

Just for your
RS-80® COLOR
TDP System 100
Dragon & MC-10

May 1984

Canada \$4.95 U.K. £3.35

\$6.95

The RAINBOW®

THE COLOR COMPUTER MONTHLY MAGAZINE

PRINTER ISSUE

A Better Spooler
Colorful Banners
Mailing Labels
Dot Graphics



PLUS GAMES GRAPHICS UTILITIES
AND MORE THAN 30 PRODUCT REVIEWS



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

M 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

From Computer Plus to YOU...

PLUS after PLUS after PLUS



Model 100 8K \$679
Model 100 24K \$835



Color Computer II 16K \$135
w/16K Ext. Basic \$165
w/64K Ext. Basic \$210



Model 4 16K \$849
Model 4 64K
2 Disk & RS232 \$1699



DMP120 \$395
DMP200 \$520



Color Computer Disk Drive
Drive 0 \$329 Drive 1 \$235



DWP210 \$629

BIG SAVINGS ON A FULL COMPLEMENT OF RADIO SHACK COMPUTER PRODUCTS

COMPUTERS

Model 4 Portable	
64K w/2 Drives	1525
Model 2000 2Dr	2299
Model 12 1 Drive	2360
Model 16B 1Dr 256K	3965

MODEMS

Hayes Smartmodem II	225
AC-3	129
DC Modem I	89
DC Modem II	160

PRINTERS

Silver Reed EXP500 D.W. Ser.	455
Silver Reed EXP550 D.W. Par.	525
CGP115	159
CGP220 Ink Jet	545
DMP110	305
DMP420	735
Toshiba 1340 (24 wire head)	779
Gemini 10X	289
Gemini 15X	409
CITOH Prowriter	359
Okidata	CALL
Epson	CALL

ETC.

Disk Drive Controller	139
Extended Basic Kit	39.95
PBH Ser/Par Conv.	69
64K Ram Chips	62.95
Deluxe Keyboard	35.95
Superpro Keyboard	69.95
HJL Keyboard	79.95
CCR-81 Recorder	52
Deluxe Joystick (each)	35.95
Joysticks (pair)	22
Video Plus (monitor adapter)	24.95
Video Plus IIC	39.95
Amdek Color 1+ Monitor	299
BMC Color Monitor	255
BMC Green Monochrome Monitor	99
Taxan Green Mono. Monitor	130
Taxam Amber Mono. Monitor	139

SOFTWARE

	(Tape Version)
Zaxxon	34.95
The King	26.95
Trap Fall	27.95
Buzzard Bait	27.95
Devil Assault	27.95

Colorpede	29.95
Juniors Revenge	28.95
Pac Attack	24.95
Block Head	26.95
Froggie	24.95
Lunar Rover Patrol	24.95
Lancer	24.95
Typing Tutor	23.95
Galagon	24.95
Scott Adams Adventures	19.95
Sea Dragon	34.95
Colorcome	49.95
Telewriter 64	49.95
O-Pak (disk)	34.95
Key-264K	39.95
Elite-Calc	59.95
VIP Writer	59.95
VIP Calc	59.95
VIP Terminal	49.95
VIP Database (disk)	59.95

Order any 2 software pieces listed and take 10% off their listed price. All Radio Shack software 10% off list. Send for complete list.

**CALL TOLL FREE
1-800-343-8124**

- LOWEST POSSIBLE PRICES
- BEST POSSIBLE WARRANTY
- KNOWLEDGEABLE SALES STAFF
- TIMELY DELIVERY
- SHOPPING CONVENIENCE



computer plus

P.O. Box 1094
480 King Street
Littleton, MA 01460

SINCE 1973

IN MASSACHUSETTS CALL (617) 486-3193

Under the Rainbow

FEATURE ARTICLES



Make Your Own Kind Of Magic/ <i>Dennis H. Weide</i>	18
Printer Utility Showing off your printer's capabilities	
Two Jobs In One/ <i>Damon Swanson</i>	23
Printer Utility An enhanced spooler program	
A Three-Ring Circus At CoCo Beach/ <i>Jim Reed</i>	26
RAINBOWfest Report An eventful weekend in Long Beach	
Software Piracy: The Great Debate/ <i>Bill Nolan</i>	29
Special Report A seminar on software thievery	
Changing Addresses/ <i>Dennis Derringer</i>	38
Disk Utility Quickly relocate ML programs	
Multicolored Mod Messages/ <i>Doug Lindsay</i>	41
Printer Utility Creating colorful banners	
CoCo Grows Up/ <i>Ed Eilers</i>	49
Tutorial An updated, uplifting upgrade	
Scrubba Dub Dub/ <i>Barry E. Becker</i>	54
Printer Utility Cleaning your printer's head — without shampoo	
Stylish Types From The Past To The Future/ <i>Mike Fahy</i>	67
Printer Utility Using dot graphics	
The Best Looking Envelope/ <i>Charles M. Thonen</i>	74
Printer Utility Creating a useful mailing label	
Wish You Were Here/ <i>Don Hughes and Jessie James</i>	84
Printer Utility Printing personalized postcards	
Rockin' Round The CoCo/ <i>Fred B. Scerbo</i>	89
Rainbow Wishing Well A printout of your favorite rock group	
And Now There Are CoCo Widows/ <i>Susan P. Davis</i>	119
Commentary A look at women in the CoCo Community	
Women In The Computer Revolution/ <i>Sara Nolan</i>	121
Special Report A seminar at RAINBOWfest	
3...2...1... Blastoff!/ <i>Jeff Kawa</i>	131
Graphics A close-up of the CoCo Columbia	
Colorful Correspondence/ <i>Thomas Szlucha</i>	135
Printer Utility Custom labels drawn in colors	
Pretty As A Printout/ <i>Thomas Szlucha</i>	137
Printer Utility Creating pictures with the CGP-115	
Print It, Print It!/ <i>James Provost</i>	149
Utility Synchronous output to screen and printer	
It's A Bargain!/ <i>Edward R. Carson</i>	156
Home Help A sell-sational garage sale program	
Playing The Ponies/ <i>Leonard Hyre</i>	166
Derby Special Weighing the odds	
Nerdy, But Nice/ <i>Jerry D. Forsha</i>	177
Game Fun with Q*bert's nerdy little friends	
Run For The Roses/ <i>M. J. Himowitz and J. Nelson</i>	180
Printer Mystery A Derby printout	
Let's Blow This Joint/ <i>Doug Thorsvik</i>	195
Game An alarmingly fun bank heist	



DEPARTMENTS

Advertiser Index	321
Back Issue Information	311
Basic Training/ <i>Joseph Kolar</i>	116
A full-baked debugging session	
Bits And Bytes Of BASIC/ <i>Richard White</i>	31
A lesson on memory maps and machine language	
Building May's Rainbow/ <i>Jim Reed</i>	16
A many-hued preview to this month's issue	
CoCo Clubs	282
CoCo Counsel/ <i>Tom Nelson</i>	288
A guide to buying your printer	
CoCo Graphics/ <i>Don Inman</i>	125
Examining LOGO through the eyes of BASIC	
The Dragon's Byte/ <i>Bill Nolan</i>	142
A filing system for your fantasy role-playing characters	
Education Notes/ <i>Steve Blyn</i>	190
A "home run" lesson on list manipulation	
Education Overview/ <i>Dr. Michael Plog</i>	52
Curriculum questions on computer education	
GameMaster's Apprentice/ <i>Bob Albrecht</i>	113
Creating a random name file	
Greetings From Uncle Bert/ <i>Dale Peterson</i>	185
Springtime and the turtles are hatching	
Letters To Rainbow/ <i>Our Readers</i>	7
The Pipeline/ <i>Staff</i>	152
PRINT #-2,/ <i>Lawrence C. Falk</i>	14
Editor's Notes	
RAINBOW Info	48
Rainbow Scoreboard	210
Received And Certified	202
Reviewing Reviews	206
School Is In The Heart Of A Child/ <i>Fran Saito, Bob Albrecht</i>	60
Children's evaluations of programs	
Submitting Material To Rainbow	189
Subscription Information	39
These Fine Storés	318
Turn Of The Screw/ <i>Tony DiStefano</i>	188
Designing your own video monitor adapter	

(No corrections are listed in this month's issue.)

RAINBOWTECH

Downloads/ <i>Dan Downard</i>	293
Answers to your technical questions	
hogg_wash/ <i>Frank Hogg</i>	314
Comparing FLEX and OS-9	
KISSable OS-9/ <i>Dale L. Puckett</i>	297
Some technical potpourri	

PRODUCT REVIEWS

Product Review Contents	201
-------------------------------	-----

NEXT MONTH: June is our music issue, featuring a number of noteworthy routines to show off your CoCo. We'll have lessons on guitar chords, a method for finding chords on your computer and a CoCo concert — from the classics to a little ragtime. And, keeping in tune with our usual harmonious blend, we'll have business programs as well as ones for home improvement, a database program and more.

Plus, dozens of articles, features and hardware and software reviews — more information on the CoCo than is available anywhere else!

