Return.
230 - 280	Input statements for the six fields of each record. An error check in Line 235 was added because the correct selection and spelling of the subject is vital to the functioning of the program — the files are searched by subject.
290	Instructs the computer to send the information held in each variable to tape. Each variable contains the data for one field and all the variables are printed as one record.
300 - 310	Checks for another record for the file, then jumps to the appropriate routine.
330 - 390	When menu option 2 is selected, displays instructions for adding to a file and waits for a selection.
400	Sends the program back to Line 200 for the same routine used to create a file.
420 - 500	When menu option 3 is selected, displays instructions for searching a file and waits for selection.
510 - 520	Displays file subjects for selection by using the subroutine in Lines 760 through 800, then returns to Line 530.
530	Input for the subject to search.
535	An error check to eliminate a subject or spelling error.
540	A computer-is-working display — reduces user anxiety if the search takes a while.
550	Opens "I" file, an Input file so that records can be read or searched.
560	Checks for end of file. If an EOF marker is found, jumps to Line 640.
570	Inputs a record from tape to the computer's memory. A record contains all the data in variables S\$, A\$, W\$, M\$, D\$, and N\$.
580	Compares the subject of the record in file with the subject of search — jumps to Line 600 if a match occurs.
590	Returns to Line 560 to read another record. This occurs only when a match was not found in Line 580.
600	Prints the record on the screen that was matched to the selected subject in Line 580.
610 - 630 640 - 680	A Continue Searching? prompt and test. Displays options when the end of a file is found.
690	Checks contents of I\$ and jumps to appropriate lines.
700	When the current file is complete but other files on the tape are to be searched, closes current file. This may be an Output file or an Input file. Returns to Line 540 for routine to search next file.
710 - 750	The search through files is complete — closes current file. Option to begin again or end the program is given.
770 - 800	A subroutine for reading and printing subject data. Contents of "P" is used for the PRINT@ positions. The Restore command resets the pointer so data can be reused in the program.
810 - 870	Displays instructions to note the cassette counter position when an output file is closed.
880	Jumps to Line 710 for the Close routine.
890	Data statement for the file subjects.

Table 2. Line Functions

# SOFTMART SEPTEMBER SALES

SALE PRICES GOOD UNTIL OCTOBER 15.

**HARDWARE**

LEGEND PRINTER 800 .....	279.00
LEGEND PRINTER 1000 .....	369.00
LEGEND PRINTER 1200 .....	399.00
BOTEK PARALLEL INTERFACE — SAVE 15.00 IF ORDERED	
WITH ABOVE PRINTERS .....	54.95
GORILLA GREEN MONOCHROME MONITOR .....	94.95
GORILLA AMBER MONOCHROME MONITOR .....	101.95
VIDEO PLUS .....	22.45
VIDEO PLUS IIM .....	24.25
HJL 57 PROFESSIONAL .....	79.95
J&M DISK CONTROLLER .....	139.00
64K UPGRADE KIT .....	45.95
SPECTRUM LIGHT PEN .....	17.95
PHELAN SWITCH BOX .....	39.95
(FOR CONNECTING PRINTER AND MODEM AT THE SAME TIME/DATA TRANSFER LIGHT)	
PHELAN 10FT EXT. CORD FOR PRINTER:	
MALE TO MALE .....	15.00
FEMALE TO MALE .....	15.00
PHELAN 10FT COCO JOYSTICK CABLE .....	15.00
PHELAN ATARI TO COCO JOYSTICK CABLE:	
10 FT .....	20.00
4 FT .....	20.00
PEEK AND POKES CAT. FOR COCO .....	3.00

**SOFTWARE**

CHOPPER STRIKE (MICHTRON) .....	25.00 (C/D)
CANDY CO. (INTRACOLOR) .....	30.50 (C/D)
WILLY'S WAREHOUSE (INTRACOLOR) .....	30.50 (C/D)
GALAGON (SPECTRAL ASSOCIATES) .....	21.50 (C)/25.40 (D)
TIMS MAIL (SUGAR) .....	17.95 (C)
TIMS (SUGAR) .....	20.95 (C)
QUEST 32K (AARDVARK) .....	21.50 (C)/26.30 (D)
NINJA WARRIOR (PROGRAMMER'S GUILD) .....	25.50 (C)
(GET SNOWPLOW FREE)	
DIETICIAN (NORTH GLENN) .....	19.95 (C)
MOON SHUTTLE (DATASOFT) .....	29.95 (C/D)
POOYAN (DATASOFT) .....	25.95 (C/D)
FROGGIE (SPECTRAL ASSOCIATES) .....	21.50 (C)/25.50 (D)
GRAPHICOM .....	26.95 (D)
GRAPHICOM PICTURE DISK I-V .....	17.25 ea. (D)
ELITE CALC .....	51.95 (C/D)
ELITE FILE .....	69.00 (D)
NEW WORLDS OF FLIGHT (TOM MIX) .....	27.95 (C)/30.95 (D)
WAREHOUSE MUTANTS (TOM MIX) .....	21.95 (C)/24.95 (D)
SALVAGE (PROPER PROGRAMS) .....	9.95
CO CO CALIGRAPHER (SUGAR) .....	20.95 (C)/25.95 (D)
TUT'S TOMB (MARK DATA) .....	21.95 (C)/25.95 (D)
THE NORTH CAROLINA CARTOGRAPHER .....	24.95 (D) 32K EXT.
ANY MARK DATA GRAPHIC ADVENTURE .....	21.95 (C)/25.95 (D)

**WE PROUDLY PRESENT THESE NEW PRODUCTS  
DISTRIBUTED BY SOFTMART**

**DEJAVU  
BEARGRIP SOFTWARE**

AN EXTRAORDINARY TEST OF YOUR MEMORY SKILLS. YOU MUST MATCH HIDDEN PAIRS OF PICTURES. THE DIFFICULTY LEVEL MAY BE ADJUSTED FROM A PLAY FIELD OF 6 SQUARES (PRESCHOOL LEVEL) UP TO 132 SQUARES. A GOOD CHALLENGE FOR ALL AGES.

INTRODUCTORY PRICE ..... 13.95(C)/15.95 (D) 32K EXT.

**"WORKBASE"  
FROM THE CREATORS OF HOMEBASE**

AN INTEGRATED PACKAGE FOR BUSINESS THAT PERFORMS DATABASE, SPREADSHEET, WORD PROCESSING, AND MAIL MERGE FUNCTIONS ALL IN ONE.

INTRODUCTORY PRICE:  
WORKBASE I ..... 61.95 400 RECORDS  
WORKBASE II ..... 75.00 1200 RECORDS

**"MATHS-TREK"**

A CHALLENGING PROGRAM THAT CAN BE SET FOR ADDITION, SUBTRACTION, MULTIPLICATION, DIVISION, FRACTIONS AND SQUARE ROOT PROBLEMS. YOU COMMAND THE 'ENTERPRISE' AND YOUR MISSION IS TO RETURN BACK SAFELY TO 'STARBASE.' SUDDENLY YOU SPOT KLINGONS COMING WITHIN RANGE. TO INCREASE WAR YOU MUST ANSWER THE PROBLEM CORRECTLY. IF NOT... FOR AGES 6-12.

INTRODUCTORY PRICE ..... 15.95 (C)

**"YACHTSEE"  
BEARGRIP SOFTWARE**

A GREAT COMPUTER VERSION OF THE POPULAR DICE GAME.

INTRODUCTORY PRICE ..... 16.95 (C)/17.95 (D) 32K EXT.

WE ARE ACTIVELY LOOKING FOR GOOD PROGRAMS TO DISTRIBUTE. WRITE FOR AUTHORSHIP/DISTRIBUTORSHIP PACKAGE.

SEND FOR YOUR FREE DESCRIPTIVE CATALOG (INCLUDE \$2.00 FOR SHIPPING AND HANDLING). PLEASE SPECIFY COMPUTER.

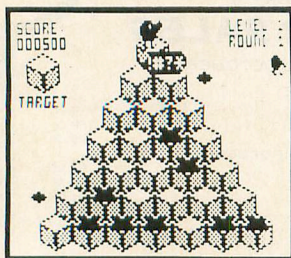
- MONTHLY SALES SHEET • ACCEPTANCE OF CHECKS WITH NO DELAY
- RALEIGH, NC STORE LOCATION COMPLETE WITH LIBRARY AND COMPUTER DISPLAYS.

MAIL ORDERS: \$2.00 - 1ST CLASS / \$2.00 - UPS GROUND / \$4.00 AIR  
\$2.00 - C.O.D. / NC SALES TAX 4 1/2%  
MC & VISA WELCOMED

**SOFTMART**

5024E Departure Drive - Raleigh, NC 27604  
ORDER ONLY INFORMATION  
1-800-334-0854, EXT. 879 (919) 876-6124

# THE TOP 4 COCO GAMES...

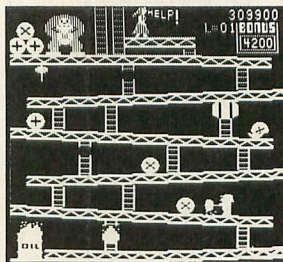
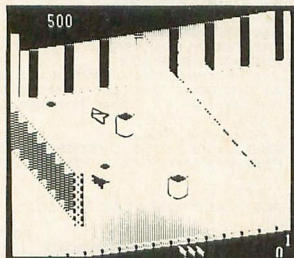


## CUBIX

By Spectral Associates. Very much like the arcade smash! Jump little Cubix around the 3D maze trying to change the color of all the squares. With Death Globes, Discs, Snakes, etc. 32K Tape: \$24.95

## ZAKSUND

From Elite Software comes this fantastic arcade style space action game with 3 different stages of moving 3-D graphics. You've never seen anything like this on your CoCo! Great sound too! 32K Tape: \$24.95

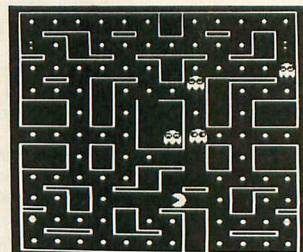


## THE KING

Previously called 'Donkey King', you simply cannot buy a more impressive game for your CoCo. With 4 different screens and loads of fun! From Tom Mix Software. 32K Tape: \$25.95

## GHOST GOBBLER

From Spectral Assoc. This "PAC" theme game has been improved several times. It is definitely the best of its type. Brilliant color, action and sound, just like an arcade. 16K Tape: \$24.95



## COLORCADE SUPER JOYSTICK MODULE



**ONLY \$19.95**

**JOYSTICK INTERFACE/RAPID FIRE/6 FT. EXTENDER ALL IN ONE!** The Colorcade allows connection of any Atari type joystick to your CoCo (including the Wico Red Ball). These switch type sticks are extremely rugged and have a faster and more positive response. They will improve the play of almost any action game.

An adjustable speed rapid fire circuit is built in. Press your fire button and get a great burst of fire instead of just a single shot! You get a real advantage in shooting games that do not have repeat fire.

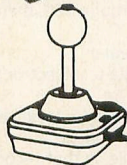
## ATARI JOYSTICK

**ONLY \$8.50**



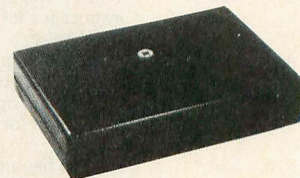
**THE BEST YOU CAN BUY WICO #15-9730**

~~\$34.95~~  
**\$29.95**



**WICO FAMOUS "RED BALL"**

## ROM/PROJECT/PRODUCT CASE

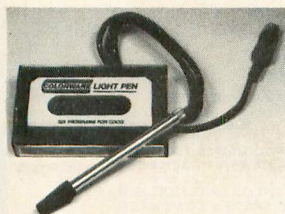


**Give a professional look to your project or product!** High quality 3 piece injection molded plastic with spring loaded door. Designed especially for the CoCo ROM slot.

2 - 4 pcs. .... \$5.50 Ea.  
5 - 9 pcs. .... \$3.50 Ea.  
10 - 99 pcs. .... \$2.75 Ea.  
100 & UP. .... Call Us

P.C. board for 27XX EPROMS. . . \$4.00 Ea.

## COLORWARE LIGHT PEN

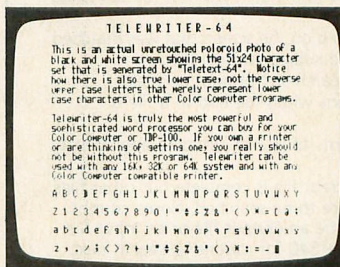


**ONLY \$19.95**

**WITH SIX FREE PROGRAMS ON CASSETTE!**

The Colorware Light Pen plugs directly into your joystick port and comes with six fun & useful programs on cassette. Easy instructions show how to use it with Basic and it's compatible with light pen software such as Computer Island's "Fun Pack." Order yours today. Only \$19.95 complete.

## TELEWRITER-64



**DISK ..... \$59.95**  
**CASSETTE... \$49.95**

Colorware researched the word processors available for the Color Computer. This is the best. Telewriter-64 is a truly sophisticated system that is marvelously easy to use. It works with any 16K, 32K or 64K system and any CoCo compatible printer.

## TOP-RATED COCO WORD PROCESSOR



**TOLL FREE ORDERING**  
**800-221-0916**

ORDERS ONLY. N.Y. & INFO CALL (212) 647-2864

# 'REAL TALKER'

## HARDWARE Voice Synthesizer

**NEW** from  
**COLORWARE..**  
only... **\$59.95**

**THINKING OF BUYING A  
COCO VOICE SYNTHESIZER?**

**READ THIS....**

Making your computer talk couldn't be any easier! 'Real Talker' is a full featured, ready to use, HARDWARE voice synthesizer system in a cartridge pak. It uses the Votrax SC-01 phoneme synthesizer chip to produce a clear, crisp voice.

### **FREE TEXT-TO-SPEECH**

Included free with 'Real Talker' is Colorware's remarkable Text-to-Speech program. This is a truly powerful machine language utility. What it does is automatically convert plain English to speech. And it has an unlimited vocabulary! For example, use it in the direct mode: Type in a sentence or a paragraph, even mix in numbers, dollar signs, etc., then press enter. The text is spoken. At the same time a phoneme string is generated which can be saved to cassette or disk, modified or used in a Basic program.

We originally planned to sell this major piece of programming for about \$40.00 but decided it was so useful that no 'Real Talker' user should be without it. Besides, it really shows off the capability of 'Real Talker'.

Also included with 'Real Talker' is our unique Phoneme Editor program. It allows you to explore and create artificial speech at the phoneme level. Phonemes are the fundamental sounds or building blocks of word pronunciation. There are 64 different phonemes, as well as 4 inflection levels at your disposal. Creating and modifying speech at the phoneme level is both fascinating and educational. The Phoneme Editor may also be used to customize the pronunciation of speech produced by the Text-to-Speech program.



You don't have to use any of our utility programs though. If you write your own Basic Programs, you will find the pocket sized Votrax Dictionary (included free) is all you need to make your own Basic programs talk. This dictionary gives you quick access to the phoneme sequences used to create approximately 1400 of the most used words in the English language.

How about compatibility? 'Real Talker' is compatible with any 16K, 32K, 64K, Extended or non-extended Color Computer. It works with any cassette or disk based system, with or without the Radio Shack Multi-slot expander. No other synthesizer under \$100 can make this claim. Most other CoCo voice synthesizers require an expensive Multi-slot expander in order to work with the disk system. 'Real Talker' requires only an inexpensive Y-adaptor. This is an important consideration if you plan on adding a disk or have one already.

'Real Talker' comes completely assembled, tested and ready to use. It is powered by the CoCo and talks through your T.V. speaker so there is nothing else to add. Price includes Text-to-Speech and other programs on cassette (may be transferred to disk), User Manual and Votrax Dictionary. ONLY ..... \$59.95

'Y-BRANCHING CABLE' For disk systems. This 40-pin, 3 connector cable allows 'Real Talker' to be used with any disk system ..... \$29.95

### **YOU DECIDE....**

Order yours today on our Toll-Free Order Line. If you are not delighted with your 'Real Talker' system, simply return it within 30 days for a prompt, courteous refund.



**COLORWARE INC.**  
78-03A Jamaica Ave.  
Woodhaven, NY 11421  
(212) 647-2864



### ★★★ ORDERING INFORMATION ★★★

ADD \$2.00 PER ORDER FOR SHIPPING & HANDLING.  
C.O.D.'S: ADD \$3.00 EXTRA.  
SHIPPING & HANDLING FOR CANADA IS \$4.00  
WE ACCEPT VISA, MASTER CARD, M.O.'S, CHECKS.  
N.Y. RESIDENTS MUST ADD SALES TAX.

# CUSTOM COLOR

Out of a job again... I can't believe it! Four years ago, I ended my own newsletter because a new magazine called *80 Microcomputing* offered me a wider forum. Eighteen months ago, I gave that up for **The Color Computer Magazine**, the best way to communicate with my fellow Color Computer users.

Now here I am, out on the literary street. And instead of the first part of a series on speech synthesis and real-time clocks, you're reading a final potpourri of updates and short bits.

**COCO2 VIDEO OUPUT.** As promised, I've got a circuit for direct video (monitor) output for the Color Computer 2. Figure 1 shows the schematic, Figure 2 the hookup to the 6847 VDG. There are eight wire connections, seven of them to the VDG (U8). Soldering to the VDG is not hard, but be nimble. First, line a piece of styrofoam (a discarded vegetable tray) with aluminum foil. Remove the VDG with an IC puller or by rocking both ends with a flat blade. Press the VDG, pins down, into the aluminum foil-covered foam. Solder quickly to the top of each pin on the VDG (near its plastic case) as shown, being careful not to allow solder to flow down to the end of the pin. Solder to a count of three, and let cool to a count of fifteen. Remove the VDG from the foil, and replace it in its socket.

**COLOR BURNER TOUCH-UP.** The programming table in the Color Burner assembly listing (June, 1984), Lines 450-480, shows values \$02, \$C0, \$90, and \$80. They should read \$02, \$00, \$A2, and \$A0. Although the

2732 will probably program correctly, the original values put extra stress on the device.

Be reminded of these corrections to the Color Burner hardware (April, 1984): the inverter goes to the top 6821, not the bottom as originally shown; a 75-ohm resistor should appear between the 21-volt and 25-volt transistor collectors; the electrolytic capacitor should be removed from the Vpp line going to the programming socket; and pin 14 of the programming socket goes to ground. 24-pin EPROMs always fit into the bottom 24-pins of the 28-pin socket (pins 3 through 26).

Bob Helms of Midwest City, Oklahoma, offers these tweaks for the Color Burner Basic Driver (May, 1984): Delete Lines 248 and 344. Change the last statement in Line 22 to: `NN=VAL("&H"+N$)+1`. Change part of Line 34 from `POKE&H3D00,E-1` to: `POKE&H3D00,(E-1)*4`. At the end of Line 34, add: `:IFPM>&H3FTHENPOKE&H3D03,PM:POKE&H3D04,PL:ELSE` `POKE&H3D03,&H40:POKE&H3D04,0`. At the end of Line 50, add: `P=VAL("&H"+P$)+&H4000:PM=INT(P/256):PL=P-256*PM`. Change Line 164 to: `CLOADMF$,P-O`.

To the assembly listing (June, 1984), Bob suggests changing Line 04770 from `BRA BACK TO RTS` and Line 04780 to `NOP`. Many thanks to Bob for smoothing out the software's operation.

**THE MEMORY MASTER.** I've been asked for a good 64K memory test. Listing 1 is a memory test that will really work your memory chips over. It's in Extended Color Basic with an embedded machine code test program. Enter the program, save it to tape, then run it. What you'll see on the screen will be the program itself, performing four different tests.

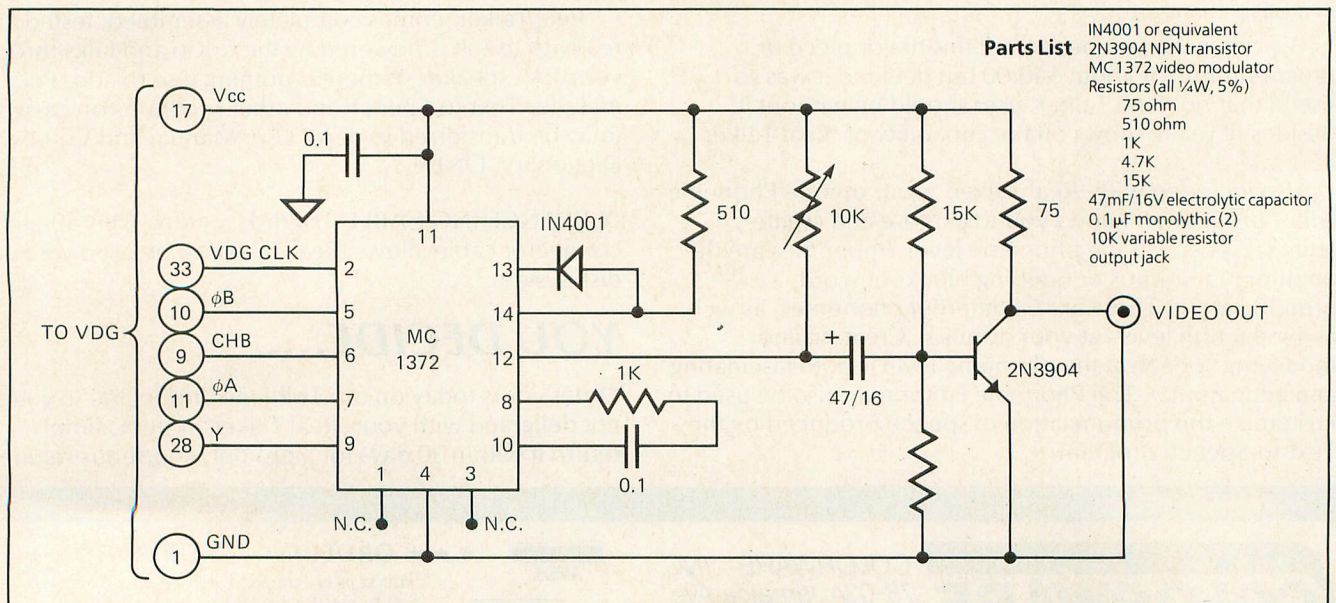


Figure 1. Video Output Schematic



# TALKHEAD FOR THE 'REAL TALKER'

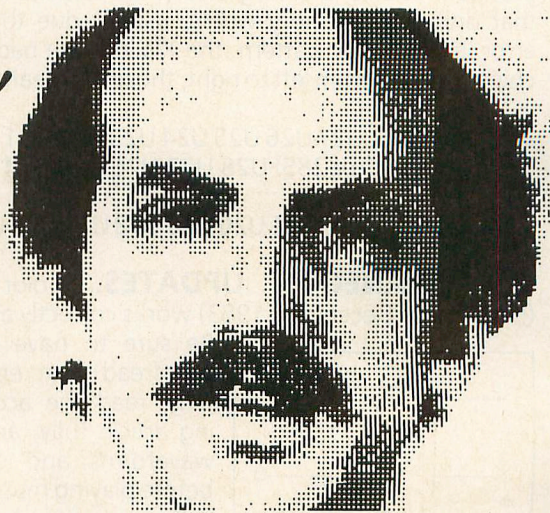
**"Way beyond anything you have ever seen for the CoCo"**

That's a strong statement, we know. But wait until you see 'TALKHEAD'! It's a dazzling creation—easily the most impressive display of CoCo graphics you can buy!

If you have a 'REAL TALKER' voice synthesizer, DO NOT deprive yourself of this absolutely incredible Talking Head simulation program! TALKHEAD uses the 'Real Talker' and extremely high speed/high resolution machine language to create an audio-visual simulation that clearly goes way, way beyond anything that you have ever seen on ANY home computer!

TALKHEAD's fast, smooth-talking animation is so stunningly life-like that it resembles a movie more than a cartoon! This page shows some still shots of the actual moving image as it will appear on your TV screen.

And, TALKHEAD is a real snap to use in Basic, thanks to a new command that we give you: SAY. Type SAY "ANYTHING YOU WANT" and Talkhead instantly appears and speaks ANY text—it has an unlimited vocabulary!



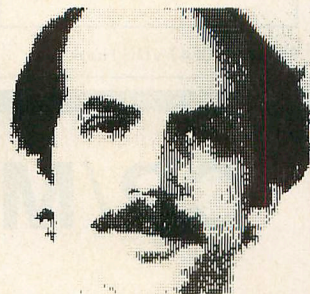
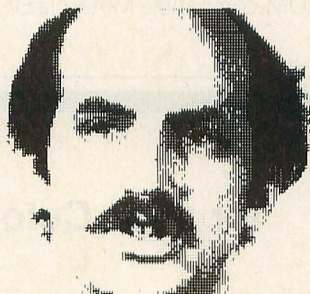
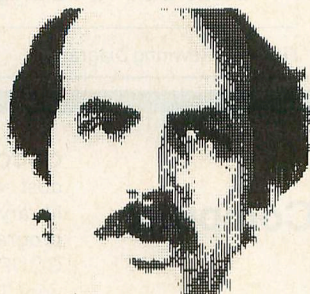
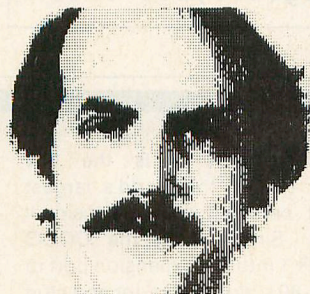
**The most impressive CoCo program you can buy . . .**

'TALKHEAD' is available on cassette or disk (please specify) for **only \$29.95**. The cassette version can be transferred to disk in case you ever upgrade. TALKHEAD requires 64K of memory and a Colorware 'REAL TALKER' voice pak.

**ONLY \$29<sup>95</sup> FROM COLORWARE**

PROGRAM BY TIM JENISON

SPEECH PROGRAMMING BY H. PUNYON



*'TALKHEAD's eyes, mouth and jaw move, realistically animating his speech. The effect is amazing!*

**MORE SOFTWARE FOR THE 'REAL TALKER' VOICE PAK**

## STELLAR SEARCH ADVENTURE

If you ever had an urge to command the USS Enterprise, this talking version of 'STELLAR SEARCH' from Owl-Ware is for you! It uniquely combines the best aspects of 'adventure' and graphic 'action' type games and puts the 'Real Talker' voice pak to good use. You'll find graphics galore in this exciting package containing more than 86K of action adventure. Requires 32K and a 'Real Talker' voice pak. **Cassette....\$24.95. Disk....\$26.95**

## TALKING EDUCATIONAL SOFTWARE

### SOFTWARE FOR CHILDREN FROM COMPUTER ISLAND

- Math Drill ..... \$ 9.95
- Foreign Languages..... \$ 9.95
- Spelling Tester ..... \$ 9.95

All 3 for Only ..... \$24.95  
Requires 16K and a Colorware 'Real Talker' voice pak.

## ADVENTURE STARTER

The popular 'ADVENTURE STARTER' from Owl's Nest Software is now available in a speaking version for the 'Real Talker' voice synthesizer. Adventure Starter is a painless and enjoyable way to learn about computer adventure games. Included are two adventures. The first is "MYHOUSE", an easy game with plenty of help and hints. A second adventure, 'PIRATES', is more challenging. Both are great fun for the adventure minded. This is the only way to get into CoCo adventuring! Requires 16K Extended Basic and a 'REAL TALKER' voice pak. **Cassette, only \$17.95.**



COLORWARE INC.  
78-03 Jamaica Ave.  
Woodhaven, NY 11421  
(212) 647-2864



★★★ ORDERING INFORMATION ★★★

ADD \$2.00 PER ORDER FOR SHIPPING & HANDLING.  
C.O.D.'S: ADD \$3.00 EXTRA.  
SHIPPING & HANDLING FOR CANADA IS \$4.00  
WE ACCEPT VISA, MASTER CARD, M.O.'S, CHECKS.  
N.Y. RESIDENTS MUST ADD SALES TAX.  
ALL SOFTWARE ON THIS PAGE REQUIRES A  
COLORWARE 'REAL TALKER' VOICE PAK.

If a pattern of X's and O's appears, here's what it means: XXXXXXXX means only 16K of your memory is working, probably due to a wiring error; OXOOOXOX indicates that only 32K memory works, usually due to a wiring error. In any other pattern, the X's indicate bad memory chips. Reading from left to right, those X's mean:

Revisions D&E: U27 U26 U25 U24 U23 U22 U21 U20  
 Revisions F (NC or 285) U28 U27 U26 U25 U24 U23 U22 U21  
 Color Computer 2: U21 U20 U19 U18 U17 U16 U15 U14

**MISCELLANEOUS UPDATES.** Color Quaver (November–December, 1983) works correctly as printed.

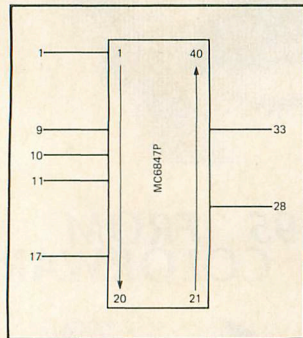


Figure 2. 6847 VDG Hook-up

Be sure to have someone proofread your entry carefully, read the accompanying article fully, and define waveforms and envelopes before playing music.

If you are updating your own Basic or Disk ROMs using erasable, programmable memories (EPROMs), be sure to use 68766 (not 68764!) ROM-compatible Motorola EP-

ROMs. These cost \$20 to \$25 each. 68764's are not fat enough to do the job. If you use 2764's, you'll need to rewire them; see Figure 3, created by Charles B. Langley using Chesire Cat's excellent program "Graphicom."

**THAT'S NO WAY TO SAY GOODBYE...** For some of you, this is a farewell. For others, it will be just one more transition. We TRS-80 users have gotten used to

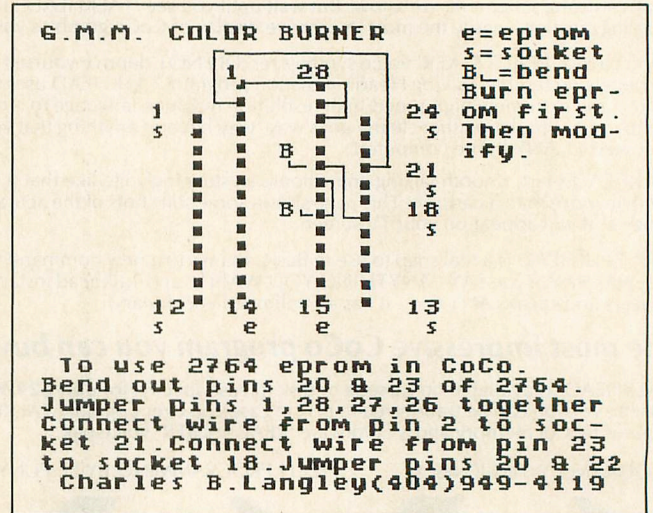


Figure 3. Rewiring Diagram

# CP/M™ for your Color Computer

**Includes CP/M 2.2 & Utilities  
 Add Z80A power to your Coco**



**COCO COUPLER 1** is the low cost way to use the world's largest library of personal and professional programs. Simply plug the COCO COUPLER 1 into the expansion port of your TRS-80 Color Computer and plug the disk controller into COCO COUPLER 1 - no modification to your system is needed. COCO COUPLER 1 contains its own 4 Mhz Z80A microprocessor and firmware for efficient execution of CP/M programs. COCO COUPLER 1 supports WORD-PAK 80 x 24 display board from PBJ Inc.

**ONLY the Digital Research CP/M** operating system assures you total compatibility.

**COCO COUPLER 1** supports both single and double density diskettes.

**COCO COUPLER 1** comes complete with CP/M 2.2 diskette and Users Reference Manual.

**\$250.00**

Shipping Included  
 MASTERCARD and VISA accepted  
 California residents add 6%

**WAYNE TECHNOLOGY**

P.O. Box 5196 • Anaheim, CA 92804-1196 • (714) 772-5757

TRS-80™ Tandy Radio Shack Corp.-CP/M™ Digital Research-Z80A™ Zilog Inc. WAYNE TECHNOLOGY is a licensed distributor of CP/M 2.2

transition: new machines, software updates and hardware fixes are familiar territory.

I wrote for **The Color Computer Magazine** because it was the best way to stay in touch with my readers. Now

a new way is needed. Custom Color can continue. It's time for the newsletter to re-emerge. If you're interested contact us at Box 6809, Roxbury, VT 05669, (802) 485-6112. I'll see you there in November! ■

## PROGRAM LISTING MEMORY TEST



### 64K Extended Color Basic

```

10 FOR X = &H1000 TO &H11FF
15 READ A$: A = VAL ("%H" + A$)
20 Q = Q + A : POKE X,A : NEXT X
25 IF Q <> 58403 THEN 30 ELSE 40
30 CLS : PRINT "ERROR IN DATA!!"
35 PRINT "PROOFREAD DATA!" : END
40 CLS : PRINT "TOUCH!" : PRINT
45 PRINT "<S> TO CSAVE PROGRAM"
50 PRINT "<X> TO EXECUTE PROGRAM"
55 A$ = INKEY$: IF A$=" " THEN 55
60 IFA$ = "S" THEN CSAVE"MEMORY"
65 IFA$ = "X" THEN EXEC &H1000
70 GOTO 55 : REM D B KITSZ 07/84
100 DATA 1A,50,32,8D,01,B9,8D,32
110 DATA B7,FF,CD,8D,39,30,8C,F0
120 DATA 10,8E,00,00,A6,80,A7,A0
130 DATA 10,8C,02,00,26,F6,8D,1A
140 DATA 7E,00,23,32,8D,01,98,B7
150 DATA FF,DF,8D,41,8D,66,17,00
160 DATA 89,17,00,AE,B7,FF,DE,7E
170 DATA A0,27,4F,C6,06,8E,FF,C6

```

```

180 DATA A7,81,5A,26,FB,39,30,8D
190 DATA 01,1F,17,01,02,8E,00,00
200 DATA A6,84,A7,8D,01,12,43,A7
210 DATA 84,A1,84,10,26,00,B1,A6
220 DATA 8D,01,05,A7,80,8C,02,00
230 DATA 26,E6,16,00,D0,30,8D,01
240 DATA 03,17,00,DB,8E,02,00,A6
250 DATA 84,A7,8D,00,EB,43,A7,84
260 DATA A1,84,10,26,00,8A,A6,8D
270 DATA 00,DE,A7,80,8C,FF,00,26
280 DATA E6,16,00,A9,30,8D,00,E8
290 DATA 17,00,B4,8E,02,00,4F,A7
300 DATA 84,A1,84,10,26,00,69,4A
310 DATA A7,84,A1,84,10,26,00,60
320 DATA 30,01,8C,FF,00,26,E7,16
330 DATA 00,83,30,8D,00,CD,17,00
340 DATA 8E,4F,8E,02,00,A7,80,8C
350 DATA FF,00,26,F9,17,00,8D,8E
360 DATA 02,00,A1,84,26,3A,30,01
370 DATA 8C,FF,00,26,F5,4C,26,E2
380 DATA 20,5B,30,8D,00,B0,8D,67
390 DATA 8E,02,00,31,8D,00,0A,4F
400 DATA 6F,1F,6F,01,A7,84,A7,A4
410 DATA 86,00,A1,84,26,12,6C,1F
420 DATA 6C,01,26,F4,4C,26,ED,30
430 DATA 01,8C,FF,00,26,E1,20,2D
440 DATA 34,10,30,8D,00,8B,8D,37
450 DATA 35,10,34,10,31,8D,00,C0

```

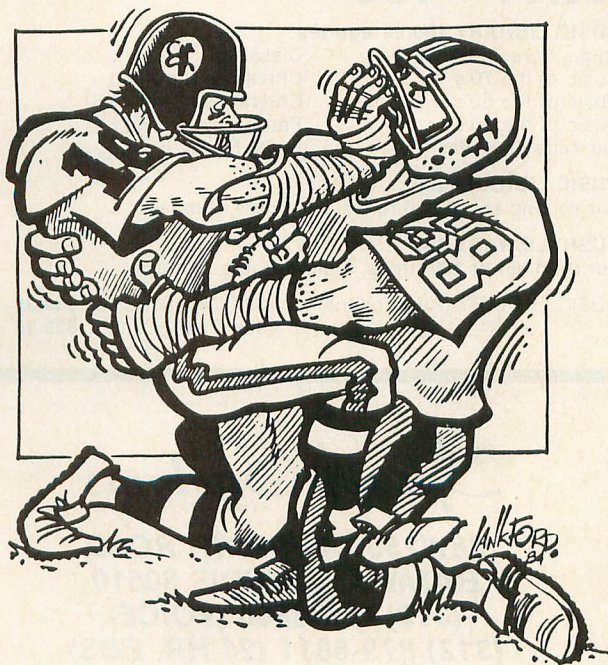
```

460 DATA 34,02,A8,84,C6,08,34,04
470 DATA 49,25,04,C6,4F,20,02,C6
480 DATA 58,E7,A0,35,04,5A,26,EE
490 DATA 35,02,35,10,39,C6,0A,30
500 DATA 8D,00,69,8D,0A,30,8D,00
510 DATA AC,8D,04,5A,26,F1,39,31
520 DATA 8D,00,99,A6,80,27,05,43
530 DATA A7,A0,20,F7,34,10,8E,00
540 DATA 00,30,01,26,FC,35,10,39
550 DATA 00,AF,BE,B8,BA,9F,A5,BA
560 DATA AD,B0,9F,00,BC,B0,B2,AF
570 DATA B3,BA,B2,BA,B1,AB,00,00
580 DATA AC,A8,B6,AB,BC,B7,B6,B1
590 DATA B8,9F,00,B6,BB,B3,BA,9F
600 DATA BB,BA,BC,BE,A6,00,B2,BE
610 DATA AB,AD,B6,A7,B6,B1,B8,9F
620 DATA 00,BD,B6,AB,9F,B9,BE,AA
630 DATA B3,AB,9F,00,D5,D5,AF,BE
640 DATA AC,AC,BA,BB,D5,D5,00,44
650 DATA 6E,42,6E,4B,49,54,53,5A
660 DATA BF,BF,BF,BF,BF,BF,BF,BF
670 DATA BF,BF,BF,BF,BF,BF,BF,BF
680 DATA BF,BF,BF,BF,BF,BF,BF,BF
690 DATA BF,BF,BF,BF,BF,BF,BF,BF
700 DATA BF,BF,BF,BF,BF,BF,BF,BF
710 DATA BF,BF,BF,BF,BF,BF,BF,BF
720 DATA BF,BF,BF,BF,BF,BF,BF,BF
730 DATA BF,BF,BF,BF,BF,BF,BF,BF

```

# Forget Those Point Spread Blues!

## With Pigskin Predictions!



Pigskin Predictions, the best-selling NFL Handicapper from Rainbow Connection Software, is now part of our library. And we're absolutely delighted! Why wrestle with those Sunday point spreads? Let your Color Computer do the work for you! And what a job it does:

- Menu-driven selection of schedules, ratings, division races, predictions or results by team or week. Seven different reports to screen or printer!

- Easy once-a-week entry of scores—no complex, meaningless stats!

- Predicts scores of all games for remainder of season each week!

- Calculates projected won-lost records for all weeks.

- Maintains home field advantage and power ratings for all teams!

- 1984 schedule data file included free. Or enter the schedule yourself.

- 32K enhanced version features dazzling Rainbow Writer screen display! Seeing is believing. 16K abridged version included too.

If you're a football fan, you'll be absolutely amazed at the power of this program. 16/32K Extended Basic required. Only \$35.95 on tape or disk. 1984 data tape or disk for previous owners only \$13.95.

**Federal Hill Software 825 William St. Baltimore, Md. 21230 301-685-6254 VISA/MC Welcome**

**NEW!**

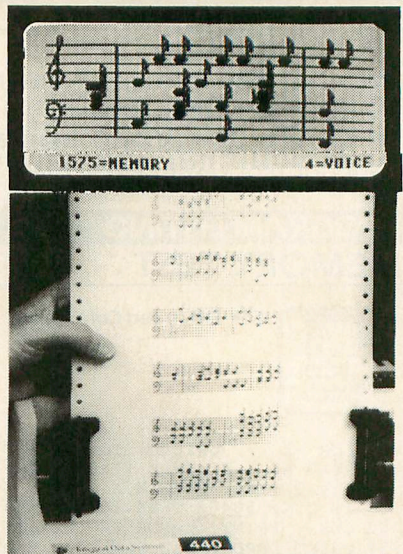
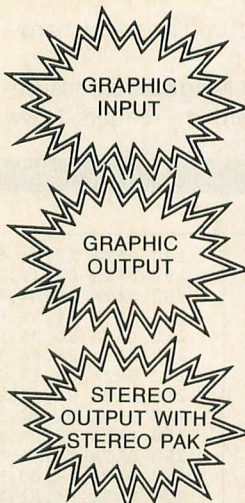
# MUSICA 2™

The best just got better.

- Dump music to any dot matrix graphics printer. (Epson, Okidata, Gemini, 10X, R.S. printers, etc.)
- Repeat any portion of music using repeat bars.
- 4 Voices produced simultaneously.
- Input notes from the keyboard or joystick.
- Develop your own timbres by specifying 9 harmonics.
- Change tempo at any point in the music any number of times.
- Save or load music from tape or disk.
- Music may be played from BASIC.
- Music produced in stereo when used with the STEREO PAK.
- 100% machine code so it is fast, no wait times.
- Volume of each of the voices may be specified separately.
- Available memory is constantly shown on screen.
- Vibrato effect possible.
- Waveshapes may be switched as the music plays.
- A 30 page manual completely describes its operation.
- Powerful music editing capabilities.
- Double bar repeat, block move and title lines supported.

Tape (32K) .....\$34.95    Disk (32K) .....\$39.95

Join our MUSICA USER'S GROUP



**NEW!**

# STEREO PAK™

Plug this gem into your computer, connect to your home stereo system and sit back and enjoy music realism. The STEREO PAK is a hardware music synthesizer that plays our MUSIC LIBRARY and MUSICA 2 music in stereo. Because it was designed specifically with music reproduction in mind, the sound is superb. The highs are crisp and clear while the bass notes will rattle your walls.

The STEREO PAK is all hardware. It is intended as an enhancement for MUSICA 2 and our MUSIC LIBRARY. Disk owners may use the STEREO PAK with the R.S. Multi-Pak or our Y-CABLE. (\$29.95).



**NEW!**

# MUSIC LIBRARY™ 100

You get over 100 four voice songs with a combined playing time of 3 hours. That's right, 3 hours of music. You won't believe your CoCo could sound so good. To fit over 100 songs required both sides of 5 C-20 tapes and the disk version uses 5 full disks (that's a half box of disks).

A JUKEBOX selection program is included to allow you to select specific songs or automatically play each. These songs are ready to go, you don't need MUSICA 2 or a knowledge of music.

These songs were developed using the best music program available for the CoCo; MUSICA 2. The tunes may be used as source files for MUSICA 2 and changed by the user. When coupled with the STEREO PAK the songs are reproduced in stereo with unsurpassed realism.

**MUSIC LIBRARY 100 categories:**

- |                       |                         |
|-----------------------|-------------------------|
| Stage, Screen, and TV | Classical               |
| Music of the 70's     | Christmas (popular)     |
| Music of the 60's     | Christmas (traditional) |
| Music of the 50's     | Patriotic               |
| Old Time Favorites    | Polka Party             |

**MUSIC LIBRARY 200**

Our second set of 100 tunes, 3½ hours of music.

**MUSIC LIBRARY 300**

Our third set of 100 tunes, 3 more hours of music.

MUSIC LIBRARY (All Versions) ... (32K Tape) .....\$34.95  
 (32K Disk) .....\$39.95



Dealer Inquiries  
Invited

If your dealer doesn't stock our  
products, ask for them.

We accept CASH, CHECK, COD, VISA, and MASTER CARD orders.  
 Shipping and handling US and Canada .....\$3.00  
 Shipping and handling outside the US and Canada .....\$5.00  
 COD charge .....\$2.00  
 Illinois residents add 6¼% sales tax for the STEREO PAK.

*Speech Systems*

**38W255 DEERPATH ROAD  
 BATAVIA, ILLINOIS 60510  
 (312) 879-6880 (VOICE)  
 (312) 879-6811 (24 HR. BBS)**

CALL ANY DAY, ANYTIME TO ORDER. ALSO ORDER BY MAIL OR BBS.  
 WE SHIP FROM STOCK WITHIN 48 HOURS.



Inero Gobbato

Do you wander through the aisles at the supermarket, trying to recollect what you need? Do you write a list before you go, only to find that if you follow it, you're running to different corners of the supermarket, and noticing things you need that aren't on the list?

A perfect shopper would tell you that all it takes is perfect recall of all the items you need, combined with the ability to write them in a list so they follow an order corresponding to supermarket aisles — just the sort of thing for a computer.

This is where Shoplist comes in. It may be used on a cassette- or disk-based 32K Extended Color Basic machine. It lets you create a permanent master list of all the items you ever need. By reviewing the master list, you're prompted to remember and note all needed items.

You can easily edit the master list to accommodate new items. For instance, if you diet, you may remove ice cream and other fattening snacks, and add healthier munchies.

A sort and print routine will list your shopping choices by aisle order. You will be able to follow your list without doubling back. No more dashing from aisle 3 to 7 to 1!

# SHOPPING LIST

BY RICK HOEGBERG

*You'll never have to backtrack again.*

## USING SHOPLIST.

When you run Shoplist, a five-option table will appear on your screen: choose, add, or delete

from the master list, exit to Basic, or quit program. All commands throughout Shoplist are queued by using command prompts displayed with reverse field first letters, and are activated using one-key input. The commands are confirmed by a brief beep.

The exit to Basic and quit program options are for convenience. Both produce a prompt: Sure? (Y/N) for safety. If you exit to Basic you may re-enter Shoplist by typing

RUN and pressing the Enter key; the quit program option clears memory.

Choosing to add to the master list produces prompts for item and aisle number. Up to ten item entries and their respective aisle numbers may be added at a time. Shoplist sorts additions into the master list when the user has finished, or if ten items are entered, or if the master list capacity is reached. I set the master list capacity arbitrarily for 99 items, but a few changes will let you work with at least 200 items.

**SORT STRATEGIES.** Once items are no longer being added, the new items are inserted in alphabetical order into the master list. While this is done, progress is displayed by a "countdown" in the top left screen corner. The sort routine takes an item to be added, finds where it should go in the existing master list, moves all the items after that position by re-assigning items from the end of the list into the insertion position, one item down. This leaves a space to put the added item. Inserting ten additions into a 70-item master list takes only 15 seconds. The

countdown display gives me something to look at while the sort progresses.

**DISPLAY ROUTINE.** The delete and choose from master list options share the same display routine except for the title heading. In both cases, groups of 11 items are displayed alphabetically ordered, with their aisle indicated in the top right corner. To page forward or backward, you type N (next page) or P (previous page).

A cursor is controlled by the up and down arrow keys. If you want to choose an item for a shopping list, or delete

## PROGRAM LISTING SHOPLIST



or



16K Extended Color Basic

```

10 '*****SHOPPING LIST*****
20 CLS
30 PRINT@200,"BY RICK HOEGBERG"
50 FOR Y=1 TO 7
60 PRINT@170,"SHOPPING LIST"
70 FOR X=1 TO 100
80 NEXT X
90 PRINT@170,"shopping list"
100 FOR X=1 TO 100
110 NEXT X
120 NEXT Y
130 CLEAR 3000
140 DIM ARRAY$(100),Y(20),TDLIST$(100),ENTRY$(12)
150 '*****OPTIONS*****
160 CLS:SOUND250,1
170 PRINT@44,"options"
180 PRINT@164,"add TO MASTER LIS
T"
190 PRINT@100,"CHOOSE FROM MASTE
R LIST"
200 PRINT@196,"DELETE FROM MASTE
R LIST"
210 PRINT@292,"QUIT PROGRAM"
220 PRINT@260,"EXIT TO BASIC"
225 PRINT@356,"PRINT ALL"
226 PRINT@420,"SAVE A MASTERLIST
TO DISK"
230 A$=INKEY$:IFA$=" " THEN 230
240 '*****REPLIES*****
250 IFA$="A" THEN ACTION$="ADD":G
OTO 310
260 IFA$="C" THEN ACTION$="CHOOSE
":GOTO 310
270 IFA$="E" THEN 2260
280 IFA$="Q" THEN 2330
290 IFA$="D" THEN ACTION$="DELETE
":GOTO 310
295 IF A$="P" THEN ACTION$="PRTA
LL":GOTO 310
296 IF A$="S" THEN ACTION$="SAVE"
:GOTO 310
300 GOTO 230
310 SOUND250,1:CLS:PRINT@39,"WHI
CH SUPERMARKET?"
320 PRINT@100,"GRAND UNION - GEO
RGES RD
FOODTOWN - EASTON
AVE"
330 REPLY$=INKEY$:IF REPLY$=" " TH
EN 330
340 IF REPLY$="G" AND ACTION$="AD
D" THEN 400
350 IF REPLY$="F" AND ACTION$="AD
D" THEN 430
360 IF REPLY$="G" AND ACTION$<>"A
DD" THEN 1180
370 IF REPLY$="F" AND ACTION$<>"A

```

```

DD" THEN 1220
380 GOTO 330
390 '*****ADD TO MASTER LIST****

400 SOUND250,1:CLS:PRINT@76,"HOL
D ON..."
410 OPEN"D",#1,"GNDUNION.MST",18

420 GOTO 450
430 SOUND250,1:CLS:PRINT@76,"HOL
D ON..."
440 OPEN"D",#1,"FOODTOWN.MST",18

450 FIELD #1, 18 AS INFO$
460 ITEM=0
470 IF LOF(1)=0 THEN ITEM=0:GOTO
590
480 I=0
490 '*****LOAD MASTERLIST*****
500 FOR I=1 TO LOF(1)
510 GET #1,I
520 ARRAY$(I)=INFO$
530 NEXT I
540 ITEM=I-1
550 '*****CHECK IF MASTERLIST IS
FULL*****
560 IF ITEM<99 THEN 590
570 CLS:PRINT@39,"MASTERLIST IS
FULL":FOR T=1 TO 1000:NEXT T
580 CLOSE:GOTO 130
590 ENTRY=0
600 '*****ITEM ENTRY ROUTINE****
*
610 SOUND250,1:CLS:ENTRY=ENTRY+1
:IF ENTRY<(11) THEN 650
620 PRINT" MAX OF 10 ADDITIONS A
T A TIME REACHED. WILL NOW SOR
T & SAVE TO DISK."
630 FOR T=1 TO 1000:NEXT T
640 ENTRY=ENTRY-1:GOTO 880
650 IF (ENTRY+ITEM)<100 THEN 690

660 CLS:PRINT@39,"MASTERLIST IS
FULL."
670 FOR T=1 TO 1000:NEXT T
680 ENTRY=ENTRY-1:GOTO 880
690 PRINT@7,"add to master list"

700 PRINT@64
710 INPUT "ITEM";ITEM$
720 SOUND250,1
730 INPUT "AISLE #";AISLE
740 '*****FORMAT ENTRY*****
750 NUMBLANK=15-(LEN(ITEM$))
760 FOR ADDBLANK=1 TO NUMBLANK
770 ITEM$=ITEM$+" "
780 NEXT ADDBLANK
790 AISLE$=STR$(AISLE)
800 ENTRY$(ENTRY)=ITEM$+AISLE$
810 '*****CONTINUE ENTERING?****
*
820 PRINT@384,"CONTINUE? <ENTER>
=YES OR no"
830 A$=INKEY$:IF A$=" " THEN 830
840 IF A$=CHR$(13) THEN 610
850 IF A$="N" THEN 880
860 GOTO 830
870 '*****SORT ENTRIES INTO MAST
ERLIST*****
880 SOUND250,1:CLS:PRINT@140,"SO
RTING..."

```

```

890 IF ITEM<>0 THEN 910
900 ARRAY$(1)=ENTRY$(1):ITEM=1:J
=2:GOTO 920
910 J=0
920 J=J+1
930 IF J>ENTRY THEN 1070
940 K=0
950 FOR K=1 TO ITEM
960 PRINT@0,ENTRY-J+1;K
970 IF ENTRY$(J)<ARRAY$(K) THEN
990
980 NEXT K
990 FOR MOVEITEM=1 TO ITEM-K+1
1000 ARRAY$(ITEM+2-MOVEITEM)=ARR
AY$(ITEM+1-MOVEITEM)
1010 NEXT MOVEITEM
1020 MOVEITEM=0
1030 ARRAY$(K)=ENTRY$(J)
1040 ITEM=ITEM+1
1050 GOTO 920
1060 '*****SAVE NEW MASTERLIST T
O DISK*****
1070 SOUND250,1:PRINT@172,"SORTE
D"
1080 PRINT@204,"SAVING...."
1090 FOR N=1 TO ITEM
1100 LSET INFO$=ARRAY$(N)
1110 PUT#1,N
1120 NEXT N
1130 CLOSE
1140 PRINT@236,"SAVED"
1150 FORT=1 TO 3000:NEXT T
1160 '*****RETURN TO OPTIONS TAB
LE*****
1170 GOTO 130
1180 '*****CHOOSE/DELETE****
*****
1190 SOUND250,1:CLS:PRINT@76,"HO
LD ON..."
1200 OPEN"D",#1,"GNDUNION.MST",1
8
1210 GOTO 1240
1220 SOUND250,1:CLS:PRINT@76,"HO
LD ON..."
1230 OPEN"D",#1,"FOODTOWN.MST",1
8
1240 FIELD#1,18 AS INFO$
1250 IF LOF(1)<>0 THEN 1300
1260 CLOSE:CLS:PRINT@64,"THERE'S
NO MASTERLIST FOR THAT SUPERMA
RKET. START ONE BY ADDING TO MAST
ERLIST."
1270 FORT=1 TO 3000:NEXT T
1280 GOTO 160
1290 '*****LOAD MASTERLIST*****

1300 FOR I=1 TO LOF(1)
1310 GET#1,I
1320 ARRAY$(I)=INFO$
1330 NEXT I
1335 IF ACTION$="PRTALL" THEN 3300

1336 IF ACTION$="SAVE" THEN 3400
1340 '*****INITIALIZE PAGE DISPLA
Y PARAMETERS*****
1350 A=1:B=11:SOUND250,1
1360 PAGE=1
1370 Y=32
1380 '*****DISPLAY ROUTINE*****

1390 CLS

```

◆ more

it from the master list, hit Enter when the cursor appears by the item. The item then appears in reverse video (light on dark). In this way, selections stand out clearly. You can toggle an item between selected and unselected by positioning the cursor at it and hitting Enter.

The reverse-video routine uses the fact that the ASCII codes for uppercase letters equal lowercase codes minus 32. This provides an easy way to invert words — just add or subtract 32 from each letter in the string. After using ASC(X\$) to see if the first letter of an item has a code less than or greater than 90, the routine adds or subtracts 32 to the codes of each letter in an item string. In addition to making candidates for a shopping list or master list deletion stand out on screen, this method also helps the program distinguish your choices.

When you are finished selecting items for a shopping list or for deletion, you exit with D (done). Depending on whether you were choosing or deleting, you can then review your selections, start over, or print choices/execute deletions.

The executing deletions routine scans the list, skipping items selected for deletion because of their lowercase letters, while saving the rest to a temporary master list file on disk. It then kills the old master list file and renames the temporary file as the new master list.

The print today's shopping list routine scans the master list, saving only the selected items in a holding list. Shoplist then scans this holding list, looking at aisle numbers to determine the highest. Once the highest aisle is determined, a sort by aisle proceeds. As in the add routine, a count-down on the progress of the sort is displayed in the top left corner. Since the items are already in alphabetical order, you end up with a shopping list sorted by aisle, with the items in each aisle alphabetized.

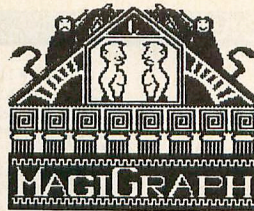
**EXTRA TOUCHES.** The commands at the start of the print routine are for the Gemini-10X printer. You have a choice of small, medium, or large characters.

You needn't be restricted to just one master list (that is, one supermarket). Shoplist lets you include master lists for two different supermarkets. Since there's no standardized aisle arrangement followed by all supermarkets, you'll have to know which items are in what aisle.

In addition, some supermarkets number aisles from 14 to 1 (starting from the entrance) while others go from 1 to 14. The program sorts by aisles up or down depending on which method your supermarket uses.

**POSSIBLE IMPROVEMENTS.** I'd like to add a pricing routine to Shoplist. It would be great to see the tab before walking out of the house — my food budget would certainly benefit. I'd like to make a provision for multiple purchases of one item as well (I certainly don't buy my St. Bernard his food one can at a time!). Prices do change rapidly, so I'd have to update the master list regularly.

As for the proof of the pudding, I've been using Shoplist for about six months now with great results. One time, a friend came along to do a little shopping of her own. While she went her way, we whizzed through the supermarket at our shoplist-assisted speed, taking less time to acquire six bags worth of groceries than it took our friend to fill a hand basket. Computer-assisted-shopping could be the wave of the future! ■



## NEW GOOD STUFF FOR EVERY COLOR COMPUTER!

**MAGIGRAPH**—Turn your Color Computer into a graphic design center with the ease of a keystroke! **MagiGraph** makes it simple to create highly detailed figures up to and including an entire high-resolution screen. Designed for those with some experience in Basic and Assembly Language programming, **MagiGraph** includes: A full set of logical and pixel manipulation functions; a design editor; nine animation buffers; versatile I/O routines. If you're looking for the finest graphic development utility available for your computer, THIS IS IT! Cassette \$34.95 (16K required); Disk \$39.95 (32K Extended Color BASIC required); Amdisk cartridge \$44.95.

### **CSPool: COLOR COMPUTER PRINT**

**SPOOLER**—Stop Waiting Around for the Printer! **CSPool** allows you to use your printer and computer concurrently, takes only 26 bytes of Color Basic's memory, and gives you 32K of print buffer. It's like having two computers in one! By intercepting characters sent to the printer and storing them in the upper 32K of RAM, **CSPool** allows you to run other programs while your printer is doing its job. **CSPool** is FREE with the purchase of a 64K RAM UPGRADE KIT from The Micro Works, or it may be purchased separately on cassette or diskette for \$19.95. Requires 64K; not for FLEX or OS9.

**64K MEMORY UPGRADE KIT:** For Rev. levels E, ET, NC, TDP-100s, and Color Computer II. Eight prime 64K RAM chips, instructions, and **CSPool**: \$64.95.

### **MACRO-80C: DISK-BASED EDITOR, ASSEMBLER AND MONITOR**

—A powerful 2-pass macro assembler with conditional assembly, local labels, include files and cross referenced symbol tables. Supports the complete Motorola 6809 and 6800 instruction sets in standard source format. Incorporating all the features of our Rompack-based assembler (SDS-80C), **MACRO-80C** contains many more useful instructions and pseudo-ops which aid the programmer and add power and flexibility. The screen-oriented editor is designed for efficient and easy editing of assembly language programs.

**MACRO-80C** allows global changes and moving / copying blocks of text. You can edit lines of assembly source which exceed 32 characters. Also includes DCBUG, a machine language monitor which allows examining and altering of memory, setting break points, etc.

**MACRO-80C**— along with sample programs—comes on one Radio Shack compatible disk. Extensive documentation. \$99.95

**MICRO WORKS COLOR FORTH**—This Rompack contains everything you need to run Forth on your Color Computer. **COLOR FORTH** consists of the standard Forth Interest Group (FIG) implementation plus most of FORTH-79. Includes super screen editor with split screen display, a decompiler and other aids for learning more about this fascinating language. Uses Hi-Res graphics, joysticks and sounds. Includes 112-page manual with a glossary of system-specific words, full standard FIG glossary and complete source listing. **MICRO WORKS COLOR FORTH... THE BEST!** \$109.95

**SDS-80C**—Our famous Rompack editor, assembler and monitor. Complete manual included with this comprehensive software development system. \$89.95

**PARALLEL PRINTER INTERFACE**—Serial to parallel converter allows use of all standard parallel printers. 600 or 2400 baud. **PI80C**: \$59.95

**MICROTEXT COMMUNICATIONS ROMPACK**—Allows you to get printouts while using your modem. Also download to cassette. General purpose terminal Rompack: \$59.95

Write or call for information  
about our complete range of products for every Color Computer!

THE **MICRO WORKS**

P.O. BOX 1110-B  
Del Mar, CA 92014  
(619) 942-2400

California Residents  
add 6% Tax  
MasterCard/Visa and  
COD Accepted

Circle No. 160 on Reader Service Card

# PROGRAM LISTING (CONT.)

```

1400 PRINT@33,"# ITEM
      AISLE #"
1410 PRINT@449,"NEXT PAGE PREVIOUS PAGE DONE"
1420 IF ACTION$="DELETE"THEN1450

1430 PRINT@4,"choose from master list P";PAGE;
1440 GOTOL460
1450 PRINT@4,"delete from master list P";PAGE;
1460 R=0
1470 FOR N=A TO B
1480 R=R+1
1490 *****ITEM & AISLE #*****

1500 PRINT@((32*R)+38),ARRAY$(N)

1510 *****ITEM #*****

1520 PRINT@((32*R)+32),N;
1530 NEXTN
1540 *****CURSOR*****
1550 PRINT@((36+Y),CHR$(128));
1560 *****DISPLAY COMMANDS*****
1570 A$=INKEY$:IF A$=""THEN1570
1580 IF A$=CHR$(10)THEN1660
1590 IF A$=CHR$(94)THEN1680
1600 IF A$="D"THEN2060
1610 IF A$=CHR$(13)THEN1710
1620 IF A$="N"THEN1990
1630 IF A$="P"THEN2020
1640 GOTOL570
1650 *****CURSOR CONTROL*****
1660 SOUND250,1:IFY=352THEN1390
1670 Y=Y+32:GOTOL390
1680 SOUND250,1:IFY=32THEN1390
1690 Y=Y-32:GOTOL390
1700 *****FIGURE WHICH ITEM CURSOR POINTS TO*****
1710 SOUND250,1:L=A-1+(Y/32)
1720 IN$=ARRAY$(L)
1730 IF IN$=""THEN1390
1740 *****INVERT ITEM ROUTINE*****
1750 IF ASC(IN$)<>32THEN1790
1760 IF ACTION$="CHOOSE"THEN1390

1770 IF IN$="delete"THEN1390

1780 ARRAY$(L)="delete":GOTOL390

1790 IF ASC(IN$)>90THEN Q=1:GOTO1810
1800 Q=0
1810 N=0
1820 N$=RIGHT$(IN$,3)
1830 FOR N=1 TO 15
1840 X=ASC(IN$)
1850 IF X>32THEN1870
1860 Y(N)=X:GOTOL900
1870 IF Q=0 THEN1890
1880 Y(N)=X-32:GOTOL900
1890 Y(N)=X+32
1900 IN$=MID$(IN$,2,15)
1910 NEXTN
1920 ARRAY$(L)=""
1930 FORJ=1TO15
1940 ARRAY$(L)=ARRAY$(L)+CHR$(Y(J))
1950 NEXTJ
1960 ARRAY$(L)=ARRAY$(L)+N$
1970 GOTOL390
1980 *****PAGE DE/INCREMENT*****
1990 SOUND250,1:IF PAGE=9THEN1370
2000 PAGE=PAGE+1
2010 A=A+11:B=B+11:GOTOL370
2020 SOUND250,1:IF PAGE=1THEN1370
2030 PAGE=PAGE-1
2040 A=A-11:B=B-11:GOTOL370
2050 *****FINISH DELETION TABLE*****
2060 SOUND250,1:IF ACTION$="CHOOSE"THEN2170
2070 CLS:PRINT@104,"REVIEW DELETIONS"
2080 PRINT@136,"START OVER"
2090 PRINT@168,"EXECUTE DELETION S"

```

```

2100 A$=INKEY$:IF A$=""THEN2100
2110 IF A$="S"THENCLOSE:GOTOL30
2120 IF A$="R"THEN 1350
2130 *****EXECUTE DELETIONS*****
2140 IF A$="E"THEN2400
2150 GOTOL100
2160 *****FINISH CHOOSE TABLE*****
2170 CLS:PRINT@104,"REVIEW CHOICES"
2180 PRINT@136,"START OVER"
2190 PRINT@168,"PRINT CHOICES"
2200 A$=INKEY$:IF A$=""THEN2200
2210 IF A$="R"THEN1350
2220 IF A$="S"THENCLOSE:GOTOL30
2230 IF A$="P"THEN2630
2240 *****GO PRINT SHOPPING LIST*****
2250 GOTOL200
2260 *****EXIT TO BASIC*****

2270 SOUND250,1:CLS:PRINT@74,"SURE? (Y/N)"
2280 A$=INKEY$:IF A$=""THEN2280
2290 IF A$="N"THEN160
2300 IF A$="Y"THEN SOUND250,1:END
2310 GOTOL280
2320 *****QUIT PROGRAM*****
2330 SOUND1,10:CLS:PRINT@74,"SURE? (Y/N)"
2340 A$=INKEY$:IF A$=""THEN2340
2350 IF A$="N"THEN160
2360 IF A$="Y"THEN SOUND1,1:GOTO2380
2370 GOTOL2340
2380 POKEL13,0:EXEC40999
2390 *****DELETE FROM MASTER LIST*****
2400 J=0:SOUND250,1
2410 CLS:PRINT@130,"EXECUTING DELETIONS..."
2420 OPEN"D",#2,"TEMP.FIL",18
2430 FIELD#2,18 AS ITEMS$
2440 FOR I=1 TO LOF(1)
2450 IN$=ARRAY$(I)
2460 *****DROP DELETED*****

2470 IF ASC(IN$)>90THEN2510
2480 LSET TITEM$=IN$
2490 J=J+1
2500 PUT#2,J
2510 NEXT I
2520 CLOSE
2530 IF REPLY$="F"THEN2570
2540 KILL"GNDUNION.MST"
2550 RENAME"TEMP.FIL"TO"GNDUNION.MST"
2560 GOTOL2600
2570 KILL"FOODTOWN.MST"
2580 RENAME"TEMP.FIL"TO"FOODTOWN.MST"
2590 SOUND250,1
2600 PRINT@152,"DONE":FOR T=1TO100:NEXTT
2610 *****GOT TO OPTIONS TABLE*****
2620 GOTOL30
2630 *****PRINT CHOICES*****
2640 *****CHOOSE PRINT SIZE*****
2650 SOUND250,1:CLS:PRINT@104,"CHOOSE PRINT SIZE":PRINT@174,"SMALL MEDIUM LARGE"
2655 POKE 150,1
2660 A$=INKEY$:IF A$=""THEN2660
2670 IF A$="S"THEN2700
2680 IF A$="M"THEN2710
2690 IF A$="L"THEN2720:GOTOL2660
2700 SOUND250,1:PRINT#-2,CHR$(15)
)CHR$(7):GOTOL2730
2710 SOUND250,1:PRINT#-2,CHR$(27)
)CHR$(64)CHR$(7):GOTOL2730
2720 SOUND250,1:PRINT#-2,CHR$(27)
)CHR$(87)CHR$(1)CHR$(7)
2730 H=0
2740 IF REPLY$<>"F"THEN2780
2750 *****PRINT LIST HEADING*****

```

```

2760 PRINT#-2,"FOODTOWN - EASTON AVE"
2770 CLS:PRINT@128,"":INPUT " TODAY'S DATE";DATE$:GOTOL2786
2780 PRINT#-2,"GRAND UNION - REGES RD"
2785 CLS:PRINT@128,"":INPUT " TODAY'S DATE";DATE$
2786 PRINT#-2,DATE$
2790 PRINT#-2,"ITEM AISLE #";CHR$(13)
2800 *****LOAD, IGNORE UNCHOSEN ITEMS*****
2810 CLS:PRINT@76,"HOLD ON..."
2820 FOR U=1TOLOF(1)
2830 IN$=ARRAY$(U)
2840 IF ASC(IN$)<91THEN2870
2850 H=H+1
2860 ARRAY$(H)=IN$
2870 NEXTU
2880 CLOSE
2890 CLS:PRINT@135,"SORTING..."
2900 *****PIND MAX AISLE #*****
2910 MAX=1
2920 FOR J=1TO H
2930 IN$=RIGHT$(ARRAY$(J),2)
2940 A=VAL(IN$)
2950 IF MAX<A THEN MAX=A
2960 NEXT J
2970 *****SORT CHOICES BY AISLE*****
2980 P=0
2990 IF REPLY$="G"THEN3010
3000 J=0:GOTOL3020
3010 J=MAX+1:GOTOL3030
3020 J=J+1:IFJ<MAX+1THEN3040ELSE3160
3030 J=J-1:IFJ=0THEN3160
3040 FOR K=1TO H
3050 IF REPLY$="F"THEN3070
3060 PRINT@0,J;K:GOTOL3080
3070 PRINT@0,MAX-J+1;K
3080 IN$=RIGHT$(ARRAY$(K),2)
3090 A=VAL(IN$)
3100 IF A<>J THEN3130
3110 P=P+1
3120 TDLIST$(P)=ARRAY$(K)
3130 NEXTK
3140 IF REPLY$="G"THEN3030
3150 GOTOL3020
3160 PRINT@167,"SORTED SENDING TO PRINT ER..."
3170 *****PRINT SHOPPING LIST*****
3180 FORJ=1TOH
3190 PRINT#-2,TDLIST$(J)
3200 NEXTJ
3210 PRINT#-2,CHR$(13)
3220 PRINT@231,"SENT...";
3230 *****CLEAR PRINTER*****
3240 PRINT#-2,CHR$(27)CHR$(64)
3250 PRINT@238,"% PRINTED"
3260 FORT=1TO2000:NEXTT
3270 *****RETURN TO OPTIONS TABLE*****
3280 GOTOL30
3300 *****PRINT ALL*****
3305 POKE 150,1
3310 FOR I=1 TO LOF(1)
3320 PRINT#-2,I;ARRAY$(I)
3330 NEXTI
3335 CLOSE:GOTOL30
3400 *****SAVE A MASTERLIST TO ANOTHER DISK*****
3410 CLS:PRINT@67,"INSERT DESTINATION DISK PRESS <ENTER> WHEN READY"
3415 A$=INKEY$:IF A$=""THEN3415
3420 IF A$<>CHR$(13) THEN3415
3421 IF REPLY$="F" THEN 3424
3422 OPEN"D",#2,"GNDUNION.MST",18
3423 GOTOL3425
3424 OPEN"D",#2,"FOODTOWN.MST",18
3425 FIELD#2,18 AS INFO$
3428 FOR I=1 TO LOF(1)
3429 LSET INFO$=ARRAY$(I)
3430 PUT#2,I
3435 NEXT I
3440 CLOSE:GOTOL30

```





# SUMMER MELTDOWN SPECIALS

## SKYLINE'S BIG 10

Cheshire Cat	
Graphicom (64K disk)	\$29.95
Cognitec	
Telewriter 64 tape	\$49.95
Telewriter 64 disc	\$59.95
Custom Software Engineering	
Graphic screen print, specify printer	\$ 9.95
Eigen Systems	
Colorcomm/E, disk or cart.	\$49.95
Stripper	\$ 7.95
CCEAD	\$ 6.95
BASIC Aid cartridge	\$34.95
Micro Works	
Macro 80C Editor/Assembler	\$99.95
SDS 80C Editor/Assembler	\$89.95

## SKYLINE'S OWN BEST SELLERS

### SUPERSTATS

The most powerful statistics program available for the CoCo. Used by professionals. 16K Ext. Basic. Tape \$29.95

### PAGE PLUS

Gives 64K from Basic. New revised documentation! Disk \$29.95 Tape \$27.95

### STRUCTURED MACROS

Macro 80C super enhancement! Disk \$19.95

### SETUP64

Allows double-sided 40/80 track drives! \$19.95

### MDISK

Sets up an internal 32K memory disk for rapid storage and retrieval. Source code included. Disk \$29.95 Tape \$27.95

### ROMBACK

Why pay more? Allows dumping from ROMpak to disk or tape. Full documentation, easy to use. Lowest price! Tape \$16.95

### QUICKSORT

M/L sort routine for easy use by Basic programmers. Works on tape or disk. 16K. Tape \$12.95

### 64K BOOT/PAGER

This is what you need to get the most from your 64K CoCo. Super buy! 64K Req. Tape \$19.95

### SIMPLEX

Programmers — this is a must! This powerful tool will save you time and effort. Min. 16K Ext. Basic. Tape \$29.95

### C.C. FILE

Flexible data base manager. 16K. Now only \$12.95

### C.C. WRITER

You can pay more — but will it be better? 16K. \$29.95

### C.C. CALC

Powerful spreadsheet for your CoCo! 32K. \$34.95

### C.C. MAILER

Handles all you mail list needs! 16K. \$19.95

## C.C. Three

You save \$27.90! C.C. File, Writer, and Calc in one fantastic package. We'll even give you both tape and disk versions (one tape) for one low price — \$49.95

## OUR CUSTOMERS SOUND OFF FOR SKYLINE!

*I would like to express my appreciation to you for the excellent service provided by your company.... I was delighted to receive my shipment only one week after the phone order. Hats off to your shipping department.*

*Once again, thank you for your prompt and efficient service, and for providing such a great package at a good price.*

D.S., Kentucky

*...You might care to know that this order is repeat business. Recently, I purchased a NEC monitor package from your firm and I was very pleased with your fast service, the quality of merchandise and the ease of set-up.*

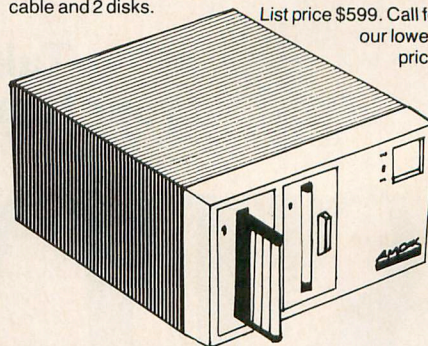
M.S., California

## HARDWARE — SKYLINE has the BEST for LESS! Call us LAST!

### LESS = MORE

with the Amdek 3" Disk Drive. You get more data stored on a 3" disk than a 5 1/4" and the AMDISK III B takes up less space. AMDISK III B 3" dual drive with cable and 2 disks.

List price \$599. Call for our lowest price!



### TIRED OF RF INTERFERENCE?

Poor resolution? We carry a complete line of B/W and color monitors from AMDEK, NEC and SYNCO. We also have the right monitor adapter to match your CoCo. Call for FRIENDLY SERVICE!

### SKYLINE PRINTER SALE! STAR MICRONICS — OKIDATA — TRANSTAR — JUKI — NEC You want it? We've got it!

### GET ON LINE!

Modems from Hayes and NEC. Call for latest prices.

### NOW AVAILABLE!

Skyline's Risk-Free diskettes and data cassettes — so good that they're guaranteed for as long as you own them!



"No Bull"

10 diskettes, sleeves, labels, and write protect tabs — \$19.95

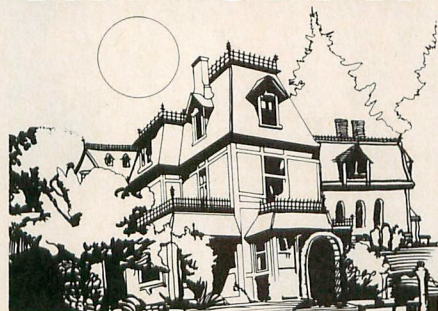
12 data cassettes, boxes, and labels — \$8.00

## \$60 Software Bonus With Memory Upgrade

That's right — Skyline's famous 64K Upgrade is an even better deal than before! 8 guaranteed 200 n.s. 64K memory chips, solderless installation instructions (one solder connection required on Color Computer 2), Skyline's 64K BOOT and PAGER programs, PLUS the Wizard 64 adventure game, PLUS a handy new utility, SETUP64 (allows you to configure your tape or disk system in a myriad of ways!) Still only \$59!! Order now — this offer may be withdrawn at any time!

### ATTENTION ADVENTURE FREAKS!

## MYSTIC MANSION



You can stay cool in front of your air conditioner, but can you keep your cool while playing Skyline's exciting ALL GRAPHIC ADVENTURE? One of the best yet! 32K Disk only.

Summer Special \$29.95



UPS C.O.D. order gladly accepted, \$2.00 additional.

We Love Canadian Orders! Inquire For Foreign Shipping

FAST ORDER LINE (312) 286-0762  
24-HR MODEM ORDER LINE  
(312) 286-9015

### ORDERING INFORMATION

\*\$10 shipping, handling & insurance on printers. Amdisk, and monitors. \$5 on modems, \$2 on all other orders. All prices U.S. funds.

Skyline Marketing Corp. 4510 W. Irving Park Rd. Chicago, IL 60641

### FREE GIFT

Use of our order forms qualifies you for a free gift with your order. Get on our mailing list now for order forms.

### COUPON

NAME \_\_\_\_\_ Dept. C  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_





When you select Review, the input screen is displayed with the data filled in for the first stock. A cursor appears to the left of the entry for stock name. You can change the entry simply by typing in the new data.

You can move the cursor to other lines with the up and down arrow keys. At each position, you have the opportunity to change the data on file.

This procedure repeats until you've reviewed every stock in the portfolio. Those entries not changed are retained in memory. The screen will prompt you when the end of the file is reached and give you the option to add yet another stock to the portfolio.

The Save subroutine saves both input and calculated data to a cassette file. Once you have established and

saved a file, it can be used as the basis for creating a new file. This time when the program is run, select Load and then Review to make the required changes.

The Print subroutine produces an 80-column report in the format displayed in Figure 4. It includes all of the input and calculated data.

An index to the program is included in Table 1, and program variables are defined in Table 2. Disk users will have to revise the Save subroutine (Lines 400 - 450) and the Load subroutine (Lines 600 - 690). You may also wish to add other variables or revise the report format.

Whatever your data, better organization will certainly improve your decision-making. Now, load the program and good luck on your first million!

## PROGRAM LISTING STOCKS



16K Extended  
Color Basic

```

10 CLEAR500:CLS:X=1:TI=0:TV=0:TG
=0:TM=0:E=1
20 DIMS$(20),N$(20),N(20),I$(20),
I(20),P$(20),P(20)
25 DIMD$(20),D(20),CV(20),Y(20),
G(20),M(20)
30 PRINT@65,"<N>EW FILE <L>OAD
FROM TAPE"
35 PRINT@170,"(SELECT ONE)"
40 GOSUB50:IFA$="N"THEN100ELSE I
FA$="L"THEN600ELSE40
50 A$=INKEY$:IFA$=""THEN50ELSE R
TURN
100 CLS:PRINT@0,"ACCOUNT NAME: "
;:LINEINPUT Z$
110 PRINT@32,"TODAY'S DATE: ";:L
INEINPUT DT$
120 CLS:PRINT@0,Z$;:GOSUBL130:GOT
O280
130 PRINT@64,"NAME OF STOCK:
";:LINEINPUT S$(X)
140 PRINT@128,"NUMBER OF SHARES:
";:LINEINPUT N$(X):N(X)=VAL(N$(
X))
150 PRINT@192,"AMOUNT INVESTED:
";:LINEINPUT I$(X):I(X)=VAL(I$(
X))
160 PRINT@256,"CURRENT PRICE:
";:LINEINPUT P$(X):P(X)=VAL(P$(
X))
170 PRINT@320,"ANNUAL DIVIDEND:
";:LINEINPUT D$(X):D(X)=VAL(D$(
X))
180 PRINT@384,"PRESS ANY KEY
TO CONTINUE";:GOSUB50
190 CV(X)=N(X)*P(X):Y(X)=D(X)/P(
X)*100:G(X)=CV(X)-I(X):M(X)=N(X)
*D(X)
200 TI=TI+I(X):TV=TV+CV(X):TG=TG
+G(X):TM=TM+M(X)
210 CLS:PRINT@0,Z$
220 PRINT@64,"NAME OF STOCK: ";S
$(X);
230 PRINT@128,"CURRENT VALUE: ";
:PRINTUSING"#####.###";CV(X);
240 PRINT@192,"CURRENT YIELD: ";
:PRINTUSING"#####.###";Y(X);
250 PRINT@256,"ANNUAL INCOME: ";
:PRINTUSING"#####.###";M(X);
260 PRINT@320,"CAP GAIN/LOSS: ";
:PRINTUSING"#####.###";G(X);
270 RETURN
280 PRINT@484,"ANOTHER STOCK (Y
/N)";:GOSUB50
290 IFA$="Y"THENX=X+1:E=X:GOTO12
0
300 CLS:PRINT@0,"ACCOUNT: ";Z$
310 PRINT@64,"TOTAL VALUE: ";:PR
INTUSING"#####.###";TV:PRINT@128
,"TOTAL INVESTED: ";:PRINTUSING
"#####.###";TI
320 PRINT@192,"ANNUAL INCOME: ";

```

```

:PRINTUSING"#####.###";TM
330 PRINT@256,"NET GAIN/LOSS: ";
:PRINTUSING"#####.###";TG
340 PRINT@448,"PRESS ANY KEY TO
CONTINUE";:GOSUB50
350 PRINT@448,"<R>EVIEW <S>A
VE <P>RINT <Q>UIT <A>NO
THER ACCOUNT";
360 GOSUB50
370 IFA$="R"THEN380 ELSE IFA$="S
"THEN400 ELSE IFA$="P"THEN500 EL
SE IFA$="A"THEN10 ELSE IFA$="Q"
HEN END ELSE350
380 X=1:TI=0:TV=0:TG=0:TM=0
390 GOTO 700
400 CLS:PRINT@0,"ADVANCE TAPE TO
THE END OF THE LAST FILE AND S
ET CONTROLS TO <RECORD>. INPUT
FILENAME (SUCH AS 'JR1SE
P84'.):";PRINT:INPUT"FILE NAME";F
$
410 OPEN"O",#-1,F$
420 PRINT#-1,Z$,DT$,TI,TV,TM,TG
430 FOR X=1 TO E:PRINT#-1,S$(X),
N(X),I(X),P(X),D(X),CV(X),Y(X),G
(X),M(X):NEXTX
440 CLOSE#-1
450 GOTO350
500 CLS:PRINT#-2,"ACCOUNT: ";Z$;
TAB(60)"DATE: ";DT$
505 PRINT#-2:PRINT#-2,"";TAB(11)
"NO. OF";TAB(20)"AMOUNT";TAB(28)
"CURRENT";TAB(37)"ANNUAL";TAB(46)
"CURRENT";TAB(63)"ANNUAL";TAB(7
4)"GAIN"
510 PRINT#-2,"STOCK";TAB(11)"SH
ARES";TAB(19)"INVESTED";TAB(29)"
PRICE";TAB(36)"DIVIDEND";TAB(47)
"VALUE";TAB(55)"YIELD";TAB(63)"I
NCOME";TAB(72)"LOSS (-)"
515 PRINT#-2,STRINGS(80,45)
520 FOR X=1 TO E:PRINT#-2,S$(X);
TAB(10);:PRINT#-2,USING"###.###"
;N(X);:PRINT#-2,TAB(18);:PRINT#-
2,USING"#####.###";I(X);:PRINT#-
2,TAB(28);:PRINT#-2,USING"###.###
";P(X);
530 PRINT#-2,TAB(37);:PRINT#-2,U
SING"###.###";D(X);:PRINT#-2,TAB(
46);:PRINT#-2,USING"#####.###";CV
(X);:PRINT#-2,TAB(55);:PRINT#-2,
USING"###.###";Y(X);
540 PRINT#-2,TAB(62);:PRINT#-2,U
SING"#####.###";M(X);:PRINT#-2,TAB
(72);:PRINT#-2,USING"#####.###";G
(X)
550 NEXT X
560 PRINT#-2,STRINGS(80,45)
570 PRINT#-2,"TOTALS: ";:PRINT#-2
,TAB(18);:PRINT#-2,USING"#####.
###";TI;:PRINT#-2,TAB(46);:PRINT#
-2,USING"#####.###";TV;:PRINT#-2,
TAB(62);:PRINT#-2,USING"#####.###
";TM;:PRINT#-2,TAB(72);:PRINT#-2,
USING"#####.###";TG
580 FORX=1TO6:PRINT#-2:NEXTX
590 GOTO350
600 CLS:PRINT@0,"SET RECORDER TO
<PLAY>. THEN INPUT FILE NAME
(SUCH AS 'JR1SEP84'.)"

```

```

605 X=0
610 PRINT:INPUT"FILE NAME";F$
615 PRINT:PRINT"file loading";
620 OPEN"i",#-1,F$
630 INPUT#-1,Z$,DT$,TI,TV,TM,TG
640 E=X:X=X+1
650 IF EOF(-1) THEN 680
660 INPUT#-1,S$(X),N(X),I(X),P(X)
),D(X),CV(X),Y(X),G(X),M(X)
670 GOTO 640
680 CLOSE#-1
690 GOTO350
700 CLS:PRINT@0,Z$;:PRINT@21,DT$
;
705 PRINT@64,"NAME OF STOCK: ";:P
RINT@83,S$(X);
710 PRINT@128,"NUMBER OF SHARES:
";:PRINT@146,N(X);
715 PRINT@192,"AMOUNT INVESTED: "
;:PRINT@210,I(X);
720 PRINT@256,"CURRENT PRICE: ";:
PRINT@274,P(X);
730 PRINT@320,"ANNUAL DIVIDEND: "
;:PRINT@338,D(X);
740 PRINT@403,"CONTINUE";
750 GOSUB800:GOSUBL190
760 IF X<>E THEN780ELSE PRINT@39
0,"END OF CURRENT FILE";
770 PRINT@448,"ENTER DATE IF CHA
NGED ";:LINEINPUTA$:IFA$=""THEN2
80ELSE DT$=A$:GOTO280
780 PRINT@482,"PRESS <ENTER> TO
CONTINUE";:GOSUB50
790 IFA$=CHR$(13)THEN795ELSE780
795 X=X+1:CLS:GOTO705
800 PRINT@448,"USE UP/DOWN ARROW
S TO POSITION CURSOR";
810 V=6
820 CP=64*V+19
830 PRINT@CP-1,CHR$(207);
840 GOSUB50:IFA$=CHR$(13)THEN850
ELSE870
850 IFPEEK(137)+PEEK(136)*256-10
24>64*V+19 THENPRINT@64*V+18,CHR
$(32);:GOTO940
860 IF V=6 THEN 960
870 IFA$=CHR$(94)THEN IF V=1 THE
N820ELSE IFV>1THEN V=V-1:PRINT@C
P-1,CHR$(32);:GOTO820
880 IFA$=CHR$(10)THEN 890 ELSE 9
00
890 IF V=6 THEN 820 ELSE V=V+1:P
RINT@CP-1,CHR$(32);:GOTO820
900 IFA$=CHR$(8)THEN IF PEEK(137
)+PEEK(136)*256-1024>64*V+19 THE
NPRINT A$;:CP=CP-1:L=L-1:B$=LEFT
$(B$,L):GOTO840
910 IFA$<CHR$(38)OR A$>CHR$(92)T
HEN 830 ELSE PRINT@CP,STRINGS(12
,32);
920 PRINT@CP,A$;
930 B$=B$+A$:CP=CP+1:L=L+1:GOTO8
40
940 IF V=1THEN S$(X)=B$ ELSE IF
V=2THEN N(X)=VAL(B$)ELSE IF V=3T
HEN I(X)=VAL(B$)ELSE IF V=4THEN
P(X)=VAL(B$)ELSE IF V=5THENND(X)=
VAL(B$)ELSE IF V=6THEN960
950 B$="";L=0:V=V+1:GOTO820
960 RETURN

```

ACCOUNT NAME:  
 TODAY'S DATE:  
 NAME OF STOCK:  
 NUMBER OF SHARES:  
 AMOUNT INVESTED:  
 CURRENT PRICE:  
 ANNUAL DIVIDEND:

PRESS ANY KEY TO CONTINUE

Figure 1. Input Screen

NAME OF STOCK: ABC CORP  
 CURRENT VALUE: 1350.00  
 CURRENT YIELD: 9.33  
 ANNUAL INCOME: 126.00  
 CAP GAIN/LOSS: 116.00

ANOTHER STOCK (Y/N)

Figure 2. Calculated Data

ACCOUNT: J. SMITH  
 TOTAL VALUE: 15387.50  
 TOTAL INVESTED: 14166.10  
 ANNUAL INCOME: 1286.00  
 NET GAIN/LOSS: 1221.40

PRESS ANY KEY TO CONTINUE

Figure 3. Screen Summary Report

Lines	Description
10	Clears string memory; initializes variables
20-25	Reserve array space
30-40	Select or start file
50	Inputs subroutine
100-180	Input data screen
190-200	Calculations
210-340	Output screens
350-390	Menu selection
400-450	Save subroutine
500-580	Print subroutine
600-690	Load subroutine
700-790	Review file subroutine
800-910	Cursor position and data input

Table 1. Program Index

Account: J. Smith

Date: 5 Jun 84

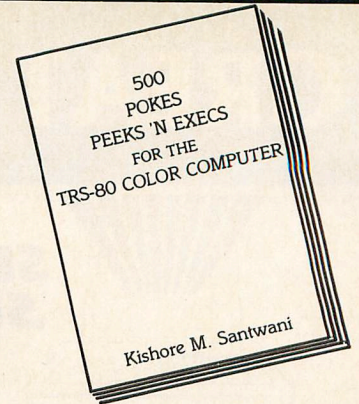
Stock	No. of Shares	Amount Invested	Current Price	Annual Dividend	Current Value	Yield	Annual Income	Gain Loss (-)
ABC Corp.	100.000	1234.00	13.500	1.26	1350.00	9.33	126.00	116.00
XYZ Co.	250.000	7500.00	35.250	2.40	8812.50	6.81	600.00	1312.50
ACME Ind.	200.000	5432.10	26.125	2.80	5225.00	10.72	560.00	-207.10
Totals:		14166.10			15387.50		1286.00	1221.40

Figure 4. Printed Report

Variable Function

A\$	Input variable	M(X)	Annual income from dividends
B\$	Input string	N\$(X)	Number of shares
CP	Cursor position	N(X)	Value of N\$(X)
CV(X)	Current value of stock	P\$(X)	Current stock price
D\$(X)	Annual stock dividend	P(X)	Value of P\$(X)
D(X)	Value of D\$(X)	S\$(X)	Name of stock
DT\$	Date	TG	Total (net) portfolio gain
E	Total number of stocks in portfolio	TM	Total portfolio annual income
F\$	File name	TV	Total portfolio value
G(X)	Capital gain (or loss)	V	Screen line number
I\$(X)	Amount invested	X	Counting variable
I(X)	Value of I\$(X)	Y(X)	Dividend yield
L	Length of input string	Z\$	Account name

Table 2. Program Variables



**500 POKES  
 PEEKS 'N EXECs  
 for the  
 TRS-80  
 COLOR COMPUTER**

NEVER BEFORE has this information of vital significance to a programmer been so readily available to everyone. This book will help you 'GET UNDERNEATH THE COVER' of the Color Computer and develop your own HI-QUALITY Basic and ML programs. SO WHY WAIT??