The RAINBOW

May 1984

Vol. III No. 10

Editor and Publisher
Lawrence C. Falk

Managing Editor James E. Reed
Senior Editor Courtney Noe
Technical Editor Dan Downard
Copy Editor Susan Remini
Submissions Editor Jutta Kapfhammer
Editorial Assistants Valarie Edwards,
 Wendy Falk, Suzanne Kurowsky,
 Lynn Miller, Shirley Morgan,
 Noreen Morrison, Kevin Nickols
Technical Assistant Ed Ellers
Contributing Editors Bob Albrecht, Steve Blyn,
 Tony DiStefano, Frank Hogg, Don Inman, Joseph
 Kolar, Dennis Lewandowski, Tom Nelson, Bill
 Nolan, Dale Peterson, Michael Plog, Dale Puckett,
 Fran Saito, Paul Searby, Fred Scerbo, Richard
 White
Art Director Sally Nichols
Assistant Art Director Jerry McKiernan
Designers Peggy Henry, Neal C. Lauron
Advertising Manager Charlotte Ford
Advertising Assistant Debbie Baxter
 (502) 228-4492
General Manager Patricia H. Hirsch
Asst. General Manager for Finance Donna Shuck
Bookkeeper Diane Moore
Advertising Accounts Doris Taylor
Dealer Accounts Judy Quashnock
Administrative Assistant to the Publisher
 Marianne Booth
Rainbowfest Site Management Willo Falk
Director of Fulfillment Services Bonnie Shepard
Asst. Customer Service Manager Deidra Henry
Customer Service Representative Sandy Apple
Word Processor Manager Lynda Wilson
Rainbow On Tape Subscriptions Monica Wheat
Research Assistants Laurie Falk,
 Wanda Perry, Loretta Varda, Kara Voit
Dispatch Mark Herndon
Production Assistant Melba Smith

Advertising and Marketing Office for the western states and provinces: Cindy Shackelford, director, 12110 Meridian South, Suite 8, P.O. Box 73-578, Puyallup, WA 98373-0578, phone (206) 848-7766.

Garland Associates, Inc., is the advertising representative for The RAINBOW in the eastern United States. Advertisers east of the Mississippi may contact them for further information. Garland Associates, Inc., P.O. Box 314, S.H.S., Duzbury, MA 02331, (617) 934-6464 or 934-6548.

The RAINBOW is published every month of the year by FALSOFT, Inc., 9529 U.S. Highway 42, P.O. Box 209, Prospect, KY, 40059. Phone (502) 228-4492. The RAINBOW and The RAINBOW logotypes are trademarks of FALSOFT, Inc.

Second class postage paid Prospect, KY and additional offices. USPS N. 705-050 (ISSN No. 0746-4797). POSTMASTER: Send address changes to The RAINBOW, P.O. Box 209, Prospect, KY 40059. Forwarding Postage Guaranteed. Authorized as second class postage paid from Hamilton, Ontario by Canada Post, Ottawa, Ontario, Canada.

Entire contents © by FALSOFT, Inc., 1984. The RAINBOW is intended for the private use and pleasure of its subscribers and purchasers and reproduction by any means is prohibited. Use of information herein is for the single end use of purchasers and any other use is expressly prohibited. All programs herein are distributed in an "as is" basis, without warranty of any kind whatsoever.

TRS-80, Color BASIC, Extended Color BASIC, Scripsit and Program Pak are trademarks of the Tandy Corp. CompuServe is a trademark of CompuServe Inc.

Subscriptions to The RAINBOW are \$28 per year in the United States. Canadian and Mexican rates are U.S. \$35. Surface mail to other countries is U.S. \$65, air mail U.S. \$100. All subscriptions begin with next available issue.

Limited back issues are available. Please see notice for issues which are in print and costs. Payment accepted by VISA, MasterCard, American Express, Cash, Check or Money Order in U.S. currency only.

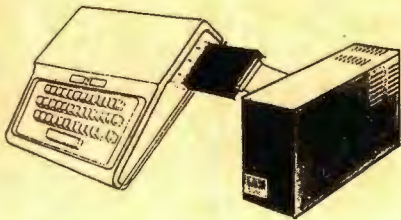
MICRO R.G.S. INC.
751, Carre Victoria, Suite 405, Montreal, Quebec, Canada, H2Y 2J3

computer mail order

DISK DRIVES **CoCo**

for the TEAC & TANDON DISK DRIVES

40 track - 6 ms trk-trk
FULLY COMPATIBLE



drive Ø
\$339.00

drive 1
\$199.00

SPECIAL

DISKETTES

FREE PLASTIC LIBRARY CASE INCLUDED WITH THE PURCHASE OF EVERY BOX OF DISKETTES

5" DISKETTES!
SOFT SECTOR
40 TRACK
DOUBLE DENSITY WITH HUB REINFORCING RINGS
PACKAGE OF 10



CoCo HARD DISK DRIVES

5 meg \$1295

10 meg \$1595

-- COMPLETE ----- JUST PLUG IN -----

HARD DISK-OPERATING SYSTEM features

- FULLY INTEGRATED INTO COLOR DISK BASIC
- TAPE TO HARD DISK
- DISK TO HARD DISK
- HARD DISK TO TAPE
- HARD DISK TO DISK
- DUPLICATE
- COLD START
- M-RUN
- ALL EXTENDED BASIC COMANDS

INTERFACE CARD & H-DOS[®] operating system \$425⁰⁰

PERIPHERAL H-DOS UTILITY PACK \$129⁰⁰
BOOT STRAPS OS-9, FLEX, MDIR (master directory)

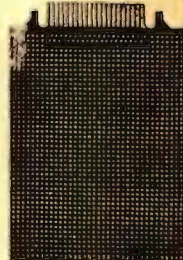
PARALLEL INTERFACE
for the GEMINI printer
300 to 9600 baud
complete with cables



\$ 5495

PROJECT BOARDS

GOLD PLATED EDGE CONNECTOR
FOR PERIPHERAL EXPERIMENTS



\$ 29⁹⁵

64K Memory Expansion Kit 4900
All parts and complete instructions

NOW AVAILABLE!!

OS 9 users.....
128K MEMORY board
MEMORY MAPPED INTO
32K BYTE BLOCKS
including RAM chips
PRICE call ?

COLOR **MODEM 300**

direct connect smart modem card
multipak interface compatible
auto answr, auto dial, re-dial, search,
full audio line monitoring
full duplex, 300 baud

\$169.95

SOFTWARE

	SOFT LAW	ROM	D
VIP WRITER		\$59.95	\$59.95
VP SPELLER		-	\$49.95
VIP CALC	\$59.95	\$59.95	
VIP TERMINAL	\$49.95	\$49.95	
VIP DATA BASE	-	\$59.95	
VIP DISK-ZAP		-	\$49.95

	COMPUTERWARE	T	D
* JUNIOR'S REVENGE		\$28.95	\$31.95
* TIME PATROL		\$24.95	\$29.95
* HYPER ZONE		\$28.95	\$29.95
* COLOR BASIC COMPILER		-	\$29.95
* 64K SCREEN EXPANDER (64K)		\$24.95	\$27.95
* THE SOURCERER		\$34.95	\$39.95
* DISK MACRO ASSEMBLER & XREF		-	\$49.95
* COLOR EDITOR		\$24.95	\$29.95
* COLOR MONITOR		\$24.95	\$27.95

	ELITE SOFTWARE	T	D
ELITE-WORD		\$59.95	\$59.95
ELITE-CALC		\$59.95	\$59.95
COGNITEC			
	T	D	
TELEWRITER 64	\$49.95	\$69.95	
PRICKLY-PEAR SOFTWARE			
	T	D	
ADVENTURE IN WONDERLAND	\$24.95	\$29.95	
THE DISK MANAGER	-	\$29.95	
THE DISK MASTER	-	\$24.95	

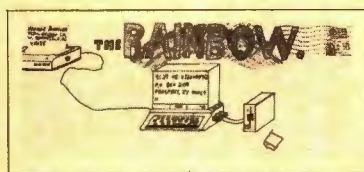
USA
MICRO R.G.S. INC.
30 CANUSA STREET
BEEBE PLAIN, VERMONT,
05823, USA
US Toll free line **800-361-4970**

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**

CANADA
New! TORONTO OFFICE
696 Yonge St., #704
Tel: (416) 967-1730
Canadian Toll Free **800-361-5155**

RAINBOW

ARTS AND LETTERS



Envelope Of The Month

George Mueller
W. Bloomfield, MI

A COMPUFAIR

Editor:

The Northern Pennsylvania Amateur Computer Club and the Hazleton Campus of Penn State University will hold their third annual Computer Fair May 19, 1984. CompuFair '84 will be held on the Hazleton Campus at Penn State in Hazleton, Penn.

The fair will feature seminars, workshops, vendor displays and demonstrations by the club's user groups. For more information call (717) 454-8731.

George Lee
Hazleton, PA

INFORMATION PLEASE

Editor:

I purchased a Gorilla Banana Printer for my CoCo and would like to know if anyone knows of a screen dump program I can use with it. By the way, anyone interested in buying a Banana Printer should make sure the printer is sent with a serial interface unless you have a parallel/serial converter. The Banana is a fine printer but if you don't specify a serial interface when ordering you may be disappointed when it arrives and end up spending at least \$60 for an interface cable, like me. Write: 16718 Polo Road, 61081.

Marty A. Mapson
Sterling, IL

Editor:

I have some questions about the machine language listings in your Rainbow On Tapes.

How do you load the listing so that it can be displayed on the screen? How do you make changes to the listing? How can you print out the listing to a printer?

I have *EDTASM+* from Radio Shack.

Les Durni
Milton, FL

Editor's Note:

You must use a disassembler such as the one available in *ZBUG*.

AUTOSTART ACTION

Editor:

Is there a way to make a program *RUN* automatically once it is loaded from tape?

Harry A. Thayer
Ravena, NY

Editor's Note:

See Steve Abrams' letter.

Editor:

I would like you or your readers help! I would like to know how to autostart Extended BASIC or machine language programs loaded from tape or disk.

There is so much information and helpful tips in your publication that I thought you or your readers might solve this problem for me?

Richard A. Thomas
Ferndale, WA

Editor's Note:

See the following letter.

Editor:

Recently there have been a rash of new programs on disk which when *LOADMed*, perform their own start without having to type in *EXEC*. Also some of these programs start again at the beginning when the *RESET* button is pushed.

How can this be accomplished before the program even starts?

Steve Abrams
San Francisco, CA

Editor's Note:

By loading a small program into low memory you can force a program to autostart by modifying certain memory locations. You can also force a program to restart upon *[RESET]* by the same method. See the *Rainbow* "Memory Map" and see if you can identify these addresses. You may start at \$9F.

Editor:

I am a recent proud owner of a CoCo 2 Extended BASIC computer. At the time of purchase your magazine was recommended to me. I have a copy of the January 1984 issue and it is better than I had anticipated.

One of the things I wanted to do with my new CoCo is to place on tape 7½ generations of my family tree with all the data about each generation. At present I have about 90 to 96 direct ancestors and others to record.

I am having problems finding a program for genealogy. Would you know of any pro-

gram that would handle this much information and where I could obtain it?

LaVerne Ashabranner
Jeffersonville, Ind.

Editor's Note:

See *All in the Family Tree*, February 1984, Page 78. Also West Bay Company has a genealogy program called *Roots*.

SOME DO'S AND DONT'S

Editor:

I am 13 and have a 64K CoCo. I enjoy your magazine a lot and especially enjoy "Letters to Rainbow." I'm in a computer club at school and recently several computers have broken down. They have blamed this on the peeks and pokes of our programs. So, we have three angry teachers and some poor kids who are being punished for it. I told them that it was impossible for the program to hurt the computer. (So I live dangerously.) But being that I'm a kid, I guess they started telling me how wrong I was.

I have read a statement somewhere about software hurting hardware but can't find that particular issue to prove my story is true. Who's right?

Can I use peeks and pokes safely from now on without worrying about hurting the computer?

Dylan Krider
Houston, TX

Editor's Note:

Dylan, the computer will *not* be damaged by any command you type in or by any program you run, even if there are errors. One thing that will wreck a CoCo is plugging or unplugging cartridges or disk controllers (anything that goes into the cartridge slot) with the CoCo turned on. Always switch the CoCo off before changing cartridges.

Editor:

I have a 1.0 "D" board, upgraded to 32K. I recently bought a Radio Shack DWP-210. To get it to work, I needed to install a new Color Basic 1.1 chip, #8040364 A. It takes about 10 minutes to pop out the original and put in the new chip.

Does anyone know how to get the DWP-210 to underline using the *Telewriter* word processor?

Write me: Route 2, Box 577A, 56367,
Eugene J. Benlek
Rice, MN

LOST AND FOUND

Editor:

Over the past couple of years, I've gained quite a large stockpile of information about CoCo products — more information than I can afford to take advantage of. I'm on the mailing lists of several large CoCo software companies, so I have a lot of new product information coming in at regular intervals. I'd like to extend an invitation to *Rainbow* readers, especially those who may be new to the CoCo Community. If anyone is looking for a certain type of program and they've had no success finding it so far, they can write me at 1801 17th Avenue, 49858. I'll try to answer any letters as quickly as possible. I feel that CoCo is a great machine and there are a lot of great products available — hopefully I can help people find some of them.

Dale Dobson
Menominee, MI

GAMES, GAMES, GAMES

Editor:

I recently typed in an Adventure game from the February 1984 issue *The Amazing Adventures of Karrak*. I cannot get past the pit and I don't know what goes in the slot on the first game. If anyone knows the solution to my problem, please send it to me: 11 Walnut Dr., 06248.

Mark McConnell
Hebron, CT

Editor:

I'm only 11 but I think your magazine is great!

If someone in CoCoLand has some answers to *El Diablero*, I would appreciate it. Please send all clues and solutions to me at: Box 473, P0J 1E0.

Marc Brisson
Earlton, Ontario

Editor:

I need answers to the Adventures *Raaka-Tu* and *Pyramid*. Please help!

If anybody has the answers to the above questions, write me at P.O. Box 555, 78040.

Fred Turner
Laredo, TX

OH, MUMMY

Editor:

For all of you Adventure buffs who are still having trouble in *Pyramid* and *Raaka-Tu*, I have a few major tips for you. In *Pyramid*, no one can seem to find the Pharaoh's chest. It is deep within the maze, past the pit. This information has been printed before, yet the person always would leave out one vital piece of information. When you get to the pit in the maze, go east one more time, and then go northwest, then you should see the words "Dead End." This is where the chest is. In order to get it, the mummy has to have previously taken some of your treasures. If he has, you will see your treasures, and the chest. If you do not know

how to get the mummy to take your treasures, or you cannot get to the pit, write me, and I will tell you.

In *Raaka-Tu*, when you leave the temple, you only have 25 points, yet you have all of the treasures. To solve this, when you leave the temple, go west twice, and then north three times, then press "Score," and you have 50 points. If you can't find any of the treasures, or just need to find one more, just write me at: 110 Ashley Drive, 29631.

John Allen
Clemson, SC

Editor:

I have reached the 220 points for *Pyramid* which was quite a challenge. I can see why some people are running into a lot of problems. Any questions you have, I would be glad to answer, 1058 E. 9th Avenue, 85204.

Judy Fodness
Mesa, AZ

Editor:

I have helpful hints to solving *Bedlam*. I have answers to questions such as: How do you get the red key? How do you get the green key? How do you stop wandering? How do you get out? If you need any help on *Bedlam*, send a self-addressed stamped envelope to: 1450 Picadilly Street, 23513. One dollar handling appreciated. I will also include a map of *Bedlam*.

Harry L. Perkins, III
Norfolk, VA

EARLY GAMES FOR YOUNG CHILDREN



The Best Selling Program for Young Children
Now Available for: TRS-80 Color Computer-
16K disk or cassette and TRS-80 Models
I/III-32K disk or 16K cassette

Nine fun educational games for children ages 2½ to 6

Phone Orders: 800-328-1223
Minnesota: 612-926-7888

Educators Endorse: "Early Games can help children learn new concepts, information and skills, and also introduces them to the joys and benefits of home computers."

Peter Clark, Faculty
Institute of Child Development
University of Minnesota

No adult supervision required. The Picture Menu gives children control. They can:

- Match Numbers
- Match Letters
- Count Colorful Blocks
- Learn the Alphabet
- Add Stacks of Blocks
- Spell their Names
- Subtract Stacks of Blocks
- Compare Shapes
- Draw and Save Colorful Pictures

All
nine games
for \$29.95

counterpoint software, inc.
4005 West Sixty-Fifth Street
Minneapolis, Minnesota 55435

Yes!

Please rush me *Early Games for Young Children*

Circle one:
Model I Disk Color Computer Disk Model I/III Cassette
Model III Disk Color Computer Cassette

Name _____

Address _____

City _____ State _____ Zip _____

My check for \$29.95 is enclosed (Minnesota residents add 6% sales tax).

Charge to VISA Charge to Mastercard

Acct. No. _____ Expiration Date _____

Color Power II

Expands Your CoCo to CP/M

```

01          * * * ACTUAL COLOR POWER II DISPLAY * * *
02
03 COLOR POWER II GIVES YOU MORE --- INCLUDING:
04 POWERFUL FOUR MHz Z-80A
05
06 MOTOROLA 6845 WHICH GENERATES A HIGH QUALITY 80 COLUMN BY 24 LINE DISPLAY
07 WITH UPPER and lower case characters on your composite video monitor,
08 INSTRUCTIONS INCLUDED ON USING 6845 DIRECTLY FROM YOUR CoCo
09
10 USES CoCo COMMANDS, NO NEW OPERATING SYSTEM TO LEARN SUCH AS OS-9 OR FLEX
11
12 ABSOLUTELY NO 64K CoCo or CoCo II HARDWARE MODIFICATIONS NEEDED
13
14 RUNS THOUSANDS AND THOUSANDS OF CP/M PROGRAMS
15
16 SUPPORTS DOUBLE-DENSITY CoCo DISK FORMAT FOR MAXIMUM STORAGE CAPACITY
17
18 INCLUDES POWER SUPPLY
19
20 CHARACTER SET INCLUDES UPPER CASE, lower case with descenders (gjpqy),
21 ██████████ ██████ _---:;_.,.( < > " # $ % & ! + - * / = [ ] ^ _ ` ' █ █ █ (total of 128)
22
0000000001111111112222222222333333333344444444445555555555666666666677777777778
1234567890123456789012345678901234567890123456789012345678901234567890

```

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™. It's that simple!

Introductory Prices:
 Color Power II **\$299.00**
 Color Power II plus WordStar® & MailMerge® **\$469.00**
 Add SpellStar™ and StarIndex™ for only..... **\$ 79.00**

You now have a fully professional CP/M compatible computer that generates an 80 column by 24 line display on your 80 column monitor with upper and lower case characters and works with your CoCo commands.

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-D, New Providence, N.J. 07974 (201) 665-9646

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

TWO FOR THE TICKLE

Editor:

Have you heard these two?

Wife of Computer Enthusiast: "Why did the computer see a chiropractor?"

Computer Enthusiast: "I don't know. Why?"

Wife: "Because it had a slipped disk."

.....

Computer Enthusiast: "Why did the computer see the dentist?"

Son: "I don't know, Dad. Why?"

Computer Enthusiast: "To straighten out its byte."

Mrs. A.E. Fuller
Montrose, CO

Editor: Why does Mrs. Fuller write computer jokes?

Computer Enthusiast: Don't ASCII! I haven't array of an idea. We ought to delimiter to BASIC statements.

KUDOS

Editor:

Add my name to the list of people around the reading area in saying, "Thanks, for a great magazine!" You and your staff have convinced my friends and me that the Color Computer is not only the best computer, but also the one with the best information source, *the Rainbow!*

We are growing by the years with software and hardware additions and are looking forward to growing with your magazine in knowledge and understanding of this fascinating world of computers!

May life be one BIG *Rainbow* for us all!

John H. Boehnlein
South Bend, IN

Editor:

I really enjoy your magazine. I have compared the three major magazines available for the CoCo and yours is tops.

I would like to point out that I've had no problems obtaining these programs, but I consider your magazine of such high quality and low price that I feel obligated to "pay" for the convenience of having the programs sent to my door. I hope others (pirates) will recognize the true value of this service and aid you in being able to continue providing such quality to the CoCo Community at such a great price. All those programs plus a great magazine complete with documentation. Your efforts are appreciated!