This 80-page book includes POKES, PEEKs and EXECs to:

- ★ Autostart your basic programs
  - ★ Disable Color Basic/ECB/Disk Basic commands like LIST, LLIST, POKE, EXEC, CSAVE(M), DEL, EDIT, TROM, TROFF, PCLEAR, DLOAD, RENUM, PRINT USING, DIR, KILL, SAVE, LOAD, MERGE, RENAME, DSKINI, BACKUP, DSKI\$, and DSKO\$.
  - ★ Disable BREAK KEY, CLEAR KEY and RESET BUTTON.
  - ★ Generate a Repeat-key.
  - ★ Transfer ROMPAKS to tape (For 64K only).
  - ★ Speed Up your programs.
  - ★ Reset, MOTOR ON/OFF from keyboard.
  - ★ Recover Basic programs lost by NEW.
  - ★ Set 23 different GRAPHIC/SEMIGRAPHIC modes
  - ★ AND MUCH MUCH MORE !!!
- COMMANDS COMPATIBLE WITH  
 16K/32K/64K/ COLOR  
 BASIC/ECB/DISK BASIC  
 CASSETTE  
 and DISK SYSTEMS and CoCo I  
 and  
 CoCo II.**

**ONLY \$16.95**

ORDER TODAY! VISA, MC, Check or MO. COD add \$2.50. Please add \$2.00 S&H (\$5.00 for foreign orders). NYS residents pl. add sales tax. ALL orders shipped WITHIN 24 HOURS!!!

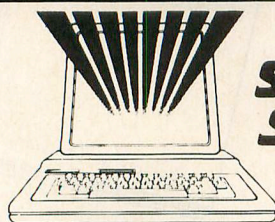


**MICROCOM  
 SOFTWARE**

P.O. BOX 214  
 FAIRPORT, N.Y. 14450  
 Ph: (716) 223-1477

(9AM-9PM --7 DAYS A WEEK)  
 Dealers Inquiries Invited

# GREAT COCO PRODUCTS



## SUPER SCREEN

### The Color Computer Supercharger

- A big 52 character by 24 line screen
- 'PRINT @' is fully implemented on the big screen
- Easily combine text with Hi-res graphics
- Auto-key repeat for greater keyboard convenience
- The 'ON ERROR GOTO' statement is fully implemented
- Control codes for additional function

Super Screen comes with complete, well detailed instructions and is available on cassette or disc. It adjusts automatically to any 16K or greater, Extended or Disc basic Color Computer or TDP-100 and uses only 2K of memory in addition to the screen memory reserved during power up. Guaranteed to be the most frequently used program in your software library...once you use it, you won't be without it!

**Hot CoCo, Jan. '84** "Super Screen represents a quality utility program that fills a definite need for the serious CoCo user. No other programs on the market so far have offered the error-trapping utility of Super Screen."

**Color Computer Magazine, May '84** "Super Screen is a worthy addition to anyone's software library. It has become my most used utility and has made programming in BASIC on the Color Computer a joy..."

Cassette \$29.95

Disc \$32.95

**NEW!**

## EASY-FILE

### Data Management System

- Need a good mailing list or customer list program? How about a program to keep track of your investments, your computer magazines, or record collection? Do you have an inventory of all household items for insurance purposes? **EASY-FILE** will do all of these things and many more.
- **EASY-FILE** makes data managing a breeze with single key menu selections, extensive error handling procedures, a demonstration data file and a detailed, easy to understand instruction manual.
- **EASY-FILE** is powerful too. It automatically enhances your monitor screen to a full upper and lower case 51 character by 24 line display. **EASY-FILE** allows up to 30 data fields and provides password file protection, selectable numeric totalling, and complete data searching and editing capabilities. You can quickly enter, locate, review and modify data records, and even transfer records from one file to another.
- Sorting? You bet! **EASY-FILE** allows you to sort up to 5 levels of data and allows you to define upper and lower limits as well. You can sort in many different ways and save the results in individual index files. These index files may be used later to determine what will appear on your printed reports.
- Reports are easily prepared with **EASY-FILE** because it offers so many automatic features. There is no need to generate complex report forms. With **EASY-FILE** you simply select from a list of options to determine what your report and header will look like. There are countless variations. **EASY-FILE** takes care of tabstops and field spacing automatically. Prepare horizontal reports (80 or 132 columns), vertical reports or labels! Save your favorite report formats right in a data file so they may be used whenever you need them.
- The **EASY-FILE** master disc and instructions are packaged in an attractive 3-ring binder. Requires 32K and at least one disc drive.

Order yours now! Get organized for only \$59.95!

**NEW!**

## UNIVERSAL VIDEO DRIVER

Carefully engineered to work with **ALL** Color Computer models, including the new

**COCO II**

**ENABLES YOUR COCO TO OPERATE WITH A VIDEO MONITOR INSTEAD OF A TELEVISION**

- Works with Monochrome Monitors!
- Audio Connection Included!
- Works with Color Monitors!
- Easy Installation—No Soldering!
- Great Price! **ONLY \$29.95**

## ORDER ENTRY SYSTEM

**Rainbow, Feb. '84** "If you are looking for a program to keep track of your sales and print invoices, then this one will take care of those needs quite well...A good program that would serve the invoicing needs of a small company quite nicely."

The Mark Data Products sales order processing system provides a fast, efficient means to enter orders, print shipping papers and invoices, prepare sales reports, and monitor receivables. The system automatically enhances the monitor screen to a 51 character by 24 line display. 32K of memory is required along with an 80-column printer and one or more disc drives.

The MDP Order Entry System is a family of programs which operate interactively by means of a "menu" selection scheme. Up to 900 products may be defined and a single disc system can hold over 600 transactions. When the operator selects a task to be performed, the computer loads a program designed to handle that task from the system disc. The system disc contains all of the programs required to create, update and maintain data files and prepare the necessary paperwork including shipping and invoice forms, daily sales reports, a monthly (or other period) sales report and a receivables report.

This order entry software equals or exceeds higher priced packages for other computers and includes a detailed operating manual. **ONLY \$99.95**

## SUPER PRO KEYBOARD



**ONLY \$64.95\***

- Original key layout
- Fast, easy installation—no soldering
- Individually boxed with full instructions
- Smooth "Touch Typist" feel—no sagging
- U.S. made—high quality, quad gold contacts
- Professional, low profile, finished appearance

\* Computers produced after approximately October 1982 require an additional keyboard plug adapter. Please add \$4.95.

## ACCOUNTING SYSTEM

**Rainbow, May '84** "Considering what it can do to organize a small business, it is quite a value."

**Hot CoCo, June '84** "...a serious, professional accounting program and well worth its price. The programs are complete and simple to use."

The Mark Data Products Accounting System is ideal for the small businessman needing a fast, efficient means to process income and expenses, prepare detailed reports and maintain most of the information required at tax time. The system is a family of programs which operate by means of a "menu" selection scheme. When the operator selects a task to perform, the computer loads a program designed to handle that task from the system disc. The system disc contains all of the programs required to create, update and maintain data files and prepare the necessary accounting reports including a transaction journal, a P & L or income report, an interim or trial balance and a balance sheet.

Up to 255 separate accounts may be defined and a single disc system can hold over 1,400 transactions. This system automatically enhances the monitor screen to a 51 character by 24 line display. 32K of memory is required along with an 80-column printer and one or more disc drives.

This accounting software equals or exceeds higher priced packages for other computers and includes a detailed operating manual. **ONLY \$99.95**



**FREE - Send for our NEW 24 page catalog!**

**Mark Data Products**

24001 ALICIA PKWY., NO. 207 • MISSION VIEJO, CA 92691 • (714) 768-1551

**SHIPPING:** All orders under \$100 please add \$2 regular, \$5 air. All orders over \$100 please add 2% regular, 5% air. California residents please add 6% sales tax. Orders outside the continental U.S., check with us for shipping amount; please remit U.S. funds. Software authors—contact us for exciting program marketing details. We accept MasterCard and VISA. Distributed in Canada by Kelly Software.

# \$\$ SAVE MONEY ON YOUR \$\$ CASSETTE & DISC SUPPLIES

## CASSETTES

We buy cassettes and discs in large quantities for our own use and can pass the savings on to you.

C-10 Cassettes w/labels	.59 ea	10 for \$5.50
Cassette storage box	.25 ea	10 for 2.00

## 5¼ DISCS

High quality nationally advertised brand. *Guaranteed Performance!* We will replace any disc that fails during normal use. Discs are single sided, double density, reinforced hub with Tyvek sleeve. \$2.25 each 10 for \$19.95

## ROMS

Basic 1.2	.....	\$39.95
Extended 1.1 w/manual	.....	69.95
Disc 1.1	.....	39.95

## NEED MORE MEMORY?

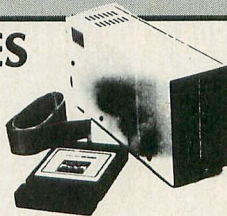
### 64K Memory Expansion Kit

All parts and complete instructions (For 'E' and 'F' boards and CoCo II)  
\$59.95

# COCO DISC DRIVES

## COMPLETE SYSTEMS INCLUDE:

- Hi-Quality Teac Thin Line Drives
- Attractive, Beige Dual Drive Cabinet/Power Supply
- Fill Panel for Single Drive Disc Systems
- Radio Shack or J & M Controller
- Cable and Operating Manual
- Full 90 Day Warranty



Single Drive (SSDD) in Dual Cabinet w/Controller	.....	389.95
Additional Drive	.....	129.95
Two Drives (SSDD) in Dual Cabinet w/Controller	.....	499.95
Single Drive (DSDD) in Dual Cabinet w/Controller	.....	469.95
Additional Drive	.....	209.95
Two Drives (DSDD) in Dual Cabinet w/Controller	.....	669.95
Dual Cabinet/Power Supply	.....	79.95
Disc Controller (Radio Shack or J & M)	.....	139.95
Connecting Cable	.....	24.95
Radio Shack DOS ROM 1.1	.....	39.95

## VIP SOFTWARE

We carry the most asked for softlaw products for your convenience.

VIP Writer	.....	\$59.95
VIP Terminal	.....	49.95
VIP Calc	.....	59.95

# NEW! SUPER BUG



Mark Data Products **SUPER BUG** is a powerful, relocatable machine code monitor program for your CoCo. If you are a beginner, the program and documentation are an indispensable training aid, helping you to gain a better understanding of your Color Computer and machine code programming. If you are an accomplished computerist, **SUPER BUG**'s capabilities, versatility and convenience will prove invaluable during programming and debugging.

**SUPER BUG** offers so many outstanding features that we are unable to list them all in this limited space, but here are a few: hex and alpha numeric memory display, modify, search, and test; full printer support with baud rate and line feed select; up to 220 breakpoints; mini object code disassembler; 64K mode setup; decimal, hex and ascii code conversion routines and extensive documentation.

Tape \$29.95

Disc \$32.95

## INFORMATIVE BOOKS

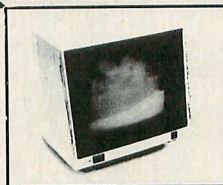
"Your Color Computer" by Doug Mosher

Over 300 pages of detailed information...an indispensable introduction to your Color Computer, complete with diagrams, photographs, and a BASIC thesaurus and command reference section. A CoCo encyclopedia. \$16.95

"Programming the 6809" by Rodney Zaks

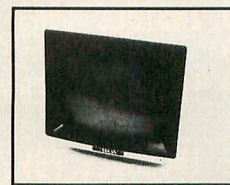
One of the best machine language texts available — required reference material. This book explains how to program the 6809 in machine language, covering all aspects progressively and systematically. \$15.95

# QUALITY VIDEO MONITORS



SAKATA COLOR SC-100 - \$299.95

The SC-100 is a streamlined 13" composite monitor which produces sharp, brilliant colors. The cabinet is made of durable styrene and is available in an attractive off-white color. Includes audio with speaker and earphone jack. We highly recommend this color monitor because of its excellent performance and beautiful styling.

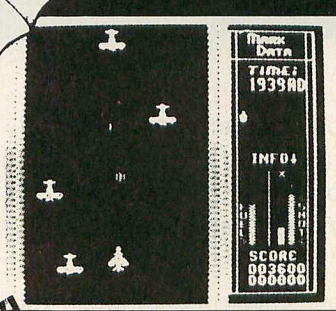


TAXAN AMBER SCREEN - \$149.95

A 12" amber screen composite monitor of the highest quality with exceptional reliability and performance. 18 MHZ bandwidth. Attractive off-white cabinet. We use this monitor in our offices.

**SPECIAL:** Order one of these quality monitors from MDP and get our Universal Video Driver for just \$24.95!

# SUPER NEW GAMES!



## TIME FIGHTER

Pilot your MD-64 fighter through a hazardous time tunnel. Your mission is to destroy the dreaded Time Guardian who threatens the natural order of the universe. In order to reach this menace you must fight aerial dangers from strange and different time zones. If you like fast action, this one's for you! 16K required.

Rainbow, March '84 "One of the best in your library of computer games. It's a real gem."

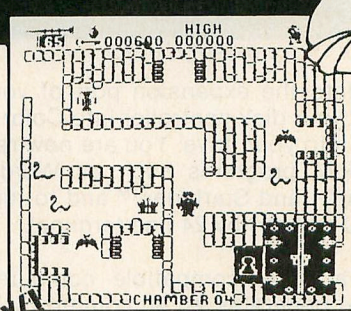
CASSETTE

\$24.95

DISC

\$27.95

NEW!



## TUT'S TOMB

Explore the ancient, mystical tomb of the great Pharaoh. Find the magical keys which lead you to unbelievable treasures as you out-manuever the creatures that slither and swarm about you. Super fast arcade action—this one will knock your socks off with 16 screens of incredible color and sound. Fabulous! 32K required.

Hot CoCo, April '84 "State of the art CoCo graphics. A first rate game."

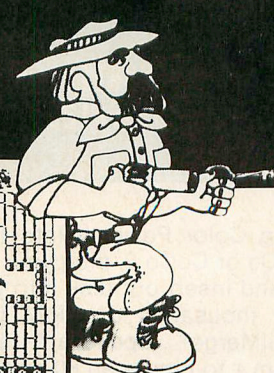
CASSETTE

\$24.95

DISC

\$27.95

NEW!

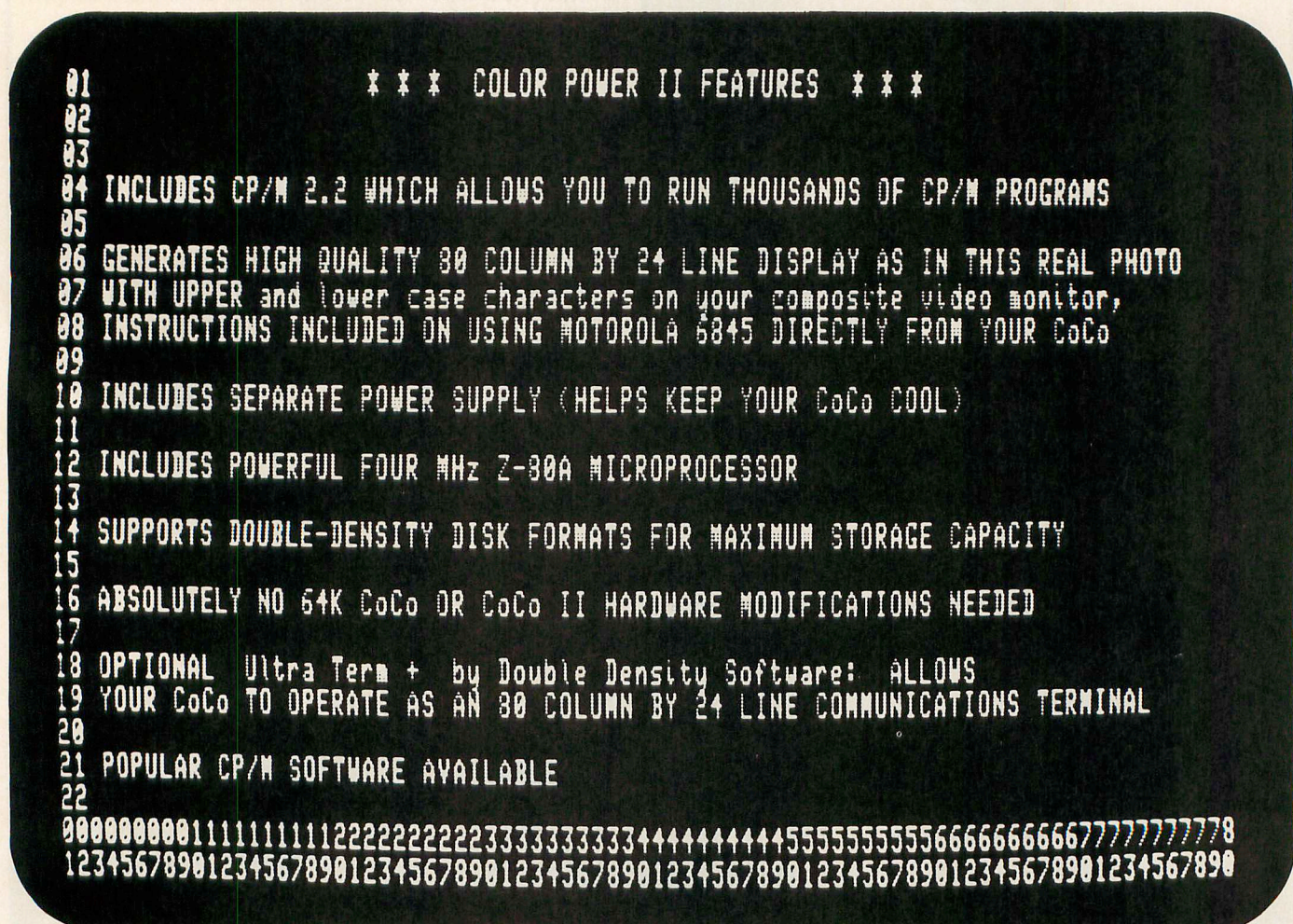


# Mark Data Products

**SHIPPING:** All orders under \$100 please add \$2 regular, \$5 air. All orders over \$100 please add 2% regular, 5% air. California residents please add 6% sales tax. Orders outside the continental U.S., check with us for shipping amount; please remit U.S. funds. Software authors—contact us for exciting program marketing details. We accept MasterCard and VISA. Distributed in Canada by Kelly Software.

# Color Power II <sup>TM</sup>

## Expands Your CoCo to CP/M® 2.2



Plug Color Power II into the expansion port of your 64K CoCo or CoCo 2, plug your disk controller into Color Power II, and insert our disk into your drive. You are now ready to run thousands of CP/M programs such as WordStar®, MailMerge®, SpellStar®, and StarIndex™ and to run Ultra Term + to create an 80 column by 24 line terminal.

Your CoCo is now a CP/M compatible computer that includes CP/M 2.2 and generates an 80 column by 24 line display on your 80 column monitor with upper and lower case characters.

**Introductory Prices:**

Color Power II (includes CP/M 2.2) .....	<b>\$329.00</b>
Add Ultra Term + .....	<b>\$ 55.00</b>
Color Power II plus WordStar® & MailMerge® .....	<b>\$498.00</b>
Add SpellStar® and StarIndex™ for only .....	<b>\$ 79.00</b>

Call or send check, money order, Visa or MasterCard number with expiration date to the address below. N.J. residents add 6% sales tax.



## Color Power Unlimited, Inc.

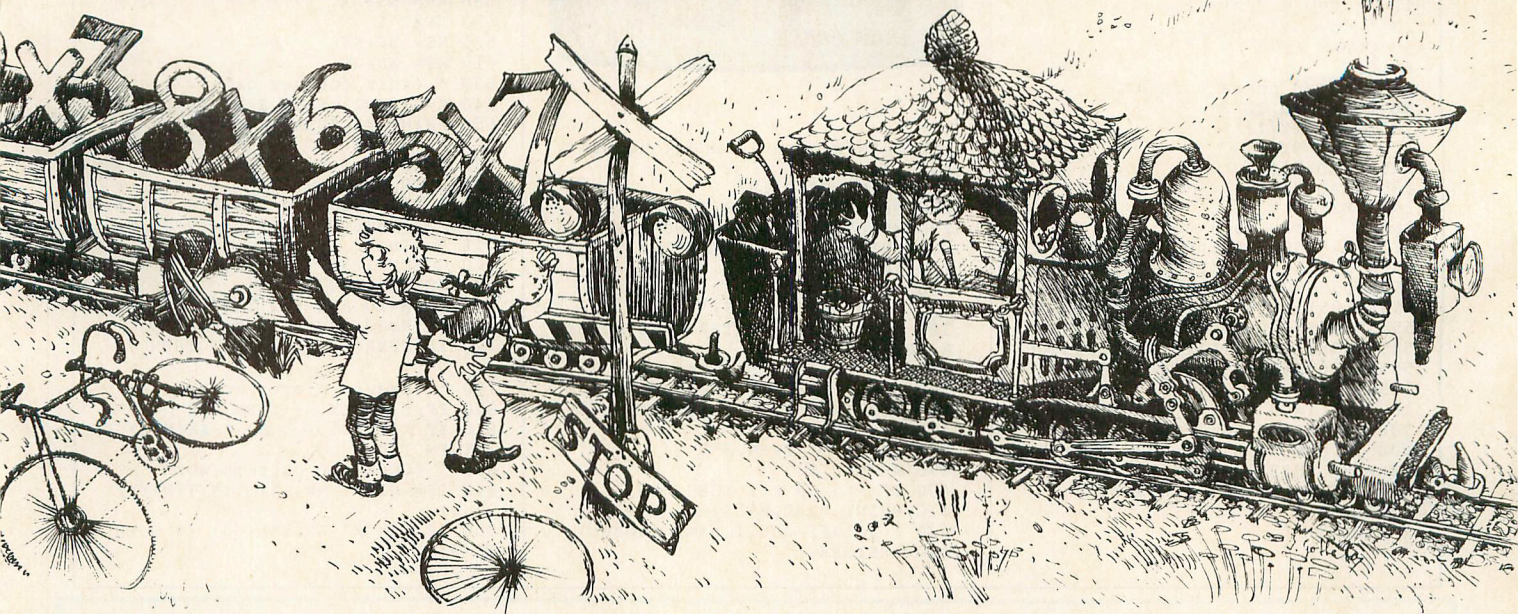
1260 Springfield Ave., P.O. Box 606-E, New Providence, N.J. 07974 (201) 665-9646

Color Power is a trademark of Color Power Unlimited, Inc.  
CP/M is a trademark of Digital Research, Inc., WordStar, MailMerge, SpellStar, and StarIndex are trademarks of MicroPro International Corp.



# CROSS TRAFFIC

BY DALE LEAR



Grab your kids, grab your Color Computers, it's time for "Cross Traffic," a game designed especially for children in the elementary grades, offering a fun way to learn and memorize.

Using the right joystick, you control the travel of a cursor along a maze-like path. The object of the game is to move from one end of this path to the other.

At ten places along the path, passage is blocked by cross traffic. The cross traffic consists of words traveling along the screen on "word highways." The only way to cross a highway is to get right next to it and press the joystick button at the instant the word traveling in front of you matches the word found at the bottom of the screen.

If you match the words correctly, your cursor crosses safely. If the button is pressed at the wrong time, a sound is played and a strike will be counted against you, shown by an X at the top of the screen.

Word matching is the heart of the educational aspect of the game. Depending on the words chosen, the game can be used to develop letter recognition skills in a kindergarten student, aid in reading skills for a first or second grader, help a fourth grader with his multiplication tables, and more. What could be a dull and uninteresting drill is transformed into a pleasure when presented in the guise of a game.

There are five different word sets included in the program. A word set, in this context, means a set of data from which the match words are drawn. The five games included are: letter matching (pre-kindergarten to kindergarten); the spelling of the numbers from one to ten (kin-

dergarten to first grade); finding opposites of simple words (first to second grade); word association (second to third grade); and multiplication tables (third to fourth grade).

The match pairs given are supplied as examples. You are encouraged to substitute any sets of matchwords that you wish. The object is to drill your child on something he is currently learning in school. Some suggestions for data to use are: states vs. capitols (there are exactly 50 match pairs in a five game set); any math problems from simple addition through algebra; the names of the first ten presidents in order (note: the match words would just be the numbers one to ten); and so on, to the limits of your imagination. Any multiple choice-type data can be used. (Note: If you put in math problems make sure that no two problems have the same answer within a group of ten.)

To customize your match pairs, simply change the data in Lines 1520 through the end of the program. There must be exactly five sets of ten pairs representing the five games. You may also want to edit Line 290 to change the titles of the games that appear at start-up time.

There are no excuses allowed: it is a short program, so a lot of typing is not required. It is written in standard Basic so Extended Basic is not required. And it is right under your nose, so your checkbook is not required. In conclusion, if you have a Color Computer, and you have kids, sit down and type in Cross Traffic. A menu appears when you Run the program that will guide you in choosing the game you want to play. You and your family will be in for a lot of educational fun! ■

# PROGRAM LISTING CROSS TRAFFIC

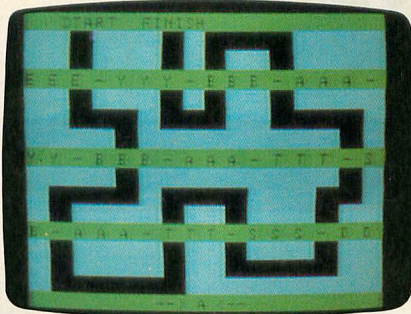


## 16K Extended Color Basic Tape Loader

```

10 ' CROSS TRAFFIC
20 ' by Dale Lear
50 CLEAR 1000
60 CLS
80 ' (Read in path data)
90 FOR I= 0 TO 9
100 READ YY(I)
110 READ NY(I)
120 READ II(I)
130 READ XX(I)
140 NEXT I
160 ' (Draw map)
170 M$="5505555050000555555055505
0550555511111111111111111155055505
05505555500050000550000555550555
55555051111111111111111155550555
5555505500005000055500555055505
50555055111111111111111150555505
5055505550555505500005550000055
55555555"
180 FOR I= 0 TO 223
190 M= VAL( MID$( M$,I+1,1))
200 IF M=0 THEN MM$=CHR$(128) EL
SE MM$= CHR$(143+16*(M-1))
210 PRINT @32+(I*2),MM$+MM$;
220 NEXT I
230 B31$= "

```



```

250 ' (New game loopback point)
260 IX= 1
270 PRINT @1,B31$;
280 PRINT @9,"CROSS TRAFFIC";
290 W$= "1-LETTERS 2-NUMBERS 3
-OPPOSITES 4-ASSOCIATION 5-MUL
TIPLICATION "
300 W$= W$+W$
310 PRINT @480,B31$;
320 PRINT @483,"ENTER GAME NUMBE
R DESIRED";
340 ' (Get game selection)
350 GOSUB 1230
360 FOR I= 1 TO 50: NEXT I
370 K$= INKEY$
380 IF K$=" " THEN 350
390 K= VAL(K$)
400 IF K>5 OR K<1 THEN 350
410 PRINT @480,B31$;
430 ' (Sluff until game chosen)
440 RESTORE

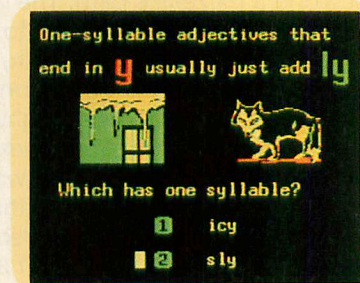
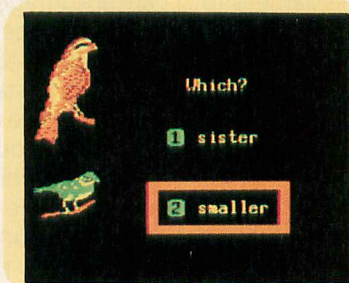
```

```

450 FOR I= 1 TO 20*(K+1)
460 READ S$
470 NEXT I
490 ' (Read in game data)
500 W$= " ": N$= " "
510 FOR I= 0 TO 9
520 READ W1$(I)
530 READ W2$
540 W$= W$+W2$+"-"
550 FOR J= 1 TO LEN(W2$)
560 N$= N$+RIGHT$( STR$(I),1)
570 NEXT J
580 N$= N$+"X"
590 NEXT I
600 N$= N$+N$
610 W$= W$+W$
630 ' (Init for new game)
640 X=8: Y=2: N=0: E=0: IX=1
650 PRINT @3,"START FINISH
";
670 ' (Word loop point)
680 PRINT @480,B31$;
690 PRINT @480+(24-LEN(W1$(N)))/
2,"--> "+W1$(N)+" <--";
710 ' (Inner loop)
720 GOSUB 1230
730 GOSUB 1330
740 IF N=10 AND Y=2 THEN 1020
760 ' (Read joystick button)
770 IF PEEK(65280) AND 1 THEN 72
0
790 ' (Ensure player at bridge)
800 IF Y <> YY(N) THEN 720
810 IF X-XX(N) < 0 OR X-XX(N) >
3 THEN 720
830 ' (Check if correct word)
840 Q$= MID$( N$,IX+II(N)+INT(X/
2),1)
850 IF Q$="X" OR VAL(Q$) <> N TH
EN 950

```

## NEW! For Your TRS-80 Color Computer 320 Full-time Audio Talk/Tutor Programs!



### We're Your Educational Software Source

Course	No. of Programs
Language Arts (Spelling)	16 Programs
Reading Comprehension	64 Programs
Phonics	32 Programs
English as a Second Language	32 Programs
Mathematics Basic Algebra	64 Programs
Physics	16 Programs
Effective Writing	16 Programs
History	32 Programs

### In Color, with Pictures and Text!

All of our TRS-80 Color programs have easy to understand professional announcer narration, not synthesized, robotic voices. All text is displayed in easy to read upper- and lower-case characters. Video clearly illustrates key concepts in each frame of the program.

Only \$4.40 per program (\$8.80 for 2, one on each side of a half-hour cassette). \$59.90 for 16 programs (8 cassettes) in an album. Send for catalog of over 1000 programs for Atari, TRS-80, Apple, etc.

Dealer inquiries welcome  
For more information, or to order call:  
**TOLL FREE 1-800-654-3871**  
IN OKLAHOMA CALL (405) 288-2301



**DORSETT**  
Educational Systems, Inc.  
Box 1226, Norman, OK 73070



```

870 ' (Correct word! -jump)
880 RESET(X,Y)
890 Y= NY(N)
900 N= N+1
910 SOUND 200,1
920 GOTO 680
940 ' (Incorrect word, Error)
950 E= E+1
960 IF E > 10 THEN E= 10
970 PRINT @21,LEFT$("xxxxxxxxx",E)
980 SOUND 10,10
990 GOTO 720
1010 ' (Game over)
1020 FOR I= 1 TO 3
1030 FOR J= 1 TO 10
1040 SOUND J*25,1
1050 NEXT J
1060 NEXT I
1070 RESET(X,Y)
1080 W$= "GAME OVER - "
1090 IF E=0 THEN W$= W$+"PERFECT SCORE!! - "
1100 W$=W$+W$
1110 IF LEN(W$) < 128 THEN 1100
1120 PRINT @482,"PRESS ANY KEY TO PLAY AGAIN";
1130 IX= 1
1140 GOSUB 1230
1150 FOR I= 1 TO 50: NEXT I
1160 K$= INKEY$
1170 IF K$="" THEN 1140
1180 GOTO 260
1200 'Subroutine:
1210 ' Print moving words
1230 IX= IX-1
1240 IF IX=0 THEN IX= LEN(W$)/2
1250 PRINT @96,MID$(W$,IX,32);
1260 PRINT @224,MID$(W$,IX+10,32);

```

```

1270 PRINT @352,MID$(W$,IX+20,32);
);
1280 RETURN
1300 'Subroutine:
1310 ' Move player
1330 DX= INT( JOYSTK(0)/22)-1
1340 DY= INT( JOYSTK(1)/22)-1
1350 RESET (X,Y)
1360 IF POINT (X+DX,Y)=0 THEN X= X+DX
1370 IF POINT (X,Y+DY)=0 THEN Y= Y+DY
1380 SET (X,Y,8)
1390 RETURN
1410 ' Bridge data
1420 ' (DO NOT CHANGE)
1430 DATA 5,8,0,8,13,16,10,16
1440 DATA 21,24,20,4,24,21,20,24
1450 DATA 21,24,20,36,24,21,20,52
1460 DATA 16,13,10,56,8,5,0,44
1470 DATA 5,8,0,32,8,5,0,24
1490 ' ===== Game Data =====
1500 ' (Change as you desire)
1510 ' (GAME 1)
1520 DATA "A", "A A A"
1530 DATA "T", "T T T"
1540 DATA "S", "S S S"
1550 DATA "D", "D D D"
1560 DATA "P", "P P P"
1570 DATA "L", "L L L"
1580 DATA "R", "R R R"
1590 DATA "E", "E E E"
1600 DATA "Y", "Y Y Y"
1610 DATA "B", "B B B"
1630 ' (GAME 2)
1640 DATA "2", "TWO"
1650 DATA "7", "SEVEN"
1660 DATA "10", "TEN"
1670 DATA "4", "FOUR"

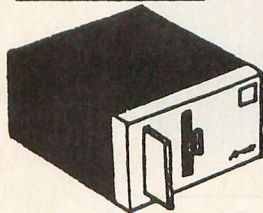
```

```

1680 DATA "9", "NINE"
1690 DATA "1", "ONE"
1700 DATA "5", "FIVE"
1710 DATA "3", "THREE"
1720 DATA "6", "SIX"
1730 DATA "8", "EIGHT"
1750 ' (GAME 3)
1760 DATA "HOT", "COLD"
1770 DATA "DARK", "LIGHT"
1780 DATA "UP", "DOWN"
1790 DATA "MEAN", "NICE"
1800 DATA "TALL", "SHORT"
1810 DATA "FAST", "SLOW"
1820 DATA "MAN", "WOMAN"
1830 DATA "LOUD", "QUIET"
1840 DATA "PUSH", "PULL"
1850 DATA "LOST", "FOUND"
1870 ' (GAME 4)
1880 DATA "PEANUT BUTTER", "JELLY"
1890 DATA "CAMP", "TENT"
1900 DATA "GUITAR", "MUSIC"
1910 DATA "SWIM", "WATER"
1920 DATA "HORSE", "SADDLE"
1930 DATA "WINDOW", "GLASS"
1940 DATA "SHOE", "SOCK"
1950 DATA "SCHOOL", "LEARN"
1960 DATA "SMILE", "HAPPY"
1970 DATA "DRIVE", "CAR"
1990 ' (GAME 5)
2000 DATA "8 * 8", "64"
2010 DATA "9 * 2", "18"
2020 DATA "4 * 8", "32"
2030 DATA "6 * 4", "24"
2040 DATA "7 * 3", "21"
2050 DATA "5 * 7", "35"
2060 DATA "5 * 9", "45"
2070 DATA "7 * 8", "56"
2080 DATA "3 * 5", "15"
2090 DATA "2 * 7", "14"

```

## Saguaro Software



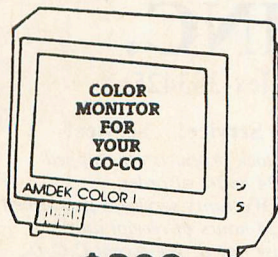
Amdek Dual 3 1/2" Disk Drive

**\$450**

Includes 2 Diskettes  
And 2 Drive Cables

First Box Of Diskettes - \$45

R.S. Controller - \$135 With Amdisk 3



**\$299**

### NEW!

#### Stars Of America

Education should be fun - this program is just that! This tutorial uses 25 of the superstars of American history, from George Washington to Ronald Reagan.

#### The Civil War

A challenging two-person game. Questions cover Carpet baggers to the Battle of Vicksburg. Points are assigned according to the difficulty of the question, scores are displayed throughout the game.

Both Only:

Tape 19.95 Disk 24.95

#### Ultimate Bingo & Jackpot

Do you want the ultimate in bingo? Use your LP7 or 8 to print the number of cards you desire. You can choose from 3 speeds & even pause the game to check the winner.

#### Jackpot

Pull the one arm bandit's arm & see if you can beat the odds. Both only.  
Tape - 19.95, Disk - 24.95, Amdek - 29.95

#### NNFUSICOO CONFUSION

3 modes of play, 3-4/5-6/7 letter words. You select time to govern how long (30 or 60 seconds) to unscramble the words. First person with ten correct wins. 1-4 can play. Tape - \$19.95, Disk - \$24.95, Amdek - \$29.95.

Move-III Co Co I **15.95**

#### Treasure Hunt

A graphics text adventure. You walk with our graphics character through desert, mountains and city to seek the illusive treasure of gold. Super graphics with a person who walks with you at each turn. Tape - \$24.95, Disk - \$29.95.

#### Kidstuf

Picture, Letter, or Number Association. Play an old-time tune with correct answer (7 songs), buzzes when wrong & waits for correct choice. 8 screens. Tape - \$19.95, Disk - \$24.95.

#### Loveless Manor

Trapped in a bedroom by your evil aunt, you've admired Queen Cinderella's castle in the distance... and you've just discovered she's a distant cousin. Can you escape to her protection? 32K. Great word adventure. Tape - \$19.95, Disk - \$24.95, Amdek - \$29.95.

#### Co-Co Keno

Bring Las Vegas' Keno game home with Co-Co Keno. Bet \$1, \$3, or \$5 & mark off 1 to 15 spots... can you beat the odds & win \$50,000? 16K, high resolution screen. Keno chart print included. Tape - \$24.95, Disk - \$29.95, Amdek - \$34.95.

#### Co-Co Receivables

Keep track of all those accounts with current list of accounts, statement printing, last activity date, and current month's transactions debits & credits. Disk storage of data 32K disk. \$29.95.

## We Are Discount Distributors For:

- Prickly Pear
- Petrocci Freelance Associates
- Tom Mix
- Computer House
- Sugar Software

**At 20% - 25% Off!**

<b>FILMASTR</b>	<b>23.75</b>
Family	11.75
Worlds Of Flight	23.75
Quix	19.75
Elec*Tron	19.75
Draconian	21.75
Warehouse Mutants	19.75
CoCo Calligrapher	19.75
Presidents Of The U.S.	19.75
Flying Tigers	19.75
Color Disk Trivia	22.75
1st Question Disk (w/Game)	7.50
Question Disk	14.75

VISA

Az. Residents Add 7% Tax • Add \$1.00/Program For Shipping (\$4.00 Max) • Dealer Inquiries Welcome • Some Quantities Limited

**7331 E. Beverly - Tucson, AZ 85710 - 1-800-223-5369**









triad pictures

# 'TRY BEFORE YOU BUY' You can have any Triad Pictures program for a FREE 10-DAY TRIAL!

Just fill out and mail the form below, and we'll send you one of Triad Pictures' great programs for a 10-DAY TRIAL. If you like the program, pay us. If you don't, just send it back. It's as simple as that. (Limit: one program per customer).

OR . . . you can PAY NOW, and take \$3 off the price of any program (take \$5 off THE ANIMATOR'S price)! Just use the ORDER FORM below.

\*\*\*\*\*

## INSTANT ANIMATION

**THE ANIMATOR lets you create your own FULLY ANIMATED CARTOONS!**

EASY TO USE!

You don't have to be a programmer to get spectacular results from your computer! THE ANIMATOR puts YOU in command of a Hollywood style animation studio, including Video Lab, Cel Animation Studio, Camera Dept., Background Studio, Sound Effects Dept., and Screening Room. THE ANIMATOR comes with an extensive manual and 3 cassettes: sample cartoons, a library of ready-to-use cels & backgrounds, and THE ANIMATOR itself. Do a simple motion study, make your characters walk & dance, or even create your own Hollywood classic. Full cel animation (as used by Disney) for smooth, professional-looking results!

- \* Up to a minute-and-a-half of animation!
- \* 32 cels at your fingertips!
- \* 12 "Help" screens!
- \* Over 600 frames of "film"!

32K/EXT.

3-CASS. PKG. \$35

\*\*\*\*\*

## PRICE REDUCTIONS!

ALPHABET STEW (preschool keyboard/animated fun)	was \$22	now \$18
SPLAATT! (action/strategy tank game)	was \$22	now \$16
DIGIDOTS (add & subtract - concepts)	was \$14	now \$12
NUMBER POWER (add & subtract drill)	was \$14	now \$12
JEEPERS REAPERS! (hi-res arcade fun)	was \$16	now \$14
ETCH•A•DOT(easy-to-use drawing)	was \$14	now \$12

\*\*\*\*\*

**NEW!**

## The CENTIPEDE Preschool Series

CENTIPEDE ABC'S and CENTIPEDE 123's are designed to guide children as young as two from the basics of letter and number recognition thru alphabetizing and numeric sequence. Both programs use extensive animated hi-res graphics as encouragement for learning.

Each correct response adds another animated part to a smiling, dancing centipede. The more correct responses, the longer the child's centipede grows. Both are 16K/EXT. on cassette.

\$16 EA. or BOTH for \$25

\*\*\*\*\*

## order form

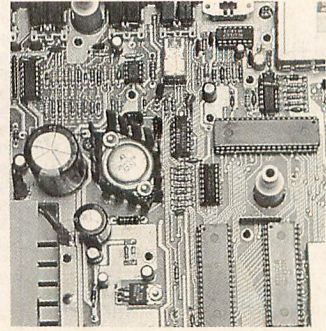
- I want the 10-DAY TRIAL! I understand that I will have 14 days from the date this software is shipped to return it to Triad Pictures. If I do not return the program(s) within that time I will be billed, and will pay the full price within 30 days.
- I want to subtract \$3 (\$5 for THE ANIMATOR) from the price of each program I order! I am PAYING YOU NOW.

Please send me:

\_\_\_\_\_ \$ \_\_\_\_\_  
 \_\_\_\_\_ \$ \_\_\_\_\_  
 \_\_\_\_\_ \$ \_\_\_\_\_  
 \_\_\_\_\_ \$ \_\_\_\_\_  
 \_\_\_\_\_ \$ \_\_\_\_\_  
 Add \$2 SHIPPING AND HANDLING ..... \$ \_\_\_\_\_  
 (3 or more - we pay s/h)

\_\_\_\_\_ send this to:  
 name TRIAD PICTURES  
 \_\_\_\_\_ P.O. Box 1299  
 address Sequim, WA 98382  
 \_\_\_\_\_  
 city state zip

# Dissecting Your ROM



The following is the address and commentary to the last four sections of Jake's ROM disassembly. Use this with the overall comments published in the July, 1984 issue (page 69), and the disassembler found in that same issue. Each section will begin with a new heading. Now... enjoy!