Gerald A. Mills
Topeka, KS

Editor:

I would like to compliment you on a fine magazine. In fact, my subscription to one of your competitors is being replaced with a subscription to *Rainbow* this year. It was a pleasant surprise to find so much support available for the CoCo after purchasing what was going to be "just something to play with."

Again, thanks for an excellent magazine and all the help it has given me.

David B. Lamon
Yuba City, CA

Editor:

I would like to thank you for an outstanding magazine. To me, this is the *only* magazine for the CoCo. Thanks!

Keep up the great work and thanks for a great magazine. The CoCo deserves it!

Jeff D. Sauer
Perkiomenville, PA

HINTS AND TIPS

Editor:

I am writing this letter to you because I want to praise this fine publication that you have. This is the second year that I have subscribed to your excellent magazine. I also want to say that I like this fine computer that I am writing this letter on. The TRS-80 Color Computer is a machine that is not as well praised as it should be. The 6809 microprocessor is a very powerful little beast that should not be underestimated. My system consists of a 64K Color Computer and a disk drive. I have a lot of excitement for the future of this computer since OS-9 was released by Radio Shack. It shows that Radio Shack cares a lot for the future of the Color Computer. Since I bought the computer back in 1982 I have seen it expand and grow to a very well-supported computer. Even Radio Shack has begun to expand its support for its little computer.

I would like to share a couple of peeks and pokes I have discovered.

Decimal Location	Description
25 & 26	Beginning of BASIC program
27 & 28	End of BASIC program
39 & 40	Top of cleared space
113	Warm start flag (If 85 Then warm start)
116	Top of RAM
157 & 158	Jump address for EXEC command

Dale Robertson
Rush Lake, Saskatchewan

Editor:

We have encountered a situation you might want to pass along to your readers. At least two brands of wireless telephones will cause the Amdek disk drives to speed up and crash. If you have portable phones in your house you might want to avoid their use when your Amdek drive is being used. Evidently the R.F. signal being generated by the phones can affect the speed of the drives.

Norman R. Shelton
Owls Nest Software

Editor:

With the 64K question so frequently discussed, I would like to share a short program that will let 32K users know if they have "half good" or "full" 64K chips.

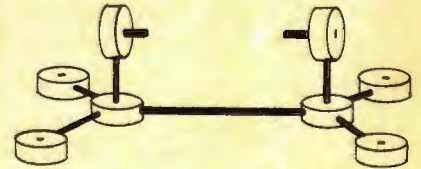
20 FOR X = 16000 TO 16013

```
30 READ Y:POKEX,Y: NEXT X
40 DEF USRO = 16000
50 A = USRO (0)
60 IF A THEN PRINT "32K" ELSE
PRINT "64K"
70 END
80 DATA 198, 191, 247, 255, 2, 246,
255, 34, 196, 4, 79, 126, 180, 244 RUN
```

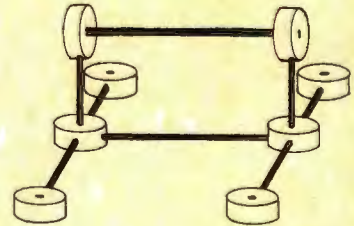
Bruce Sumner
Windsor, OH

Editor:

To make a stand for holding roll paper for the printer, we used Tinkertoys.



Long roll — sits on top of printer



For heavier rolls, sits on floor

Juli Koch
Margaret Hettinger
Lebanon Junction, KY

INTERESTING INDEX

Editor:

May I make a suggestion to your readers?

Take an index card on each issue of the *Rainbow* and write on it the tips, hints, ideas, and articles of interest to you and note the page numbers as well. As your collection grows, it will be vastly valuable and easy to find any item you wish to recall. But be smart — if you read an article about a disk drive or for a printer and you think it would be great, except you don't have a disk drive or a printer, note it anyway. Someday you will, and you'll wonder where (what month and year) was that article about banner headlines or "Gosh, wasn't there a *POKE* to prevent headcrashes?"

Larry Arnold Lansberry
Phoenix, AZ

Editor:

How would you like a disk file to appear on the directory, but nobody except you can load it? To do this, save your file as follows: *SAVE "FILE"+CHR\$(143)*. The file will appear normally on the directory, but attempts to *LOAD "FILE"* will give you a ?NE ERROR. To load the file, use *LOAD "FILE"+CHR\$(143)*. I'm sure you can find variations on this process.

Craig M. Arnold
Dallas, TX

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 +



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.



Give up on Word Processors for Fast Letter Writing & Mailing Labels

Instead use the

DATABASE/MAILER 2.0 & LETTER WRITER 2.0

Reg. **\$59.95**



plus
shipping
&
handling

for FAST single page letters or
1000's of form letters and labels

See excellent reviews in "Rainbow" magazine 12/83 and "Things to do with your Color Computer," in paperback by Dilithium Press.



SALE ENDS!
June 15, 1984

NO WORD PROCESSING EXPERIENCE NECESSARY

**New!
up to 4 drive
capability**

— CC-DBM2/LW2 USES —

- Accounts
- Insurance
- Proposals
- Bulk Mail
- Dental Recall
- Lost Card Reporting
- Change of Address
- Christmas Lists/Labels
- Churches
- Club Membership
- Realtor Listings
- Sales Records

**Works
on ALL
Color Computers**

— BIG SYSTEM FEATURES —

- Active menus guide you to valid operations.
- 32K system allows 68 to 454 records per file.
- 16K system allows 13 to 95 records per file.
- 4 - 10 fields, 5 - 27 field widths, 20 - 270 char/record.
- All user definable with default values - simple.
- Memory sense adjusts files to system size.
- FAST key index sort by any field you choose.
- Adjusts for empty address lines - no gaps.
- Up to 9 line labels with up to 500 copies each.
- Master two column printout with field names.
- Master printout includes date, paging & filename.
- Selective printing by any field or field range.
- Accepts alpha or numeric zip codes up to 9 digits.
- Partial or whole item search by any chosen field.
- Single screen 10 record display by any field.
- Single key entry for hard copy of screen data.
- Fast single page letter writing with wordwrap.
- Embedded commands center, tab and line skip.
- Full screen edit allows delete, insert & change.
- Headings and closings are tabbed, spaced and printed - all automatically.
- No "Database Adventure" - over 40 page manual.
- Manual includes program operation flowcharts.
- Not needed, but included is user modification section.
- And many more features - too numerous to list.

We ship 1st Class Mail within 24 hours

**Call our 24 hour orderline
619-695-1385**

or 619-566-6013, 9 — 5 p.m. PST weekdays
or send check or money order to:

EVS ENGINEERING

9528 Suite 35, Miramar Road
San Diego, CA 92126

When ordering please provide:

NAME
ADDRESS
CITY/STATE
ZIP CODE
PHONE
TAPE or DISK
CREDIT CARD NO.
EXP. DATE
Master Card holders —
include interbank no.

Please include the following:
\$3 postage and handling
U.S. funds only
CA residents add 6% tax
COD orders add \$2
Amdek disk add \$2
Dealer inquiries invited
Personal checks — OK
we won't make you wait.



"Serving the Defense and Space Industry since 1979"

Editor:

I would like to pass on this information to the people who have been having problems with their computers shutting off on them.

The current sensing resistor R66 in the "D" board .33 OHM should be replaced with a high quality resistor. This particular type of resistor has the leads crimped to the resistive wire and is prone to open. I was experiencing problems with my computer quitting. Turning it off and on would sometimes correct it for a while. After I replaced it with a weld-bonded type of resistor all my problems went away.

Dean Broadbent
Howell, MI

BOUQUETS AND BRICKBATS

Editor:

I want to say some kind words about a few of your advertisers. In December I ordered from both Computer Plus and MichTron. All I can say is that if every advertiser conducts business like them, there are some mighty satisfied CoCo users out here. Likewise, for a non-mail order company, The Program Store in Eatontown, N.J. is outstanding. The managers are super nice and gladly let customers try the programs before buying. Even though I normally pay full list for what I buy and have to drive 65 miles to get there, I've saved myself that "ripped-off" feeling many times by trying before buying. If all the Program Stores operate this way they're well worth the visit.

Thanks again for an excellent magazine.

Gene Gillam
Bayonne, NJ

Editor:

I have recently purchased *Complete Personal Accountant* software by Futurehouse on the recommendation of *Rainbow* and I am reasonably happy with the product even though the cost is quite high compared to other similar utilities.

The reason for writing this letter is to point out to others, that to receive any software support for this product you must send in an additional \$20. In fact, if you call the company they will speak to you if you give them your VISA number.

I personally have not tried to call them but their literature states that it is so.

This \$20 fee is supposed to cover any future updates or additions to the product which is purported to be sent free of charge.

I doubt that a company that charges for software support is about to send an update free from any further charges.

I would be interested in hearing of any other experiences with this company.

Lawrence B. Snyder
Norristown, PA

Editor:

We would like to address our policy of charging \$20 for technical phone support to the end users of our *Complete Personal Accountant*. First, it is important to note that not everyone who buys a home finance package needs technical support. As a mat-

ter of fact, less than 25 percent of our customers inquire about our program. Keeping this in mind, we thought it would be unfair to incorporate the cost of technical support in the price of the package. Our technical support staff are all full-time, paid employees who do nothing but customer support work all day. There are many companies which charge for their technical support programs.

If we were to include the cost of technical support into the price of the *CPA*, the package would cost \$99.95! Instead, we thought it would be much more fair to charge \$79.95 and let the end user decide if he or she wanted to pay for technical support.

John K. Watkin
Futurehouse

JURIS CORRESPONDENCE

Editor:

I use my computer primarily in support of my law practice and find that the programs I locate with your assistance are very useful. I also correspond occasionally with Mr. Robert P. Wilkens, an attorney in Lexington, S.C. Mr. Wilkens is the president of R.P.W. Publishing, Inc., which publishes *The Lawyer's Microcomputer*, a journal dedicated to the use of Radio Shack computers and related equipment in the practice of law. You may reach Mr. Wilkens at P.O. Box 1046, Lexington, S.C., 29072. The telephone number is (803) 359-9941.

I would also like to put in a good word for John Boals, president of PCLEAR 80, 494 Cline Avenue, Mansfield, Ohio, 44907. John has been most helpful in gathering and investigating, not to mention marketing, business applications for the CoCo. I have found his advice to be most helpful.

I am interested in corresponding with other attorneys who are using the CoCo in the practice of law. My CompuServe ID number is 71615,1511; although I rarely use it except for research (mainly security data). My address is 732 South Court St., 44256.

James N. Brown III
Medina, OH

A FIRST CLASS TACKLER

Editor:

I enjoy your great magazine and was glad to hear that it is now sent second class mail. I was afraid sometimes that our mail personnel found it so dynamite that they were not going to give it up.

It would be really great if electronics stores would start to advertise in your magazine. I'm in a Computer Club and we are presently making our own modems. Some of the parts are not carried by Radio Shack and are hard to get. Also, some of the hardware projects in your magazine, like the "Cheapstick" (Feb. 1984, Page 186), are great too, and would be even greater if finding all the right parts was not so difficult.

After the "Letters to *Rainbow*" built up my confidence, I upgraded my CoCo to 64K. Between building the modem and "Cheapstick," a woman like myself, with two left

feet, is now ready to tackle the world. If only I can find all the parts!

Willa Stokes
Philadelphia, PA

BULLETIN BOARD SYSTEMS

Editor:

I am very pleased to announce the beginning of an all new Canadian Bulletin Board Service based in Port Mouton, Nova Scotia. The system fully supports up- and down-loading, E-Mail, on-line games, and many other features. The Great White North BBS is on-line 24 hours a day, seven days a week. There is no charge to use this BBS and all callers are welcome, (902) 683-2086.

Jeff Pyne, SYSOP
Port Mouton, Nova Scotia

Editor:

We are a software and hardware company mainly supporting the CoCo. We are closely associated with the Color America Users Group in Southern California, but are not a specific entity of that group. For efficiency and expansion of services available to C.A. U.G., E.P.C., we started a new BBS called the Musashi Network. The number is: (213) 258-0640.

Felix P. Edwards
Los Angeles, CA

Editor:

Elkins Institute in Dallas, Inc. would like you to know about our new Bulletin Board, called CAREERS, that is now on-line 24 hours a day in Dallas, Texas. This is a Color Computer BBS, but all others are welcome.

In addition to the electronic mail section, we also have a bulletins section that covers various aspects of current career training. The merchandise section is very well provided for by RAM Electronics. Comments and suggestions would be welcome on the BBS, and we hope to hear from your readers soon. The CAREERS BBS number is (214) 692-0513.

John Novocilsky Jr.
Dallas, TX

LETTERS TO THE EDITOR are always welcome. Please keep them short if possible and we will try to answer some of the questions in this column. Others may be left open for solutions by other users. In order to make space for as many letters as possible, we reserve the right to edit submissions.

Letters can be sent to the *RAINBOW*, P.O. Box 209, Prospect, KY 40059.



Thanks to the installation of some new equipment at our printer's, last month's issue of *the Rainbow* was a little later than usual. That was good and bad.

The good part was that I was able to fill the first couple of paragraphs of this space with some news from RAINBOWfest-Long Beach; something I would not have been able to do had the printer handled *the Rainbow* on time as is usually the case.

The bad part of it all is that we were a tad late with last month's issue and this one arrives a couple of days less than the full month between issues. What happened? We can all sympathize with our printer: They bought a new piece of computer equipment that would make things "lots easier" for them — but there were a few interfacing problems.

How many times have we all heard that one? Oh well, the problems seem to have been licked as of this writing and we are back on schedule again.

And, yes, you did get a chance to read a little bit about Long Beach last month, but this month I get the opportunity to tell you even more about the show. It was really a great one! I think everyone, just about, had a fine time and the

spirit of CoCo Community was very much in evidence.

My special thanks to Bob Albrecht, who was our keynote speaker at the CoCo Community Breakfast Saturday morning. And what a surprise — it was also Bob's birthday. How did I find out? Well, Don Inman told me. Bob was trying to keep it a deep secret. That didn't last long, either. Nor did the special cheesecake (for the big cheese) we had whipped up for Bob at the last minute.

I think the greatest thing about RAINBOWfest is that it is a lot of fun for all. By the time you read this, our RAINBOWfest-New Brunswick will be history, too, and if you have not been to one of our shows, there's only one chance left — the Chicago show June 22-24 at the Hyatt-Regency Woodfield. That was the site of CoCo's Very First Show a year ago. So, do plan to join us then if you have not been with us already. Or, as we say here in the South, "Do come again!"

By the way, the question I get asked most often at RAINBOWfests is whether we will be back next year. Although at this writing the dates are not 100 percent firm, we do plan to do another series of RAINBOWfests in the 1984-85 "season."

Tentative plans call for a show in the Eastern part of the United States in the fall; a show in California during the winter and a return to Chicago in the spring — somewhat earlier than this year's Chicago show. There will be details (we hope) about sites and dates next month.

One of the things I like the most about RAINBOWfest is the opportunity to talk at some length with other members of the CoCo Community who attend each show. Long Beach was no exception; and one of the questions I was asked is one I would like to share with you for your input.

The issue was arcade-type games and the subject was whether I believed "winning" was an important issue that might be lacking from these games. Here's the thesis:

With most traditional games (board games, card games, simulation games and the like, whether written for a computer or not) the player has an opportunity to win the game. With most arcade games this is not the case — all you can do is lose.

Think about it for a minute. You can play a game for hours and hours, mount up scores that are higher and higher (as our "Scoreboard" feature will attest), but, in the end, you always "lose" — you are always destroyed by the game.

The discussion I had in Long Beach centered around the fact that it might be better that the player should, at some point, be able to "win" the game — that the game would, at some point, say "I lose and you win."

My point was that this would certainly decrease the playability of a game. Once the player won, all the challenge would be gone. The response was that there could be levels of play — as there are now — and that once someone won at a certain level, he or she could go on to the next one.

Some of you might consider this to be a fairly trivial issue, but the more I think about it, the more significant it becomes. Do we want our children (and ourselves, who play these games, too) to always be "losers," no matter how proficient we become? Should we encourage "winning"? Is it that important to be able to win all the time — or at least, have the chance to win? Or possibly, do we teach more about life by encouraging our youngsters (and ourselves) to always strive for something better,

(continued on Page 285)

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 Nob Street
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.



COLOR CONNECTION SOFTWARE

1060 Buddlee Dr., Sandy, Utah 84070 (801) 571-5023

***** Joysticks req'd.

MEGAMUNK

A fantastic new Hi-res strategic arcade game with animated movement! As a soldier/monkey of fortune, you have been commissioned by the king to save the forest from its enemies. Fulfill the assignment and be knighted a monkey of the round table.

32k cas \$21.95 32k disk \$23.95

COLOR DESIGNER

The ultimate Hi-Res Graphics Processor!!! Great for doodling, sketching, and most of all, creating entire graphics screens. Options include: 8 key cursor control with key repeat. Draw command that follows your cursor, FILL command that "PAINTS" the screen with more than 1000 different color/texture combinations, and much much more!!

16/32K cas \$26.95 disk \$28.95.

QUIZ ALL

A versatile quiz program. Has study and test formats and allows printing of quiz. Even includes an option for the computer to generate multiple choice answers!

cas \$18.95 disk \$20.95

COMPU SCRIBE B.S.A.

Need some help with scout records? Compu Scribe keeps tabs on the whole troop and creates printouts by scout, by rank, or alphabetically. Requires a printer with 132 character mode.

available on disk only - \$26.95

OKI DUMP

Eight bit screen dump from CoCo to an Okidata printer without dot addressable graphics! Includes hints on printing pictures of game screens, etc. ("The King" by Tom Mix, is the example) a steal at

16K cas \$8.95 16K disk \$10.95

Call or write for our free newsletter.

Dog-gone it.
I wish I could play
Megamunk!



All cassette orders include disk version on cassette with instructions to transfer to disk. Unless otherwise specified, programs require 16K extended for cassette or 32K extended for disk. Add \$2.00 shipping and handling. Utah residents add 5 1/4% sales tax. Orders paid by personal check allow 1-2 weeks; all others shipped within 48 hours. No COD.

To order, call 24 hours a day or write
COLOR CONNECTION SOFTWARE
1060 Buddlee Drive, Sandy, Utah 84070
For information:
Call Weekdays between 8:30 pm and 10 pm MST
(801) 571-5023

BUILDING MAY'S RAINBOW

Our Printer Issue . . .

Heading For New Brunswick Edition . . .

Plus, A CoCo Rock Festival . . .

In his review of Jarb Software's "talking" *Spell-A-Tron* this month, Bruce Rothermel hit a responsive chord with me. In explaining that many words need to be spelled phonetically in order to sound right when the Votrax voice synthesizer "speaks" them, he wonders if the same word will be spelled variously according to the region of the country the program user lives in. That observation brought back memories.

As sometimes happens when you live in a very small town, my third grade teacher was also my mother. On occasion, she was also the spelling bee judge as well as enunciator. One particular time, now indelibly etched in my memory, all that stood between me and victory was the final word. She pronounced it twice as I strained to listen: "whey-air," she said, "whey-air." My heart pounded; I had never, ever heard of this word.

Valiantly, I gave it a shot, "Whey-air," I said, "W-H-A-I-R." "Wrong," she said, "Whey-air is spelled W-H-E-R-E." What? Where?? I was robbed, I thought. "But Mom, why didn't you just say 'whurr,'" I protested — for weeks on end. If only she had said "whurr," I'd have aced out the little girl with the long blond hair and won the spelling bee and lived happily ever after. As it was, for years, *I thought* I was right and she was wrong and held a secret grudge against my third grade teacher — my own mother, yet — for "doing me in."