## PROGRAM LISTING

### SECTION 11

Address	Jake's Comment	Address	Jake's Comment
! string field		8F3D	;Update flag
8E37 ;= string length to return		8F3F	;Continue scan numeric
8E39 ;Required string length = 1		Decimal point	
8E3B ;1 less strng specifier to scan		8F41	;Next chr from specifier string
8E3C ;Print "+" if required		8F43	;"#?"
8E3F ;Parse current chr		8F45	;Print dec point if not "#"
8E41 ;If end of statement		8F49	;Initialize # chrs...
8E45 ;Hold # remaining specfr chrs		8F4B	;...after decimal point
8E47 ;Compute expression		8F4D	;Bump over 1st "#"
8E4A ;Do ?TM Error if not string		8F4F	;Bump # places after dec point
8E4D ;Target string varptr...		8F51	;1 less specifier to scan
8E4F ;...saved		8F52	;If end specifier
8E51 ;String length to return		8F54	;Next specifier chr
8E53 ;New string to mem		8F56	;"#" - post dec point digit?
8E56 ;Print (=> X)		8F58	;Yes
8E59 ;String varptr		8F5A	;Up arrow?
8E5B ;# chrs to return		8F5C	;Not exponential format
8E5D ;Minus target string length		8F5E	;Next chr up arrow?
8E5F ;1 less space to pad		8F60	;If not exponential format
8E60 ;Done all padding necessary		8F62	;Next chr up arrow?
8E64 ;Print blank			
8E67 ;Continue filling		8F64	;If not exponential format
% string field		8F66	;Next chr up arrow?
8E69 ;Hold # chrs left in specifier		8F68	;If not exponential format
8E6B ;Hold specifier pointer		8F6A	;At least 4 more chrs to scan?
8E6D ;Minimum length = 2		8F6C	;No, not exponential format
8E6F ;Initialize length requested		8F6E	;4 less chrs to scan
8E71 ;Next specifier chr		8F70	;Bump over 4 up arrows
8E73 ;"%" end string field?		8F72	;Set bit 0 = exponential reqr'd
8E75 ;If so		8F74	;Adjust specifier pointer
8E77 ;Blank?		8F76	;Bump # chrs before dec point
8E79 ;Just prt "% if not "% or " "		8F78	;Format byte
8E7B ;Else bump reqr'd string length		8F7A	;"+" specified?
8E7D ;Bump specifier pointer		8F7C	;Leading sign already specified
8E7F ;1 less chr to scan		8F7E	;Else adjst # chrs bfore dec pt
8E80 ;Continue if more specifier		8F80	;More chrs in specifier
8E82 ;Restore specifier pointer		8F81	;No
8E84 ;Restre # chrs in spcfier strng		8F83	;Get next specifier chr
8E86 ;"%"		8F85	;"-?"
8E88 ;Print "+" if format flag set		8F87	;Set trailing minus flag
8E8B ;Print as per device #		8F89	;"+"?
8E8E ;Continue specifier scan		8F8B	;No trailing sign
		8F8D	;Print sign + or -
		8F8F	;Trailing sign
PRINT USING		8F91	;Into format byte
8E90 ;Token = USING?		8F93	;Update format byte
8E92 ;Do USING if so		8F95	;1 less specifier to scan
8E94 ;Else back to PRINT		8F96	;Parse current chr
8E95 ;Pull return address		8F98	;If end of statement
8E97 ;Compute field specifier string		8F9C	;Save # specifier chrs left
8E9A ;Do ?TM Error if not string		8F9E	;Compute # to FPACL
8E9D ;" ;"		8FA1	;# chrs before dec point
8E9F ;Syntax check for ";"		8FA3	;+ # chrs after dec point
8EA2 ;Field varptr		8FA5	;> 17 chrs requested?
8EA4 ;Hold for later		8FA7	;?FC Error if so
8EA6 ;Current USING vrble delimiter		8FAB	;Format FPACL to buffer @ \$03DB
8EA8 ;?FC Error if trailing info		8FAE	;Align pointer to ASCII # strng
8EAC ;Field varptr		8FB0	;Print (=> X)
8EAE ;Initlz current USING delimiter		8FB3	;Clear USING delimiter
8EB0 ;# chrs in specifier string		8FB5	;Parse current chr
8EB2 ;OK if not null		8FB7	;If end of statement
8EB4 ;?FC Error if null specifier		8FB9	;Save current parse delimiter
		8FBB	;" ;"?
		8FBD	;If so
8EB7 ;=> specifier string			
8EB9 ;Initialize format flags			
8EBB ;Initlz # chrs before dec point			
8EBD ;Get format specifier			
8EBF ;"!?"			
8EC1 ;If so, return 1st string chr			
8EC5 ;"##"?			
8EC7 ;Numeric format			
8EC9 ;1 less chr in specifier string			
8ECA ;If more to scan			
8ECC ;Print "+" if format flag set			
8ECF ;Print as per device #			
8ED2 ;Parse current chr			
8ED4 ;If not end of statement			
8ED6 ;Current USING delimiter			
8ED8 ;If one exists			
8EDA ;Print c/r otherwise			
8EDD ;Specifier varptr			
8EDF ;Get strg ptr to X, # chrs to B			
8EE2 ;"+" - print sign at start?			
8EE4 ;No			
8EE6 ;Print "+" if format flag set			
8EE9 ;Bit 4 for "+"			
8EEB ;Reset format flag			
8EED ;Cont scan specifier field			
8EEF ;" ;"?"			
8EF1 ;If decimal point			
8EF3 ;" ;"?"			
8EF5 ;If string field			
8EF9 ;Double chr?			
8EFB ;No, just print it			
8EFD ;"\$ \$"?"			
8EFF ;Double dollar			
8F01 ;" ;" ;"?"			
8F03 ;Print chr			
8F05 ;Format flag			
8F07 ;Set asterisk fill bit			
8F09 ;Update flag			
8F0B ;At least 2 chrs left in spcfr?			
8F0D ;No			
8F0F ;Get chr past double chr			
8F11 ;" ;" ;"?"			
8F13 ;If not **\$			
8F15 ;Else 1 less chr to scan			
8F16 ;Bump over 2nd asterisk			
8F18 ;Bump # chrs before dec point			
8F1A ;Format flag			
8F1C ;Set floating dollar bit			
8F1E ;Update format flag			
8F20 ;Bump past double chr			
8F22 ;Bump # chrs before dec point			
8F24 ;Initlz # chrs after dec point			
8F26 ;Bump # chrs before dec point			
8F28 ;1 less specifier to scan			
8F29 ;If end of specifier string			
8F2B ;Next chr from specifier			
8F2D ;Decimal point?			
8F2F ;If decimal point			
8F31 ;" ;"#" - additional numeric?			
8F33 ;If additional "#" chr			
8F35 ;" ;" ;"?"			
8F37 ;No, check exponential format			
8F39 ;Format flag			
8F3B ;Set bit 6 for commas			

# PROGRAM LISTING (CONT.)

Address	Jake's Comment	Address	Jake's Comment	Address	Jake's Comment
8FBF	;Syntax check ", "	9086	;Yes, save to stack	9139	;1 less to do
8FC2		9088	; "\$"?	913A	;Check if all done
8FC4	;Parse next chr	908A	;Yes, save to stack	913C	;Decimal point displacement
8FC6	;Specifier string varptr	908C	;Leading zero?	913E	;If must go left
8FC8	;Specifier string length	908E	;No	9140	;Don't move right
8FCA	;Minus # chrs left	9090	;Get 2nd chr after ASCII zero	9141	;Positive # to move left
8FCC	;Specifier string pointer	9092	;Is it ASCII 0-9?	9142	;+ # chrs reqr'd before dec pnt
8FCE	;Offset past what's alrdy done	9094	;If not	9144	;+1 in case trailing sign
8FCF	;# chrs left	9096	;Leading chr	9145	;+ trailing sign offset
8FD1	;More in specifier	9098	;Store over redundant zero	9148	;= # chrs until decimal point
8FD5	;If specifier done	909A	;Again if more on stack	914A	;No commas required
Print "+"	if format flag set	909C		914C	;FPACL to formatted ASCII
8FD8	;Hold current print chr	909E	;Leading chr off stack	914F	;Decimal point displacement
8FDA	;"+"	90A0	;Terminator?	9151	;A zeroes to buffer
8FDC	;Flag set for plus?	90A1	;Get next if not	9154	;# chrs after decimal point
8FDE	;No	90A3	;Restore buffer pointer	9156	;If some required
8FE0	;Print as per device #	90A5	; "\$"	9158	;Else back over decimal point
8FE3	;Restore currnt print chr & RTS	90A7	;Flag no room	915A	;Original FPACL exponent
Format FPACL to buffer at \$03DB		90A9		915C	;If # is zero
8FE5	;=> ASCII number buffer	Set carry flag off if A = ASCII 0-9		915E	;Decml pnt disp from 9th digit
8FE8	;Blank prefix	90AA	;ASCII #?	9160	;+ # chrs in FPACL
8FEA	;Format byte	90AC	;RTS if not	9162	; - # chrs before decimal point
8FEC	; "+ " specified?	90AE	;Carry flag off if > \$39	9164	; - trlng sign offset gives exp
8FEE	;No	90B0	;Crry flg on ag'n or off if 0-9	9167	; "+ "
8FF0	;Else use "+" prefix	90B2		9169	;Exponent positive?
8FF2	;FPACL sign			916A	;If so
8FF4	;If positive	90B3	;# chrs after decimal point	916C	; "- "
8FF6	;Remove negative	90B5	;If 0	916E	;Make it positive #
8FF8	;Use "- " prefix	90B7	;1 less for dec point itself	916F	;Sign after "E" position
8FFA	;Prefix to buffer	90B8	;Get dec point displacement	9171	; "E"
8FFC	; "0"	90BA	;If displacement reqr'd to left	9173	; "E" to buffer, bump past sign
8FFE	;To buffer	90BC	;Else zero displacement	9175	;Initialize for ASCII #'s
9000	;Exponential format?	90BD	;Leftward displacement	9177	;ASCII adjst most sgnficnt digt
9002	;Yes	90BF	;If dec point located	9178	; (Bug) should be 10
9006	;=> LE09	90C1	;Save dec point tally	917A	;Form ASCII exponent
9009	;Compare FPACL with LE09	90C3	;Divide FPACL by 10	917C	;Readjust & make ASCII digit
900C	;OK if FPACL < 10 digits	90C6	;Restore dec point tally	917E	;Exponent digits to buffer
900E	;Convert FPACL to ASCII	90C8	;1 less to do	9180	;Delimit buffer
9011	;Got end ASCII #?	90C9	;See if all done	Leading characters to buffer	
9013	;Loop until at end	90CB	;# places to move dec point	9185	;=> ASCII # buffer
9015	;Get 1 byte back	90CD	;Minus # digits done	9188	;1st character from buffer
9017	;Store 1 byte forward	90CF	;New # places to move dec point	918A	;Save 1st character
9019	;At buffer start?	90D1	;Dec pnt within currnt digits?	918C	;Leading chr = space
901C	;Continue until at start	90D3	;If zeroes reqr'd before dec pt	918E	;Format byte
901E	; "\$"	90D5	;# chrs before decimal point	9190	;Asterisks over leading spaces?
9020	;Place "\$" at buffer start	90D7	;Minus # chrs available	9192	;1st buffer chr
9022		90D9	;Plus dec pt disp from 9th digit	9194	;No asterisks
Normal format		90DB	;Place reqr'd # leading zeroes	9196	;Leading chr = "*"
9023	;Exponent FPACL	90DD	;Get # commas required to <\$D7	9198	;1st character = space?
9025	;Hold in case 0	90E0		919A	;No
9027	;If FPACL = 0	Extend buffer at (U) with A zeroes		919C	;Else 1st chr becomes "*"
9029	;Scale FPACL dec point to right	90E2	;Save tally	919E	;Save 1st chr
902C	;Decimal point displacement	90E4	;ASCII zero	91A0	;Leading chr to buffer
902E	;If < 1	90E6	;To buffer	91A2	;Get next chr
9032	;Length required...	90E8	;Restore tally	91A4	;If buffer end
9033	;...minus length of #	90EA	;Done all?	91A6	; "E"?
9035		90EB	;Continue if not	91A8	;Yes
9037	;Pad buffer with A ASCII zeroes	90ED		91AA	; "0"?
903A	;Get # commas required to <\$D7	90EE	;# chrs before decimal point	91AC	;If "0", pad leading chr
903D	;FPACL to formatted ASCII	90F0	;Extnd buffr w/ that many 0's	91AE	; " "
9040	;Dec pt disp from 9th digit	90F2	;Store decimal point	91B0	;If comma, pad leading chr
9042	;Do additional zeroes	90F5	; -9	91B2	; " "?
9045	;Dec pt disp from 9th digit	90F7	;Add to get # 0's after dec pt	91B4	;If not decimal point
9047	;Check for dec pt or comma	90F9	;Extnd buffr w/0's after dp	91B6	;ASCII zero before deciml point
904A	;# chrs after dec point	90FB	;No digits after dec point	91B8	;To 1 back in buffer
904C	;If specified	90FD	;No commas required	91BA	;Format byte
904E	;Backup buffer pointer	90FF	;FPACL to formatted ASCII	91BC	;Floating dollar specified?
9050	;Adjust for decimal point	9102	;# chrs after decimal point	91BE	;If not
9051	;Extend buffer with A zeroes	9104		91C0	; "\$"
9054	;Leading chrs to buffer	9106	;Align buffer to decimal point	91C2	;Store "\$" 1 back in buffer
9057	;Check format byte	9108		91C4	;Trailing minus required?
9058	;If nothing fancy	910A		91C6	;Restore 1st buffer chr
905A	; "*" first chr?	Exponential format		91C8	;Trailing minus required
905C	;If asterisk	910D	;Exponent FPACL	91CA	
905E	;Else chr to buffer	910F	;Save it	91CC	
9060	;Delimit buffer	9111	;If # is zero	Scale FPACL dec pt to RHS 9th digit	
9062	;=> buffer start-1	9113	;Scale FPACL	91CD	;Save buffer pointer
9065	;Bump buffer pointer	9116	;# chrs after decimal point	91CF	;Initlz # places to move dec pt
9067	;Hold currnt buffr strt pointer	9118	;If none	91D0	;Rightwards displcmnt of dec pt
9069	;Dec point location LSB	911A	; -1 for decimal point itself	91D2	;Exp FPACL
906B	;Current buffer start pointer	911B	;Add # chrs before decml point	91D4	;FPACL > 0.1?
906D	;# chrs before dec point	911D	;Trailing sign offset = 0	91D6	;If so
906F	;RTS if # chrs OK	9120	;Format byte	91D8	;=> LE09
9071	;Chr from buffer	9122	;Trailing sign required?	91DB	;LE09 * FPACL
9073	;Blank?	9124	;Yes	91DE	;Decimal point displacement
9075	;Yes, get next	9126	;Else offset = -1	91E0	;Adjust to reflect multiply
9077	;Asterisk?	9129	;Subtract 0 or 1 for trlng sign	91E2	
9079	;Yes, get next	912C	;Get # places to shift dec point	91E4	;Divide FPACL by 10
907B	;Stack terminator flag	912E	;Save # places to shift	91E7	;Need to mve dec pt lmore right
907C	;Hold valid leading chrs	9130	;If decimal point located	91E9	;=> 999,999,999
907E	;Chr from buffer	9132	;Save decimal point tally	91EC	;FPACL > 999,999,999?
9080	; "- "?	9134	;Divide FPACL by 10	91EF	;Divide by 10 if so
9082	;Yes, save to stack	9137	;Restore decimal point tally	91F1	;=> 99,999,999.9
9084	; "+ "?				



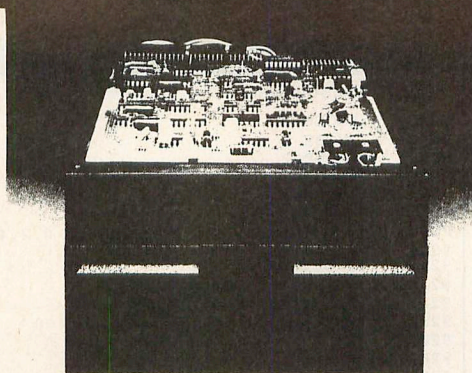
# NEW DISK DRIVES

STARTING AT

## \$159.00

**WITH CASE &  
POWER SUPPLY**

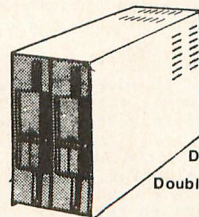
### \$189.95



TANDON MPI TEAC

Speed 6 ms tk to tk and up  
Capacity 250k unformatted  
Tracks 40  
Warranty **now 1 YEAR**

New Low Price!



40Tks 6Ms  
Double Sided  
Double Density

1/2 Hght. Teac/Panasonic



We carry only the finest quality disk drives \*no seconds\* no surplus

**SATISFACTION GUARANTEED!!**

ALL DRIVES FULLY TESTED & WARRANTED

- Complete Disk Drive with Power Supply & Case ..... \$189.95
- Two Drives in Dual Case & Power Supply ..... ~~\$359.00~~ Call
- 1/2 ht double sided double density Disk Drives (Panasonic/Teac) ~~\$219.95~~ Sale
- 1/2 ht double sided double density Disk Drive with ps & case..... ~~\$249.95~~ Sale



How to use your new drive system on audio cassette

Single ps & case ...\$44.95 ..... Dual ps & case ..... \$79.95

Color Computer Controller (J&M)



\$129.95

**DRIVE Ø FOR RADIO SHACK COLOR COMPUTER**

TANDON, MPI OR TEAC DRIVE (SINGLE SIDED 40 TRACKS SPEED 5 MS TRK TO TRK & UP)  
POWER SUPPLY and CASE, TWO DRIVE CABLE WITH ALL GOLD CONNECTORS

J&M CONTROLLER, MANUAL and DOCUMENTATION ..... ~~\$329.95~~ ..... \$ SALE!

**DRIVE Ø FOR RADIO SHACK COLOR COMPUTER**

PANASONIC 1/2 HEIGHT DOUBLE SIDED DOUBLE DENSITY DRIVE 500K unformatted  
POWER SUPPLY and CASE, 2 DRIVE CABLE WITH ALL GOLD CONNECTORS

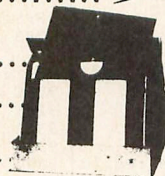
J&M CONTROLLER, MANUAL and DOCUMENTATION ..... ~~\$399.95~~ ..... Super!! SALE!

TAKE ADDED SAVINGS ON TWO DRIVE SYSTEMS

DISKETTES with free library case ..... \$17.95

Unadvertised Specials ..... \$Call

Drives cleaned, aligned & tested ..... \$29.95



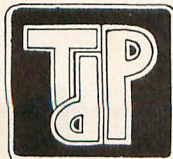
TECHNICAL STAFF ON DUTY, PLEASE CALL FOR ASSISTANCE.



**CALL US TODAY!!  
ORDER TOLL FREE**

**(617) 234-7047  
1-800-635-0300**

\* DEALER INQUIRIES INVITED.  
**(617) 234-7047**





**TRUE DATA PRODUCTS**

195 Linwood Street, P.O. Box 546  
Linwood, Massachusetts 01525  
(617) 234-7047

HOURS MON-SAT 9-6 (EST)

We welcome

- Visa / Master Charge  
- Checks (allow 2 weeks for clearing)
- C.O.D. Add \$2.00

# PROGRAM LISTING (CONT.)

```

Address  Jake's Comment
91F4    ;FPACL > 99,999,999.9?
91F7    ;OK if so
91F9    ;Else FPACL * 10
91FC    ;Need to move dec pt lmore left
91FE    ;Do until # scaled
9200    ;Restore buffer pointer, RTS

FPACL to formatted ASCII
9202    ;Save buffer pointer
9204    ;FPACL + 0.5
9207    ;FPACL to INT
920A    ;Restore buffer pointer
920C    ;=> Floating point convrsn tbl
920F    ;Set bit7 to detct negtv ovflw
9211    ;Check for dec point or comma
9213    ;)
9215    ;) LSB
9217    ;)
9219    ;*
921B    ;*Next LSB
921D    ;*
921F    ;)
9221    ;)Next MSB
9223    ;)
9225    ;*
9227    ;*MSB
9229    ;*
922B    ;Bump # additions/subtractions
922C    ;Adjust # to test for overflow
922D    ;Went too far?
922E    ;No, go again
9230    ;If # obtained is positive
9232    ;Else B is 1 too far negative
9234    ;Adjust B, 1 to A
9235    ;Cnvert to ASC assumng 1 too far
9237    ;Bump to next table entry
9239    ;ASCII # to A
923B    ;Remove possible high bit
923D    ;Into buffer
923F    ;Reverse high bit
9240    ;Extract high bit
9242    ;At end of table?
9245    ;Keep going if not
9247    ;Delimit buffer
9249    ;Decimal point required here?
924B    ;Not at decimal point position
924D    ;Hold buffr pointr to dec point
924F    ;","
9251    ;Into buffer
9253    ;No more commas required
9255    ;Comma required here?
9258    ;No, RTS
925A    ;# digits until next comma
925C    ;Refresh comma tally
925E    ;","
9260    ;Into buffer
9262

Get Number of commas required to <$D7
9263    ;Decimal point displacement
9265    ;+10
9267    ;# digits after decimal point
9269
926A    ;Minus 3
926C    ;Until negative
926E    ;=2, 3 or 4
9270    ;Save # commas required
9272    ;Format byte
9274    ;Commas required?
9276    ;RTS if so
9278    ;Else zero = # commas required
927A

A zeroes to buffe
927B    ;Save # zeroes to do
927D    ;Chck dec point or comma reqr'd
927F    ;Restore # zeroes remaining
9281    ;Done all?

9282    ;RTS if so
9284    ;Save # zeroes
9286    ;ASCII zero
9288    ;Into buffer
928A    ;# remaining
928C    ;If more to do
928E

Get PMODE handler address
928F    ;=> jump table
9292    ;Current PMODE
9294    ;* 2
9295    ;Get jump address from table
9297
9298    ;Get PMODE handler address
929A    ;Pixl bits->A,X,Y vid adr to X

Pixel & video address jump table

```

```

Address  Jake's Comment
929C    ;PMODE 0
929E    ;PMODE 1
92A0    ;PMODE 2
92A2    ;PMODE 3
92A4    ;PMODE 4

Pixel bit->A Video address->X PMODES 0,2,4
92A6    ;# bytes/line
92A8    ;Current Y coord
92AA    ;Get offset to Y byte
92AC    ;+ start current hi-res screen
92AD    ;To X
92AF    ;Current X coord
92B1    ;* Divide
92B3    ;* by 8
92B4    ;* (# pixels/byte)
92B5    ;Get base address of X coord
92B6    ;Current X coord
92B7    ;Extract pixel position
92B9    ;=> table
92BB    ;Get pixel bit from table
92BE
92C0

Pixel bit->A Video address->X PMODES 1,3
92C2    ;# bytes/line
92C4    ;Current Y coord
92C6    ;Get offset to Y byte
92C8    ;+ start current hi-res screen
92C9    ;To X
92CB    ;Current X coord
92CD    ;* Divide by 4
92CF    ;* (# pixels/byte)
92D1    ;Get base address of X coord
92D2    ;Current X coord
92D4    ;Extract pixel position
92D6    ;=> table
92D9    ;Get 2 pixel bits from table
92DB

Pixel table, PMODE 0,2,4
92DD    ;From leftmost pixel
92DF
92E1    ;To
92E3
92E4    ;Rightmost pixel bits

Pixel table, PMODE 1,3
92E5    ;From leftmost pixel to
92E7    ;Rightmost pixel bits

Y direction increment
92E9    ;# bytes per hi-res line
92EB    ;Bump video address 1 line down
92EC

X direction increment PMODE 0,2,4
92ED    ;Move pixel mask 1 bit right
92EE    ;RTS if not shifted out
92F0    ;Else move mask to LHS...
92F1    ;...and bump video address
92F3

X direction increment PMODE 1,3
92F4    ;Move pixel mask 1 bit right
92F5    ;And again if not shifted out
92F7    ;Else reset mask to LHS...
92F9    ;...and bump video address
92FB

Get valid X,Y coordinates to <$BD <$BF
92FC    ;Get #1 to 2B, #2 to reg B
92FF    ;Point to current coordinatess
9303    ;B < 192? (Y coord)
9305    ;OK if so
9307    ;Else use 191
9309    ;Zero MSB
930A    ;= Y coordinate
930C    ;Specified X coord
930E    ;< 256?
9312    ;OK if so
9314    ;Else use 255
9317    ;= X coordinate
9319

Scale coordinates as per PMODE
931A    ;Get valid X,Y start coordinates
931D    ;=> current coordinates
9320    ;Current PMODE
9322    ;PMODE > 2?
9324    ;If >= 2
9326    ;Y coordinate
9328    ;Divide Y by 2 if PMODE 0 or 1
9329    ;To allow max 96 Y pixels
932A    ;New Y coordinate
932C    ;Current PMODE

```

```

Address  Jake's Comment
932E    ;PMODE > 4?
9330    ;RTS if = 4
9332    ;X coordinate
9334    ;Divide X by 2 if PMODES 0-3
9335    ;To allow max 128 X pixels
9336    ;New X start
9338

PPOINT
9339    ;Get valid start coordinates
933C    ;Scale coordinates as per PMODE
933F    ;Get pixel bits->A, vid adr->X
9342    ;Extract bit info from video
9344    ;Current PMODE
9346    ;PMODE 1 or 3?
9347    ;If PMODE 0,2,4
9349    ;Color bits in bits 2-7?
934B    ;No, we have color in bits 0-1
934D    ;Else rotate
934E    ;One pair bits
934F    ;Cont until bits aligned
9351    ;Offset color val to 1
9352    ;Align for CSS val
9353    ;Add CSS val (0 or 8)
9355    ;Get # = 0-7
9356    ;Final value to B
9358    ;Return value in B
935B    ;Pixel on?
935C    ;No, return value 0
935E    ;Init to return color val =1
935F    ;Return value + CSS

PSET / PRESET
9361    ;PSET status <- E.p. PSET
9363    ;Save it
9365    ;PRESET status <- E.p. PRESET
9366    ;Save PSET/PRESET status
9368    ;Syntax check "("
936B    ;Get valid X,Y coords scaled
936E    ;Setup color byte to use
9371    ;Syntax check ")"
9374    ;Pixel bits->A, vid adr->X
9377    ;Get current video byte
9379    ;Save current video byte
937B    ;Current pixel bits->B
937D    ;Make mask for pixel
937E    ;Mask out currnt pixl frm video
9380    ;Mask in color pixel to B
9382    ;Color pixel to stack
9384    ;Mask in pixel bits from stack
9386    ;Store back to video
9388    ;Subtract previous video byte
938A    ;Flag changed pixel
938C    ;Save pixel change status
938E

Setup start & end coordinates
938F    ;Previous X end coordinate
9391    ;Use as default X start
9393    ;Previous Y end coordinate
9395    ;Use as default Y start
9397    ;"-"?
9399    ;If hyphen
939B    ;Set up X,Y coords for origin
939E    ;Hyphen
93A0    ;Syntax check for hyphen
93A3    ;Syntax check for "("
93A6    ;Get #1 to $2B, #2 to reg B
93A9    ;=> line X end
93AD    ;Set valid coords
93B0    ;Syntax check ")" & out

Get valid start coordinates
93B2    ;Syntax check "("
93B5    ;Get valid X,Y coords->$BD,$BF
93B8    ;Syntax check ")"

```

## PROGRAM LISTING SECTION 12

```

Address  Jake's Comment
LINE
93BB    ;LINE INPUT?
93BD    ;If so
93C1    ;"("
93C3    ;Left parenthesis
93C5    ;"-"?
93C7    ;Hyphen
93C9    ;="@"
93CB    ;Syntax check for "@"
93CE    ;Setup start/end coordinates
93D1    ;* Use end
93D3    ;* points
93D5    ;* as next default
93D7    ;* (X,Y) origin

```

Say the Magic Words  
 "I saw your ad in Color Computer Magazine"  
 and get a free gift with your purchase  
 until October 31

## EDUCATIONAL

### PreReader

**\$19.95 Tape; \$24.95 Disk.**  
*Requires 32K ECB and joysticks.*

Age 3-5 reading readiness skills; capital and small letters; numbers; colors; shapes; letter and consonant blend sounds.

### Galactic Hangman

**\$17.95 Tape**

*Both 16K ECB and 32K ECB versions included.*

Best hangman game available for the CoCo. Improve your vocabulary, spelling. 700 words included, or use your own words.

### The Great USA

**\$19.95 Tape**

*Both 16K ECB and 32K ECB versions included.*

Challenging game of the 50 states. Abbreviations; capitals; state nicknames; trees; flowers; birds. User modifiable input.

### Silly Syntax

**\$19.95 Tape; \$24.95 Disk.**  
**\$49.95 Disk with 62 stories**  
*Requires 16K ECB.*

Laugh and learn parts of speech and reading skills. Create your own stories with the built in word processor.

### Bible Stories Adventure

**\$19.95 Tape; \$24.95 Disk**  
*Requires 16K ECB.*

Familiar Bible Stories in graphics adventure format. Cross the Red Sea with Moses and throw stones at Goliath.

### STATGRAF

**\$24.95 Tape; \$29.95 Disk**  
*Requires 32K ECB.*

Our linear regression analysis package combined with high-resolution plotting/line graphing. Enter up to 250 pairs of (x,y) data, 5 data sets on a single graph, transform observations.

## UTILITIES

### AUTO RUN

**\$19.95 Tape; Requires 16K ECB.**

Create a ML loader for your Basic or ML programs. Includes a graphics editor so that you can create a colorful title screen for all your programs.

### PIRATECTOR

**\$99.95 Disk; Requires 32K ECB.**

Don't waste your time writing a protection scheme for your disk-based software. Let Piratector do it for you! Proven effective against popular "cracking" or duplicating programs now on the market. Includes Semigraf graphics editor and user functions to make your programming easier.

### SEMIGRAF Graphics Editor

**\$19.95 Tape; \$24.95 Disk**  
*Requires 16K.*

Uses the little-documented semigraphics modes of the Color Computer — 8 colors; combine text with graphics; letter set; auto repeat; menu-oriented; includes sample pictures.

## INFORMATION MANAGEMENT

### TIMS

**\$24.95 Tape**  
*Requires 16K ECB, 32K ECB recommended.*

The most database for the money for the CoCo. Keep all files, rosters, lists; 8 user definable fields; sorts on 3 fields; item search; range search; upper and lower cases; user-selected print formats. Disk compatible.

### TIMSMAIL

**\$19.95 Tape. Requires 32K ECB.**

The ultimate mailing list manager for the CoCo. User friendly and user proof; send your mailing list to printer, tape or disk; designed for 80 column printer; continuous or single sheet; 1, 2 or 3 labels wide; 2.5, 2.75, 3, 3.5 and 4" labels; select records to print.

Disk software compatible with Radio Shack DOS only.  
 A complete catalog of other sweet Sugar Software products is available.

**SUGAR SOFTWARE**  
 2153 Leah Lane  
 Reynoldsburg, Ohio 43068  
 (614) 861-0565



Add \$1.00 per tape for postage and handling. Ohioans add 5.5% sales tax. COD orders are welcome. CIS orders EMAIL to 70405, 1374. Dealer inquiries invited.

Sugar Software    No. \_\_\_\_\_

**Gift Certificate**

Pay to the order of \_\_\_\_\_ \$ \_\_\_\_\_

Amount \_\_\_\_\_

Memo \_\_\_\_\_

**available in any amount!**

# PROGRAM LISTING (CONT.)

```

Address  Jake's Comment
93D9    ;Syntax check for comma
93DC    ;PRESET?
93DE    ;If PRESET
93E0    ;PSET?
93E2    ;Syntax error if neither

93E6    ;If PSET
93E8    ;93E9 = CLR B if PRESET
93EA    ;Save PSET/PRESET status from B
93EC    ;Parse next chr
93EE    ;Scale coordinates as per PMODE
93F1    ;Save PSET or...
93F3    ;...PRESET status
93F5    ;Set up color to use
93F8    ;Parse current chr
93FA    ;If end of line
93FE    ;Syntax check commas
9401    ;"B"
9403    ;Syntax check "B"
9406    ;If not end of line
9408    ;Do horizontal line 1
940A    ;Do vertical line 1
940C    ;X start coordinate
940E    ;Save it
9410    ;X end coordinate
9412    ;Use as strt coord for nxt line
9414    ;Do vertical line 2
9416    ;Previous X start coordinate
9418    ;Restore X start coordinate
941A    ;Y end coordinate
941C    ;Use as Y start coordinate
941E    ;Do horizontal line 2
9420    ;Scale origin coords as per PMODE
9423    ;=> end coordinates
9426    ;Scale end coords as per PMODE
9429    ;"F"
942B    ;Syntax check for "F"
942E
9430    ;Decrement Y coordinate
9432    ;Update current Y coordinate
9434    ;Do horizontal line
9437    ;Current Y coordinate
9439    ;Same as Y end coordinate?
943B    ;Out if so
943D    ;If current Y > end Y
943F    ;Increment Y coordinate
9441    ;Update & continue
9443

Horizontal line
9444    ;Start X coordinate
9446    ;Hold it
9448    ;Get ABS diffrnce end X-start X
944B    ;If end >= start
944D    ;Else get end X coordinate
944F    ;Save as start X coordinate
9451    ;# pixels to Y reg
9453    ;Offset to 1
9455    ;Pixel bits->A, video adr-ss->X
9458    ;Current X coordinate
945A    ;Update X coordinate
945C    ;Get X increment routine->U
945E    ;Hold pixel bits
9460    ;Hi-res pixel to video
9463    ;Restore pixel bits
9465    ;Move pixel 1 position
9467    ;Decrement difference
9469    ;Keep going till done
946B

Vertical Line
946C    ;Pull # Y pixels
946E    ;Start Y coordinate
9470    ;Hold it
9472    ;Get ABS diffrnce end Y-start Y
9475    ;If end > start
9477    ;Else get end Y coordinate
9479    ;Save as start Y coordinate
947B    ;# pixels to Y
947D    ;Offset to 1
947F    ;Pixel bits->A, video adr-ss->X
9482    ;Start Y coordinate
9484    ;Update current Y coordinate
9486    ;Addr of Y increment routine->U
9488    ;Line to video

X direction increment table
948A    ;PMODE 0
948C    ;PMODE 1
948E    ;PMODE 2
9490    ;PMODE 3
9492    ;PMODE 4

Get X increment routine to U
9494    ;=> jump table
9497    ;Current PMODE
9499    ;* 2 bytes/table entry

```

```

Address  Jake's Comment
949A    ;Get jump address from table
949C
949D    ;=> Y increment routine
94A0

Draw line using memory coordinates
94A1    ;=> bump Y coord subroutine
94A5    ;Get ABS end Y-start Y
94A8    ;No diffrnce, do horizontal line
94AC    ;If end > start, bump, else...
94AE    ;=> decrmt Y coord subroutine
94B2    ;Save # Y pixels
94B4    ;=> bump X coord subroutine
94B7    ;Get ABS end X -start X
94BA    ;If no diffrnce, do vertcl line
94BC    ;If Xend > Xstart, bump, else...
94BE    ;=> decrmt X coord subroutine
94C1    ;# X pixels < # Y pixels?
94C4    ;# Y pixels to X
94C6    ;If # X >= # Y pixels
94C8    ;Majr coord-upd adr->U, minor->Y
94CA    ;Get major # pixels->D, minor->X
94CC    ;# majr pxls left, majr upd adr
94CE    ;# major pixels
94D0    ;* Divide
94D1    ;* By 2
94D2    ;If odd #
94D4    ;Incrementing major coord?
94D8    ;Yes
94DA    ;Else adjust minor update tally
94DD    ;Minr updt tally, # minr pixls
94DF    ;Get PMODE pixl/vid jump adr->U
94E2    ;Get pixl bits->A, video adr->X
94E4    ;Hi-res pixel to video
94E7    ;Major # pixels remaining
94E9    ;Out if no more
94EB    ;1 less major pixel
94ED    ;Update # remaining
94EF    ;Update major coordinate
94F2    ;Get minor update tally
94F4    ;+ minor # pixels
94F6    ;Update minor update tally
94F8    ;Minus major # pixels
94FA    ;If no need to updt minr coord
94FC    ;Else keep update
94FE    ;Update minor coordinate
9500    ;Continue line
9502    ;Pull minor update tally
9504    ;Restore registers & return

Bump X coordinate
9506    ;X coordinate (current)
9508    ;Add 1
950A    ;Update X coordinate
950C

Bump Y coordinate
950D    ;Current Y coordinate
950F    ;Add 1
9511    ;Update Y coordinate
9513

Decrement X coordinate
9514    ;Current X coordinate
9516    ;Minus 1
9518    ;Update X coordinate
951A

Decrement Y coordinate
951B    ;Current Y coordinate
951D    ;Minus 1
951F    ;Update Y coordinate
9521

Set maximum X,Y = 255,191 in $D3,$D5
9522    ;= X & Y coordinates
9525    ;= 255
9528    ;Default X coordinate
952A    ;= 191
952D    ;Default Y coordinate
952F    ;Scale coordinates as per PMODE

PCLSn
9532    ;If no color specified
9534    ;Get specified color to B
9536    ;Full graphic byte
9538    ;Insert color info
9539    ;=> screen start
953B    ;Store color byte to screen
953D    ;At end screen?
953F    ;Keep going if not
9541
9542    ;Current background color
9544

COLOR
9546    ;Comma?
9548    ;If so, leave foreground color

```

```

Address  Jake's Comment
954A    ;Get spec'd col
954C    ;Save as current foregrnd color
954E    ;Parse current chr
9550    ;RTS if no bkgrnd specifiedd
9552    ;Syntax check ",",
9555    ;Get specified color
9557    ;Save as current backgrnd color
9559

Get specified color->B, CSS->A
955A    ;Compute # <256 to B
955D    ;# > 9?
955F    ;?FC Error if so
9563    ;Init CSS = 0
9564    ;Color < 5?
9566    ;No problem if so
9568    ;Else set CSS = 1
956A    ;Offset color-4
956C    ;Save CSS
956E    ;Current PMODE
9570    ;Check PMODE
9571    ;If current PMODE 0,2,4
9573    ;Color = 0?
9574    ;No
9576    ;Else use 3
9578    ;Offset color to 0
9579    ;Restore CSS & return
957B    ;Color = 1 or 3?
957C    ;If so, use 3
957E    ;Else use zero
957F    ;Return with zero color

Setup color byte
9581    ;Setup line colr to use as dflt
9584    ;Parse current chr
9586    ;If eos,RTS via parse crnt chr
9588    ;" )"?
958A    ;Out if end of parameters
958C    ;Syntax check ",",
958F    ;Comma?
9591    ;If so
9593    ;Get specified color
9596    ;Save colr, derive col byte->$B5
9598    ;Parse current chr

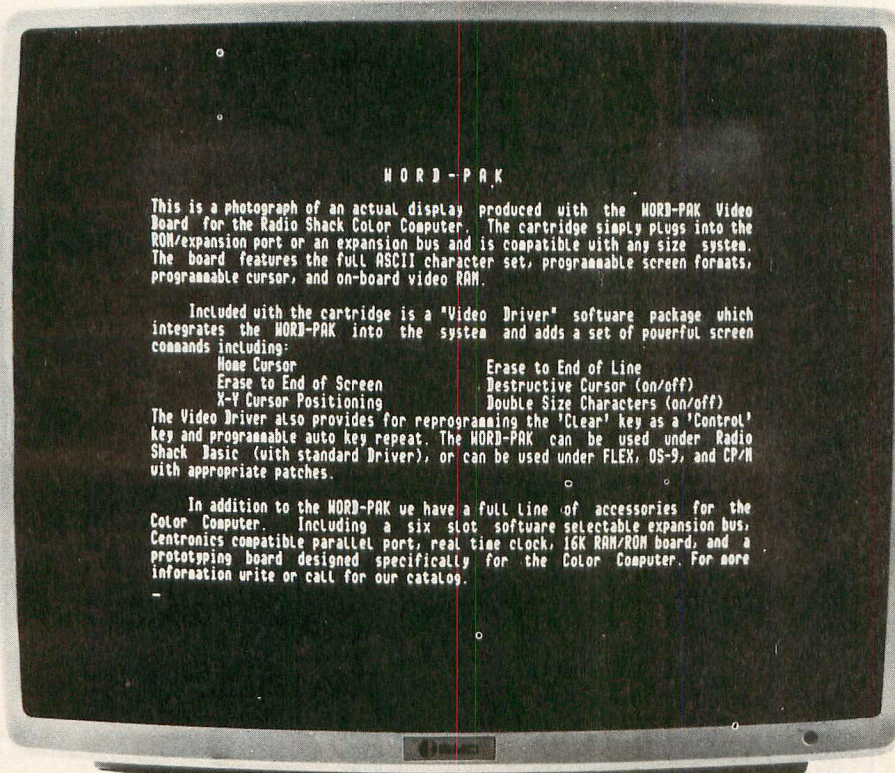
Setup default color
959A    ;Current foreground color
959C    ;PSET or PRESET?
959E    ;If PSET, use foreground
95A0    ;Else use background color
95A2    ;Save color to use
95A4    ;Derive actual...
95A6    ;...byte for video
95A7    ;Save it
95A9

Reset SAM video to text
95AA    ;If SCREEN 1,n
95AC
95AE    ;=>SAM display offset
95B1    ;* Set
95B3    ;* SAM
95B5    ;* display
95B7    ;* offset
95B9    ;* to
95BB    ;* $0400
95BD    ;*
95BF    ; Set
95C1    ; VDG
95C3
95C5    ;* Reset
95C8    ;* VDG
95CA    ;* control O/P
95CD

High resolution video setup
95CF
95D1    ;Current PMODE
95D3    ;Bump over unused graphic modes
95D5    ;Move left 4 bits...
95D7    ;...to align with VDG ctrl O/Ps
95D8    ;Set A/G mode to full graphics
95DA    ;Set appropriate CSS
95DC    ;=> VDG PIA
95DF    ;Retain non-VDG bits
95E1    ;To stack
95E3    ;New info + retained bits
95E5    ;Set VDG control O/Ps
95E8    ;Start current hi-res screen
95EA    ;Eliminate unwanted bit
95EB    ;Set SAM lines for dsply offset
95EE    ;Current PMODE
95F0    ;Bump over unwanted VDG modes
95F2    ;All bits set?
95F4    ;No
95F6    ;Else set = 6 for G6R
95F7    ;Setup SAM lines for VDG
95F9

```

# A Picture Is Worth . . .



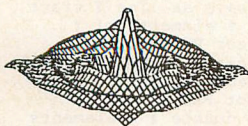
# CC inc.

P.O. BOX 813  
N. Bergen, N.J. 07047  
(201) 330-1898

Circle No. 47 on Reader Service Card

## PROFESSIONAL and EDUCATIONAL

SOFTWARE for the COLOR COMPUTER  
from ANKIA RESEARCH



### PROFESSIONAL 3-D PLOTTER

Plots any function or a data set

\$24.95

### SPECTRUM ANALYZER

Machine Language FAST Fourier Transform \$24.95

### MATHEMATICS (16 K ECB)

MATRIX MATH (Inverse, Determinant)	\$12.95
EQUATION EVALUATOR (Polynomials, Linear Sets)	\$12.95
FUNCTION FINDER (Interpolation, Regression)	\$12.95
CALCULUS (Differentiation, Integration)	\$12.95

### EDUCATIONAL SIMULATIONS

STRATEGY POLITICS	\$16.95
STRATEGY INVESTING	\$16.95
IMAGE PROCESSING	\$16.95
STRATEGY FOOTBALL	\$16.95
STRATEGY BOXING	\$12.95

## Write for FREE CATALOG

All programs 32K ECB unless specified

Send CHECK or MONEY ORDER (US\$)

SPECIFY Program Name & DISK or TAPE

Add \$2.00 Shipping / Handling

Florida Residents add 5% Sales Tax



**ANKIA  
RESEARCH**

901-19 INDIANTOWN RD.  
SUITE R  
JUPITER, FL 33458

Circle No. 20 on Reader Service Card

## Talk is Cheap!

your Color Computer can talk for only

# \$29.95

**SPEAK UP!**™ Is a machine language, voice synthesizer program for the TRS-80 Color Computer.\* It is 100% software—nothing else to buy. Best of all, *YOU* can make BASIC programs talk!

- 16K, 32K, 64K all on one cassette
- Text-to-speech makes it easy to use
- **SPEAK UP!** will say anything
- Reviewed in April '83 issue of *Rainbow*
- Reviewed in Oct. '83 *Color Computer*
- COD, VISA, MC, checks—no delay

**ORDER NOW 800-334-0854 EXT. 890**



*Classical Computing, Inc.*

P.O. Box 3318  
Chapel Hill, NC 27515

\*TM by Tandy Corp.