Thanks to the advent of microprocessor technology, now every parent can blame it on the computer if Johnny can't spell. Actually, I like the "analog dimension," the shades of gray, that phonetic spelling brings to the otherwise "either/or" digital device we call a Color Computer; it adds a personal touch to our CoCo that it can not only "talk" but do so with a regional accent.

But this is our printer issue isn't it? And the impact of computer printers is definitely toward standardization of the printed word. Right? Only at first glance. On closer examination, with printers as well, the premium is on personalization. The ultimate printer, it would seem, would be one that writes illuminated script with a quill pen, albeit at 9600 Baud. While the technology is here for scanners to "read" an entire printed page at a glance, the rush is to make one's own printer as distinctive and different as computerly possible. *Rainbow* can help.

In this printer issue, we have everything from a "postcard whacker" to a banner program for the Color Graphics Printer 220. Dennis Weide delves into "Printer Magic" while Mike Himowitz provides another "Printer Mystery." Damon Swanson makes our good spooler even better and Tom Szlucha provides not only a graphics screen dump, but also a label-making program for the little CGP-115. Dot matrix printer owners, don't despair, Charles M. Thonen has a mailing-label program for you, too.

Fred Scerbo has a printer's delight pumping out of our "Wishing Well" this month with his "CoCo Rock Festival" and coloring book programs. Tom Nelson digresses from his legal advice to provide counsel on selecting a printer and Mike Fahy shows us how to create Old English, Italics and Futuristic typefaces on the L.P. VII or DMP-100 in his tutorial on dot graphics.

Our "CoCo Clubs" quarterly roundup of user groups appears in this issue, and that's all the transition I need to issue my monthly invitation to you to join the growing club of *Rainbow* readers. For \$28, you get about 15 pounds of *Rainbow* club materials in the form of a 340-plus page monthly magazine and we share our vast library with you by printing a couple of dozen program listings in every issue for you to key in and use. As clearly as I can say it, without spelling it out aloud, we hope you'll consider a "sub-scrip-shun."

— Jim Reed

NEW!

YUT'S TOMB



Explore the ancient, mystical tomb of the great Pharaoh. Find the magical keys which lead you to unbelievable treasures as you out maneuver 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. \$24.95 cassette, \$27.95 disc. Requires 32K.

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. \$24.95 cassette, \$27.95 disc. Requires 16K.



MD

Mark Data Products

24001 Alicia Pkwy., #207, Mission Viejo, CA 92691 • (714) 768-1551

ORDERING INFORMATION: Phone your order for speedy delivery. Use your MasterCard or Visa. We also accept checks and money orders. ALL ORDERS: Please add \$2.00 shipping and handling in the continental U.S. All others, add air shipping and \$3.00 handling. California residents add 6% sales tax. Foreign orders please remit U.S. funds. Distributed in Canada by Kelly Software Distributors. SOFTWARE AUTHORS: Contact us for exciting marketing details.



A LITTLE PRINTER MAGIC

By Dennis H. Weide

Printer Magic is a program that lets you take advantage of your printer's special capabilities by embedding control codes in a BASIC program. The use of embedded control codes allows you to highlight a line, change print size or even feed to top of form. These codes take up very little memory (one byte per code) and will function whether using *PRINT#-2* statements or listing a program to your printer. Once embedded in your program, they can be saved to tape or disk.

In order to understand how *Printer Magic* works, it is necessary to know how a BASIC program is stored in memory. We will follow a step-by-step procedure as we work our way through the program. Since most people think in decimal, all numbers will be decimal unless otherwise noted.

If you have Extended Color BASIC, type and [ENTER] *POKE 25,6:NEW*. This will reset the start of BASIC pointer back to address 1537, eliminating graphics pages the same as if you had Color BASIC only.

Use Figures 1 and 2 and the BASIC disassembler to examine memory contents. First, type in the BASIC disassembler (program Listing 1). Now enter this line exactly as listed: *10 PRINT#-2, "HI"*. When you run the program, enter 10 for the line number prompt. Figure 1 is a block layout of memory

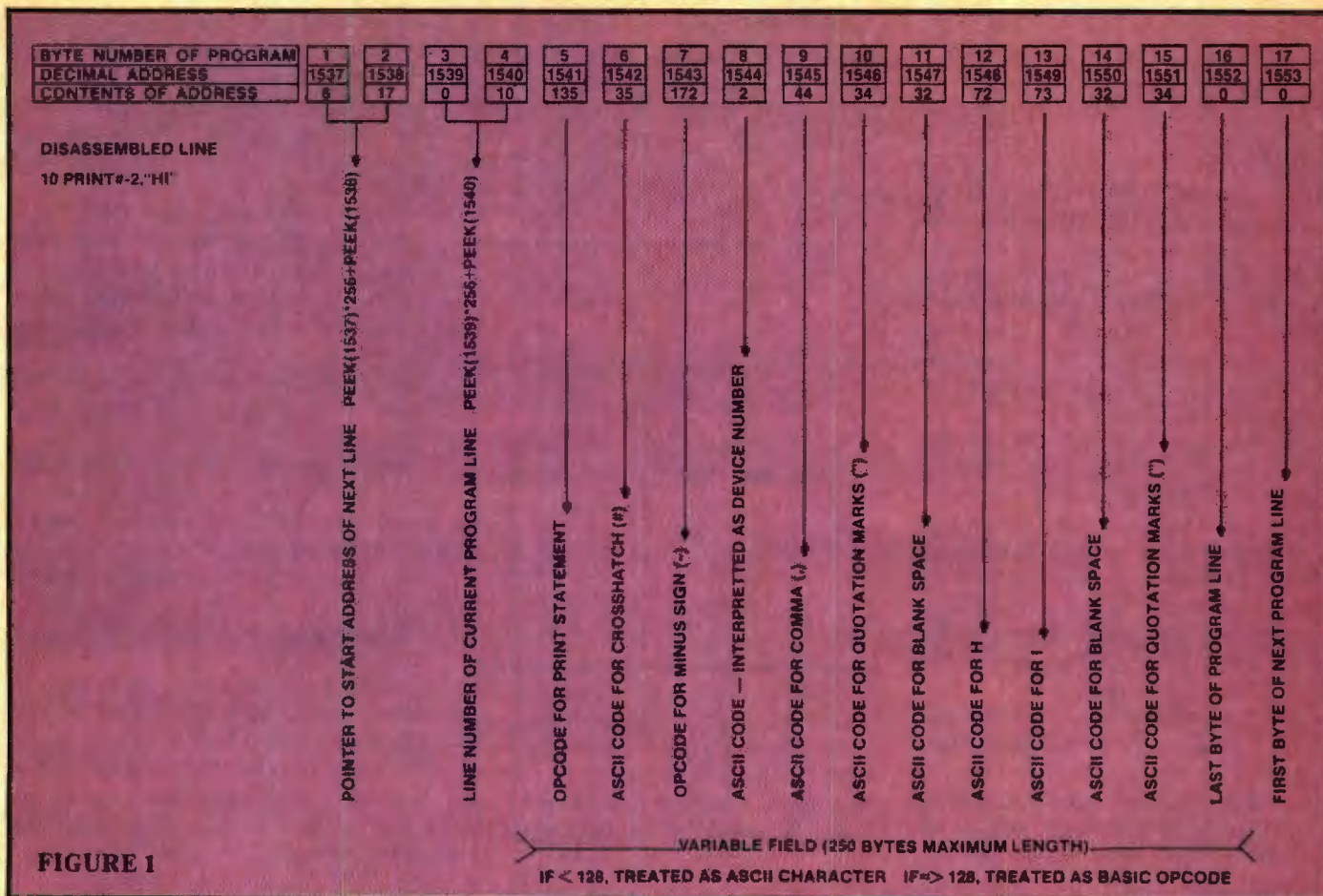


FIGURE 1

locations and their contents. Figure 2 represents a printout of the disassembled line. In Figure 2, the program line number is printed followed by the start address of this line and the next line.

(Dennis Weide is a communications technician with a large telecommunications company. He teaches BASIC in the evenings and writes articles and programs in his spare time.)

Beneath this, each memory location has its contents displayed as a number or character. Memory values from 33 to 127 are printed as ASCII characters. All other values are printed as decimal numbers. This allows you to recognize characters easily.

To find the first address of a BASIC program, look at the start of BASIC pointer (addresses 25 and 26). Use the following command to compute the

start address:

`PRINT PEEK(25)*256+PEEK(26).`

The first two bytes of a BASIC program line point to the start address of the next program line. The next two bytes contain the current line number. Figure 1 shows how to compute start address and line number.

The fifth byte is the start of the variable field. If the contents of any of these

FIGURE 2

10 PRINT#-2,"HI "

LINE NUMBER 10 THIS ADDRESS= 7661 NEXT ADDRESS= 7697

30 17 0 10 135 # 172 2," 32 HI 32 " 0

Try this— POKE 7691,31:POKE 7694,30

10 PRINT#-2,"HI "

LINE NUMBER 10 THIS ADDRESS= 7661 NEXT ADDRESS= 7697

30 17 0 10 135 # 172 2," 31 HI 30 " 0

addresses is greater than 127, the BASIC interpreter will treat it as a BASIC opcode or mathematical function. Throughout the entire variable field, any address that holds a value greater than 127 is treated as an opcode. Values of 127 or less are treated as ASCII characters. If a byte contains 255, the opcode is considered a two-byte opcode and the next byte is the second half of the command. In Figure 1, the first two bytes point to 1553 for the start of the next line. If line 10 is the only line in the program, addresses 1553 and 1554 will both contain zeros to indicate the end of the BASIC program. Addresses 1541 to 1552 make up the variable field. The last address, 1552, contains a zero and marks the end of the current program line. Disassemble more lines to familiarize yourself with the program and how it's stored in memory. Tables 1, 2 and 3 are provided to help you break down the codes. Press [BREAK] when you are finished to exit the program.

To see how you can use this information to enhance your programs and listings, look at the Line Printer VII control codes (Table 4). There are more codes than listed, but for the purpose of this article, these are enough. The following ideas will work with any standard printer if you substitute the proper control codes for the ones listed.

Back in Figure 1, address 1547 stores a value of 32. Since this is a character code (ASCII), it will print a blank space when sent to the printer. If you *POKE* a value of 31 into that address, the printer will be set to large font when this line is listed to the printer. If you *POKE* address 1550, which also stores a 32, to ASCII code 30, the printer will be reset to small font at the end of the line. When you run or list the program to the printer, the word "HI" will be printed in large block letters. When printing or listing to the screen, the control codes are transparent to the computer. Figure 2 shows the line as listed before embedding codes, then shows the disassembled line. You can use the *POKE* commands in the figure and then disassemble the line again. When you *LLIST* the program line, the "HI" is in large letters and the rest of the line is in small letters. Now run line 10. Again, the word "HI" is printed in large letters.

It is too time consuming to *PEEK* and *POKE* addresses to embed your codes in a program. But *Printer Magic* does the job quickly and easily. It uses special characters (see Table 5) which you type in your program. Look at Listing 2. In line 5, the program looks at the

start of BASIC pointer to compute the start address of your BASIC program. Line 6 looks at the second two bytes of the program line to calculate the line number. Line 7 calculates the start address of the next line and saves it as a variable. Line 8 checks to see if the cur-

"It is too time consuming to PEEK and POKE addresses to embed your codes in a program. But Printer Magic does the job quickly and easily."

rent line number matches the one you requested. If not, the program goes back to line 6 with a new address and starts looking again. If it is, lines 9 through 14 read the variable field and change any of the special symbols to the

proper control codes. Lines 15 and 16 allow another line selection and line 17 checks to see if your last line number is lower than the previous one. If lower, the program returns to the start of BASIC pointer; otherwise it will continue down the line.

I have included examples 1, 2 and 3 to show what *Printer Magic* can do. Each example lists the line with the special symbols before running *Printer Magic* and with the control codes after running it.

The best way to utilize embedded codes is in string variables, *DATA* statements and *REMark* statements.

When writing a program, save a final copy before running *Printer Magic* to insure that you do not accidentally poke a control code where it can cause problems. You can load *Printer Magic* before writing your program or load it back-to-back with your program when ready to embed codes.

Since both programs are written in BASIC, you can modify them easily. And I'm sure you can find more interesting ways to utilize both programs. In the meantime, you can enhance your favorite program listings and printouts for eye appeal and easier reading.

TABLE 1
BASIC OPCODES

KEY CODE WORD	KEY CODE WORD	KEY CODE WORD
128 FOR	154 CLOSE	180 <
129 GO	155 LLIST	181 DEL
130 REM	156 SET	182 EDIT
131 '	157 RESET	183 TRON
132 ELSE	158 CLS	184 TROFF
133 IF	159 MOTOR	185 DEF
134 DATA	160 SOUND	186 LET
135 PRINT	161 AUDIO	187 LINE
136 ON	162 EXEC	188 PCLS
137 INPUT	163 SKIPF	189 PSET
138 END	164 TAB(	190 PRESET
139 NEXT	165 TO	191 SCREEN
140 DIM	166 SUB	192 PCLEAR
141 READ	167 THEN	193 COLOR
142 RUN	168 NOT	194 CIRCLE
143 RESTORE	169 STEP	195 PAINT
144 RETURN	170 OFF	196 GET
145 STOP	171 +	197 PUT
146 POKE	172 -	198 DRAW
147 CONT	173 *	199 PCOPY
148 LIST	174 /	200 PMODE
149 CLEAR	175 ^	201 PLAY
150 NEW	176 AND	202 LOAD
151 CLOAD	177 OR	203 RENUM
152 CSAVE	178 >	204 FN
153 OPEN	179 =	205 USING

TABLE 2
TWO BYTE BASIC OPCODES

CODES	KEYWORD	CODES	KEYWORD
255 + 128	SGN	255 + 145	POINT
255 + 129	INT	255 + 146	INKEY\$
255 + 130	ABS	255 + 147	MEM
255 + 131	USR	255 + 148	ATN
255 + 132	RND	255 + 149	COS
255 + 133	SIN	255 + 150	TAN
255 + 134	PEEK	255 + 151	EXP
255 + 135	LEN	255 + 152	FIX
255 + 136	STR\$	255 + 153	LOG
255 + 137	VAL	255 + 154	POS
255 + 138	ASC	255 + 155	SQR
255 + 139	CHR\$	255 + 156	HEX\$
255 + 140	EOF	255 + 157	VARPTR
255 + 141	JOYSTK	255 + 158	INSTR
255 + 142	LEFT\$	255 + 159	TIMER
255 + 143	RIGHT\$	255 + 160	PPOINT
255 + 144	MID\$	255 + 161	STRING\$

TABLE 3
ASCII CHARACTER CODES

ASCII CODE	SYMBOL	ASCII CODE	SYMBOL	ASCII CODE	SYMBOL
32	SPACE	64	@	96	\
33	!	65	A	97	a
34	"	66	B	98	b
35	#	67	C	99	c
36	\$	68	D	100	d
37	%	69	E	101	e
38	&	70	F	102	f
39	'	71	G	103	g
40	(	72	H	104	h
41	)	73	I	105	i
42	*	74	J	106	j
43	+	75	K	107	k
44	,	76	L	108	l
45	-	77	M	109	m
46	.	78	N	110	n
47	/	79	O	111	o
48	0	80	P	112	p
49	1	81	Q	113	q
50	2	82	R	114	r
51	3	83	S	115	s
52	4	84	T	116	t
53	5	85	U	117	u
54	6	86	V	118	v
55	7	87	W	119	w
56	8	88	X	120	x
57	9	89	Y	121	y
58	:	90	Z	122	z
59	;	91	[	123	{
60	<	92	\	124	|
61	=	93	]	125	}
62	>	94	^	126	~
63	?	95	_	127	

TABLE 4
CONTROL CODES FOR LPVII

FUNCTION	CODE (ASCII)
LINE FEED/CARRIAGE RETURN	10
CARRIAGE RETURN ONLY	26
LARGE FONT	31
SMALL FONT	30

TABLE 5
SYMBOLS USED FOR PRINTER MAGIC PROGRAM

MEMORY VALUE	SYMBOL	NAME	CODE (CHR\$)	CONTROL FUNCTION
91	[	LEFT BRACKET	31	SET LARGE FONT
93	]	RIGHT BRACKET	30	SET SMALL FONT
94	↑	UP ARROW	10	LF/CR
95	←	LEFT ARROW	26	LF W/O CR

SAMPLES 1, 2 & 3

Example #1 Large Font

Before Embedding Codes

```
100 REM CEXAMPLE #1
```

After Embedding Codes

```
100 REM EXAMPLE #1
```

Example #2 Line Feed With Highlight

Before Embedding Codes

```
100 REM ^^EXAMPLE #2_EXAMPLE #2_EXAMPLE #2
```

After Embedding Codes

```
100 REM
```

```
EXAMPLE #2
```

Example #3 Large Font Highlighted

Before Embedding Codes

```
100 REM ^^CEXAMPLE #3_EXAMPLE #3_EXAMPLE #3
```

After Embedding Codes

```
100 REM
```

```
EXAMPLE #3
```

RETIREMENT PLANNING MODEL



PENSION?
SOCIAL SECURITY?
IRA?
INCOME TAXES?

EARLY RETIREMENT?
INFLATION?
TIME?

SAVINGS?

After first helping you organize your present assets, the model projects these assets to their value at the retirement age you select. Using your assets at retirement as a base, a detailed cash flow analysis is conducted for each year of your retirement.

The variables shown above are considered in all calculations. Each analysis stops when you either run out of funds or reach the age of 100. The model is designed for "what if" analysis and optional printer output. A vital tool for comprehensive retirement planning. Fully documented.

Requires 16K ext.
basic. Specify if
for 32K CoCo. II.

Tape \$34.95
Disc \$39.95

A&P SOFTWARE
P.O. Box 202
Glenview, IL
60025

Ill. residents
add 8% sales tax

Listing 1:

```
20 ' BASIC DISASSEMBLER
21 ' BY DENNIS H. WEIDE
22 ' COPYRIGHT (C) 1983
23 POKE 153,24
24 CLS:INPUT"ENTER LINE NUMBER";
LN
25 PRINT#-2,"LINE NUMBER";LN,
26 ADDRESS=PEEK(25)*256+PEEK(26)
27 NUMBER=PEEK(ADDRESS+2)*256+PE
EK(ADDRESS+3)
28 NADDRESS=PEEK(ADDRESS)*256+PE
EK(ADDRESS+1)
29 IF LN=NUMBER THEN 30 ELSE ADD
RESS=NADDRESS:GOTO 27
30 PRINT#-2,"THIS ADDRESS="ADRE
SS,
31 PRINT#-2,"NEXT ADDRESS="NADDR
ESS
32 PRINT#-2
33 FOR X=ADDRESS TO ADDRESS+3
34 PRINT#-2,PEEK(X);:NEXT X
35 FOR X=ADDRESS+4 TO NADDRESS-1
36 IF PEEK(X)>127 OR PEEK(X)<33
THEN PRINT#-2,PEEK(X); ELSE PRIN
T#-2,CHR$(PEEK(X));
37 NEXT X
38 PRINT#-2,STRING$(3,10)
39 PN=LN
40 INPUT"ENTER LINE NUMBER";LN
41 PRINT#-2,"LINE NUMBER";LN,
42 IF LN<PN THEN 26 ELSE 27
```

Listing 2:

```
1 ' PRINTER MAGIC
2 ' BY DENNIS H. WEIDE
3 ' COPYRIGHT 1983
4 CLS:INPUT"ENTER LINE NUMBER";L
N
5 ADDRESS=PEEK(25)*256+PEEK(26)
6 NUMBER=PEEK(ADDRESS+2)*256+PEE
K(ADDRESS+3)
7 NADDRESS=PEEK(ADDRESS)*256+PEE
K(ADDRESS+1)
8 IF LN=NUMBER THEN 9 ELSE ADRE
SS=NADDRESS:GOTO 6
9 FOR X=ADDRESS+5 TO NADDRESS-2
10 IF PEEK(X)=91 THEN POKE X,31
11 IF PEEK(X)=93 THEN POKE X,30
12 IF PEEK(X)=94 THEN POKE X,10
13 IF PEEK(X)=95 THEN POKE X,26
14 NEXT X
15 ADDRESS=NADDRESS:PL=LN
16 INPUT"ENTER LINE NUMBER";LN
17 IF LN=<PL THEN 5 ELSE 6
```


Make The Good Spooler Better

By Damon Swanson

Steve Good's *Spooler (the Rainbow, June '83)* is an excellent example of using the Color Computer in a multitasking mode. This means that your CoCo can do two jobs at one time. (We'll be hearing a lot more about that as people start using the OS-9 operating system.) There were, however, two things that limited the program for my use. First, it stole graphic memory, and second, it would not work with Radio Shack's *Screen Print* program.