Circle No. 6 on Reader Service Card

# PROGRAM LISTING (CONT.)

```

Address  Jake's Comment
Setup SAM lines
95FB    ;# SAM lines to set for VDG
95FD    ;=> VDG mode in SAM
9600    ;Current bit =1?
9601    ;No, otherwise...
9603    ;Access odd addr to set SAM bit
9605
9607    ;Access even addr to clear bit
9609    ;Bump to next SAM bit
960B    ;Done all bits?
960C    ;Continue if not
960E
960F    ;# SAM lins to set for dsp ofst
9611    ;=> display offset in SAM
9614    ;Set up disp ofst to SAM
9616    ;=> VDG PIA
9619    ;Eliminate CSS
961B    ;Color select
961D    ;Set appropriate CSS
9620

PMODE
9621    ;", "?
9623    ;If comma, just check page
9625    ;Compute # <256
9628    ;>= 5?
962A    ;?FC Error if > 4
962C    ;Default page start = $0600
962E    ;Save start crnt hi-res screen
9630    ;Mode*2

9631    ;=> table
9634    ;Get page end from table
9636    ;> Basic start?
9638    ;?FC Error if pg end>Basic strt
963A    ;Save current end hi-res screen
963C    ;Table-1
963E    ;Get previous value from table
9640    ;# bytes/vid line
9642    ;Back to original PMODE value
9643    ;Save current PMODE
9645    ;Current background...
9646    ;...color
9648    ;Current foreground...
964A    ;...color
964C    ;Parse current chr
964E    ;RTS if end of statement
9650    ;Chk ", " - get # <256
9653    ;0?
9654    ;FC Error if so
9656    ;Offset page to 0
9657    ;*
9659    ;6
965A    ;Add lowest hi-res offset
965C    ;Save new hi-res screen start
965E    ;Add length...
9660    ;...of screen
9662    ;> basic start?
9664    ;FC Error if so
9666    ;End current hi-res screen
9668    ;Restore hi-res screen start
966A    ;Start current hi-res screen
966C
966D    ;FC Error

SCREEN
9670    ;", " no screen type specified?
9672    ;If not
9674    ;Compute # <256 to B
9677    ;Set flag for text/graphic
9678    ;Setup video
967B    ;Parse current chr
967D    ;RTS if no CSS
967F    ;Check ", " - get # <256 to B
9682    ;Color select specified?
9683    ;No
9685    ;Else set CSS mask on
9687    ;Save mask
9689    ;Set CSS in SAM

PCLEAR
968B    ;Compute # < 256 to B
968E    ;PCLEAR 0?
968F    ;FC Error if = 0
9691    ;> 8?
9693    ;FC Error if > 8
9695    ;Times 6...
9697    ;...pages/screen
9698    ;+ hi-res base adr
969A    ;Highest page
969C    ;+ 1
969E    ;Highest+1->Y
96A0    ;Lower than end hi-res mem?
96A3    ;FC Error if so
96A7    ;Get # bytes to move Basic

```

```

Address  Jake's Comment
96A9    ;Compute new Basic end
96AB    ;Save new Basic end
96AD    ;+ CLEAR 200
96B0    ;Minus stack top address
96B2    ;FC Error if no room
96B4    ;Old Basic end
96B6    ;New Basic end
96B8    ;Old end > new?
96BB    ;If so, move Basic downwards
96BD    ;Byte from old position
96BF    ;Into new position
96C1    ;Done Basic start?
96C4    ;Continue until at start
96C6    ;Reset Basic start
96C9    ;Initialize Basic-1 = 0
96CB    ;Reset Basic link pointers
96CE    ;Reset variable pointers
96D1    ;Between statemnts
96D4    ;Current Basic start
96D6    ;New Basic start
96D9    ;Initialize Basic-1 = 0
96DB    ;Old byte position
96DD    ;To new position
96DF    ;At start of variables?
96E2    ;No, continue
96E4    ;Reset Basic pointers

Initialize Extended Basic cold
96E6    ;MSB Basic start
96E8    ;Basic start = $1E00
96EA    ;Minimum hi-res...
96EC    ;...mem=$0600
96EE    ;Setup current hi-res screen
96F0    ;Current...
96F1    ;PMODE = 0
96F3    ;# bytes per...
96F5    ;...hi-res line
96F7    ;Current foreground...
96F9    ;...color
96FB    ;End of current hi-res...
96FD    ;...screen = $0600
96FF    ;Initialize...
9701    ;...Basic-1 = 0
9703    ;Initialize Basic cold

# bytes/line - memory requirement table
9706    ;PMODE0
9708    ;PMODE1
970A    ;PMODE2
970C    ;PMODE3
970E    ;PMODE4

9710    ;Line Y end coordinate

9712    ;Minus current Y coordinate
9714    ;RTS if difference >= 0
9716    ;Save carry flag
9718    ;Negate D to get ABS value
971B    ;Restore carry flag & return
971D    ;Line X end coordinate
971F    ;Minus current X coordinate
9721

PCOPY
9723    ;Get video page address to D
9725    ;Hold source address
9727    ;Token for "TO"
9729    ;Syntax check for "TO"
972C    ;Get destnatn vid page adr to D
972E    ;Source address
9730    ;Destination address to U
9732    ;# words to copy ($600 bytes)
9736    ;2 bytes from source
9738    ;To destination
973A    ;Decrement tally
973C    ;Again if more
973E

Get video page address to D
973F    ;Compute # <256
9742    ;0?
9743    ;FC Error if so
9745    ;> Basic start?
9747    ;FC Error if so
9749    ;Offset to 0
974A    ;Times # memory...
974C    ;...pages/vid page
974D    ;Add hi-res base address
974F    ;Swap to give video page address
9751
9752    ;FC Error

GET / PUT
9755    ;Set flag for GET
9756
9758    ;Set flag for PUT
975A    ;Save flag
975C    ;RAM vector

```

```

Address  Jake's Comment
975F    ;"@"?
9761    ;No
9763    ;Parse next chr
9765    ;Setup start & end coordinates
9768    ;Syntax check ", "
976B    ;Get requested array
976E    ;Array size pointer to D
9770    ;Array size to U
9772    ;Minus 2 for array size bytes
9774    ;Bump to array end+1
9776    ;Setup in memory
9778    ;Point to # dimensions
977A    ;Get # dimensions
977C    ;*2 bytes per element definition
977D    ;Step over element definitions
977E    ;Save array start-1
9780    ;Variable type
9782    ;FC Error if string array
9784    ;Init flag for no actions
9786    ;Parse current chr
9788    ;If end of statement
978A    ;Set action = on
978C    ;Syntax check ", "
978F    ;Doing GET or PUT?
9791    ;If PUT
9793    ;"G"
9795    ;Syntax check "G"
9798    ;Continue GET
979A    ;# allowable PUT options
979C    ;=> PUT options table
979F    ;Pixel off option address
97A1    ;Pixel on option address
97A4    ;Action tokens match?
97A6    ;Yes
97A8    ;Checked all options?
97A9    ;No, try next
97AB    ;SN Error otherwise
97AE    ;Setup pixel on vector
97B1    ;Setup pixel off vector
97B3    ;Parse next chr
97B5    ;Continue PUT
97B7    ;Modulo 8 mask for X coordinates
97B9    ;Current PMODE
97BB    ;PMODE 1 or 3?
97BC    ;No
97BE    ;Yes, use modulo 4 mask
97C0    ;Mask to both A & B
97C2    ;Mask X start coord = modulus
97C4    ;Update X start coordinate
97C6    ;Mask X end coord = same moduls
97C8    ;Update X end
97CA    ;Get size of X side of rectngle
97CD    ;OK if positive X size
97CF    ;Else get line X end
97D1    ;And save as line X start
97D3    ;Save # elements of X
97D5    ;Get size of Y side of rectngle
97D8    ;OK if positive Y size
97DA    ;Else get line Y end
97DC    ;And save as line Y start
97DE    ;Save # elements of Y
97E0    ;Current PMODE
97E2    ;Set carry if PMODE 1 or 3
97E3    ;# elements of X
97E5    ;If not PMODE 1 or 3
97E7    ;Else double # X elements
97E9    ;Setup again in memory
97EB    ;Scale orgn coords as per PMODE
97EE    ;# elements of X direction
97F0    ;# elements of Y direction
97F2    ;Offset to 1
97F4    ;Update # Y elements
97F6    ;Special action requested?
97F8    ;Yes
97FA    ;Divide # X elements...
97FB    ;By 2
97FC    ;Divide # X elements...
97FD    ;By 2 again = 4
97FE    ;Divide # X elements...
97FF    ;By 2 again (div by 8 pxls/byt)
9800    ;+1
9803    ;# X video bytes to do
9805    ;Get pixl bits->A, video adr->X
9808    ;# X video bytes to do
980A    ;Save video address
980C    ;Doing GET or PUT?
980E    ;If GET, save video byte
9810    ;If PUT, bump array pointr in U
9812    ;Get byte from array
9814    ;Place to video
9816    ;1 less X video byte to do
9817    ;Continue until X all done
9819    ;Video adr at start current X
981B    ;Bump video address to next X
981E    ;1 less to do in Y direction
9820    ;If more to do
9822

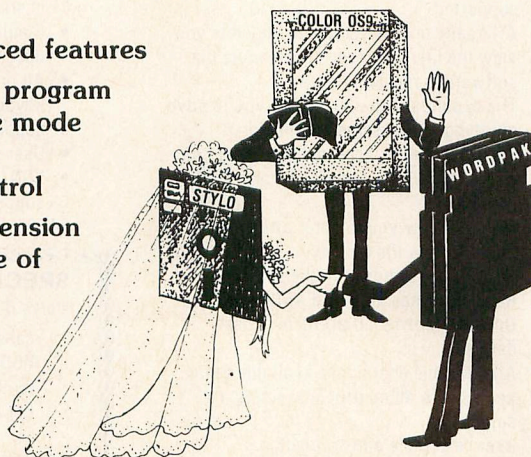
```

# Stylograph III and WordPak are "United" by Color OS9 to provide a dazzling display of Word Processing Power

Stylo III has many enhanced features

- Printer configuration program
- Continuous overwrite mode
- Programming mode
- Enhanced cursor control

WordPak adds a new dimension to the overall performance of the Color Computer.



The Color Computer is transformed into a quality professional work station when you put the right combination together.

Stylograph III + WordPak \$239.<sup>95</sup>

StyloPak + WordPak \$339.<sup>95</sup>

(Stylograph III + Mail Merger + Spell Checker)

Send for catalog

Flex Versions also available

Great Plains Computer, Inc.

P.O. Box 916

Idaho Falls, Idaho 83402

208-529-3210

OS9 is a trademark of Microware

WordPak is a trademark of PBJ, Inc.

Flex is a trademark of TSC, Inc.

Circle No. 18 on Reader Service Card

## NEED AN INEXPENSIVE SERIAL-PARALLEL INTERFACE?

### SP-2 INTERFACE for EPSON PRINTERS:

- 300-19,200 BAUD rates
- Fits inside printer — No AC Plugs
- Optional external switch (\$5<sup>00</sup> extra) frees parallel port for use with other computers
- \$49<sup>95</sup> (plus \$2<sup>00</sup> shipping)

### SP-3 INTERFACE for MOST OTHER PRINTERS:

- 300-19,200 BAUD rates
- External to printer — No AC Plugs
- Built in modem/printer switch—no need for Y-cables or plugging/unplugging cables
- \$64<sup>5</sup> (plus \$2<sup>00</sup> shipping)

Both also available for RS-232, Apple IIC and Macintosh computers.

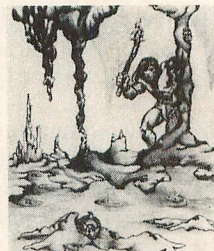
Co Co Serial Cables 15 ft.—\$10.

Co Co/RS-232 Cables 15 ft.—\$20. Other cables on request.

**C  
N  
R** ENGINEERING  
**DEALER INQUIRIES INVITED!**

P.O. Box 492  
Piscataway, NJ 08854  
(201) 752-0144

Circle No. 3 on Reader Service Card



## THE RING ADVENTURE

Ancient Evil threatens your homeland. For the long dormant Magna-Kan—last of the evil high Clerics—drawing incalculable power from an old Elven ring, has animated an almost indestructible army of skeletons. Only you can stop the ancient Cleric by undertaking the perilous quest to find and carry the ring to the mysterious ledge of fire, there to be permanently destroyed.

\$19.95 tape—Note: this is a text adventure

## CORPORATION

If you've ever wanted to run a large corporation, this is your chance. You start with a small bank account and no other assets, but by making smart investments, and sending out spies, you can become a very powerful person. Secretly learn, from your spies, how other players are investing, then you can flood the market with that investment and financially ruin your opponents. But watch out, you must continually check for spies in your organization or YOU may be ruined. With 3 or more players you can secretly send messages to others in order to pool your resources and bankrupt another player. Every game turns out differently. You won't want to miss this one! For 2 to 5 players.

\$21.95 tape

Personal Cheques and Money Orders welcome. Include \$2.50 shipping per order. All prices in Canadian dollars. B.C. residents add 7% sales tax. All orders shipped within 48 hours. Quantity discounts to dealers. U.S. orders very welcome.

Send order to: COLORTECH SOFTWARE

2016 East 13th Avenue

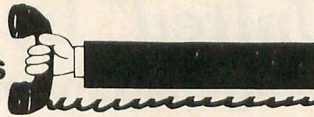
Vancouver, B.C.

Canada V5N 2C4

Programs require 16K extended BASIC

Circle No. 153 on Reader Service Card

# Learn Something New and Useful!



## 1. Modems & Telecommunications

### The Color Connection II for RSDOS and Cassette

- 300 baud
  - Supports auto-dial
  - Full & half duplex
  - Menu driven - easy to use
  - Buffer size (for upload & download) shown on the screen.
  - Reads & writes standard ASCII text files.
  - Upload & download protocol is user definable.
  - Single key "macros" allow entry of often used passwords & IDs with a single key.
  - All printable characters available at the keyboard & all control characters are supported including ESCape, RUB, DEL, etc.
  - User selectable anti-truncation features will not allow a word to be broken when wrapping from one line to the next.
  - User selectable inverted screen - for either black letters on a light screen or light letters on a black screen.
  - Includes our "Introduction to Data Communications" tutorial at no additional charge.
  - Requires 16K on cassette or 32K on disk.
- cass \$34.95                      disk \$39.95

### The Color Connection II for OS-9

- XON/XOFF software handshaking is supported.
  - A 12 page on-line screen display lets you view the last 12 screens even while the software is receiving data.
  - The expandable buffer allows you to save anything on the screen to memory.
  - The OS-9 shell is accessible - within Color Connection II you can invoke any OS-9 command.
  - Macros allow you to enter often used passwords & IDs quickly.
  - Buffer size is shown on the screen.
  - Reads & writes standard ASCII text files.
  - Upload & download protocol is user definable.
  - All printable characters available at the keyboard & all control characters are supported.
  - User selectable anti-truncation.
  - 300 baud with full and half duplex.
  - Supports auto dial.
  - Menu driven - easy to use.
  - Glossary of telecommunications terms included.
- \$49.95

### The Color Connection II for FLEX

- 300 baud
  - Full & half duplex
  - Supports auto-dial modems
  - Menu driven - easy to use
  - Buffer size (for uploading & downloading) is shown on the screen.
  - Single key "macros" allow entry of often used passwords & IDs easily.
  - All printable characters available at the keyboard & all control characters are supported.
  - User selectable anti-truncation.
  - XON/XOFF software handshaking is supported.
- \$49.95

### SPECIAL PACKAGES

#### Volks Modem w/Color Connection II

cassette	\$ 99.00
RSDOS disk	\$104.00
OS-9 disk	\$114.00
FLEX disk	\$114.00

#### Smartmodem w/Color Connection II

cassette	\$275.00
RSDOS disk	\$279.00
OS-9 disk	\$289.00
FLEX disk	\$289.00

## Don't Forget!

### 2. The Personal Time Management System & Event Recorder

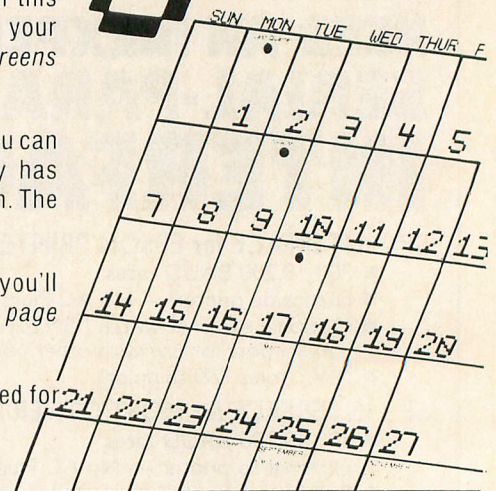
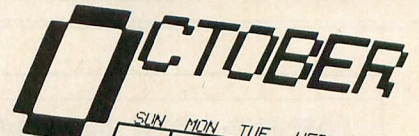
You *won't forget* with **Don't Forget!** You'll actually enjoy getting organized with this personal time management system. The *Macintosh-like icons* make entering your personal schedule simple and fun. But if you need instructions, there are *help screens* to assist you.

You'll never miss a birthday or important appointment again! With **Don't Forget!** you can record the *entire year's* occasions and daily appointments ahead. Each day has spaces for *4 Special Occasions*, *2 Memos*, and *hourly notes* for 6 am through 9 pm. The built-in 51 x 24 upper and lower case *hi-res display* makes it very easy to read.

You can *display or print* any daily schedule - or a whole week at a time - so you'll remember every important event. You can even print a blank monthly *calendar page* with big boxes to scribble notes in!

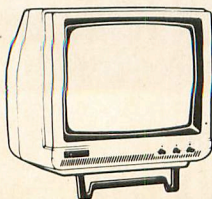
So use your CoCo's memory and **Don't Forget!** as your personal secretary. Designed for mouse, joystick, or keyboard entry, **Don't Forget!** requires 32K and one disk drive.

\$24.95



### 3. Put a MONITOR on your CoCo with Video Plus!

with audio!



- NAP green screen \$109<sup>95</sup>
- NAP amber screen \$119<sup>95</sup>
- Color with audio \$275<sup>00</sup>

Our monochrome monitors have *audio*—no need to add expensive amplifiers or go without sound! Our NAP<sup>®</sup> monitors are the same as the familiar *Gorilla*—except that by special arrangement with North American Phillips (Magnavox) ours has the *audio amplifier built in!*

Yes! You can enjoy the crisp display of a **composite video monitor** using **Computerware's Video Plus** interface. Each is fully **assembled and tested**. Installation is quick, easy, and requires **no soldering**. Your TV output is not disabled. **Audio output** available for color monitors. Choose the model right for your computer and monitor.

#### Video Plus \$24<sup>95</sup>

Interfaces the **original** model of Color Computer to **any** composite video monitor (color or monochrome).

#### Video Plus II M \$26<sup>95</sup>

Interfaces the **CoCo II** with a **monochrome** composite video monitor.

#### Video Plus II C \$39<sup>95</sup>

Interfaces the **CoCo II** with **any** composite video monitor (color or monochrome).



# Looking for a New Thrill?

Tired of shoot 'em up, chase 'em around arcade games? Bored with one-line text adventure games?

You want a new challenge - one that dares the mind & thrills the senses with brilliant graphics, sound & a real plot!



## Try our new STRATEGY GAME series!



**MAJOR ISTAR**  
Under the Doomed Sea

**SCENARIO:** You travel to TRIDEN RESEARCH DOME because an urgent call for help is received from one of the service droids stationed there. He said help was urgently needed, but before he could say why, his transmission was cut off!

**OBJECT:** Solve the mystery at TRIDEN in as few moves as possible.

**SETTING:** In the beginning of the 21st century undersea cities, interstellar spaceships, colonies in other planets & solar systems, worker droids, super computers, are all realities. One hero of the time is MAJOR ISTAR. In the late 1990's when space exploration & colonies began, it was necessary to form a task force to offer help to all that needed it in these hostile environments. You, Camerion J. Istar, are a highly rated member of that team and you have never failed to solve a mystery!

cass \$24.95      disk \$27.95



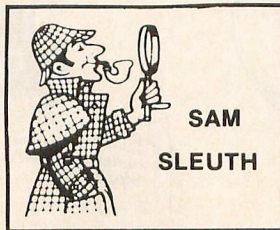
**STAR TRADER**

As a merchant ship captain in the far future you travel in real-time between solar systems, trading cargo, encountering pirate ships, stopping at starports for fuel or repairs, & making money! Your goal is to earn 1,000 credits to retire in luxury!

Your graphic cockpit shows read-outs of your location, damage status, credit balance, cargo destination & due date, the location of nearby starships, fuel & laser power levels, & the current date. With your joystick you choose your next move or transaction. As you travel, transport, trade, & battle, you develop a reputation which effects your future activities & rewards.

With different skill levels & many variable factors, this simulation offers excitement & the challenge of a new game every time you play! (Requires 32K on cassette or 64K on disk, with one joystick or mouse, & Ext. Basic.)

cass \$24.95      disk \$27.95



As a detective for Sam Sleuth Investigations you are given 3 cases (of increasing difficulty):

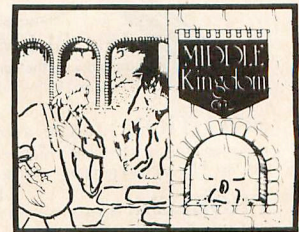
Case of the Missing Cat  
Mystery at the Museum  
Baffling Bank Robbery

Using your sleuth skills (& joystick or mouse) you search the town (displayed in hi-res graphics), interviewing townspeople, collecting evidence, examining the grounds, & gathering data to solve the mysteries & apprehend the culprits. Remember you are working against the clock!

Investigate the bank, museum, school, offices & homes, market, gas station... Talk to Mike, Willy, Roy, Sue, Chrissy... And keep track of those addresses & clues!

The unique graphics presentation & mouse/joystick control are as intriguing as the mysteries! (Req. 64K & mouse or joystick).

cass \$24.95      disk \$27.95



**MIDDLE KINGDOM**

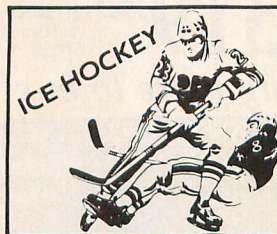
In this real time graphic adventure your goal is to become ruler of the Middle Kingdom, which can be achieved only by returning the three magic Rings to the Sanctuary. You must search the rooms of the Catacombs, Temple, & Pyramid.

You choose your character of a Magician, Merchant, or Warrior, each having their own weapons & abilities. You will face monsters of all types, Lizardmen, Trolls, Goblins, & worse. You'll find treasures of all kinds too as well as new weapons along the way!

Try this medieval adventure if you dare! (Requires 32K)

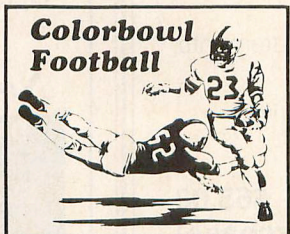
cass \$24.95      disk \$27.95

## Or get involved with SPORTS!



Begin with our national anthem, then race into action in hi-res graphics with realistic player & puck movement. One or two players compete against the real time clock. Many skill levels for all ages. (Req. 32K)

cass \$24.95      disk \$27.95



Big league graphics start the football season! Two players play against each other or one can sharpen his offense against the computer. Use 8 defensive plays, 9 offensive plays, & many formations to win the Colorbowl! (Req. 32K)

cass \$24.95      disk \$27.95

Call or Write to:

**COMPUTERWARE**®  
(619) 436-3512  
Box 668 • Encinitas, CA • 92024

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Yes! Send me your FREE catalog!   
VISA      MasterCard      Check      COD  
Card # \_\_\_\_\_ Exp. \_\_\_\_\_  
Signature \_\_\_\_\_

Item	Format	Price
Shipping:		
Surface — \$2 minimum.		6% Calif. Sales Tax
2% for orders over \$100		COD Add \$3
Air or Canada — \$5 minimum.		Shipping*
5% for orders over \$100		TOTAL

Checks are delayed for bank clearance

# Sleuthing for Solutions?

**PROBLEM:** Disappointed with only a 32 x 16 screen and only upper case characters for your OS-9 operating system?

**SOLUTION:** O-Pak will give you a 52 x 24 HiRes screen with upper and lower case, character set editor, and utilities to copy from RS format to FLEX or OS-9 formats, all for only

**\$34.95**

**FREE!**  
Subscribe to  
"SOFTNEWS"  
a new 48 page  
news letter.  
Write or call  
today!

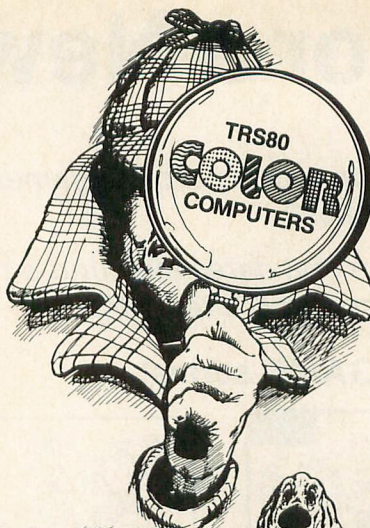
**PROBLEM:** Less than thrilled with the editor/assembler included with your DOS?

**SOLUTION:** ED/ASM, a screen type editor and macro assembler will give you all you need for serious program writing for only

**\$69.95**

**PROBLEM:** Need an easy to use and understand operating system that makes full use of the 64K in your Color Computer?

**SOLUTION:** FHL Color FLEX powerful, easy to use. More low cost software available for it than any other operating system for the Color Computer. Complete with Hi-Res for Only **\$69.95**



HELP! I am being held prisoner by equipment limitations! Send me....

- FHL O PAK \$34.95  FHL ED/ASM \$69.95  
 FHL FLEX \$69.95  
 FHL'S SOFTNEWS FREE!

Name \_\_\_\_\_

Address \_\_\_\_\_

Zip \_\_\_\_\_

INCLUDE \$3.50 SHIPPING AND HANDLING

**HURRY!**

**FHL FRANK HOGG LABORATORY**

THE REGENCY TOWER • SUITE 215 • 770 JAMES ST. • SYRACUSE, NY 13203  
PHONE (315) 474-7886 • TELEX 648740

Circle No. 67 on Reader Service Card

## H. S. & Co. presents

### Personal Accounts Manager

formerly Home Accountant

for use on Tandy Color Computer\* and TDP-100.\*

\*TM of Tandy Corp.

Balances checkbook, reconciles bank statement, and updates budgetary categories in minutes.

Easy check entry and check modification.

Enter cleared check numbers from bank statement and the system is updated from that list.

80 standard budget categories and 20 multiple categories are easily set up and updated at your command.

Summary sheets are printed for checkbook entries, bank statements, individual categories and category recap.

For use on 32K Extended BASIC system with 1 or 2 disk drives. Printer recommended.

**HOME ACCOUNTANT software (disk) & manual \$65.00**  
**Manual Only . . . . . \$7.00 (refundable with purchase)**

Add \$2.00 for shipping.  
CO residents add 5.75% tax.  
Check or M.O. — Allow 2 wks.  
for personal checks.

**HS & Co.**  
111 E. Drake, Suite 7001  
Ft. Collins, CO 80525  
303-493-2359

Circle No. 35 on Reader Service Card

# GEMINI 10X PRINTER

WITH

# BLUE STREAK INTERFACE

PLUS

# SCREEN DUMP SOFTWARE

## GEMINI 10X

**PRINT SPEED**—120 cps, Bidirectional  
**PRINT SIZE**—10, 12, 17, 5, 6, 8.5 cpi  
**NUMBER OF COLUMNS**—80, 96, 136, (40, 48, 68 in Double Wide)  
**CHARACTER MATRIX**—9x9 Standard with True Descenders • 18x9 Emphasized • 18x18 Double Strike • 6x6 Block Graphics • 60x72 Low Resolution, Bit Image Graphics • 120x144 Hi Resolution, Bit Image Graphics • 240x144 Ultra Hi Resolution, Bit Image Graphics  
**PAPER HANDLING**—Roll Paper • Cut Sheet • Tractor Fanfold • Copies; 3 Carbonless Sheets

## BLUE STREAK SERIAL TO PARALLEL INTERFACE

- RUN COCO I or II to PARALLEL PRINTER
- 300, 600, 1200, 2400, 4800, 9600 SWITCHABLE BAUD RATES
- AC POWER OPTIONAL — NOT NEEDED WITH GEMINI PRINTER
- COMPLETE WITH ALL CABLES AND CONNECTORS
- 180 DAY WARRANTY

## COMPLETE SYSTEM

(10X, Blue Streak, Screen Dump Software)

ONLY **319<sup>95</sup>** + \$10 Shipping and Insurance  
15X System 439.95

*Nothing more to buy!*

**DAYTON ASSOCIATES, INC.**  
OHIO CHARTER CORPORATION  
DUN & BRADSTREET LISTED  
7201 CLAIRCREST BLDG. B • DAYTON, OH 45424  
(513) 236-1454  
OHIO RESIDENTS ADD 6% SALES TAX  
C.O.D. ADD \$2.00

## FREE LIMITED TIME OFFER

OVER \$100 IN DISCOUNT COUPONS  
ON SOFTWARE AND SUPPLIES  
WITH PURCHASE OF COMPLETE SYSTEM

Circle No. 163 on Reader Service Card

# PROGRAM LISTING

## SECTION 13

```

Address  Jake's Comment
9823      ;Current array pointer
9825      ;Bump pointer
9827      ;Update current array pointer
9829      ;Past array end?
982C      ;RTS if not
982E      ;FC Error
9831      ;Get byte from video
9833      ;Bump array pointer in U
9835      ;Save video byte in array
9837

PUT actions table
9839      ;... (Pixel off vector)
983B      ;PSET (Pixel on vector)
983D      ;... (Token)
9840      ;PRESET
9842      ;...
9845      ;OR
9847      ;...
984A      ;AND
984C      ;...
984F      ;NOT
9851      ;...

9853      ;out of sync.
9852      ;Bump no. X elements
9855      ;Update # X elements
9857      ;Doing GET or PUT?
9859      ;If PUT
985B      ;Array end+1
985D      ;Zero array byte
985F      ;At array start?
9862      ;Continue until array cleared
9864      ;Get pixl bits->A, video adr->X
9867      ;Current PMODE
9869      ;Set carry if PMODE 1 or 3
986A      ;If PMODE 0, 2, or 4
986C      ;Else set pixl mask to get colr
986E      ;Init current pixel position
9870      ;Array start-1
9873      ;Save pixel mask/video adr
9875      ;# X elements
9877      ;Save pixel mask/# X elements
9879      ;Done current pixel byte?
987A      ;No
987C      ;Bit back to bit 7 in B
987D      ;Bump to next array byte
987F      ;Past array end?
9882      ;FC Error if so

9884      ;Doing GET or PUT?
9886      ;If GET
9888      ;Current array pixel on?
988A      ;No, do off option
988C      ;Else do on option
9890      ;Pixel off option

Pixel on
9894      ;Change mask to..
9895      ;Set current pixel off
9897      ;Place to video
9899      ;Do next X coordinate

Pixel off
989B      ;Mask pixel on
989D      ;Place to video
989F      ;Do next X coordinate

Pixel NOT
98A1      ;Reverse pixel
98A3      ;Place to video
98A5      ;Do next X coordinate

GET G option
98A7      ;Current pixel on?
98A9      ;No, do next X coordinate
98AB      ;Bit mask to A
98AD      ;Mask in current array byte
98AF      ;Update current array byte

98B1      ;Pixel mask/# X elements
98B3      ;Incr pixel mask 1 bit right
98B6      ;1 less element to do
98B8      ;Finished this X element?
98BB      ;Continue if not
98BD      ;Current X start video adr
98BF      ;# bytes per video line
98C1      ;Bump video to next X line
98C3      ;Re-init pixel mask
98C5      ;Pull old X start video adr
98C7      ;1 less Y element to do
98C9      ;Continue if not done
98CB

```

```

Address  Jake's Comment
98CC      ;Find or assign variable
98CF      ;2nd chr variable name
98D1      ;1st chr variable name
98D3      ;Variable name to U
98D5      ;Start of array variables
98D7      ;At end of array variables?
98D9      ;FC Error, array not found
98DD      ;Found requested array?
98E0      ;Yes
98E2      ;Else get array size
98E4      ;Step to next array
98E6      ;Check if found array
98E8      ;Point to array size
98EA      ;
98EB      ;One for luck

PAINT
98EC      ;"e"?
98EE      ;No
98F0      ;Parse next chr
98F2      ;Valid start coords to $BD,$BF
98F5      ;Scale coordinates as per PMODE
98F8      ;Setup PSET...
98FA      ;...status
98FC      ;Setup color byte to paint
98FF      ;Get color #/color byte
9901      ;Save to stack
9903      ;Parse current chr
9905      ;If end stmt, paint to same clr
9907      ;Setup color byte of border
990A      ;Border color byte
990C      ;Save border color byte
990E      ;Restore color #, color byte
9910      ;Reset colr #, colr byte to mem
9912      ;Setup stop byte for paint srtn
9913      ;Fill stack with stopper info
9915      ;Set max X,Y(255,191)-> $D3,$D5
9918      ;Get pixel/video jump adr to U
991B      ;Save adr -- fregnt pixl access
991D      ;Paint leftwards from current X
9920      ;Out if on border
9922      ;Update lft border & paint right
9925      ;Set downward Y direction
9927      ;Save to memory flag
9929      ;Stack current paint posn
992C      ;Set upward
992E      ;Stack current up paint posn
9931      ;Save stock ptr for dwnwrtd paint
9934      ;Any pixels changed?
9936      ;Yes
9938      ;Else rstr stk for dwnwrtd paint
993B      ;Next paint info to do
993D      ;Clear pixel changed flag
993F      ;Save stack pointer
9942      ;Bump X coordinate past border
9944      ;Set up current X coordinate
9946      ;# pixls chnged at this Y coord
9948      ;Save current Y direction
994A      ;Finished if stopper pulled
994C      ;If painting upward
994E      ;Current Y down 1 pixel
994F      ;Past maximum Y position?
9951      ;No, continue
9953      ;Else reset Y
9954      ;Current Y at top?
9955      ;Yes, do next stacked paint
9957      ;Current Y up 1 pixel
9958      ;Save current Y coordinate
995A      ;Paint left from curnt lftmst X
995D      ;If on border
995F      ;Painted less than 3 pixels?
9963      ;If T, later skip this posn chk
9965      ;# pixels painted-2
9967      ;Save posn fr later rvrse Y chk
9969      ;Update lftmst coord & paint rt
996C      ;Stack current paint posn
996E      ;Make # pixels done...
996F      ;...negative minus 1
9970      ;Previous # pixels-# done-1
9972      ;# pixels still to check
9974      ;If# xtd brdr/done>prev# Y pxls
9976      ;Bump X coordinate
9979      ;Check if on border color
997C      ;If not at border
997E      ;Else prepare to backoff # pxls
9981      ;Backoff # pixels to do
9983      ;Backoff X coordinate to border
9986      ;Save lft border X coord in $C3
9988      ;Paint rightward from current X
998A      ;Save crnt pnt posn &cont X chk
998C      ;Bump X coordinate
998F      ;Backoff X to ths lft hand side
9991      ;Update current X coordinate
9993      ;Make # pixels...
9994      ;...negative...

```

## MICRO SOURCE

BOX 67  
10601 SABO RD.  
HOUSTON, TX 77089

### HARDWARE

#### RS232 SWITCH

ALLOWS MORE THAN ONE I/O PORT FROM YOUR CO—CO  
E.G. SWITCH 2 PRINTERS OR A PRINTER & A MODEM  
WITHOUT SWAPPING CABLES

2 WAY ..... \$24.95  
3 WAY ..... \$34.95

CASSETTE CONTROLLER..... \$19.95  
LETS YOU FIND THE START OF A PROGRAM ON TAPE  
WITHOUT PULLING CABLES.

### SOFTWARE

GRAPHICS GENERATOR..... \$6.95  
ALLOWS YOU TO DRAW ON THE SCREEN WITH SIMPLE  
KEY INPUT AND CREATES DRAW STATEMENTS TO INSERT  
INTO YOUR OWN PROGRAMS.

PERSONAL FINANCE ..... \$12.95  
EXPENSE TRACKING — CHECKBOOK BALANCING — & MORE

BASIC PLUS. (EXT 16K-32K)..... \$19.95  
SINGLE KEY MOTOR/AUDIO/RUN COMMANDS PLUS ALL  
FEATURES OF BUG TRAP & LISTA (SEE BELOW)

BUG TRAP (EXT 16K-32K)..... \$9.95  
CATCHES BASIC BUGS (SYNTAX ERRORS) PUTS YOU IN  
EDIT MODE AT POINT OF ERROR.

LISTA (EXT 16K-32K)..... \$8.95  
ALLOWS LISTING OF 1 TO 5 LINES USING ONE KEY INPUT

ROM-TO-RAM (64K)..... \$14.95  
COPIES ROM PROGRAMS INTO RAM

RAM TEST (16K-64K)..... \$6.95  
IDENTIFIES ALL BAD MEMORY LOCATIONS

ADD \$2.00 SHIPPING AND HANDLING PER ORDER  
TX RESIDENTS ADD 5% SALES TAX ON HARDWARE  
SEND CHECK OR M.O.

DON'T DELAY  
ORDER TODAY  
SATISFACTION GUARANTEED

Circle No. 210 on Reader Service Card

# COMPLETE YOUR LIBRARY OF THE Color Computer...



Add to your COLOR COMPUTER MAGAZINE collection today. Make your personal library complete and authoritative with any issues you may be missing.

Copies are available for issues published during the last twelve months—be sure to specify the issues you want. If a particular issue is out of stock, your payment will be refunded promptly.

Back issues of THE COLOR COMPUTER MAGAZINE are priced at \$6.00 each, post-paid. Outside USA, \$7.00 each.

### THE COLOR COMPUTER MAGAZINE

CN 1914 Morristown, NJ 07960

Please send issues of THE COLOR COMPUTER MAGAZINE listed below: MCBI

Issue	Qty.	Unit Price	Total Price
Payment Enclosed			\$

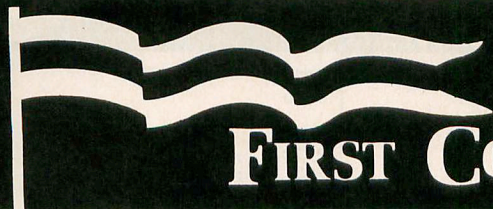
Mr./Mrs./Ms. \_\_\_\_\_ (print full name)

Address \_\_\_\_\_

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

# PROGRAM LISTING (CONT.)

Address	Jake's Comment	Address	Jake's Comment	Address	Jake's Comment
9995	;...minus 2	9A4E	;"'" apostrophe?	9AEB	;"N"
9998	;If<3 pxls; forget this pos chk	9A50	;Step over if so	9AED	;No
999A	;Else # pxls for rvrse chk to X	9A52	;"X" substring?	9AEF	;Get next play chr
999C	;Save pos for later rvrse paint	9A54	;Execute substring	9AF2	;"A"?
999E	;Cont paint from stacked info	9A58	;Check vocab	9AF4	;IF< "A", check for number
		9A5A		9AF6	;"G"?
99A1	;Hold # pixels painted left			9AF8	;If "A"->"G"
99A3	;Pull return address			9AFA	;Check number or variable
99A5	;Current X coordinate	OCTAVE	;"O"ctave?	9AFD	
99A7	;Current X, # pixels to do	9A5C	;No	9AFF	;Convert A-G to 0-6
99A9	;Current Y direction	9A5E	;Current octave	9B01	;Note to # conversion table
99AB	;Reverse Y direction	9A60	;Offset to 1	9B04	;Get # of note
99AC	;Current Y coordinate	9A62	;Take required action on octave	9B06	;More chrs in play string?
99AE	;Save direction & Y coordinate	9A63	;Offset to 0	9B08	;No, don't check sharp/flat
99B0	;Restore return address	9A65	;Octave > 5?	9B0A	;Get next play chr
99B2	;# pushes required	9A66	;FC Error if > 5	9B0D	;"#"?
99B4	;Check memory for 2 pushes	9A68	;Else setup new octave	9B0F	;Yes, sharpen note
99B7	;Restore # pixels painted	9A6A		9B11	;"+"?
99B9		9A6C		9B13	;No, check flat
				9B15	;Sharpen note #
99BA	;# pixels painted right	VOLUME	;"V"olume?	9B16	;Play it
99BC	;Pull return address from stack	9A6D	;No	9B18	;"-"? flat?
99BE	;Get left border X coordinate	9A6F	;Current volume	9B1A	;No
99C0	;Left border & # pixels painted	9A71	;Divide...	9B1C	;Flatten note #
99C2	;Current Y direction	9A73	...by 4	9B1D	;Play it
99C4	;Save curnt direction & Y coord	9A74	;Subtract 3l	9B1F	;Backup string parse pointer
		9A75	;Get new volume	9B22	;Offset to 0
99C6	;Current X coordinate	9A77	;Volume > 3l?	9B23	;>ll?
99C8	;Save to mem	9A79	;FC Error if so	9B25	;FC Error if so
99CA		9A7B	;Multiply...	9B27	;Save note
		9A7D	...by 4 to give 0-124	9B29	;Current note length
Update leftmost coordinate & paint right		9A7E	;Save adjusted volume	9B2B	;Current tempo
99CB	;Save # pixels painted	9A7F	;l27,l27=mid point for waveform	9B2D	;Multiplied together
99CD	;Get saved X coordinate	9A81	;Get high point for waveform	9B2E	;= timing decrement
99D0	;Save lft border X coord in \$C3	9A84	;Get low point for waveform	9B30	;IRQ return address to U
99D2	;Prev mid X coord=curnt X coord	9A86	;Setup new amplitude	9B32	;Current octave
99D5	;Paint rightward from current X	9A88		9B34	;>l?
99D7	;Previous # pixels painted left	9A8A		9B36	;If octave > 1
99D9	;Add # pixels painted right			9B38	;=> octave 0 & 1 table
99DB	;Bump # pixels painted right	LENGTH	;"L"ength?	9B3B	;l2 double bytes
99DE		9A8B	;No	9B3D	;Times current octave in A
		9A8D	;Current length	9B3E	;Offset X to current octave
99DF	;Save current X coord in \$C3	9A8F	;Get new length	9B3F	;Current note # 0-11
99E2	;=> decrement X coord routine	9A91	;Check length	9B41	;Times 2 bytes per table entry
99E6		9A93	;FC Error if 0	9B42	;Offset X to current note delay
99E8	;=> increment X coord routine	9A94	;New length	9B43	;Current note cycle delay
99EC	;Bump X coord	9A96	;Clear # dots after length	9B45	;Setup note length tally
99EE	;Zero constant	9A98	;Check if dotted length	9B47	;Save it
99F0	;Current X coord	9A9A	;If it was, check another	9B49	;Set D/A to mid
99F2	;If current X coordinate < 0	9A9C		9B4B	;Current hi-point amplitude
99F4	;Past maximum X position?	9A9E		9B4D	;Set D/A high
99F6	;If > 255	9A9F	;"# play chrs left	9B4F	;Set D/A mid
99F8	;Save X updt addr, # pxls done	9AA1	;Get next play character	9B51	;Current low point amplitude
99FA	;Reached border color?	9AA3	;"." dotted length?	9B53	;Set D/A low
99FC	;If on border	9AA6	;Yes	9B55	;Do next cycle
99FE	;Hi-res pixel to video	9AA8	;If not, backup string pointer	9B57	;Mid-point for D/A
9A01	;Rstr X updt adr, # pxls done	9AAA	;Set carry flag	9B59	
9A03	;Bump # pixels painted	9AAD		9B5A	;Set D/A voltage level
9A05	;Update X coordinate	9AAE		9B5D	;Delay for current note
9A07	;Keep doing X direction	9AAF	;Set # dots after note length	9B5F	;Decrement delay
9A09	;Rstr X updt adr, # pxls paintd	9AB1		9B61	;Until 0
9A0B	;# pixels painted...			9B63	
9A0D	;& to X for possible update	TEMPO	;"T"empo?		Play note, octave 2,3,4
9A0F	;Set Z flg if no pixels painted	9AB2	;No	9B64	;=> octaves 2,3,4 table-12
9A11		9AB4	;Current tempo	9B67	;12 notes per octave
		9AB6	;Update tempo	9B69	;Times current octave in A
Check if reached border color		9AB8	;Check tempo	9B6A	;Offset X to current octave
9A12	;Get pixel bit->A, video adr->X	9ABB	;FC Error if 0	9B6B	;Current note # 0-11
9A16	;Pixel bit(s) to B	9ABD	;New tempo	9B6D	;Offset X to current note
9A18	;Mask in border color	9ABF		9B6E	;Setup note length tally
9A1A	;Save pxl & border color bit(s)	9AC0	;Update info in B	9B70	
9A1C	;Pixel bit(s) from video			9B72	;Set D/A mid
9A1E	;Same as border?	PAUSE	;"P"ause?	9B74	;Current high point amplitude
9A20	;Rstr pxl & border color bit(s)	9AC3	;No	9B76	;Set D/A high
		9AC5	;Get pause parameter	9B78	;Set D/A mid
PLAY		9AC7	;Check pause	9B7A	;Current low point amplitude
9A22	;Zero constant	9ACA		9B7C	;Set D/A low
9A24	;Dummy length			9B7E	;Do next cycle
9A26	;Play stopper info to stack	9ACB	;OK if not 0	9B80	;Mid point for D/A
9A28	;Compute expression	9ACD	;FC Error	9B82	
9A2B	;For PIA U8	9AD0	;Current # dots	9B83	;Set D/A voltage level
9A2C	;Reset sel 1 & 2 for 6 bit D/A	9AD2	;Current amplitude	9B86	;Delay for current note
9A2F	;Audio on	9AD4	;Save both	9B88	;Decrement delay
9A32	;Get str pointer->X, # chrs ->B	9AD6	;Mid point for waveform	9B89	;Until 0
9A35		9AD8	;Set volume...	9B8B	
9A37	;See if prev level of play	9ADA	...to zero		Get note length
9A39	;# chrs to play to mem	9ADC	;Set no dots	9B8C	;Initialize tally
9A3B	;If done, see if more on stack	9ADE	;Play note with no volume	9B8E	;# dots after current length
9A3D	;Save play string pointer	9AE0	;Rstr previous # dots/amplitude	9B90	;If none, RTS
9A3F	;Audio off & out if end	9AE2	;Restore # dots	9B92	;2 + # dots
9A43	;Finished current play string?	9AE4	;Restore amplitude	9B94	;Times tally
9A45	;Yes, see if more play on stack	9AE6		9B95	;Divide...
9A47	;Get next chr to play	9AE7	;Align stack	9B96	;...by 2
9A4A	;";" semi colon delimiter?	9AE9	;Play pause		
9A4C	;Step over if so				



# FIRST COAST SYSTEMS

## ANNOUNCES TWO NEW DISK UTILITIES

### EASY FILE TRANSFERS WITH E.Z.T.F.R.

Send files to branch offices, friends, or main-frame storage with your 300 or 1200 baud modem. E.Z.T.F.R. handles 7-bit ASCII and 8-bit binary BASIC or machine code files. Operates by menu selections; it really is easy to use. Disk: \$24.95

### EASY FILE SECURITY WITH CRYPTON

Encrypt any disk file with this sophisticated utility that requires no sophistication to use. Enter one of 10<sup>609</sup> keys and CRYPTON's multi-dimensional digraph cipher locks your file securely. Menu driven with hi-res upper/lower case display. Disk: \$24.95

Introductory Offer: Both on one disk only \$39.95, personal checks accepted and never a shipping charge.

WIN \$200 by solving CONTEST/TXT — free on all FIRST COAST SYSTEMS disks or send for free printout. No winner after three months.

FIRST COAST SYSTEMS P.O. Box 5396 Jacksonville, FL 32207  
Programs wanted; highest royalties paid.

Circle No. 156 on Reader Service Card

### ★ 96KX-M EXPANDER ★

You have a 64K computer but can only use 32K. Our 96KX-M module allows full use of both 32K memory banks. Run BASIC in both, transfer data from one bank to the other, or continue a BASIC program into the other bank. Nothing to load just EXEC 57701 when you need the software. Does not use any of your computer's RAM. 1 yr warranty \$59.95

### ★ VIDEO REVERSER ★

Provides (1) Reversed, (2) Reversed all capitals, & (3) Normal. Solderless installation. \$19.95

### ★ DYNAMIC COLOR NEWS ★

A monthly engineering newsletter that explains how the Color Computers work in nontechnical terms. Includes Basic & Machine Language Programming, expansion techniques, questions & answers, etc. Receive discounts on our products. \$15/yr, Sample \$1

### MEMORY EXPANDERS

No trace cutting, solderless, & reversible.

ME-4 . . . D & E computers to 64K .....\$89.95  
ME-4F . . . F or 285 computers to 64K .....\$79.95

### 128K EXPANDERS

Plug-in modules mount inside your computer. Compatible with all software. Transfer variables & program control from one 64K bank to the other.

ME-128-64 Upgrades 64K computers to 128K .....\$199  
ME-128D Upgrades D & E computers to 128K .....\$269  
ME-128F Upgrades F or 285 computers to 128K .....\$259  
DYTERM — 300 to 2400 baud Terminal Program ....\$14.95  
MPM — Stack 5 programs in your computer .....\$14.95  
UNINTERRUPTED POWER SOURCE (UPS) new — Save your Programs during power failures. Battery & Electronic circuit mount under keyboard. \$59.95

★ DEALER & CLUB INQUIRIES ★ ★ FREE CATALOG ★  
24 hr. phone. Checks, VISA & MC cards. Add \$2 ship.

### DYNAMIC ELECTRONICS INC.

Box 896 (205) 773-2758  
HARTSELLE, AL 35640

Circle No. 4 on Reader Service Card



### D.I./D.O. CARD \$59.95

(DIGITAL INPUT / DIGITAL OUTPUT)

Complete HW/SW package provides control of external relays, circuits, etc. Plugs into CoCo Cartridge Connector. Applications: Process Control, Security Systems and Robotics.

Features: **Software Driver Module.**, 8 D.O. Points each capable of sinking 1.5A. An L.E.D. at each D.O. Point to indicate ON/OFF state. Fully decoded addresses. Second Port programmable for 8 D.I. or 8 D.O., or a mix. Gold interface connector. Full Support Document (i.e. Schematic, Test Program, etc.). **30 Day Warranty.**



### EXPERIMENTER'S CARD \$17.00

(6" x 5") Plugs into CoCo Cartridge Connector. Provides maximum geometry to support 2-40 pin, (or 6-16 pin), 12-16 pin and 18-14 pin sockets (or any mix desired) for wirewrapping or soldering your circuit. All CoCo Cartridge pins brought into this card via a gold-finger card edge. Includes application drawings.

Include \$3.00 for postage and handling. Send check or money order or write for more information to:

ITI  
P.O. Box 235  
Levittown, PA 19059

Circle No. 150 on Reader Service Card

# ADVENTURUS SUPREMUS 4.6B

Are you an adventurer with at least *some* experience? Are you just a little tired of games set in some repetitive science fiction or medieval type setting? Adventurus Supremus 4.6B offers a different type of adventure, realistic yet humorous. Challenging, comical, and farcical, it offers an out of the ordinary adventure experience, that's just the change that you need. Only those with at least some adventuring experience need apply.

16k Color Basic Minimum Required (On Tape)

Send 9.95 (check or M.O.) to:

Bacchus Computer Software  
143 East Michigan Avenue  
Paw Paw, MI 49079

We Pay the Shipping!

Circle No. 20 on Reader Service Card

## CHATTANOOGA CHOO CHOO SOFTWARE



Your One Stop Station Track 29  
For Computer Programs

PRICKLY-PEAR SOFTWARE

Utilities 20% Off  
for 16K, 32K, and 64K

Clone Master

This is the ultimate disk backup utility, although we can't guarantee this will back up any disk, it can handle backups of most non-standard (protected) disks we have seen. It even checks the speed of your drives for you! Don't leave your valuable software unprotected any longer. Back it up or lose it! It will adjust to any memory size and works with any version of the ROM's.

~~\$30.95~~ \$31.95

Colorkit

This adds 35 commands to BASIC. 100% ML. Reviews Nov. '83 Color Computer magazine.

Tape — ~~\$34.95~~ \$27.95

Disk — ~~\$30.95~~ \$31.95

Tape Omni Clone

Good computer practice requires the making of backup copies of software to prevent loss. In the past that has often been difficult or impossible to do. Automatically adjusts to the size memory you have. We can't guarantee that this will back up any tape, but we haven't found many it won't handle, dozens, including the toughest ones we could find. On tape, but works on disk systems.

~~\$30.95~~ \$23.95



We Pay Shipping in the U.S.!

Other programs available, send for information. TN residents add 7.25% sales tax, C.O.D. orders add \$2.00.



(615) 875-8656

P.O. Box 15892

Chattanooga, TN 37415



Circle No. 7 on Reader Service Card

76/October 1984

## PROGRAM LISTING (CONT.)

Address	Jake's Comment	Address	Jake's Comment
9B97		9C3D	
Parse string character		IRQ	
9B98		9C3E ;Zero direct...	
9B9A ;# chrs left to play		9C3F ;...page register	
9B9C ;FC Error if end string		9C41 ;In mid "play"?	
9B9E ;Play-string pointer		9C43 ;If not, check mid sound	
9BA0 ;Get next chr to play		9C47 ;Decrement note delay	
9BA2 ;Save play-string ptr		9C49 ;Update delay	
9BA4 ;Decrement play tally		9C4B ;RTI if > 0	
9BA6 ;Blank ?		9C4D ;Set delay...	
9BA8 ;Ignore spaces		9C4F ;...to zero	
9BAA		9C51 ;CCR to A	
9BAC ;Get next play chr		9C53 ;Align stack to return to U	
9BAE ;"+"?		9C56 ;Reset E flag	
9BB0 ;Do B+1		9C58 ;Replace CCR	
9BB2 ;"- "?		9C5A	
9BB4 ;Do B-1		Note-to-number conversion table	
9BB6 ;">"?		9C5B ;A B	
9BB8 ;Do B*2		9C5D ;C	
9BBA ;"<"?		9C5E ;D E	
9BBC ;Do B/2		9C60 ;F G	
9BBE ;"="?		Cycle delay table, octave 0	
9BC0 ;Yes, get value from variable		9C62 ;C	
9BC2 ;A = ASC "0"-"9"?		9C63 ;C#	
9BC5 ;FC Error if not "0"-"9"		9C65 ;D	
9BC7 ;Init ASCII # = 0		9C67 ;D#	
9BC8 ;Convert ASCII # to integer		9C6A ;E	
9BCA ;Save it		9C6B	
9BCC ;Current #		9C6C ;F	
9BCE ;Times 10		9C6D	
9BCF ;D > 255 ?		9C6E ;F#	
9BD0 ;FC Error if so		9C6F ;G	
9BD2 ;Add ASCII #		9C71 ;G#	
9BD4 ;FC Error if B > 255		9C73 ;A	
9BD6 ;More chrs in string?		9C75 ;A#	
9BD8 ;RTS if not		9C78 ;B	
9BDA ;Get next play chr		Cycle delay table, octave 1	
9BDD ;A = ASC "0"-"9"?		9C7A ;C	
9BE0 ;If "0"-"9"		9C7C ;C#	
9BE2 ;Else 1 more chr to re-scan		9C7E ;D	
9BE4 ;Current play pointer		9C80 ;D#	
9BE6 ;Backoff one place		9C82 ;E	
9BE8 ;Restore current play pointer		9C84 ;F	
9BEA		9C86 ;F#	
9BEB ;FC Error		9C88 ;G	
9BEE ;B+1		9C8A ;G#	
9BEF ;FC Error if overflow		9C8C ;A	
9BF1		9C8E ;A#	
9BF2 ;B > 0?		9C90 ;B	
9BF3 ;FC Error if too small		Cycle delay table, octave 2	
9BF5 ;B-1		9C92 ;C C# D	
9BF6		9C95 ;D# E	
9BF7 ;B > 0?		9C97 ;F	
9BF8 ;FC Error if too small		9C98 ;F# G G#	
9BFA ;B/2		9C9B ;A	
9BFB		9C9C ;A#	
9BFC ;B > 127?		9C9D ;B	
9BFD ;FC Error if too big		Cycle delay table, octave 3	
9BFF ;B*2		9C9E ;C	
9C00		9C9F ;C#	
9C01		9CA0 ;D	
9C03 ;Check syntax OK for variable		9CA1 ;D#	
9C05 ;FPACL to D		9CA2 ;E	
9C08		9CA3 ;F	
9C0A ;Execute-string varptr to FPACL		9CA4 ;F# G	
9C0D ;# pushes required		9CA6 ;G# A	
9C0F ;Check mem for 2 pushes		9CA8 ;A# B	
9C12 ;# play chrs left after string		Cycle delay table, octave 4	
9C14 ;Play-string ptr after string		9CAA ;C C#	
9C16 ;Save previous play to stack		9CAC ;D D#	
9C18 ;Continue play main code		9CAE ;E	
Syntax check variable name		9CAF ;F	
9C1B ;Current play pointer		9CB0 ;F#	
9C1D ;Save ptr to execute-variable		9CB1 ;G	
9C1F ;Get next play chr		9CB2 ;G# A A#	
9C22 ;A = "A" - "Z"?		9CB5 ;B	
9C25 ;FC Error if not ASCII A-Z			
9C27 ;Get next play chr			
9C2A ;";"?			
9C2C ;Check until semi colon found			
9C2E ;Restore pointer to variable			
9C30 ;Get current Basic parse ptr			
9C32 ;Save on stack			
9C34 ;Save play-var.ptr to parse ptr			
9C36 ;Variable to FPACL			
9C39 ;Basic parse pointer from stack			
9C3B ;Rstr Basic parse ptr to memory			

# SECTION 14


Address	Jake's Comment
DRAW	
9CB6	;Zero constant
9CB8	;Dummy string length
9CBA	;Save as draw-function stopper
9CBC	;Setup PSET status
9CBE	;Init draw-updt flg & blank flg
9CC0	;Setup default color
9CC3	;Compute expression
9CC6	;Compute str ptr->X, # chrs->B
9CC9	
9CCB	;Get next draw chr
9CCE	;Get numrc parametr or variable
9CD1	;See if prev lvl of draw to end
9CD3	;# chrs to scan
9CD5	;If done with this string
9CD7	;Else save string pointer
9CD9	;RTS if encountered stopper
9CDD	;Finished current draw string?
9CDF	;Yes, see if more 2 draw on stk
9CE1	;Get next chr to draw
9CE4	;";" semi colon delimiter?
9CE6	;Step over if so
9CE8	;'"' apostrophe?
9CEA	;Step over if so
9CEC	; "N" no update?
9CEE	;No
9CF0	;Else flag no update
9CF2	;Do next chr
9CF4	; "B"lank?
9CF6	;No
9CF8	;Else flag blank
9CFA	;Do next chr
9CFC	; "X" execute substring?
9CFE	;Yes
9D02	; "M"ove draw position?
9D04	;Yes
9D08	;Else save parsed chr
9D0A	;Default offset = 1
9D0C	;More chrs in string?
9D0E	;No, use default offset
9D10	;Get next draw chr
9D13	;A = "A" - "Z"?
9D16	;Save alpha chr status
9D18	;Backup string parse ptr
9D1B	;Alphabetic chr?
9D1D	;Check command if alpha chr
9D1F	;Get offset to B
9D21	;Current command
9D23	; "C"?
9D25	;Color
9D27	; "A"?
9D29	;Angle
9D2B	; "S"?
9D2D	;Scale
9D2F	; "U"?
9D31	;Up
9D33	; "D"?
9D35	;Down
9D37	; "L"?
9D39	;Left
9D3B	; "R"?
9D3D	;Right
9D3F	; "E"?
9D41	;45 deg
9D43	; "F"?
9D44	;135 deg
9D46	; "G"?
9D47	;225 deg
9D49	; "H"?
9D4A	;315 deg
9D4C	;FC Error otherwise
Color	
9D4F	;Get specified color
9D52	;Save current foreground color
9D54	;Setup color byte in \$B5
9D57	;Continue parse
Angle	
9D59	;Angle > 3?
9D5B	;FC Error if so
9D5D	;Save draw angle
9D5F	;Continue parse
Scale	
9D61	;Scale > 62?
9D63	;FC Error if so
9D65	;Setup draw scale
9D67	;Continue parse
315 degrees	
9D69	;Zero MSB X offset
9D6A	;Negate X offset to D

Address	Jake's Comment
135 degrees	
9D6C	;9D6D = CLRA ;Zero MSB X offset
9D6E	;X and Y vectors equal
9D70	;Draw vector
45 degrees	
9D72	;Zero MSB X & Y offsets
9D73	;Save X offset in X
9D75	;Negate offset
9D77	;Negative Y offset to D
9D79	;Draw vector
225 degrees	
9D7B	;Zero MSB X & Y offsets
9D7C	;Positive Y offset to X
9D7E	;Negate X offset in D
9D80	;Draw vector
Right	
9D82	;Zero MSB offset
9D83	;Zero X offset
9D85	;Draw vector
Left	
9D87	;Zero MSB X offset
9D88	;Negate X offset to D
9D8A	;Zero Y offset & draw
Down	
9D8C	;Zero MSB Y offset
9D8D	;Zero X offset & draw
Up	
9D8F	;Zero MSB Y offset
9D90	;Negate Y offset
9D92	;Zero X offset
9D94	;X offset to D, Y offset to X
9D96	;Draw vector
Execute substring	
9D98	;Check variable name syntax
9D9B	;# pushes
9D9D	;Check enough mem for 2 pushes
9DA0	;# chrs in current string
9DA2	;Ptr to current string position
9DA4	;Save on stack
9DA6	;Start on this variable
Perform required scale	
9DA9	;Current scale
9DAB	;If none specified
9DAD	;Zero MSB scale
9DAE	;Scale->X, offset->D
9DB0	;Save sign of scale
9DB2	;OK if positive
9DB4	;Else negate for multiply
9DB6	;16 bit multiply D * X
9DB9	;LSW to D
9DBB	;Divide...
9DBC	;...by two
9DBD	;And again
9DBE	;= divide by 4
9DBF	;Positive scale?
9DC1	;RTS if positive scale
9DC3	;Else...
9DC4	;Negate...
9DC5	;...scaled offset in D
9DC7	
9DC8	;Place unmodified offset to D
9DCA	
Draw vector (X offset in D, Y in X)	
9DCB	;Save X offset
9DCD	;Perform required Y scale
9DCF	;Restore X offset
9DD1	;Save scaled Y offset
9DD3	;Perform required X scale
9DD5	;Restore scaled Y offset
9DD7	;Draw angle/scale
9DDA	;Save angle
9DDC	;Angle = 0?
9DDE	;Yes, vectors OK
9DE0	;Else change X/Y offsets
9DE2	;Negate X offset
9DE4	;Decrement angle
9DE6	;Check if angle done
9DE8	;Restore stack
9DEA	;Default X coordinate = 0
9DEC	;Scaled Xoffset+prev Xend coord
9DEE	;Use default 0 if X < 0
9DF0	;Else move new X end coord to U
9DF2	;Scaled Y offset
9DF4	;Default Y coordinate = 0
9DF6	;Scaled Yoffset+prev Yend coord

PROBLEM SOLVING

A COLLECTION OF TIPS, ROUTINES, IDEAS AND PROGRAMMING SECRETS. DISABLING BREAK KEY-DISABLING LIST. DISABLING RESET-COLDSTARTING. CSRAVE A MACHINE LANGUAGE PROGRAM. LOTS OF POKES AND PEEKS AND MUCH MORE! \$9.95

---




**DETECTIVE**

THE POPULAR DETECTIVE GAME NEVER GROWS OLD! HAS A NEW CRIME-NEW SUSPECTS-NEW SCENE-NEW WEAPON-NEW CLUES NEW ALIBIS-NEW MOTIVES NEW VICTIM AND CRIMINAL EACH TIME IT IS PLAYED.

16K EXT. TAPE \$21.95

TRIVIA

---




**GURU**

AMERICA'S FAVORITE PARTY GAME WITH A FEW TWISTS. 16K 1 TO 4 PLAYERS 32K 1 TO 8 PLAYERS 16K EXT. TAPE \$19.95 32K EXT. TAPE \$24.95

COCO'S POPULAR ARTIFICIAL INTELLIGENCE EXPERIENCE YOUR OWN PERSONAL GURU! 16K EXT. TAPE \$21.95

---



**DIETITIAN**

CONVERTS FOOD INTO CALORIES-KEEPS TRACK OF YOUR CALORIE INTAKE. GIVES CALORIE NEEDS FOR YOUR WEIGHT-AGE-SEX AND ACTIVITY LEVEL. 16K EXT. TAPE 21.95

**DIETITIAN II**

AS ABOVE WITH OPTIONAL PRINTER ROUTINE AND FAST FOODS BY BRAND NAMES. 32K EXT. TAPE \$29.95

VISA SHIPPING PAID MasterCard

**NORTHGLENN SOFTWARE COMPANY**

BOX 33113  
NORTHGLENN, CO. 80233  
(303) 451-8647

Circle No. 44 on Reader Service Card

## DATA CASSETTES

(LABELS INCLUDED)

C-10	\$6 95/DOZ	25/\$13 95
C-20	\$8 50/DOZ	25/\$15 95
C-30	\$9 95/DOZ	25/\$17 95

**SPESHUL: 15 TAPES, HARD BOXES, LABELS & STORAGE BOX**

C-10 - \$12 95 C-20 - \$13 95  
C-30 - \$14 95

LABELS: WH OR COLOR \$2 75/100  
HARD BOXES 25/\$4 00 100/\$15 00

## SENTINEL DISKS

SS/DD 10/\$1 79 EA 50/\$1 65 EA

## LIBRARY CASES

WITH DISKS \$2 00 EA.

## BIB HEAD CLEANER

KIT: (WET/DRY) - \$8 95

## DISK FILE CASE

HOLDS 50 DISKS - \$15 95

**ALL ITEMS 100% GUARANTEED**

**MAKE CHECK PAYABLE TO:**  
**DALLAS COX**

ADD \$2 50 S/H-IN MI ADD 4% TAX

**THE SOFTWARE HOUSE**  
9020 HEMINGWAY  
REDFORD, MICHIGAN 48239  
CALL FOR QUANTITY PRICES  
**(313) 937-3442**

Circle No. 64 on Reader Service Card  
Color Computer/77

# PROGRAM LISTING (CONT.)

```

Address  Jake's Comment
9DF8      ;Use default 0 if Y < 0
9DFA      ;Else move new Y end coord to X
9DFC      ;X > 255?
9E00      ;If not
9E02      ;Else use 255 for X
9E05      ;Y > 191?
9E08      ;If not
9E0A      ;Else use 191 for Y
9E0D      ;Previous X end coordinate
9E0F      ;Use as current X coordinate
9E11      ;Previous Y end coordinate
9E13      ;Use as current Y coordinate
9E15      ;Line Y end coordinate
9E17      ;Line X end coordinate
9E19      ;No update in effect?
9E1B      ;Yes, else...
9E1D      ;Prev Y end coordinate
9E1F      ;Prev X end coordinate
9E21      ;Scale coordinates as per PMODE
9E24      ;Blank?
9E26      ;If so, skip draw
9E28      ;Draw line using memory coords
9E2B      ;Reset no update flag
9E2D      ;Reset blank flag
9E2F      ;Continue parsing draw string

Move
9E32      ;Get next draw chr
9E35      ;Save sign chr
9E37      ;Get offset to D
9E3A      ;Save offset
9E3C      ;Get next draw chr
9E3F      ;", " comma after offset?
9E41      ;FC Error if not
9E45      ;Get Y offset to D
9E48      ;Y offset to X
9E4A      ;X offset to U
9E4C      ;Initial X sign
9E4E      ;"+"?
9E50      ;If positive
9E52      ;"-"?
9E54      ;If neither, use absolute
9E56      ;X offset to D
    
```

```

Address  Jake's Comment
9E58      ;Draw vector

Get offset to D
9E5B      ;Get next draw chr
9E5E      ;"+" positive offset?
9E60      ;Yes
9E62      ;"- negative offset
9E64      ;Yes
9E66      ;Else backup strg ptr, assume +
9E69      ;Zero for positive offset
9E6A      ;Non-zero for negative
9E6C      ;Get # parameter to B
9E6F      ;Pos/neg status
9E71      ;Positive?
9E72      ;RTS if positive offset
9E74      ;Else...
9E75      ;Negate offset...
9E76      ;...in register D
9E78

Circle subarc shape table
9E79      ;X constant
9E7B      ;Y constant
9E7D      ;etc..

9E80
9E81
9E84
9E87
9E88
9E89
9E8B
9E8C
9E8F
9E92
9E94
9E95
9E97
9E99
9E9C
9E9E      ;9E9D = CMPA #40 ; "(" ?
9E9F      ;If not "("
9EA1      ;Parse next chr
9EA3      ;Max coords =255,191 in $D3,$D5
    
```

```

Address  Jake's Comment
9EA6      ;Get center coords to $BD,$BF
9EA9      ;Scale coords as per PMODE
9EAC      ;X center coordinate
9EAE      ;Save X center coordinate
9EB0      ;X center coordinate
9EB2      ;Save Y center coordinate
9EB4      ;Syntax check ", "
9EB7      ;Get # <65536 to X (radius)
9EBA      ;=> radius
9EBD      ;Save radius
9EBF      ;Scale as per PMODE
9EC2      ;Setup PSET for...
9EC4      ;...default color
9EC6      ;Setup line color to use
9EC9      ;Default height/width ratio =1
9ECC      ;Parse current chr
9ECE      ;If end of statement
9ED0      ;Syntax check ", "
9ED3      ;Compute # to FPAC1
9ED6      ;Times...
9ED8      ;256...
9EDA      ;... in FPAC1 exp
9EDC      ;Get # <65536 to X (h/w)
9EDF      ;Current PMODE
9EE1      ;PMODE = 4 ?
9EE3      ;No
9EE5      ;Else h/w...
9EE7      ;...times 2
9EE9      ;Save h/w ratio
9EEB      ;Pset/circle start flag
9EED      ;Setup PSET
9EEF      ;Close gate for circle draw
9EF1      ;Get start arc/subarc
9EF4      ;Save start point
9EF6      ;Get end arc/subarc
9EF9      ;Save end point
9EFB      ;Start point...
9EFD      ;...to D
9EFF      ;Line X end coordinate
9F01      ;= current X coordinate
9F03      ;Line Y end coordinate
9F05      ;= current Y coordinate
9F07      ;=> table
    
```

## ★B-5 Software★

**B-5** believes your Color Computer is a unique teaching tool. Our programs have been created by teaching professionals to give your children the help they need. B5 incorporates fun with basic learning skills.

### EDUCATIONAL PROGRAMS

- 4★CLOCK**  
Grades 1-4  
16K Cass. \$24.95; 32K Disk \$26.95
- 4★BORROW**  
Grades 2-4  
16K Cass. \$19.95; 32K Disk \$21.95
- 4★MONEY**  
Grades 2-4  
16K Cass. \$19.95; 16K Disk \$21.95
- 4★CARRY**  
Grades 2-4  
16K Cass. \$19.95; 32K Disk \$21.95
- 4★MATHFACT**  
Grades 1-5  
16K Cass. \$16.95; 32K Disk \$18.95
- SKIP COUNTING**  
Grades 1-4  
16K Cass. \$16.95; 32K Disk \$18.95

- QUESTION**  
Grades 1-8  
16K Cass. \$19.95; 32K Disk \$21.95
- HANGWORD & SCRAMBLE**  
Grades 1-8  
16K Cass. \$14.95; 32K Disk \$16.95
- SPELLING**  
Grades 1-8  
16K Cass. \$16.95; 32K Disk \$18.95
- KEYBOARD**  
Grades 1-8 16K Cass. \$19.95;  
32K Cass. \$24.95; 32K Disk \$26.95
- ABC's**  
Grades K-1  
16K Cass. \$9.95; 16K Disk \$11.95

All B-5 programs require Extended Basic.

**BROCHURES UPON REQUEST**  
**Ask your Dealer for a Demonstration today!**

If unavailable locally, send check or money order to:

### DATA TAPE LISTINGS

Data Tapes may be used with other B5 programs.  
*They cannot be used alone.*

**Use With Keyboard Program**  
**KEYBOARD PHONIC DRILL** - letter, word and sentence finger drills using common vowel and consonant combinations. \$8.95

**Use With Keyboard, Spelling or Hangword Programs**  
**DOLCH WORDS** - 273 words used most often in beginning readers. \$8.95

**GRADE LEVEL SPELLING** - over 300 words on each tape; each lesson follows a phonic rule. Available for grades 2, 3, 4, 5, and 6. \$8.95 per grade level.

**SPACE WORDS** - over 300 words to challenge and motivate the superior speller. Grades 4-8. \$8.95

**ADULT WORDS** - most often misspelled words. Highly challenging. \$8.95

**Use With Questions Program**  
**NOUNS AND VERBS** - 4 lessons on nouns and 4 on verbs. Grades 3-5. \$8.95

**READING COMPREHENSION** - lessons build from simple to complex. Grades 2-4.

- Main Idea .....\$10.95
- Sequencing .....\$10.95
- Fact & Opinion .....\$10.95
- Cause & Effect .....\$10.95
- Complete Series of 4.....\$39.95

**B5 Software**  
1024 Bainbridge Place  
Columbus, Ohio 43228  
(614) 276-2752

Free Shipping in U.S.A. & Canada  
(Ohio residents add 5.5% Sales Tax)



Address	Jake's Comment	Address	Jake's Comment	Address	Jake's Comment
9F0A	;2nd half of quarter-circle?	9F5D	;Plus line X end	9FB2	;MSW to X
9F0C	;No, subarc is correct	9F5F	;If too big, use maximum X	9FB4	
9F0E	;Else do subarcs backwards	9F61	;X < max (255)?		16-bit multiply D * X -> Y,U
9F0F	;Get positive again	9F64	;OK if < 255	9FB5	
9F11	;B * 4 byts...	9F66	;Else use 255	9FB7	;Zero most signfcnt byte result
9F12	;... per table entry	9F68	;Line X end coordinate	9FB9	;Least significant byte of X
9F13	;Align table pointerr	9F6A	;Current arc #	9FBB	;Multiplied by LSB D
9F15	;Save table pointer	9F6C	;Bottom of circle?	9FBC	;Save to LSW result
9F17	;Get Y offset from center	9F6E	;Yes, Y adds to radius	9FBE	;LSB D to A, MSB X to B
9F1A	;Restore table pointer	9F70	;Get circle Y center coordinate	9FC0	;Multiply LSB D * MSB X
9F1C	;Point to X offset	9F72	;Minus line Y end offset	9FCL	;Add poss carry from LSB * LSB
9F1E	;Save Y offset	9F74	;If result positive	9FC3	;Poss carry from B to A
9F20	;Get absolt X offset from centr	9F76	;Else zero...	9FC5	;Save mid result
9F23	;Restore Y offset	9F77	;...Y coordinate	9FC7	;MSB of D
9F25	;Get current arc #	9F78		9FC9	;LSB of X
9F27	;Extract quarter	9F7A	;Get circle Y center coordinate	9FCB	;Multiply
9F29	;OK if first quarter	9F7C	;Add line Y end offset	9FCC	;Add to prev LSB * MSB
9F2B	;Fourth quarter	9F7E	;If carry, use max	9FCE	;Update mid result
		9F80	; < max (191)?	9FD0	;If no carry
9F2D	;OK if fourth quarter	9F83	;OK if less	9FD2	;Else reflect crry to MSB rsult
9F2F	;Else swap offsts fr LHS circle	9F85	;Else use max value Y = 191	9FD4	;MSB D
9F31	;Line X end	9F87	;Save line Y end coordinate	9FD6	;MSB X
9F33	;Y offset to X	9F89	;This the circle start?	9FD8	;MSB * MSB
9F35	;H/W ratio	9F8B	;If so, don't draw line	9FD9	;+ possible crry from LSB * MSB
9F37	;Y offset * H/W ratio	9F8D	;Draw line using memory coords	9FDB	;Update MSB
9F3A	;MSB->A,B	9F8F	;Arc/subarc	9FDD	PC
9F3C	;Y offset overflow?	9F91	;Open gate to start drawing	9FDF	;Draw line using memory coords
9F3D	;FC Error if so	9F93	;If just opened, don't chk end		
9F41	;MSB line Y end coordinate	9F95	;Circle end point?	9FE2	;Default zero
9F43	;LSB to A	9F98	;If so, finished circle	9FE3	;Parse current chr
9F45	;LSB line Y end coordinate	9F9A	;Bump # current subarc	9FE5	;If end of statement
9F47	;Current circle arc #	9F9B	;Start next arc?	9FE7	;Syntax check ", "
9F49	;1st quarter?	9F9D	;No,do next subarc	9FEA	;Compute # expression to FPACL
9F4B	;Yes, X to RHS radius	9F9F	;Else bump to next arc	9FED	;Times...
9F4D	;Fourth quarter?	9FA0	;Starting at subarc 0	9FEF	;64...
9F4F	;If so, X to RHS radius	9FA1	;Arc is modulo 8	9FF1	;...in FPACL exp
9F51	;Circle centr X centr coord	9FA3	;Do next subarc	9FF3	;FPACL to D
9F53	;Minus line X offset	9FA6		9FF6	;Extract 0-63
9F55	;OK if no carry	9FA7	;Circle radius	9FF8	;To A
9F57	;Else use...	9FA9	;Subarc multiplier from table	9FFA	;Extract 3 bits = subarc #
9F58	;...zero coordinate	9FAB	;Radius OK if @ X/Y extremities	9FFC	;Shift...
9F59		9FAD	;Offset to 0	9FFD	;...to get 3 bit...
9F5B	;Circle X center coordinate	9FB0	;Radius * constant	9FFE	;...arc # to A
				9FFF	

# It's time we put our chips on the table

... and showed you our best deals on computer hardware.

## HARDWARE SPECIALS

Extended Basic w/bk	\$ 39.95
64k (DEI) Memory Upg	\$ 59.95
Amdek Disk Drives	\$499.95
26-3029 CoCo Drive 0	\$309.95
26-3023 CoCo Drive 1	\$239.95
HJL Keyboard (D,E,F,2)	\$ 79.95
Super Pro Keybd. (D,E)	\$ 64.95
26-3127 64k Extended CoCo 2	\$209.95
26-3026 16k Standard CoCo2	\$119.95
26-3027 16k Extended CoCo2	\$159.95
26-3801 Model 100 8k	\$549.95
26-3816P 8k Upgrade Model 100	\$ 99.95
26-1192 CGP-115 Printer/Plotter	\$169.95
26-1271 DMP-110 Printer 50 cps	\$349.95
C. Itoh 8510 AP Printer 120 cps	\$399.95
Gorilla/NAP Video Monitor (Grn)	\$109.95
Video Monitor Adapters	CALL
26-3024 RS Multi-Pac Interface	\$ 89.95
Botek Ser/Par Interface	\$ 69.95

## ACCESSORIES

RS D.C. Modem IB	\$ 89.95
Novation J-Cat Modem	\$129.95
RS D.C. Modem II	\$179.95
Signalman MK X Modem	\$179.95
Hayes SM 300 Modem	\$239.95
USR Password 1200/300	\$429.00
CoCo Switcher	\$ 39.95
Elephant Disks ssdd	\$ 22.95
26-3030 OS-9 (64k)	\$ 64.95 (disk)
Basic-09 (req. OS-9)	\$ 87.95 (disk)
"C" Compiler (OS-9)	\$ 87.95 (disk)
FHL O-Pak (req. OS-9)	\$ 34.95 (disk)
Elite Word	\$ 59.95 (d&c)
Elite Calc	\$ 59.95 (d&c)
Color Term Plus	\$ 29.95 (cass)

NEW! Dual Double Sided Drives including case, power supply & cable \$475.00

NEW! 26-3128 64K Direct Video CoCo2 \$219.95

## MSI SOFTWARE

MSI DISKUTIL	NEW	\$19.95
COLOR FINANCE 1		\$49.95
COLOR FINANCE 11	NEW	\$69.95
MSI NAMEFILE		\$24.95
MSI CALENDAR	NEW	\$19.95

Call for prices and availability of your favorite software and hardware. All advertised items subject to availability. Prices do not include shipping and handling. All of the above units are covered by our 120 day carry-in warranty.

TRS-80 Trademark Tandy Corporation. Prices subject to change without notice. Write for our FREE newsletter.

**TOLL FREE TENNESSEE 1-800-545-2502 | TOLL FREE 1-800-251-5008**

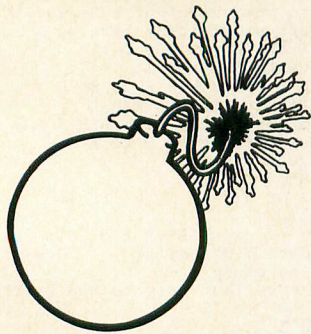


**DELKER ELECTRONICS, INC.**  
P.O. Box 897  
Dept. T  
408C Nissan Blvd.  
Smyrna, TN 37167



**800-251-5008**  
**800-251-2502 (TENNESSEE)**  
**615-459-2636 (TENNESSEE)**  
**615-254-0088 (NASHVILLE)**

BY TERRY KEPNER



**I want to know how to auto-start Basic (Extended) and machine code programs loaded from tape or disk.**

— Richard Thomas,  
Ferndale, WA

Unfortunately, making a Basic program auto-start isn't possible since the CLOAD command automatically returns control to Basic. The only way around this is to write a short machine code program that loads into your computer and automatically executes and loads the Basic program using its own cassette routine. After loading the Basic program, your machine code routine would initialize Basic with the appropriate program information (primarily where it starts and ends), then transfer control to the Run command of the ROM.

The ROM CLOAD code is disassembled on page 72 of the August, 1983 issue of **The Color Computer Magazine**. RUN's code is on page 60 of the October, 1983 issue.

One method for making a machine code program execute automatically is to intercept the Parse routine at 00A9H and 00AAH, replacing the current information (AA1AH for Color Basic 1.0) with your program's start address. This will load your program and return to the OK prompt. Now hit any key, then press Enter, and your program executes immediately.

Another method is to change the IRQ routine vector at 010DH

and 010EH, replacing the A9BCH with your program's address. The next timing pulse from the clock after loading your program will result in the execution of your program. Your program's first instruction should be to disable interrupts or the next interrupt will restart your program. With interrupts disabled, reload the IRQ link address with A9BCH and re-enable the interrupts.

Perhaps the best routine, if you don't plan to use the ROM print routine, is to load 0168H and 0169H with your program's address. After loading your program the computer tries to print OK on the screen and, instead of being sent to the ROM print routine, your program takes over. If you want to use the ROM print routine in your program you'll have to reload the link address with A282H (if you have standard Basic) or 8273H for Extended Basic. The disadvantage is that if your program misloads and the computer tries to print an error message, that portion of your program that has loaded so far will be executed anyway, leading to confusing results (such as: what if only the last 256 bytes didn't load — you would think the program loaded perfectly).

To do any of these, include an origin statement (ORG) in your program's source code specifying the desired linking address, and load it using an FDB instruction with your program's execution address. Use a second ORG immediately afterwards to specify your program's real starting address. Now when you load the program it'll start automatically (within the parameters explained above).

If you want the Reset button to restart your program whenever it's pressed, have your program load the RSTVEC linking address, 0072H and 0073H, with the program location where you want control passed. (This *must* be a NOP instruction for this method to work.) Now when someone presses the Reset button, your program is invoked instead of returning to the OK prompt. This could

also be used for first time execution of your program.

All these addresses are explained in "The Map" by Jake Commander, April, 1983.

**I have a Radio Shack Multi-pak Interface for my Color Computer (64K, D-board). It seems to work when hooked directly to the Color Computer expansion port but there isn't enough room on my desk for both the computer and the Multi-pak unit.**

**To solve this problem I constructed a 38-inch interface cable, bringing all 40 lines and two additional ground lines from the computer to the Multi-pak, but it didn't work. The wiring is correct because it works fine for individual cartridges and the disk controller.**

**I tried a 12-inch cable, but had the same results. Wrapping cable with grounded aluminum foil helped, but wasn't 100 percent reliable.**

**Radio Shack only supports the Multi-pak connected directly to the computer.**

**Can you help? I guess one or more of the clock signals is out of synchronization because of RFI.**

— John Gallagher,  
Williamson, NY

The problem is cross-talk interference between the lines in the cable. You need to use an IDC "ground plane" 40-line cable, like the one Radio Shack used with the Model I and its Expansion Interface, giving special attention to the ground clips used on the Color Computer and the Multi-pak unit.

One source of the cable, sold by the foot without connectors, is 3M, Wire and Cable Division, 225-4 Sc 3M Center, St. Paul, MN 55144. Another source is W.L. Gore & Assoc., 555 Paper Mill Rd., Newark, DE 19711. Other sources may be available.

**I want to take my Color Computer with me to England this year. The UK domestic power supply is 220V, 50Hz. Can I run my equipment using a simple transformer, like the one Radio Shack sells, or will I have to change the frequency to 60Hz? My computer is a 64K E-board, with twin Tandon disk drives, a Gemini 10X printer, an Amdek Color 1 Plus monitor, and a Radio Shack tape recorder.**

**I've been told that the computer reduces the voltage to 12Vdc, but I'm unsure whether any chips are frequency dependent after the conversion to 12 volts. As for the rest of the equipment, does any run on 12Vdc, and if not, is any of it frequency dependent?**

— T.A. Pearson,  
Omaha, NB

No problem, use a simple 220 volt to 120 volt converting transformer (make sure it's for electronic equipment and not motor equipment). The Color Computer uses a crystal-controlled frequency oscillator to generate everything it needs. The 60Hz line frequency is filtered out.

Almost all your other equipment uses internal electronics to generate frequencies. The Amdek monitor, however, uses the 60Hz line frequency for timing on the raster scan so use an American battery-powered TV, which generates the 60Hz frequency internally. Using a UK TV won't work because of the difference in the number of scan lines on the video tube and the method used to interpret the incoming TV signal (American NTSC versus European PAL).

You'll need a fairly hefty transformer to drive all these, so check the amperage requirements of the equipment, and get a transformer capable of handling the load (they should have a power rating label on them, or it will be listed in a technical manual).

# One Stop Shopping For the Color Computer

## Disk Charger

from

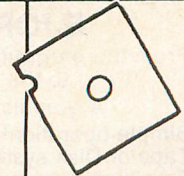
### REITZ™

Make your disk system run  
up to 6 times faster!

For units with Non  
Radio Shack Drives **\$21.95**

## Reitz™ Diskettes Lifetime Guarantee 10 pack with labels and Plastic Storage Box!

10 SS/DD . . . . \$24.95 includes TYVEC Sleeve  
10 DS/DD . . . . \$34.95  
100 Bulk Packed SS/DD Disks only **\$1.90/ea.**



**FLIP IT!**  
Punch  
your  
disks  
for  
double  
the  
storage

**\$995**

## REITZ™ Serial to Parallel CONVERTER

Transfer data to your printer  
at up to 9600 BAUD

**\$5995**

INTRODUCING:

## MUSICA III!

from Speech Systems  
Now print music on your EPSON



or Gemini Printer! **\$3995** disk **\$3495** tape

We also carry software from these fine vendors:

Computerware	Softlaw	Skyline
Prickly Pear	Eigen	Sectral Assoc.
Tom Mix	Double Density	Moreton Bay

1-(419)-537-9533

1-(419)-537-1432



3170 W. Central Ave.  
Westgate Meadows Shopping Center  
Toledo, Ohio 43606



Please include phone number with all orders. Include \$5.00 shipping for all hardware orders and \$2.00 for all software orders. Ohio residents please add 6% state sales tax.

Circle No. 101 on Reader Service Card

## DISKETTES

FREE SHIPPING  
ON ORDERS OF \$40.00 OR MORE



**1-800-334-DISK**



(617) 839-4404 MASS. RES.

WE CARRY 8" DISKS—CALL FOR PRICES

DISK TYPE PRICES PER EACH 10 PER BOX	MEMOREX <small>A Burroughs Company</small>	OMNI	wabash <small>THE WABASH COMPANY</small> HIGH QUALITY LOW PRICE
5 1/4" Sing.-Side Dbl.-Den.	#6501 \$2.19 EA.	#5121 \$1.99 EA.	#M13A \$1.79 EA.
5 1/4" Reversible Dbl.-Den.	#6505 \$2.65 EA.	#5321 \$2.79 EA.	—
5 1/4" Dbl.-Side Dbl.-Den.	#6503 \$2.95 EA.	#5221 \$2.39 EA.	#M14A \$2.39 EA.
5 1/4" Sing.-Side 96TPI-Quad.	#6513 \$3.10 EA.	#5141 \$2.59 EA.	Sing.-Side Sing.-Den. \$1.59 EA.
5 1/4" Dbl.-Side 96TPI-Quad.	#6514 \$3.95 EA.	#5241 \$3.29 EA.	#M11A
3 1/2" NEW	#6100 \$4.49 EA.	HEAD CLEANING KITS \$12.95 EA.	

STOCK #/DESCRIPTION      PRICE      S.&H. / TAX      TOTAL

VISA  Mastercard  MONEY ORDER  CHECK ENCLOSED  C.O.D. (Add \$1.85)

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

Name \_\_\_\_\_

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

Phone \_\_\_\_\_

Add \$2.00 Shipping & Handling on orders less than \$40.00. Mass Residents add 5% tax

**MAGNETICS, INC.**  
P.O. BOX 98  
SOUTH GRAFTON, MA 01560

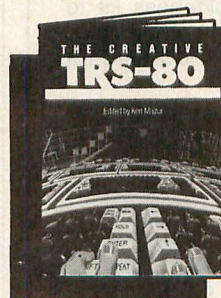
Circle No. 148 on Reader Service Card

## YOUR COMPLETE GUIDE FOR THE TRS-80

THE CREATIVE TRS-80 is the complete 408 page guide covering everything from games to business applications for the TRS-80®! Based on articles from CREATIVE COMPUTING magazine, it includes: ■ Games with full-length program listings ■ Personal productivity programs and discussions on expense management, record keeping and word-processing

THE CREATIVE TRS-80,  
edited by Ken Mazur.  
8 1/2" x 11", softcover,  
illustrated. ONLY \$15.95.

■ Educational programs for pre-schoolers, elementary and high school students ■ Business and investment programs ■ In-depth graphics, software evaluations and hardware reviews ■



THE CREATIVE TRS-80 will help expand the uses of your machine and provide hours of learning and fun!

**For faster delivery, PHONE TOLL FREE, 9 am-5 pm EST: 1-800-631-8112 (In NJ only 201-540-0445)**

Also available at your local bookstore or computer store.

**CREATIVE COMPUTING PRESS**  
Dept.NH4Q, 39 East Hanover Avenue  
Morris Plains, NJ 07950

Please send me \_\_\_\_\_ copies of THE CREATIVE TRS-80 at \$15.95\* plus \$2.00 postage and handling (\$5.00 outside USA) each. Item # 18Y

Payment Enclosed \$ \_\_\_\_\_ \*Residents of CA, NJ and NY State add applicable sales tax.

Charge My:  AmEX  MC  Visa

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

Mr./Mrs./Ms. \_\_\_\_\_ (print full name)

Address \_\_\_\_\_

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

Please send free catalog.

## MORETON BAY

Brings You the Best in Hardware and Software.

### BJORK BLOCKS

From the programmer that brought Zaxxon™ to the Color Computer.

A graphic utility for everyone!

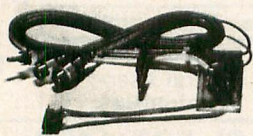
- Simple operation! Powerful!
- Tape or Disk systems—32 or 64k
- Precision drawing. Precision color selection.
- Animation (64k computers only)
- Compressed data storage or load and save 6k binary files

**\$34.95**

©copyright Sega Corp.

## DOUBLE DRIVER

The BEST monitor driver available, unlike some monitor drivers the Double Driver provides TRUE monochrome and color composite output. Audio Output. Solderless installation. \$24.95



## RESET YOUR COMPUTER

A REAL Improvement

Move the power switch and reset where they belong. An LED power on light too! High quality parts. Totally solderless kit.

CoCo I \$24.95  
CoCo II \$27.95



## 64K UPGRADES

Instantly access 64K via M/L Totally solderless kit to upgrade E Boards. Kit includes eight 4164 prime chips and chips U29 and U11 already soldered. E Board Kit \$69.95

Color Computer II kit requires soldering. \$64.95



## MORETON BAY SOFTWARE

A Division of Moreton Bay Laboratory



316 CASTILLO STREET  
SANTA BARBARA,  
CALIFORNIA 93101  
(805) 962-3127



Ordering information

Add \$2.00 shipping and handling per order. We ship within 24 hours on receipt of order. Blue Label Service available. California residents add 6% sales tax.

## DEFUSR

**Why are the Color Computer's disk drives positioned for vertical disk entry, and not horizontally like those of Commodore, Atari, and Apple? Does the position make a difference in performance?**

— Peter Privitera,  
Chelsea, MA

There is no particular reason. Position doesn't make a difference in performance (notice that the Model III and IV use horizontally mounted drives). However, disk drives are easier to service because both sides of the drive are accessible when the case cover is removed.

**I have a 64K F-board Color Computer with one disk drive. I used the drive for about a month without problems, saving programs and files and backing up all my tapes that weren't copy-protected.**

**Then I bought a disk game, Sands of Egypt. Nothing but trouble! It would either hang up on loading (with the motor running and keyboard dead), or it would load and then give I/O errors during play. I thought the game was bad so I took it back.**

**However, every disk program I've bought gives the same problems. If the programs aren't copy-protected I make a back-up onto a new disk. The back-ups always load fine.**

**Does my drive have an alignment problem? If so, is there a kit to fix it?**

— M. Kaylor,  
Cleveland, TN

The problem is head alignment. Fortunately, J & M Systems (137 Utah NE, Albuquerque, NM 87108 (505) 265-5072) has a product, Disk Drive Analyzer, that will help you fix your drive. This alignment disk and program combination lets you use your computer as a diagnostic device for drive repair.

I've seen and used the program and think it is excellent. In fact it requires no real technical experience to use, so even a brave novice can easily and quickly diagnose and repair simple disk drive problems such as head alignment, motor speed, index-hole timing, azimuth, hysteresis, and other crucial, but simple problems. There are two versions of the program: one for single-sided disk drives (\$79), and one for double-sided disk drives (\$99).

Check the ads in this magazine for any other products that perform the same function. If you think the problem is too big for you, any repair technician should be able to realign drives without much effort.

**I'm writing in regards to a question in the June, 1984 DEFUSR about using a Sears interface and typewriter with a Color Computer. Your answer was that it couldn't be done without a serial-to-parallel printer converter box.**

**I disagree! All you need is a connector cable that you can put together yourself. I have put together that system and it works perfectly.**

**Since the Sears interface and typewriter are made by Brother, I called them and they sent me a cable configuration chart. You need only three parts: a Radio Shack 4-pin DIN plug (#274-007), a D-Subminiature DB-25 male connector (#276-1559), and a length of 4-conductor cable.**

**Make sure the switches on the back of the interface are set right (switches 1,2,3, and 6 are On, or in the down position; switches 4 and 5 are Off, in the up position).**

— Jeff Smith,  
Alden, IA

You're right — you don't have to use the serial-to-parallel converter. You can connect the Color Computer directly to the Sears typewriter. Sorry about the confusion.

## STOCK & FUND INVESTING

### with the TRS-80\* COLOR COMPUTER USE FUNDGRAF AND FUNDFILE

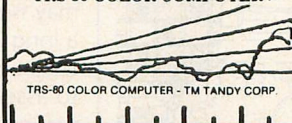
FUNDGRAF is a stock market analysis program that not only graphs and analyzes funds or stocks, but also makes decisions on when to BUY and SELL. Improve market timing using your COCO.

GRAPHS fund's progress (up to 200 weeks). SUPERIMPOSES for comparison: a line of constant percent growth or a graph of any other fund (or stock).

CALCULATES over any time span: the percent price change and the moving average (any span). INDICATES BUY and SELL signals. FUNDGRAF requires 16 K ECB min.

16/32 K Tape ..... \$49.95  
16/32 K 5 in. Disk ..... \$69.95  
ADD \$2 handling on all orders.

FUNDGRAF—A STOCK  
MARKET ANALYSIS  
PROGRAM FOR 16K EX  
TRS-80 COLOR COMPUTER



FUNDFILE is a portfolio and account management program for securities. Manage single or multiple portfolios of stocks, mutual funds, bonds, money market funds, etc. FUNDFILE allows easy maintenance of all your records for accurate portfolio evaluation. NEW 32 K VERSION of FUNDFILE summarizes all transactions (dividends, interest, purchases and sales) between any two dates of your choice - weekly, yearly, etc. Categorizes interest and dividends paid as to tax liability (tax free, etc.) and capital gains as long or short term. Great for tax reports.

FUNDFILE REQUIRES 16 K ECB min. and 80-COL PRINTER.

5-in. Diskette only for 16 K ECB ..... \$27.95  
5-in. Diskette only for 32 K ECB ..... \$37.95  
ADD \$2 handling on all orders.

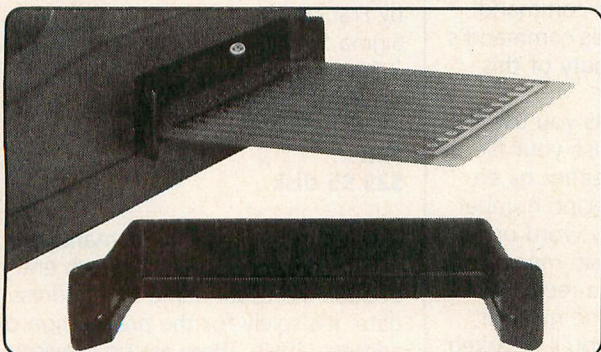


Write for free brochure for details. Dealer inquiries invited.



**PARSONS SOFTWARE, DEPT. G4  
118 WOODSHIRE DRIVE  
PARKERSBURG, WV 26101**

## 6809 SYSTEM DEVELOPMENT



### EXPANSION HARDWARE FOR THE TRS-80 COLOR COMPUTER

**XPNDRI™**

**CoCo Expander Card**

Gold edge connector plugs into the CoCo cartridge connector. Signals are labeled on the bottom (wire side) with ground and power buses; plated through holes. The 4.3 x 6.2 inch glass/epoxy card is drilled for ICs and components. The finest bare breadboard for your CoCo. Includes 8 page **Application Notes** to help you get started.

**\$19.95 each or 2 for \$36**

**SuperGuide™**

Precision molded plastic insert designed specifically to align and support printed circuit cards in the CoCo cartridge slot; an unbreakable removable card guide. Patent Pending.

**\$3.95 each**

Available now from:

**ROBOTIC MICROSYSTEMS**



BOX 30807 SEATTLE, WA 98103

Circle No. 145 on Reader Service Card

## PRO-COLOR-SERIES

### THE BEST JUST GOT BETTER

**PRO-COLOR-FILE \*ENHANCED\* \$79.95**

PRO-COLOR-FILE has become one of the most respected database programs ever developed for the Color Computer. Whether it's for home or business, PRO-COLOR-FILE lets you design your own sophisticated database tailored to your needs.

**60 DATA FIELDS** available for each record to store information  
**1020 BYTES** for each record can be used if needed  
**1 - 4 DISK DRIVES** can be used to maximize storage capacity  
**4 COLOR DATA ENTRY** screens can be custom designed  
**28 MATH EQUATIONS** can be setup to perform calculations  
**POST ACCOUNTS** routine performs calculations on an entire file  
**DUPLICATE RECORDS or FIELDS** from previous entries  
**SORT ENTIRE FILE** on 3 fields at one time  
**SORT ANY SIZE FILE** whether it's 200 or 2000 records  
**SELECT SUB-SETS** of file for sorting or reporting  
**SCAN FILES** alphabetical by any field  
**SUMMARIZE FILES** to find totals, averages, low and hi values  
**8 REPORT FORMATS** for obtaining hard or soft copy reports  
**6 LABEL FORMATS** for 1 to 10 across labels & 1 to 30 lines/label  
**PASSWORD PROTECTION** for limited access to data and reports

PRO-COLOR-FILE was so well received that over 70% of the owners of the original version ordered the PRO-COLOR-FILE \*ENHANCED\* upgrade in the first 2 weeks of its introduction. Find out for yourself why people in almost every state, Canada, South America, and even the Far East and Europe have turned to PRO-COLOR-FILE \*ENHANCED\* for their information management needs.

**PRO-COLOR-FORMS \$39.95**

This application software allows data which is stored using PRO-COLOR-FILE to be printed anywhere on a full sheet of paper. Use it to print data on pre-printed forms or use it to design your own forms. Use PRO-COLOR-FORMS to create letters for mass mail-outs that have a personal touch by being able to insert names and addresses anywhere within the letter. Design and redesign up to 6 forms with user defined parameters such as printer width and lines per page. Supports embedded printer control codes from ASCII 0 to 31.

**PRO-COLOR-DIR \$24.95**

Tired of not knowing which diskette has that program you're looking for? PRO-COLOR-DIRECTORY will create a data file of all your disk directories that can be used by PRO-COLOR-FILE to generate alphabetized reports for easy reference. PRO-COLOR-DIR will store a diskette ID name, filename, extension, file type, number of grants allocated, number of sectors allocated, number of sectors used, machine language addresses and length, date it was created and date it was updated. 1000 entries are easily stored on one diskette!

All programs require a 32k Disk with at least one disk drive. PRO-COLOR-FORMS and PRO-COLOR-DIR require PRO-COLOR-FILE to be used. All programs (c) 1983 by Derringer Software, Inc.

See your local dealer or send check or money order to:  
**DERRINGER SOFTWARE, INC., P.O. Box 5300, Florence, South Carolina 29502.** Visa/MC customers call (803)665-5676  
Add \$3.50 S&H - Available on AMDISK (Add \$5.00).  
S.C. residents add required sales tax.

Circle No. 24 on Reader Service Card

# REVIEWS

## CoCo Cookbook

Computerware  
Box 668  
Encinitas, CA 92024  
(619)436-3512  
**32K disk**  
**\$27.95**

CoCo Cookbook isn't just a recipe file. It has been optimized for recipe storage by using codes for common cooking terms on disk, yet it can serve as a general, free-form database for *any* text file. And it's a well-written program that even a novice computer user can use easily.

The Cookbook stores recipes by titles and numbers them in the order they are entered. You choose titles by deciding the key words that years from now will help find Aunt Bertha's exotic salami soup recipe, or which words will find a good recipe for leftover chicken. Recipes are stored on disk in two parts — the title, and the body, or list of ingredients and directions.

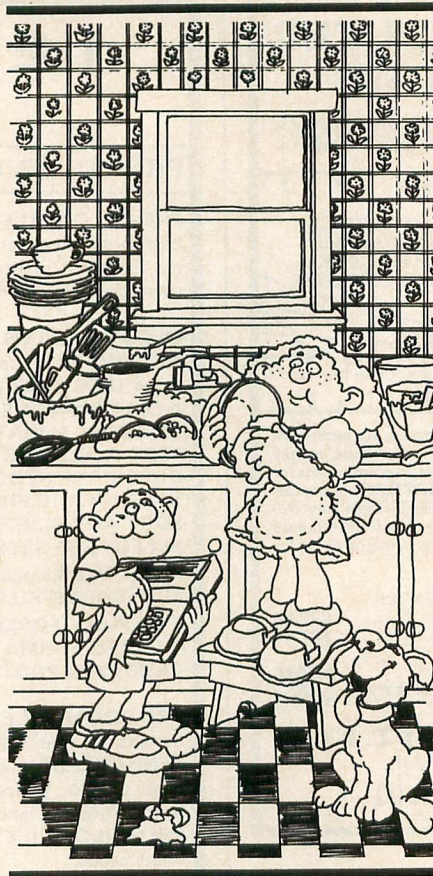
CoCo Cookbook lets you see recipes on the screen and lets you print a particular recipe, all your recipes, all recipes having a common search word, or a comprehensive list of titles and corresponding record numbers.

Learning to use this product is simple. A main menu displays seven options, most of which explain themselves. A tutorial also does an excellent walk-through. Incorrect responses are ignored, saving you from baffling situations.

When you wish to add a recipe, the first unused record number appears with a one-stroke command. The maximum number of recipes that can be stored on one disk is 269. The flashing cursor sits just below the number, waiting for you to enter a title. Titles can contain up to 45 characters, and will be used when the program searches for recipes, so it's worth the effort to make them as descriptive as possible (use capital letters).

Recipes can contain 3040 characters; long recipes can be continued to the next record.

The Back Arrow key erases the previous character and allows for quick corrections. If you find later that you've made a mistake go to the main menu and **push the correct one-letter command** to change an existing recipe,



or change a title. You must know the recipe's number to change to it, but that's easy with the Find command. But first let me explain this command's central role, and the beauty of this product.

The Find command lets you use the program as you would use your file box. Recipes are found either by entering the appropriate recipe number or by searching for a key word or phrase. Press F at the main menu and you'll be asked to enter a recipe number. If you don't know the number, press the Enter key and you'll be asked for keyword(s). This is where your thought pays off. The search word CHOCOLATE will find recipes for CHOCOLATE COOKIES, CHIPS, CAKES, SOUFFLES, and whatever else contains chocolate. Using the keywords CHOCOLATE, and COOKIES will find the chocolate cookie recipe only. This is what data management is all about.

Now, back to making changes. Having received a valid record number, the program finds and displays the recipe. Edit commands are almost identical to the line editing functions in Extended Basic. Changing a title is like changing the recipe body. Recipe deletions are also made by recipe record number.

A printed list of titles and corresponding numbers can be made alphabetically or numerically.

Weak points are the slowness of the alphabetical sort and the inability to print more than one recipe to a page. But sort speed is not crucial since it is unlikely to be used with much frequency. The one-recipe-to-a-page problem wastes paper with short recipes and may not be desirable when compiling a long listing, but the program is written in Extended Basic with many calls to assembly language subroutines. I suspect experienced programmers can modify the print option to suit individual needs.

The authors suggest using the CoCo Cookbook for collecting research paper notes. I intend to use it to teach folk songs to children. Complementing my numerous songbooks are miscellaneous sheets of paper with the verses to songs with common melodies. This program can replace those pieces of paper and make it easier to find songs by subject matter or by the appropriate age group. I could also print out copies of the words for the children to use.

— Martha Sheldon

## Director

by Francis Thompson  
Sigma Software  
3 Edgewood Rd.  
Bryans Road, MD 20616  
(301) 375-7255  
**32K**  
**\$29.95 disk**

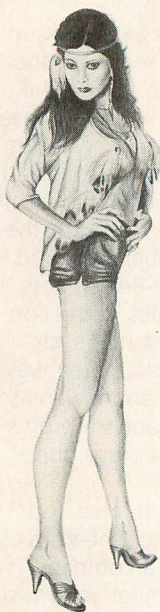
Director is a mailing list manager that stores short notes on each entry, besides the usual name and address data. It's solely for the preparation of address labels. There are no provisions for inserting the notes into form letters in a mail-merge application.

Director offers 12 primary commands. The current version includes an optional opening menu that lets you make selections by number.

You may enter and store up to 700 entries on a disk, each up to 196 characters long, subject to this pre-defined format:

Name	35 characters
Address	30 characters
City	30 characters
State	11 characters
Zip	10 characters
Phone	16 characters
Notes	64 characters

# I HAVE SOMETHING TO SAY!



For as little as 46 cents a program you can enjoy great games like FROGJUMP, FRENZY, CATERPILLAR CAVE, SHOOTIN GALLERY, and great adventures. Use powerful home management programs such as BUDGET, STOCK MARKET, BARTENDER, TINY CALC, and COST OF LIVING. Also, enjoy the use of powerful programming utilities such as COCO MONITOR, GRAPHIC SCREEN PRINT, RAM TEST, HIGH RESOLUTION TEXT, and SINGLE DISK COPY. Increase your knowledge with educational programs such as BASIC SPEED UP TUTORIAL, FLASH CARD, TRIGONOMETRY TUTOR, and our 8 PART SERIES ON MACHINE LANGUAGE.

\*\* Many programs use machine language! \*\*



Every month you will receive a cassette tape with 10 ready to run documented programs.

16K Extended Required

ORDERS SENT SAME DAY!  
FIRST CLASS SHIPPING!  
Back Issues Available from July, 1982.  
Call or write for our free catalog.  
Dealer Inquiries Invited.

PRICES	
1 YR. (12 ISSUES)	\$55.00
6 MO (6 ISSUES)	\$30.00
SINGLE COPIES	\$ 6.00

MICHIGAN RESIDENTS ADD 4% TO ORDER  
OVERSEAS ADD \$10.00 TO SUBSCRIPTION  
AND \$1.00 TO SINGLE COPIES

PERSONAL CHECKS WELCOMED!

Dept. A

## ★ ★ ★ ★ FREE PROGRAMS ★ ★ ★ ★

FOR EACH ORDER OF 20 OR MORE TAPES YOU WILL RECEIVE TWO COLOR COMPUTER PROGRAMS OF THE ABOVE PRODUCT!



### COMPUTER CASSETTES

- ★ 5 SCREW SHELL
- ★ FREE LABELS
- ★ ERROR FREE TAPE
- ★ IMMEDIATE SHIPPING



TGD Computer Products  
P.O. Box 256-C  
Holland, MI 49423  
(616) 396-7577



ITEM	PRICE	QUANT.	TOTAL
C-10	.59		
C-20	.69		
C-60	.85		
C-90	.99		
Overseas Add \$3.00			
Subtotal			3.00
USA funds only			
Mich. Res.	4%		
TOTAL			

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ St \_\_\_\_\_ Zip \_\_\_\_\_  
Credit Card \_\_\_\_\_ Exp \_\_\_\_\_

Circle No. 71 on Reader Service Card

# MR. GERBOIS PRO-MAILER

## Professional Disk Mailing List Program

- Print Labels or Lists
- Sort By Zip or Alpha
- Code & Search Records
- 32K Handles 1000



NEWLY RELEASED FOR COCO!  
FAR BEYOND OTHER PROGRAMS

## MR. GERBOIS

571 W. Front ST.  
Red Bank, N.J. 07701

Only \$59.95

Send For Manual \$5.

Circle No. 147 on Reader Service Card

# LOS ANGELES Polygram



1316 WILSHIRE BOULEVARD • SUITE 206 • LOS ANGELES, CA 90017

NOW YOUR ONE STOP SOURCE FOR SOFTWARE ALSO HAS TOP-LINE ACCESSORIES:

### PRINTERS

JUKI 6100 L/Q  
GEMINI 10-X

### MODEMS

\$AVE ANCHOR/COLOR 300 BAUD \$69  
\$AVE MARK XII 1200 \$AVE

### INTERFACES

PRINTER SERIAL/PARALLEL \$54  
3-WAY SERIAL PORT \$35  
VIDEO PLUS from \$24

### MONITORS

12" GRN TAXAN \$CALL  
12" AMBER TAXAN \$CALL  
13" COLOR ZENITH \$CALL

SEE US FOR BOOKS, MAGAZINES, DISKS, DISK CASES, CASSETTES, CABLES, KEYBOARDS, MORE

POLYGON CO.

COME IN TODAY OR CALL FOR CURRENT PRICES  
(213) 483-8388

Circle No. 23 on Reader Service Card

# Go for the "MAX"™

Panamax Surge Suppressors provide the fastest response time and highest energy dissipation available to assure you the maximum protection against over voltage "Spikes and glitches". Priced from \$59.00



See us at Seattle and Dallas C.S.E.

## PANAMAX

Toll Free 1-800-472-5555  
In California call 415-472-5547  
150 Mitchell Boulevard, San Rafael, CA 94903

Please see us at Washington, D.C.  
Houston, and Anaheim, C.S.E.

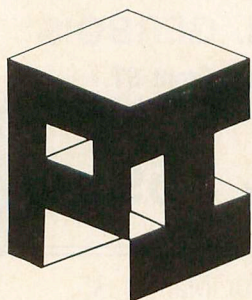
Circle No. 45 on Reader Service Card

# PROGRAMS INTELLECT Educational Software

PROGRAMS  
INTELLECT

Call or Write for  
FREE Catalogue.

P.O. Box 4282  
Westboro, MA 01581



[617] 366-6544

Circle No. 146 on Reader Service Card

There are a few twists to this set-up. It's nice to see enough space for the new nine-digit ZIP codes, but at the same time it's odd that 11 spaces have been reserved for state names in this era of two-letter state abbreviations. I suppose it's best to err on the side of caution. At least there's room for the lengthy telephone numbers required by some of today's non-Bell carriers. You can also enter names in the conventional first/middle/last name format, a nice human touch. By the way, Director accepts upper- and lowercase text, which gives your labels a professional look. You can even use punctuation.

There is only one predefined "address" field. If your subject needs a second address line for a company name or apartment number you must use the additional information field. Director has a customization subroutine that can be used to specify which data fields appear on a label, and in which order. (It is a subcommand of the same label option that does the printing.) You just enter the field names in the actual positions they are to occupy on the label.

The current version of Director prints as many as five columns of labels across the width of a standard sheet of paper. Another label subcommand sets tabs that define horizontal and vertical label separations.

The program can do selective printing, and can prepare labels for only those entries with some particular piece of data. A Search command locates individuals without printing a label, by finding any specified character string without regard to its position in the file entry. It shows the file number of every "hit," and you must keep track of these to go on to edit or delete such a record.

Editing is pretty straightforward. Every line item in the data format gets a letter from A to G. You merely specify the letter of the item to change and then retype it.

Search, Edit, and Delete are main menu options, as are Input and Label. There are others: DIR duplicates the Disk Basic command; Help summarizes all Director commands; Log is used to leave the program (actually, it just resets some pointers to release memory to Basic); Purge does exactly that to a file. LOF displays the number of file entries on the active disk. LLIST dumps the entire data file to the printer. And DNUM can be used to specify any drive



4791 Broadway, Suite 2F Dept. CM  
New York, New York 10034

**MORSE CODE TEACHER** — Teaches the letters and numbers and gives practice to up to 5 wpm. Req. 16K ECB ..... \$15/Cass  
**MORSE CODE TUTOR** — Gives code practice up to 27 wpm. A must for upgrades ..... \$15/Cass  
**HF ANTENNA DESIGN** — Calculates dimensions of quads, dipoles, and Yagis, optimized for maximum gain. Req. 4K RAM ..... \$10/Cass

GORILLA HI-RES MONITORS ~~~  
Green Screen ..... \$99  
Amber Screen ..... \$109  
BMC COLOR MONITOR w/ SOUND .. \$299  
COMPOSITE VIDEO ADAPTER ..... \$15  
With purchase of monitor ..... \$5

Check or MO to CYNWYN. NY residents add sales tax.  
3% shipping, \$2 minimum. SASE for catalog  
or call (212)567-8493

## ANTI-FADE DEVICE

Organize your copies of



Make your magazine collection a handsome addition to your decor. These durable library-quality binders will make your collection easy-to-access and keep it safely protected. They're made of luxury-look leatherette over high-quality binder board and custom designed for The COLOR COMPUTER Magazine, with size, color and imprint selected by the publisher.



**MAGAZINE BINDERS**  
hold your issues on individual rods, combining them into one volume \$7.95 each; 3 for \$22.50; 6 for \$42.95. Mixed titles OK for quantity prices.

For Faster Service CALL TOLL-FREE 1-800-631-8112  
(In NJ only 201-540-0445)

## Color Computer...

39 E. Hanover Avenue, Morris Plains, NJ 07950

Please send me \_\_\_\_\_ binders for The COLOR COMPUTER MAGAZINE.

**PAYMENT ENCLOSED \$\_\_\_\_\_** \*Add \$1.00 per order for postage and handling. Outside USA add \$2.50 per unit ordered, send US funds only.

**CHARGE MY: (\$10 minimum)**

American Express  Visa  MasterCard

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

Mr./Mrs./Ms. \_\_\_\_\_ print full name

Address \_\_\_\_\_

City \_\_\_\_\_

State / Zip \_\_\_\_\_

\*Residents of NY, NJ and NY add applicable sales tax.



as holding the data disk. This is handy if you like to keep Director on one disk and your data on another.

There are always improvements to hope for. A "print to screen" option would be convenient. As things stand, just before each label is printed you see the entire data record on the video display for several seconds, with the fields shown in the positions in which they were originally entered. You have no chance to check any rearranging you may have done as you designed your label format. And to save time, it might be nice to be able to defeat the display of the upcoming record altogether.

Finally, I would welcome the opportunity to inform the program that my printer isn't set at 600 baud — but that's a gripe I have with a lot of software these days.

All in all, it's a reasonably priced package that ought to be fairly simple for nontechnical types to use.

— Scott L. Norman

## Random Basic

Computerware  
P.O. Box 668  
Encinitas, CA 97024  
(619)436-3512  
**\$75 disk**  
**64K**

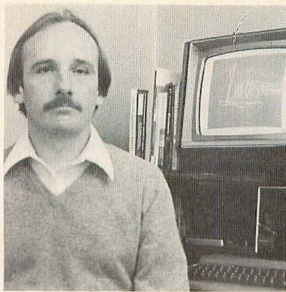
Random Basic is a version of Basic that runs on the Color Computer with the OS-9 operating system.

How does it compare with Radio Shack's Disk Basic? Many of the functions are similar. There are distinct and important differences between the two, though.

## Features

Like Disk Basic, Random Basic has two execution modes: immediate (or direct), and program. Commands entered in the immediate mode are instantly executed, while commands entered in the program mode are only executed when the program is run. The interpreter tells which mode you are using by the presence or absence of a line number.

Instructions can be abbreviated in Random Basic. For example, you can enter P for Print or L for List. This saves memory by compressing the program length.



## TEACHERS USING COLOR COMPUTERS, A GENTLE THREE STEP PATH TO EASY CLASSROOM MANAGEMENT

1. Send a \$10 check for the demonstration cassette with programs for grading and student information. This may be all you need.
2. After working with the programs and deciding that they are, or could be useful, send a \$40 check for the manual and subscription to the programming service. You are then welcome to call or write for information, assistance, and discussion of your unique requirements.
3. You may need a customized version. After we have agreed on the revision and its cost I will send the changes to you.

Richard Sailors,  
user friendly programmer  
Sailors System Software  
1943 North Garfield Avenue  
Pasadena, California 91104  
818-798-8273

Circle No. 80 on Reader Service Card

Will work on any  
16K, but has been  
designed for 32/64K  
and a printer. A  
disk drive may  
become handy.

## — By Mail ★ College Degrees ★ By Mail —

### ■ Use Your C.C. or Other P.C. ■

To Earn a College Degree, in *Computer Sciences* or Any Other Subject Thru The Mail From *Major Universities* — Bachelors, Master's and Ph.D.'s Are All Available.

**Report (Normally \$14.95) — Only \$9.95**

**Send To — J & L Educational Consultants  
3600 S. Harbor Blvd. Suite #244, Oxnard, CA 93030**

## — By Mail ★ Major Universities ★ By Mail —

Circle No. 68 on Reader Service Card

# STAR TREC

TAKE COMMAND AS CAPTAIN OF THE STARSHIP ENTERPRISE IN THIS NEW GAME AVAILABLE FROM HALYK SOFTWARE. AMAZING GRAPHICS, PLAYER SELECTABLE GAME LEVELS. ORDER TODAY!

— THE WARP SIMULATION IS SIMPLY INCREDIBLE.

ONLY:

# 19.95

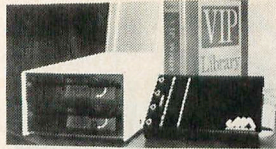
— 100 MACHINE LANGUAGE, OVER 1 YEAR IN PRODUCTION. IF YOU ARE STILL NOT SURE, SEND 2 DOLLARS AND WE WILL SEND YOU DETAILED INFORMATION ON THE GAME AND THE TWO DOLLARS WILL BE TAKEN OFF THE PRICE OF THE GAME IF YOU DECIDE TO PURCHASE A COPY. ADD \$5.00 FOR DISK, 32 OR 64K REQUIRED.

HALYK SOFTWARE, 1102 JALNA BLVD. SUITE #708, LONDON ONT. N6E-1X8 CHEQUES OR MONEY ORDERS ONLY.

Circle No. 8 on Reader Service Card

Color Computer/87

**NEW!**  
**TEAC**  
2-SS/DD 40  
TRACK DRIVES

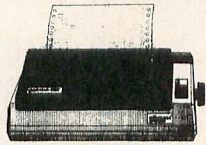


**VIP WRITER** Disk Word Processing Program, J&M Controller with J-DOS, Cable and Disk Manual. All for only... **\$579**  
Works with all COCO'S including COCO II RS-DOS add \$20

**PRINTERS**

**Gemini 10X w/Botek Interface 120 CPS Dot Matrix** **\$329.95**  
PBH add \$20

**Star Micronics Power Type Complete w/Cable, 15" Carriage Letter Quality Daisy Wheel, 18 CPS.....** **\$429.95**  
PBH intf add \$20



**MISC.**

- Verbatim Datalife SS/DD ..... **19.95**  
BOX OF 10
  - NAP 12" Green Monitor w/Sound **109.95**
  - VIDEO PLUS ..... **24.95**
  - VIDEO PLUS IIM ..... **26.95**
  - VIDEO PLUS II COLOR ..... **39.95**
- Florida Residents add 5% Sales Tax  
Add \$10 S & H on all printer, monitor and disk orders;  
\$3 on all others Mon-Sat. 10-5:30 PM

**SOFTWARE**

- CASTLE RAGOONA** by Chris Pelley. Order now and receive *Enchanted Village* on flip side...FREE! Two great adventures that do not require ext. basic. Only... **19.95**
- Version of New! 32k Graphic Castle Ragoona** ..... **24.95**
- Graphicom Disk** ..... **29.95**
- New BJORK BLOCKS 32k CASS** ..... **34.95**

WE STOCK OVER 300 COCO ITEMS. SEND SASE TO RECEIVE FREE NEWSLETTER. Visit Our Retail Store.



**FAMILY COMPUTERS**

4047 Bee Ridge Road, Sarasota FL 33582

ORDER LINE 813-921-7510

Circle No. 169 on Reader Service Card



24 HR. BBS 813-924-COCO

**HI-RESOLUTION SCREEN UTILITY**

**HI-RES SCREEN UTILITY**  
Featuring: Double Height Characters  
On Screen UNDERLINING  
Bell Character Tone Generator  
Switchable Full Screen Reverse Video  
True Upper & Lower Case Character Set  
**Variable Length Macro Key Buffers**  
Programmable Line Lengths From 28 to 255 characters  
28 Characters per line  
32 Characters per line  
42 Characters per line  
51 Characters per line  
64 Characters per line  
Line lengths of 85, 128 & 255 are unreadable but can be very useful for screen display layouts  
All Functions are easily programmable thru BASIC Fully BASIC COMPATIBLE including CDS & PRINT &

- FULLY BASIC COMPATIBLE
- DISPLAY FORMATS OF 28 to 255 CHARACTERS PER LINE
- FULL 96 UPPER-LOWER CASE CHARACTERS
- MIXED GRAPHICS & TEXT OR SEPARATE GRAPHIC & TEXT SCREENS
- INDIVIDUAL CHARACTER HIGHLIGHTING
- REVERSE CHARACTER HIGHLIGHT MODE
- WRITTEN IN FAST MACHINE LANGUAGE
- AUTOMATIC RELOCATES TO TOP OF 16 32K
- AUTOMATICALLY SUPPORTS 64K of RAM WITH RESET CONTROL
- REVERSE SCREEN
- ON SCREEN UNDERLINE
- DOUBLE SIZE CHARACTERS
- ERASE TO END OF LINE
- ERASE TO END OF SCREEN
- HOME CURSOR
- BELL TONE CHARACTER
- HOME CURSOR & CLEAR SCREEN
- REQUIRES ONLY 2K OF RAM
- COMPATIBLE WITH ALL TAPE & DISK SYSTEMS

**\$19.95**

**NEW**

Introducing The "Super Smart"  
**DATA PACK II**  
Terminal Communications Software

**NEW**

**"FEATURES"**

- No Lost Information When Using Hi-Resolution Display On Line
- ASCII Compatible File Format
- Full Text Buffering
- Terminal Baud Rates 300 to 9600
- Automatic Word Wrap Eliminates Split Words
- Full/Half Duplex
- Automatic File Capture
- Programmable Word Length, Parity and Stop Bits
- Save and Load Text Buffer and Program Key Buffers to Tape or Disk
- 9 Hi-Resolution Display Formats, 28 to 255 x 24
- True Upper/Lower Case Display
- Kill Graphics Option for An Extra 6K
- Supports Line Break
- Freeze Display and Review Information On Line
- Send Files Directory from Buffer or Disk
- Full Disk Support for Disk Version
- Send Control Codes from Keyboard
- Separate Printer Baud Rates 110-9600
- Display On Screen or Output Contents of Buffer to Printer
- Automatic Memory Sense 16-64K
- 9 Programmable Function Key Variable Length Macro Buffer
- Programmable Prompt Character or Delay to Send Next Line
- Programmable Control Character Trapping
- Programmable Open/Close Buffer Characters
- Automatic Key Repeat for Editing
- Program and Memory Status Displays

**DISK \$44.95**

**TAPE \$34.95**



5566 Ricochet Avenue  
Las Vegas, Nevada 89110

**(702) 452-0632**

All Orders Shipped From Stock  
Add \$2.50 Postage

Circle No. 5 on Reader Service Card

**REVIEWS**

You can enter Random Basic lines in any order, as the interpreter puts them in the proper sequence. But Random Basic's line numbers aren't identical to Disk Basic's: only line numbers 1 - 9999 are available. If you are used to a wide range of line numbers for subroutines and merged programs, you will have to change some habits to use Random Basic.

Another difference is Random Basic's lack of a RENUM command. Be sure you enter the line numbers you want the first time. You don't get a second chance, short of typing the whole program in again.

Disk Basic allows line lengths of up to 256 bytes. Random Basic allows a maximum line length of 128. This could be a big minus, especially when coupled with the 9999-line limit.

Random Basic provides a handy feature not available with the standard Color Computer Basic: Auto. By entering the immediate mode command AUTO 100,10 you will get automatic line numbering beginning at Line 100, incrementing by 10 each line. When you press Enter at the end of each line, the next line number automatically appears. Press Clear and C to get out of line-entry mode.

Spaces in Random Basic lines, like those in Disk Basic, are ignored except when they are in a literal expression. I'd like Basic to respect spaces at the beginning of a line; program listings with indentations showing loops and subroutines are an important part of documentation.

String variable length must be set in Random Basic. The default length is 32 characters, but you may change that to any length between 1 and 126. You can only set the length once in a program, and you are stuck with that definition for the rest of the program. Too high a definition will waste memory, while too low a definition will be unusable. A major consideration in Random Basic program design, then, is setting the string length. The first six characters in any string-variable are unique. This gives you more naming power than with Disk Basic, but I think that power does not offset the inconvenience of globally defining the variable length.

Numeric variables in Random Basic are real numbers by default, the same as in all versions of Radio Shack Basic. Random Basic comes with two programs: a 9-digit interpreter and an 11-digit interpreter.

Please indicate which of the following microcomputers you currently own and/or plan to buy in the next 12 months.

	<b>1</b> Own	<b>2</b> Plan to Buy
Apple	A	L
Atari	B	M
Commodore/PET	C	N
Digital Equipment/DEC	D	O
Heath/Zenith	E	P
IBM	F	Q
Radio Shack/Tandy TRS-80	G	R
Color Computer	H	S
Other Tandy/Radio Shack	I	T
Other (specify)	J	U
None	K	V

**3** For what, if any business application(s) do you use the microcomputer you currently own? \_\_\_\_\_

Circle Number

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162
163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234
235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252
253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288
289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324
325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342
343	344	345	346	347	348	349	350										

Void after December 31, 1984

**4** How do you use your COLOR COMPUTER?  
 w. education  
 x. entertainment  
 y. personal purposes  
 z. business purposes

**5** Which of the following peripherals do you plan to buy in the next 12 months?  
 1. Monitor  
 2. Disk drive  
 3. Printer  
 4. Modem  
 5. RAM chips  
 6. Keyboard  
 7. Interface Board

**6** Where do you buy software?  
 8. Mail order  
 9. Radio Shack computer center  
 0. Radio Shack store (not computer center)  
 a. Other computer stores

**7** How many software packages do you plan to buy in the next 12 months?  
 b. 1-2  
 c. 3-5  
 d. 6 or more

**PLEASE PRINT CLEARLY**—Use only one card per person.

NAME \_\_\_\_\_ PHONE NO. (\_\_\_\_) \_\_\_\_\_  
 COMPANY \_\_\_\_\_ TITLE \_\_\_\_\_  
 ADDRESS \_\_\_\_\_ APT. \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

**Please send me 1 year (12 issues) of The COLOR COMPUTER Magazine for \$17.97 and bill me. (Full 1 year subscription price of \$24.97.)**

CLC10842

Please indicate which of the following microcomputers you currently own and/or plan to buy in the next 12 months.

	<b>1</b> Own	<b>2</b> Plan to Buy
Apple	A	L
Atari	B	M
Commodore/PET	C	N
Digital Equipment/DEC	D	O
Heath/Zenith	E	P
IBM	F	Q
Radio Shack/Tandy TRS-80	G	R
Color Computer	H	S
Other Tandy/Radio Shack	I	T
Other (specify)	J	U
None	K	V

**3** For what, if any business application(s) do you use the microcomputer you currently own? \_\_\_\_\_

Circle Number

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162
163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234
235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252
253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288
289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324
325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342
343	344	345	346	347	348	349	350										

Void after December 31, 1984

**4** How do you use your COLOR COMPUTER?  
 w. education  
 x. entertainment  
 y. personal purposes  
 z. business purposes

**5** Which of the following peripherals do you plan to buy in the next 12 months?  
 1. Monitor  
 2. Disk drive  
 3. Printer  
 4. Modem  
 5. RAM chips  
 6. Keyboard  
 7. Interface Board

**6** Where do you buy software?  
 8. Mail order  
 9. Radio Shack computer center  
 0. Radio Shack store (not computer center)  
 a. Other computer stores

**7** How many software packages do you plan to buy in the next 12 months?  
 b. 1-2  
 c. 3-5  
 d. 6 or more

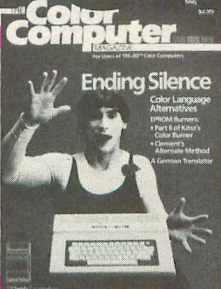
**PLEASE PRINT CLEARLY**—Use only one card per person.

NAME \_\_\_\_\_ PHONE NO. (\_\_\_\_) \_\_\_\_\_  
 COMPANY \_\_\_\_\_ TITLE \_\_\_\_\_  
 ADDRESS \_\_\_\_\_ APT. \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

**Please send me 1 year (12 issues) of The COLOR COMPUTER Magazine for \$17.97 and bill me. (Full 1 year subscription price of \$24.97.)**

CLC10841

# FREE INFORMATION!



**FAST! FREE!** **NO OBLIGATION!**

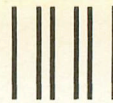
Let us get the information you'd like to receive on the products and services mentioned or advertised in this issue of *The COLOR COMPUTER Magazine*. It's free and as easy as 1-2-3!

**1** Clearly print/type your name and complete address on one of the attached reply cards.

**2** Circle the number(s) on the card which correspond to the number(s) you'll find at the bottom of the articles/ads about which you'd like to learn more. (You'll also find these key numbers on advertised products in this month's Advertiser index.)

**3** Mail the card. The sooner it's sent, the quicker you'll get the literature you requested.

This is an ideal time to subscribe to *The COLOR COMPUTER Magazine*—the leading magazine written expressly for TRS-80 Color Computers—AND SAVE 28%! Just check the box at the bottom of the reply card!



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

# BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 27346 PHILADELPHIA, PA

POSTAGE WILL BE PAID BY ADDRESSEE



P.O. Box 13307  
Philadelphia, PA 19101



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

# BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 27346 PHILADELPHIA, PA

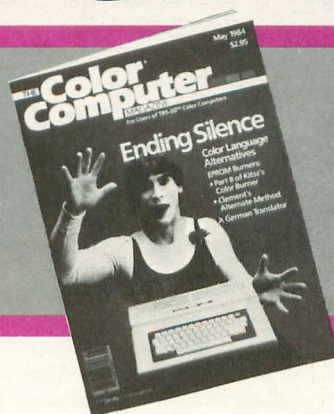
POSTAGE WILL BE PAID BY ADDRESSEE



P.O. Box 13307  
Philadelphia, PA 19101



# FREE INFORMATION!



about the products and  
services advertised in this issue of  
The COLOR COMPUTER Magazine.

See other side for directions.

## The OS-9 Interface

Since Random Basic is not ROM-based, the interface between it and OS-9 is not like that between Disk Basic and Color DOS.

When Basic is executed, the current OS-9 input and output paths become the default I/O paths for Basic. You can change those paths or define others with the Port command. For example, the command PORT 100,"/P" would define the printer as port 100. Subsequently, a PRINT #100,"Test" would send the word "Test" to the printer via port 100.

Pathlists can gobble up memory very quickly if not properly used. Random Basic's documentation explains the memory considerations and precautions that you should take.

## Commands and Functions

The Size command returns the number of available bytes of memory, the number of bytes used for program text and the number of bytes used for variable storage. This is valuable for monitoring memory usage while running a program.

FLIST, FDEL, FREN and FCHK are disk-interface commands in the OS-9 environment. FLIST displays a disk directory, FDEL deletes a file, FREN renames a file, and FCHK checks for the existence of a file. If the return code is zero, the command has completed successfully. If it is not zero, something has gone wrong. This return-code feature allows you to use error trapping.

The Line command lets you set a default line length for the Print command. This will allow word wrap (without splitting words) for test files, but does not work with the List command.

The Digits command allows you to specify the number of digits to be printed to the right of the decimal point. If you want to work with dollars and cents, you could invoke the Digits command and set the number to 2. The RJUST command manipulates numbers to the left of the decimal, and the FPSW command manipulates scientific notation.

Random Basic includes a built-in line counter. The Page command provides you with the ability to set or determine the value of that counter. You can eas-

ily make up print paging routines that use this value.

Skip is a print-formatting command which will skip 1 - 255 lines without using multiple print statements. SKIP 15 would skip 15 lines. In conjunction with the Page command, an easy page eject could be coded as SKIP #100,PAGE (this assumes that you assigned 100 as the printer port).

Have you ever tried to get the computer to pause? Usually, it requires a timing loop of some kind. Random Basic provides the Wait command, which forces the computer to wait for any time from 0 - 255 seconds.

One of the nicest features of Random Basic is the Dump command. If your program stops for any reason (even with a Stop command), this command produces a display of all files (with status) in effect at the time of the dump. I found this very handy while debugging.

Most of Disk Basic's string and numeric functions are found in Random Basic. Random Basic has some enhancements, as well. The NVAL function, for example, allows you to test a string variable for numerics before converting via the VAL command. This avoids errors by providing you with an extra check. The IMOD function returns the integer remainder of a division. You can also define your own functions with the DEF command.

Connection with subprogram modules is provided via the Call command. Parameters and variables can be passed between the calling and called programs.

Another significant enhancement over Disk Basic is the On Error statement. Complete error trapping is available to you with access to the line number in which the error occurred (using the ERLINE function) and the specific error which occurred (using the ER-CODE function).

## Input/Output

Standard terminal input can be accomplished in Random Basic via the Input, LINPUT, Inkey or INCHR commands. These commands might be better explained as follows.

Random Basic	Disk Basic
Input	Input
LINPUT	Line Input
Inkey	Single character entry
INCHR	Inkey\$

NEW NOUVEAU NEW NOUVEAU  
LOGICIELS BILINGUES  
BILINGUAL SOFTWARE  
(LANGUAGE CHOSEN BY SOFTWARE)  
(LANGUE CHOISIE PAR LE LOGICIEL)  
french and english included in SAME program  
français et anglais inclus dans le MEME logiciel

### OFFRE D'INTRODUCTION INTRODUCTORY OFFER

choisissez un titre - GRATUIT  
pick up any one title - FREE

### PROGRAMS-LOGICIELS

\*\*\*\*\* TRS 80 min. 16K EXT. \*\*\*\*\*  
TAPE ONLY - CASSETTE SEULEMENT

"TITCREAT" trs-80 couleur commodore 64  
build your own TITLE for your software or video  
fait vos titres pour vos programmes ou vidéo

"CRIO-BINGO" trs-80 couleur  
full board on screen  
tableau complet sur écran

"FILPER" vic-20 (8K) commodore 64  
build a data file with printer option  
fichier avec option d'imprimante

"R COL-64" commodore 64  
routine to choose color of border-screen-character  
sous-routine pour choisir la couleur de  
bordure-écran-caractère

"LISEP" vic-20 (8K) commodore 64  
print your grocery list (printer needed)  
imprime liste d'épicerie (imprimante requise)

"MATH 40P" trs-80 couleur  
math drill on integer numbers pos. neg.  
pratique des nombres entiers pos. neg.

veuillez envoyer \$10.00 pour couvrir les  
frais de poste et manutention  
please send \$10.00 to cover handling  
charges and postage

### A/TO: BERCOM ENR

C.P. 488  
SAINT-JEAN-SUR-RICHELIEU  
P.Q. CANADA  
J3B 6Z8

offre limitée à un programme par client  
limited to one offer by customer

Circle No. 17 on Reader Service Card

News. Features. Full,  
not just filled up.

UNDER  
COLOR

A new bi-weekly  
publication for the  
Color Computer user.  
A newsletter plus a  
magazine in one!  
26 yearly issues.

Hot Color Computer info  
only a newsletter can  
offer, plus regular  
magazine features by  
**Bill Barden, Dennis  
Kitsz** and other Color  
Computer experts!

Don't miss an issue!  
Take advantage of this  
**Charter subscription  
offer:**

A full year of UNDER  
COLOR (26 issues,  
regular price \$33) for  
only \$20.\*

**UNDER COLOR**  
**Box 6809**  
**Roxbury, Vermont 05669**

CompuServe 70136,1257  
Phone (802) 485-6440

\*(Send check/money order or charge to Visa/MC.  
Charter offer expires December 1, 1984. Add \$14 for  
First Class mail.)

Circle No. 19 on Reader Service Card

Color Computer/89

The main difference is Random Basic's addition of the Inkey command, which waits for one character of input. It differs from INCHR in that it does not poll and return a null string.

Output commands are similar to those in Disk Basic. Print Using is especially powerful when used in conjunction with the RJUST and Digit functions.

The one statement missing from output commands in Random Basic is Print@. Screen formatting must be done manually, using a combination of the Skip, Print and Tab commands.

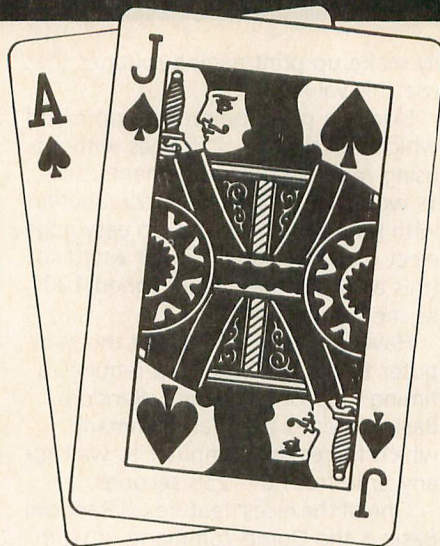
## Other Features

Random Basic supports both sequential- and random-access files. Up to 20 files (10 sequential and 10 random) may be used simultaneously. Random-access files must be allocated using the Create command and can later be expanded via the Expand command, provided that additional disk space is available. I found both types of file access easy to use, and both performed smoothly.

Random Basic also includes a Sort operator. The sort will work on a one-dimensional array, and will put a second one-dimensional array in the same order as the sorted array. In other words, if I had an array of names and a second array of Social Security numbers, I could sort the first array and the second array would automatically be ordered with the first, so that the numbers would still match the names. This is especially handy if the second array contains pointers to other arrays (perhaps multi-dimensional).

The Trace command is much superior to Disk Basic's TRON command. Trace in Random Basic displays the complete text of each line executed. That means you do not simply see a list of line numbers on the screen, but the actual code being executed. In addition, the screen pauses when full and execution halts until you press a key. That gives you all the time you need to examine a program's logic. I consider this an outstanding debugging feature.

A recent upgrade to Random Basic provided three new sets of commands. The GRxxx commands provide limited graphics capability within Basic by interaction with OS-9 graphics. The Status commands allow you to monitor graphics and joysticks. The PBYTE command prints bytes to any specified port number.



## Blackjack Pro

Skillware Corporation  
Applied Probability Dept.  
314 West 53rd Street  
New York, NY 10019  
(800)223-6015

**16K**  
**\$75**

It sounds too good to be true, but with determination and practice Blackjack Pro can help you enjoy regular, reasonable Blackjack winnings. Skillware stresses right up front, and repeatedly through the 32-page strategy booklet, that you should expect *reasonable* winnings, not overnight riches. The strategy it teaches is *card counting*.

The booklet teaches you how to count cards by explaining every aspect of the game. The first section describes what the atmosphere is like in casinos, how to handle the stress of the game, why casinos don't like card counters

(and how to go undetected), and how to manage your money and determine your best bet. In the second section you learn about counting cards. Then you learn Blackjack's rules and some excellent playing strategy.

Card counting is keeping a running total of the cards as they are dealt, a total that's either negative or positive. When the count is negative, the odds are in your favor, and you bet. To learn the rules you practice every hand and come to know when to "hit" or "stick." Skillware does an excellent job of explaining the rules.

The guidebook is practical and logical, though I found the strategy overcautious. It gives the impression that casino owners and Blackjack dealers are on the lookout for any sign that a player is a card counter and that arousing their suspicions will serve to have you removed from the casino and barred from playing there forever. This seems far-fetched. The book recommends a bet size ratio of 100 to 1, which means that only if you have \$2500 in your pocket should you ever bet \$25, and if you're ever up by 10 bets you should call it a night to avoid being spotted as a counter. To me, this strategy simply seems boring. On the other hand, big winners who are spotted as counters *have* been asked to leave casinos.

There are 16 programs in this package; eight let you practice counting, six are for practicing playing and one each for betting and the rules. The first counting program begins by showing you two cards; you indicate the correct count by moving the cursor to the correct count with a joystick and pushing the fire button. Your responses are timed. I found the joystick cumbersome

Documentation for this package is excellent. The 58-page manual outlines all of the functions of the language and gives numerous examples. There is a summary of commands and syntax which is handy to use while learning, and I found the manual to be readable, attractive and adequately organized.

In general, Random Basic is a good tool for OS-9. The interpreter is fast and the language generic enough to allow quick learning and startup, especially for experienced Basic programmers. It lets you use the power of OS-9, yet is easy enough for a beginner.

Relative to Radio Shack Disk Basic, Random Basic has some real plusses, particularly in the built-in sort, automatic line numbering, longer variable names, and the Dump command. Some minuses would include the limited range of line numbers, lack of a Renum command, and the necessity to declare string variable length.

I enjoy this version of Basic on my OS-9 system and would recommend it if you want an interpreter that is relatively fast, and easy to interface with your OS-9 system.

— Norman Garrett

# SALE

**BMC COLOR MONITOR**  
WITH M/D INTERFACE  
**NOW \$299.00**

**MODEM PACKAGE**  
MODEM I, VIP TERMINAL, CABLE  
AND PHONE  
**NOW \$150.00**

**GEMINI 10X**  
WITH INTERFACE  
**NOW \$349.00**

**DELTA 10**  
WITH CABLE  
**NOW \$425.00**

**COMPLETE  
DISK DRIVE 0**  
REGULAR \$349.00  
**SALE \$299.00**

**GRAND SLAM**  
32/64K UPGRADE KIT  
REGULAR \$75.00  
**SALE \$60.00**

**COMPLETE  
DUAL DRIVE 0 + 1**  
REGULAR \$599.00  
**ONLY \$499.00**

**RAM SLAM**  
32K PIGGYBACK KIT  
REGULAR \$50.00  
**SALE \$25.00**

**SALE PRICES VALID TO OCTOBER 1ST.**

## GAMES

PICTURE PUZZLE	9.95 (C)
	12.95 (D)
TRAPFALL	27.95 (C)
AIR TRAFFIC	
CONTROLLER	28.95 (C)
GRABBER	27.95 (C)
DEVIL ASSAULT	27.95 (C)
BUZZARD BAIT	27.95 (C)
THE KING	26.95 (C)
DEATH PLANET	19.95 (C)
ROBOTTACK	24.94 (C)
THE FROG	30.95 (D) 27.95 (C)
STELLAR SEARCH	24.95 (C)
STELLAR SEARCH	27.95 (D)
AIRLINE	24.95 (C)
INATAK	24.95
CASHMAN	27.95 (C)
OUTHOUSE	27.95 (C)
AREX	34.95 (C)
ZAXXON	39.95 (D)
ELEC•TRON	24.95 (C)
WORLD OF	
FLIGHT	32.95 (D) 29.95 (C)
HYPER ZONE	26.95 (C)
JUNIORS REVENGE	28.95 (C)
BUMPERS	24.95 (C)

## HI - RES ADVENTURES

SHENANIGANS	24.94
CALIXTO ISLAND	24.95
BLACK SANCTUM	24.95
TOUCHSTONE	27.95
TIME BANDIT	27.95
KING TUT	29.95
SEA QUEST	24.95

## APPLICATION

ELITE-WORD	59.95
ELITE-FILE	74.50
VIP WRITER	59.95
VIP DATABASE	59.95
VIP SPELLER	39.95
VIP TERMINAL	49.95
VIP DISK ZAP	39.95
TELEWRITER	TAPE 49.95
TELEWRITER	DISK 59.95
VIP CALC	59.95

## ELECTRONIC CALLIGRAPHER

FOR EPSON/GEMINI, PROWRITER,  
OR RADIO SHACK PRINTERS  
TWO FONTS OLD ENGLISH &  
CHANCERY CURSIVE

**DISK ONLY NOW \$18.95**

## UTILITIES

FULL SCREEN EDITOR	19.95
PRINTER SPOOLER 64K	9.95
SUPER SCREEN	29.95 (C)
GRAPHIC SCREEN PRINT	
FOR GEMINI	9.95 (C)
FOR EPSON	9.95 (C)
FOR OKIDATA	9.95 (C)
FOR PROWRITER	9.95 (C)
FOR LP VII/RS	7.95 (C)
EDTASM +	49.95 (R)

## ACCESSORIES

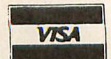
EPSON RIBBONS	7.49
GEMINI RIBBONS	2.95
LP VII, DMP100 RIBBONS	4.95
DISKS	
SENTENIAL SS/SD	19.95
SENTENIAL SS/DD	22.95
VERBATIM	34.95
2 WAY RS 232 SWITCHER	29.95
3 WAY RS 232 SWITCHER	39.95
CASSETTE CABLE	5.95
64K RAM EMBLEM	2.95
BOTEK INTERFACE	59.95
FOR EPSON	69.95
HJL-57 KEYBOARD	79.95

# DSL COMPUTER PRODUCTS INC.

**313-582-8930**

**P.O. BOX 1176 DEARBORN, MI 48121**

Michigan Residents Add 4% Sales Tax to Order. Please include \$2.00 for S. & H.



**WHEN IN DEARBORN  
VISIT OUR STORE**

**13726 W. WARREN  
1 1/2 BLKS. W. OF SCHAEFER**

some, especially with the counting programs — they provide five answer choices. I would have much rather used arrow keys.

Each program presents sixteen different questions, after which it repeats questions you answered incorrectly over and over, until you've answered them all correctly at least three times. The program then tells you what your error percentages, average times to reply, and longest times to reply were.

You progress from determining the count of two cards, through increments, to counting eight decks of cards. The programs patiently correct your mistakes. You've really got to be determined to achieve the effortless-ness Skillware says is possible. The guidebook can give no clue as to how long the process will take you. My guess is that six to twelve weeks of intense concentration, in my spare time, will turn me into the scourge of Las Vegas.

— Bonnie Hellevig

## Color Computer Interfacing, With Experiments

by Andrew C. Staugaard, Jr.  
Howard W. Sams & Co., Inc.  
4300 West 62nd Street  
Indianapolis, IN 46268  
**\$14.95, paperback, 203 pages**

This book is for anyone who ever wanted to use their Color Computer to turn on their house lights after dark. Using a micro as a preprogrammed switch-flipper is called using it as a *controller*; the electrical connections you have to make between the micro and the object you want controlled is called *interfacing*; and if you're not yet comfortable with those words, this book is for you.

Engineers and hardware geniuses don't need books telling them how to interface their micros to the real world; fumble-fingers and electronerds do. I fall into the latter group — I don't know my ac from my dc, heaven help me. And if I could find it, I wouldn't know where to put it.

The book begins with a look inside the machine, for users who have never dared. It is careful to give simple definitions of words that mean nothing to the uninitiated. It gives explanations and demonstrations of the hardware end of your computer that software people can understand. In its efforts to be clear and non-threatening, it occasionally stumbles through the Department of Redundancy Department, with side trips to the Bureau of Over-Friendliness. Better safe than sorry: I wasn't scared off, and I did understand the technical discussions.

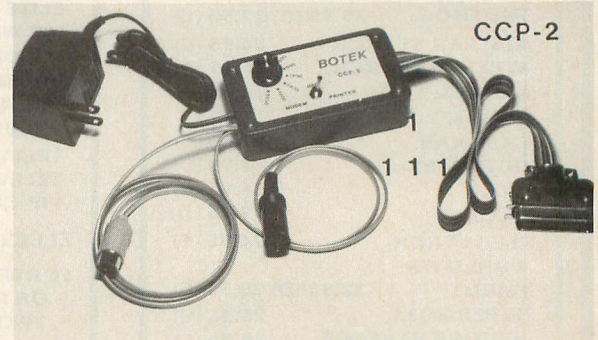
The book is not a primer on electronics. You only need a little — very little — electronics knowledge to use this book. With that background you can easily follow the book's tour through Color Computer hardware, understand how interfacing is done, and proceed with the experiments, which are demonstrations of interfacing procedures.

The book integrates hardware procedures and the software you'll need to operate your interfacing ex-

# PARALLEL PRINTER INTERFACE

FOR THE RADIO SHACK COLOR COMPUTER

- \* Runs any parallel printer from the Color Computer serial I/O port.
- \* No hardware modifications or software patches needed. Works with all standard Color Computer commands including graphics.
- \* Switch selectable baud rates from 300 to 9600.
- \* All cables and connectors included.
- \* 1 year warranty.
- \* Most printers supply power at the parallel port. With these printers you may order your interface without the power module.  
(Printers known to require the power module are: Epson, Panasonic, and Mannesman Tally.)
- \* PRICE: Model CCP-2 with modem connector & switch----- \$84.  
Model CCP-1 without modem connector & switch----\$69.  
Either model without power module deduct----- \$3.  
Shipping costs included in price.  
Michigan residents add 4% sales tax.



## CCP-1 OWNERS

UPGRADE YOUR CCP-1 TO A CCP-2 !!

Send us your CCP-1 plus \$17 ( includes shipping )  
we will add the necessary cable and switch.

# BOTEK INSTRUMENTS

313-739-2910

4949 HAMPSHIRE, UTICA, MICH., 48087

Dealer inquiries invited



periments. It's a good, solid introduction to interfacing mechanics, full of practical information for users who might only want to learn more about how hardware works.

— D.M., *Color Staff*

## Beyond Words

Computer Island  
227 Hampton Green  
Staten Island, NY 10312  
(212)948-2748

**32K**  
**\$19.95 cassette**  
**\$23.95 disk**

Beyond Words is a good example of a fine idea executed poorly. It's a language arts program with spelling, analogy, and synonym/antonym tests geared to elementary, junior high, and high schoolers. I looked at the high school version only and found a misspelled word entered as "correct" ("privilige" for "privilege"). The program also expects today's high schoolers to recognize words like "emolument" and "phlegmatic."

In the Spelling Demon exercise, users must type what they believe is the correct version of a word — not a bad exercise in itself, if you need typing instruction. I would have liked to pick and choose with one keystroke instead though, since the point of the exercise is to learn spelling. Also, if the word is misspelled via the keyboard, there's no way to enter the correct spelling.

Spelling Demon informs users that "if a word ends with an 'o' preceded by a consonant, 'es' is usually added instead of 's' to make it plural." But nowhere in the data file is there an opportunity to use the rule! Line 182 contains only one word ending in "o," and the spelling choices given are "rococo" and "rococo." The rule doesn't apply to "rococo."

Correct answers are rewarded by a high-pitched "bleep," wrong answers generate a low-pitched "duh-duh." There are no graphics anywhere but on the title page. If users want to return to the menu, the program starts afresh. They must wade through a six-second two-page title, re-enter their name,

and re-enter the printer option. The menu should be directly selectable.

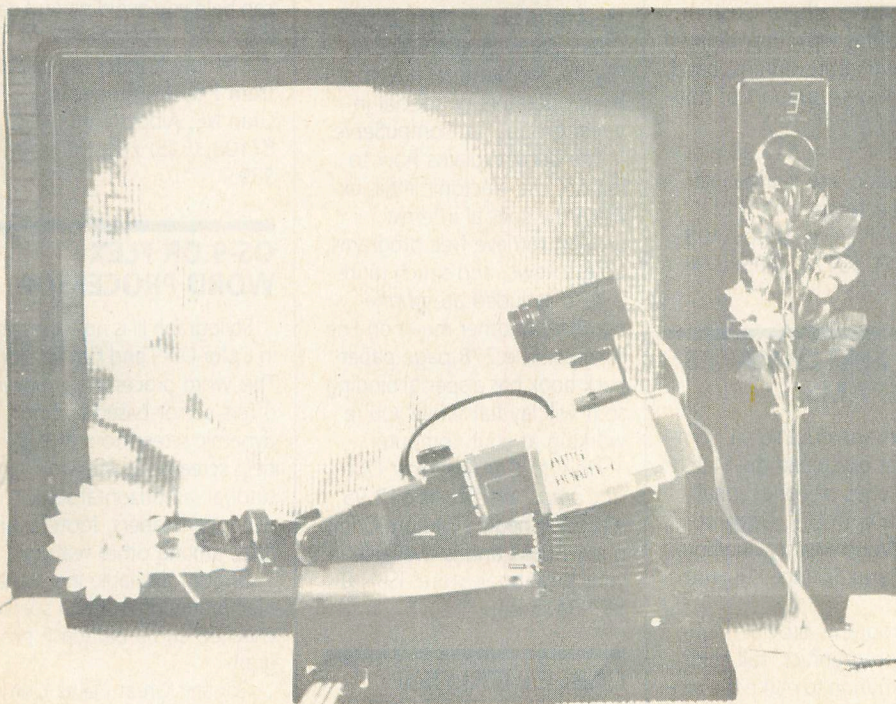
The Verbal Analogies exercise explains itself well, but again, in my opinion, many of the analogies are beyond most high schoolers. You'll find words like "disconsulate" and "nadir," "incipient," "riparian," and "querulous" there. Users determine if words are similar or opposite. The authors are not to be blamed for the deterioration of American literacy, but for aiming at the wrong audience. *Beyond Words* needs help. One saving grace is the fact that it is written in Basic and can be modified.

— Robert Gramer

*Ed. Note: Computer Island has corrected the misspelling of "privilege," and the new version of the tape now offers several opportunities to apply the rule referred to in paragraph 3.*

*Unfortunately, the new version has several other misspellings: "consensus" is misspelled "consensus" and "flaccid" is misspelled "flacid." In addition, because of the display concatenation, "disappearance" is misspelled in both screen choices.*

## Computer Servo Controlled Robot Arm



Call or Write for Free Catalog

## Analog Micro Systems

5660 Valmont Road • Boulder, Colorado 80301 • Tel: (303) 444-6809

## Robot-1

Keyboard or Joystick Control

**Remembers Everything It Did  
& does it again**

**Typical System Includes:**

- Robot-1 & Cables
- 6 Channel Servo Controller
- Power Supply
- All Software with source code

**Modular Robotic Accessories:**

- Mobile Cart for Traveling Robot
- Radio Links between all Functions
- Robot-mounted MicronEye
- Ultrasonic Range Finder

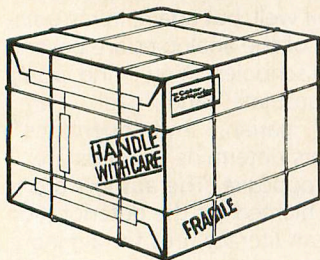
## Robot-1 Series

starting at \$289.00  
for the Color Computer  
and 6809 SS50 Computers

Additional Systems Available

**Robot-1R for Radio Control Systems**

## NEW: PRODUCTS



### COSMO GIRL TELLS ALL

And you can read about it in *Confessions of an In-fomaniac*, by Elizabeth Ferrarini.

Ms. Ferrarini searched The Source, CompuServe, and other electronic bulletin boards for men, money, and machines. She may not have found Mr. Right, but you'll watch her be drawn into the booming field of on-line communications. All the information at her fingertips could be at yours, too — from library information, banks, flight schedules, shopping, and recipes to job opportunities — maybe even a hot date!

This 202-page book is published by Sybex, 2344 6th St., Berkeley, CA 94710, (415) 848-8233. The paperback version costs \$6.95 (ISBN 0-89588-186-1) and the hardbound version costs \$12.95 (ISBN 0-89588-221-3).

### LOGO STARTER

*Logo Starter* lets you introduce your children to Logo in an easy way. It is used in conjunction with Radio Shack's Color Logo. Logo Starter requires no instruction book; just load the program and your child can draw interesting designs immediately.

Logo Starter runs on any 16K Color Computer. It is available on tape for \$13.95 postpaid. For more information, contact B & B Software, P.O. Box 210, Jenkintown, PA 19046.

### PROGRAMMING AID

Color Computer programmers will find this new 32-column paper pad a boon when they're plotting their next game or title page.

The worksheets serve a double function: They act as a listing form for program lines, and they help format the video screen. Row and column numbers are marked on the grid, simplifying PRINT@ and Print Tab statements.

The forms are available in 50-sheet pads for \$6 postpaid. Contact Gilengco, 2801 Sergeant St., Joplin, MO 64801 for more information.

### ENHANCE YOUR DISK BASIC

ADOS is an enhanced version of Disk Basic that can be used in the RAM of a 64K machine or burned into an EPROM to replace the Disk Basic ROM.

Added features include abbreviated Basic commands, lowercase command entry, auto line-number prompts, text file scan, a machine code monitor, and movable memory window, among others. Customizing utilities allow user-defined command abbreviations, baud, step rate, and support of double-sided drives.

The disk costs \$27.95 plus \$2 shipping and is available from Spectrosystems, 11111 N. Kendall Drive, Suite A108, Miami, FL 33176, (305) 274-3899.

### NEW MATCHMAKER PROGRAMS

American Educational Computer has expanded the Matchmaker series of educational software with U.S. Government, World History, Biology, French, and Science I, II, and III.

All programs provide high-resolution graphics, full color, and animation to make the programs enjoyable as well as instructional. Visual rewards and games motivate the elementary-school or junior-high audience to successfully complete the lessons.

For more information, contact American Educational Computer Inc., 2450 Embarcadero Way, Palo Alto, CA 94303, (415) 494-2021.

### BUY THAT MONITOR!

Taxan Corporation has just developed a great reason to junk your blurry color TV and get a nice crisp composite monitor with audio. It's a tuner that lets you use your monitor as a color television (that is, when you're not putting the final touches on your latest program).

The Model 305 costs \$129.95 and will be sold in computer stores and outlets handling monitors.

Contact Taxan Corporation at 18005 Cortney Court, City of Industry, CA 91748, (818) 810-1291 for more information.

### JOIN THE NETWORK NATION

Novices to on-line services and seasoned pros alike will learn much from *How to Get the Most Out of CompuServe*. Charles Bowen and David Peyton, the authors, have both been operators of special interest groups on CompuServe.

The book explains how to log on, use electronic mail, explore the special interest groups, retrieve free programs, access news, and much more.

Also included are phone numbers of other major on-line services. The 278-page paperback book has a special binding so it will lay flat while you're working at your computer.

*How to Get the Most Out of CompuServe* costs \$12.95; it is published by Bantam Computer Books and is available in your local book store. ISBN 0-553-34124-3.

### CABLES GALORE

Just can't find the right cable to connect your Color Com-

puter to your special custom-designed whatchamacallit? Computer Accessories Corporation has the answer in its line of several dozen kinds of cables.

These cables are pre-assembled, and warranted against defects in materials or workmanship for five years. The shielded cables help systems and peripherals meet the FCC's RFI emission requirements.

Costs range from \$5 to \$60; contact Computer Accessories Corporation, 7696 Formula Place, San Diego, CA 92121, (619) 695-3773 for more details.

### PROTECT YOUR DATA

Memory Minder is a disk diagnostic program that tests head alignment, index hole timing, spindle speed, and directional seek, among other parameters. If your head is out of alignment, Memory Minder can accurately align it once again.

The on-screen instructions are easy to follow. Early correction of disk drive problems can help you avoid painful data loss.

Memory Minder is available from J & M Systems, Ltd., 137 Utah NE, Albuquerque, NM 87108, (515) 265-1501, for \$79.

### OS-9 OR FLEX WORD PROCESSOR

Stylograph III is now available in Color OS-9 and Flex versions. This word processing program offers cursor-based editing, dynamic screen formatting, help screens, an easy-to-follow tutorial, a horizontal screen window, headers, footers, and tabs, among other features.

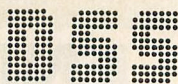
Options available include a mail merge program, a spelling checker, and a database program.

Contact Great Plains Computer Company, Inc., P.O. Box 916, Idaho Falls, ID 83402, (208) 529-3210 for more information.

# Advertisers' Index

Page	Reader Service Number	Advertiser	Page	Reader Service Number	Advertiser
------	-----------------------	------------	------	-----------------------	------------

95	40	Analog	89	19	Green Mountain Micro
67	2	Ankia Research	87	8	Halyk Software
78	16	B-5 Software	C2	33	HJL
76	20	Bacchus Computer Software	72	35	H S & Co.
6	81	Basic Technology	75	150	I.T.I.
89	17	Bercom	87	68	J & L Educational Consultants
94	28	Botek Instruments	25	37	JBM Group
12	142	Brantex	81	148	Magnetics
88	5	Cer Comp	52/53	11	Mark Data
76	7	Chattanooga Choo Choo	51	75	Microcom Software
67	6	Classical Computing	73	210	Micro Source
69	3	CNR	1	87	Microwave Systems
10	9	Cognitec	45	160	Microworks
54	10	Color Power Unlimited	81	21	Mitronix
69	153	Color Tech	82	43	Moreton Bay
36/37	12	Colorware	85	147	Mr. Gerbois
39	13	Colorware	77	44	Northglenn
14	69	Compuserve	85	45	Panamax
9	103	Computer Systems Center	83		Parsons Software
70/71	15	Computerware	27	46	PBH
6	155	Cosmos Computer	67	47	PBJ
86		Cynwyn	17	48	Petrocci
72	163	Dayton Associates	85	23	Polygon
7	55	Deft Systems	86	146	Programs Intellect
79	22	Delker Electronics	C4	1	Radio Shack
83	24	Derringer Software	81	101	Reitz
56	25	Dorsett Educational Systems	83	145	Robotic Microsystems
20		Double Density Software	57	60	Saguaro
91	36	DSL	87	80	Sailor Systems
93	51	DSS Peripherals	47	56	Skyline
33	41	Duggars Growing Systems	4/5		Softlaw
75	4	Dynamic Electronics	35	58	Softmart
88	169	Family Computers	77	64	Software House
11	30	Federal Hill Software	58/59	59	Software Support
41	29	Federal Hill Software	42	26	Speech Systems
75	156	First Coast Systems	65	62	Sugar Software
72	67	Frank Hogg Laboratory	85	71	T & D Software
69	18	Great Plains Computer	C3	63	T.C.E.
23	31	Green Mountain Micro	2		Tom Mix
			60	82	Triad Pictures
			63	89	True Data
			19	200	Vidtron
			40	65	Wayne Technology
			32		Woodstown Electronics



.....Peripherals

## THE INTRONICS EPROM PROGRAMMER

### Newly Designed Unit NEW VERSION 2.5

Plugs into ROM pack port.  Now program 8K x 8 EPROM in 15 Seconds.  On board firmware included.  No personality modules required.  Will program most EPROM's.  High quality zero insertion force EPROM socket.

**Enclosed in Molded Plastic Case**  
**Price: \$140.**

### SPLC-1 Lower Case **\$59.95**

**FOR THE COLOR COMPUTER & TDP-100**  
 TRUE LOWER CASE CHARACTERS  NO CUTTING OR SOLDERING  FULLY COMPATIBLE WITH ALL TRS-80C (SPECIFY REVISION BOARD) [NOT COMPATIBLE WITH COCO 2]  
 INVERTED VIDEO AT A FLIP OF A SWITCH

FULLY ASSEMBLED, TESTED  
& GUARANTEED FOR 90 DAYS

### YOUR SOURCE FOR THE COLOR COMPUTER

### NEW SOFTWARE

#### OS-9BBS .....\$89.95

MULTI-USER CAPACITY  FASTER THAN MOST BBS's  MULTI-TASKING (NO LONGER COMPLETELY TIES UP YOUR COCO)  REQUIRES OS-9 AND BASIC 09

\*DRIVE 0 FOR COCO .....\$329  
\*DRIVE 1 FOR COCO .....\$229

\*GUARANTEED FOR ONE FULL YEAR

\*DISK CONTROLLER FOR COCO .....\$139  
\*SATURN RS-232 PORT EXPANDER .....\$ 30  
\*POWER-ON L.E.D. KIT .....\$ 6  
\*FRONT RESET SWITCH KIT .....\$ 7  
\*LIBRARY CASE HOLDS 70 DISKS .....\$ 23  
\*NEW MULTI-COLOR RAINBOW DISKS .....\$ 25  
\*ELEPHANT DISKS SSDD .....\$ 23  
\*8 PRIME 64K RAM-CHIPS .....\$ 50  
\*GEMINI 10X PRINTER .....\$299  
\*HAYES SMART MODEM 300 .....\$235  
F-A-S-T- UPGRADE SERVICES .....\$CALL!

#### OS-9\* 40-Track Program .....\$24.95

NOW OPERATE 35/40/80 DOUBLE-SIDE, DOUBLE DENSITY DRIVES UNDER OS-9

#### 64K Terminal Package .....\$19.95

AFFORDABLE  REQUIRES 64K MEMORY  GIVES YOU 52-58K BUFFER  WRITES TO DISC  READS IN FROM DISC  STANDARD DISPLAY



.....Peripherals

62 COMMERCE DRIVE  
FARMINGDALE, NY 11735  
**(516) 249-3388**

Formerly Saturn Electronics

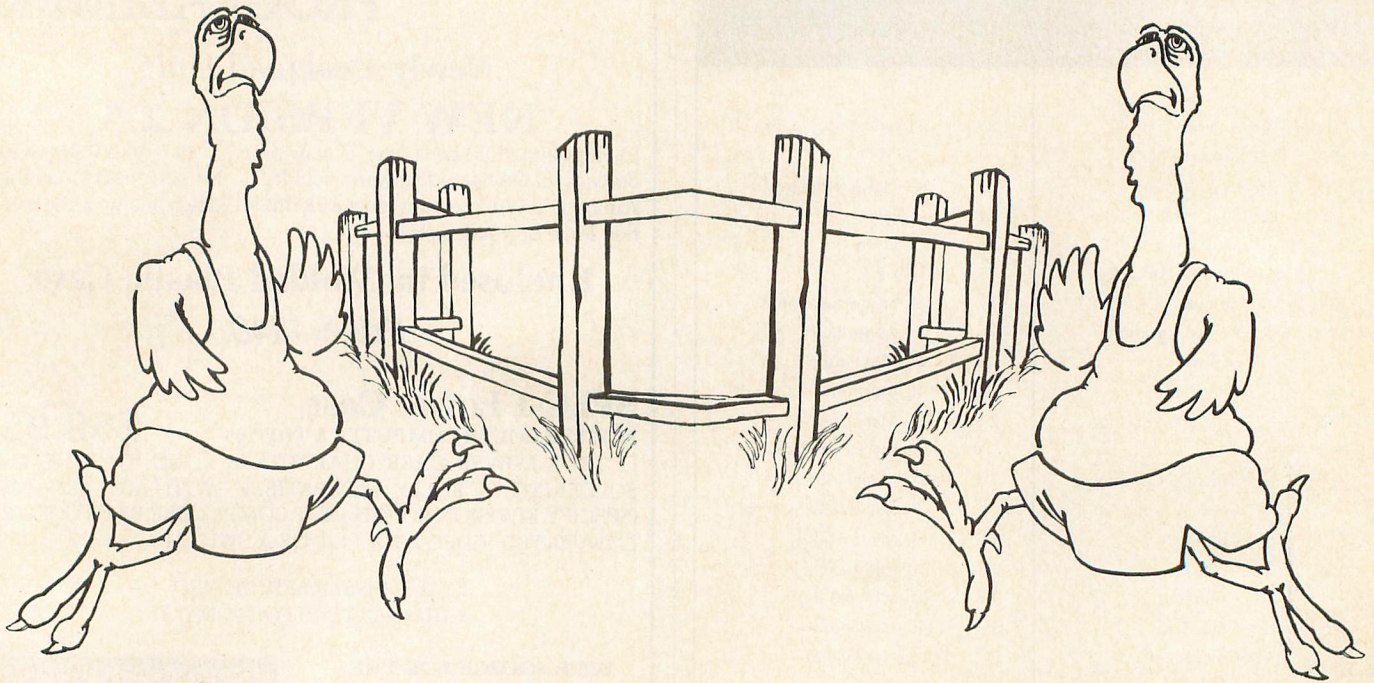
(Dealer Inquiries Invited)

\* MINIMUM \$2.00 SHIPPING & HANDLING.  
\* NYS RESIDENTS ADD SALES TAX.  
\* ALL OTHER ORDERS ADD 4% SHIPPING.

\* OS-9 Trademark of Microware, Inc.



# END OF FILE END OF FILE END OF FILE



For at least 40 hours per week, five days each week, I am immersed in the world of microcomputer technology. It is exciting to be part of the Information Age. By contrast, my wife and I also run a small home farm. The contrast is truly striking: in the office, the first thing I do in the morning is go on-line and check for electronic mail; at home I let the dog out and gather eggs.

Farming is probably the world's second oldest profession. The disbursement of computer information is probably the most recent. Even so, they have a lot in common. A truth realized on the farm can often be applied to computer publishing. Take turkeys for example.

Turkeys are stupid. We have two that we bought as four-day old chicks last May. From chicks to dinner takes about six months. May plus six months equals Thanksgiving time: next month.

The turkeys are given as much food as they can eat. They are getting fatter by the day. The idea, of course, is for the turkeys to get fat. If you are a turkey, the fatter you are the better you feel. That is why turkeys are stupid.

If I were a turkey, I would only eat enough to stay fit. Between meals I would run around my pen like a marathon runner in training. You wouldn't catch me eating just to look bigger than the rest of the flock. No sirree. When my farmer visits my pen

come mid-November I want him to see breeding stock, not Thursday's entree.

As if that weren't enough, the few times I haven't been attentive enough, and the feeder has become empty, those dumb birds stand there and peck at it anyway. They're not even smart enough to know when the grain bin is empty. They just stand there looking big and fat and ugly and stupid.

But that is the nature of turkeys. They can't help being what they are. And no matter how many times the little boy who lives across the street tells my turkeys to stop eating, they won't. Not even when the grain bin is empty.

— K.L., Editor-in-Chief

SEND  
FOR FREE  
CATALOG

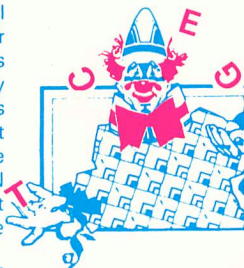


Dealer  
inquiries  
invited

### ABC'S IN COLOR

In the ABC program, all 26 letters spring up in color to the familiar ABC tune. Then, colorful detailed pictures depicting each individual letter of the alphabet appear one by one. Your child's fascination will mount as he or she correctly presses the letter on the keyboard and is rewarded with a musical tune before the next detailed picture is drawn line by line onto the screen: AIRPLANE for A, BUS for B, CLOWN for C and so on to ZEBRA for Z. Truly a must program for the preschool to first grade age group!

CoCo 16K ECB . . . . . Tape: \$19.95 Disk: \$25.95



TM

### SPELL BOMBER

As captain of your ship, you must destroy the enemy bomber by spelling the mystery word. In this exciting and educational game the bomber gets closer with each inaccurate letter. You have only EIGHT tries to guess the mystery word or your ship will be bombed! If you guess the word correctly, GENERAL QUARTERS will sound and your ship will fire a missile to destroy the bomber. Three levels are available: EASY, MEDIUM, and HARD. Challenging for all ages!

Atari 16K . . . . . Tape: \$18.95  
CoCo 16k ECB . . . . . Tape: \$18.95 Disk: \$22.95  
Vic 20 13k . . . . . Tape: \$18.95

### SPELLING BEE

The word is pronounced vocally and it is up to you to type in the correct spelling. If wrong, the computer will be your friend and flash the word on the screen for just an instant. OK! Try typing the word in again. STILL WRONG! The computer wants success and allows you to see the word again this time a little longer. If you just can't spell the word, the computer realizes you need to learn to spell the word and leaves the word on the screen for you to copy. Try your best and the computer has a surprise for your reward!

SPELLING BEE I . . . GRADE 1 & 2      SPELLING BEE III . . . GRADE 5 & 6  
SPELLING BEE II . . . GRADE 3 & 4      SPELLING BEE IV . . . GRADE 7 & 8  
CoCo 16k ECB . . . . . TAPE: \$16.95 Each

### CRISS—CROSS MATH

As the program begins, your child is presented with a nine square playing board. It is your choice as to which square you choose. After a choice is made, a MATH PROBLEM appears in the square. You score your first X by answering the problem correctly. If your answer is incorrect, the square clears and your opponent is allowed his choice of squares. The game is over when three squares vertically, horizontally, or diagonally are won by the same player. When playing against the computer, every answer you get wrong is won by the computer. Multi-level ADDITION AND SUBTRACTION program.

CoCo 16K . . . . . Tape: \$12.95

### FRACTIONS

SIDE ONE: Fraction Lessons, explains fractions with the aid of graphics. Child studies the different ways fractions can be represented. Lessons include:

- IMPROPER FRACTIONS
- MIXED FRACTIONS
- PROPER FRACTIONS

Many educators have praised the use of motion and color to display the fractional equivalents.

SIDE TWO: Fraction practice, offers a random computer generated quiz.

Atari 16k . . . . . Tape: \$19.95  
CoCo 16k . . . . . Tape: \$19.95

### JOYSTICK DRAW

Joystick Draw is the simple way to explore your artistic talents! Program operation is easy enough for a child to use, but effective enough that TCE uses it to design many sophisticated high-resolution graphic screens. Joystick Draw's design allows you or your child to save those masterpieces for future revisions or for use in other programs (instructions included). Your child will spend many hours enjoying this program and at the same time improving his or her eye hand coordination! You will find Joystick Draw to be an easy way to design those more sophisticated graphics for your own programs!

CoCo 16K ECB . . . . . Tape: \$16.95

### TC—INVENTORY

Many insurance companies offer a discount for policy holders which have complete inventories on file. TC — Inventory is designed to help you organize, maintain, and compile the personal belongings of your home. Program is user friendly and menu driven. TC — Inventory allows input for location of item, price of item, serial number of item, date of purchase, and a text written description of the item. Don't put off recording your personal belongings until its too late. Requires printer for hard copy.

CoCo 32k ECB . . . . . Tape: \$16.95

### TEACHING CLOCK



Torn between teaching time on a digital or a conventional (face and hands) clock? Well, this program combines the two using high resolution graphics and prompts! Your child will learn to tell time with the aid of a specially designed CLOCK! Child enters the time, if wrong, the center of the clock displays a graphic aid. If the child is correct a musical reward is heard. Program offers three levels: hours, quarter hours, and five minute intervals.

Apple 48k . . . . . Disk: \$19.95  
Atari 32k . . . . . Tape: \$16.95  
CoCo 16k ECB . . . . . Disk: \$19.95 Tape: \$16.95



Additional Educational Software available  
for Color Computer, TDP 100, Atari®,  
Apple®, Commodore 64®, and VIC 20®.



P.O. Box 2477 Gaithersburg, Maryland 20879 (301) 963-3848

# JUST FOR YOU...NEW LOW PRICES!

## Radio Shack's Color Computer 2 Cut \$40



Radio Shack just lowered the cost of color computing, slashing the price of our incredibly popular Color Computer 2 by \$40. The 16K Color Computer 2 with Standard BASIC (26-3134) is now just \$119.95. The 16K Color Computer 2 with Extended BASIC (26-3136) is just \$159.95.

**Choose the Color Computer Right for You.** Both Color Computer 2 models are perfect for beginners who want real computer power in an easy-to-use machine. Best of all, the Color Computer 2 grows with you, with storage and software options to make it a powerful home computing system. Both models use the BASIC computer language and come with an easy-to-read manual to get you started in programming. And the Color Computer 2 with Extended BASIC creates high-resolution graphics with simple one-line commands.

**Available Nationwide.** Visit your nearest Radio Shack Computer Center, participating store or dealer today, and find out how easy and exciting home computing can be with a Color Computer 2.

**Radio Shack<sup>®</sup>**  
**The Technology Store<sup>™</sup>**

A DIVISION OF TANDY CORPORATION

Prices apply at participating Radio Shack stores and dealers.