With a working 64K system, it is a simple matter to move the spool buffer from graphic memory to the 32K of hidden RAM and in the process create a buffer large enough for almost any need. The first program provides a patch to Mr. Good's spooler to do just that.

The modification of Radio Shack's *SCRPRT* routine to work with the Good *Spooler* and provide full compatibility with the disk operating system is a little more complex. The second part of this article shows how to append *SCRPRT* to the *Spooler* and patch it for full disk operations.

32K Spooler

If you have a good 64K CoCo, you can easily modify the Good *Spooler* to use the 32K of RAM not accessed by BASIC as the print buffer. Load Good's source listing in your assembler then make the following changes referenced to its current line numbers.

First, change the origin from screen memory to the top of BASIC RAM:

```
00020    ORG    $7F65
```

This means, of course, that you must reserve memory for the program by a *CLEAR &H7F65* before *RUNning* the program. Change the end of buffer previously in low RAM

(Damon Swanson manages 130 engineers and technicians in the engineering test department of a major high-tech company. His computer hobby keeps him from meddling in the work of his staff, which includes programming M6809 and M6800 microprocessors to solve special measurement and test problems.)

to the top of the 32K RAM page:

```
00200    LDX    #$FEFF
```

Also change the beginning of buffer to the start of the upper RAM page:

```
00220    LDX    #$8000
00790    LDX    #$8000
```

I have made buffer references absolute so that the driver can be relocated anywhere in low memory.

Now we are ready to add the code that switches from the ROM (Type 0) to the RAM (Type 1) memory map before each load or store to the buffer and to switch back afterward. Do this by adding lines:

```
00405    CLR    $FFDF
00415    CLR    $FFDE
00745    CLR    $FFDF
00755    CLR    $FFDE
```

Finally, delete line 00880 (we don't need this reference anymore) and *Sooper Spooler* is ready to assemble.

You now have a print buffer considerably larger than the memory available for BASIC programs, and a direct way to use that extra memory. Since our new buffer is located nicely out of graphic space, one thing we might use it for is to speed up the *Screen Print* routine.

Compatible Screen Print

Before we can use *Spooler* with Radio Shack's *SCRPRT* program there are two problems to solve. *SCRPRT* must be relocated and then patched so that it uses BASIC 1.1's regular 8-bit print driver. Otherwise, its print routine will not communicate with *Spooler*. *SCRPRT* is one of the worst examples of 6809 code I've ever seen. It is completely position dependent and almost defies relocation.

Fortunately, Tom Goodrick came to the rescue with a program to do this relocation.

Tom's trick uses the fact that the Hex values 3D, 3E and 3F, representing the most significant byte of every absolute address in the *SCRPRT* program, appear nowhere in the

program except as absolute addresses. As a result, we can simply run through the listing with a short BASIC program that adds \$40 offset each time it encounters one of the offending Hex values.

The BASIC program of Listing 1 uses Mr. Goodrick's scheme in a different and simpler program. Enter the BASIC program, then put the *SCRPRT* tape in the recorder. Press [PLAY] and run the program. When the [OK] prompt appears, *CSAVEM* to tape or *SAVEM* on disk using *&H7D80,&H7FFF,&H7D80* as the *START, END* and *EXECUTE* parameters. Our *Spooler* patch will correct some other deficiencies.

Modify the revised *Spooler* source to locate it in front of the screen print routine overwriting *SCRPRT*'s initialization which is no longer used.

```
00020   ORG   $7CF4
```

Add to *Spooler*'s initialization section the lines from *SCRPRT*'s code that sets up to look for and respond to the up arrow:

```
00261   LDX   #$7D98
00262   STX   $16B
00263   LDA   #$7FE
00264   STA   $16A
```

Delete line 00710. This line changes a carriage return to a line feed, but the RS Line Printer VII and DMP-100s require a distinction for the two passes required to print a full screen of graphics.

Delete the *END* statement in line 00890, then add the source of Listing 2 to your assembly. Note that this code changes the command key from the up arrow to the down arrow as suggested by Goodrick to free the up arrow for normal line editing.

Assemble this code. From BASIC, *CLEAR 200,&H7CF4.CLOADM* or *LOADM* the relocated *SCRPRT* followed by the patched *Spooler*. Then type *EXEC*. Draw something on the graphic screen, then hit the [SHIFT] and [I] to try it out. The machine returns to your use a few seconds after the [I] command for a screen dump that normally takes several minutes to print.

Before turning off the computer, *CSAVEM* or *SAVEM* your patched program using *&H7CF4,&H7FFF* and *&H7CF4* as the *START, END* and *EXECUTE* parameters.

With these programs and the substantial 32K buffer, you may never need to wait on your slow printer again.

Listing 1:

BASIC program to relocate Radio Shack's *SCRPRT* program to reside at the top of a 32K memory:

```
10 'RELOCATE SCRPRT TO TOP OF 32
K
20 CLEAR 200,&H7D80
30 CLOADM"SCRPRT",&H4000:' RELOC
ATE TO &H7D80
40 FOR I=&H7D80 TO &H7FAE
50 V=PEEK(I)
60 IF V>&H3C AND V<&H40 THEN POK
E I,V+&H40
70 NEXT I
80 END
```

Listing 2:

An *EDTASM+* patch for Radio Shack's *Screen Print* program allowing it to be used with Steve Good's *Spooler*.

```
00880 *****
00890 *PATCH FOR RELOCATED SCRPT TO USE BASIC 1.1 DRIVER
00900 *BY D. SWANSON 3 AUG. 1983
00910 *****
00920
00930 * CHANGE CHARACTER INPUT TO DISK REFERENCE (LEAVE OUT
00950 *THESE LINES IF YOU HAVE NO DISK)
00960
7D9C          00970   ORG   $7D9C
7D9C 7E   C5F   00980   JMP   $C58F
00990
01000 * CHANGE KEY-SCAN TO CLEAR BUFFER FLAG
01010
7DA1          01020   ORG   $7DA1
7DA1 BD   A179  01030   JSR   $A179
01040
01050 * CHANGE CONTROL KEY TO DOWN ARROW (PER GOODRICK)
01060
7DA4          01070   ORG   $7DA4
7DA4 B1   5B    01080   CMPA  $5B
01090
01100 * CHANGE PRINT OUT TO 1.1'S 8-BIT DRIVER
7F6A          01110   ORG   $7F6A
7F6A C6   FE    01120   LDB  $FE
7F6C D7   6F    01130   STB  $6F
7F6E 6E   9F A002 01140   JMP  [$A002]
          7CF4   01150   END   ENTRY
```

See Page 145

\$18.95

- a lot of software for a little silver



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)

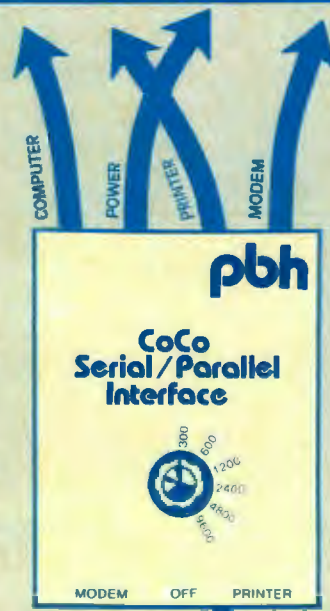
Only \$89.95 suggested retail

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

Computek
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. 01480
Turtle Micro Ware
East Lime, CT. 06333

RAINBOWfest Report:

Even without corn dogs, it was a three-ring circus weekend for thousands at Long Beach



Breakfast keynoter Bob Albrecht (above) celebrated his birthday at RAINBOWfest. The crush of people in the main ballroom exhibit hall (below) gave the three-day event a carnival flavor.



Sherry Zuehlke, president of the South Bay Color Computer Club, served on the women's program panel.



The crowd at Computerware (above) wanted programs while books were the thing at the Dymex booth (below).



For a fleeting weekend, Feb. 17-19, Long Beach, Calif., became CoCo Beach as more than 8,000 Color Computer users flocked to the Hyatt Regency and packed the exhibit hall and seminar rooms to learn about the latest developments for our favorite personal computer.

Our second RAINBOWfest of the season drew people from as far away as Canada, Panama and even England. Those of us from the colder regions enjoyed the palm trees and sunshine even if the weather was a bit brisk for the beach. Content to stay inside, we followed the crowd headed for the main ballroom exhibit hall.

It was like a three-ring circus at times with seminars competing with Radio Shack's CoCo Classroom, and both running during exhibition hall hours. The litany of CoCo Community personalities attending is too long to recite here, but it ranged from CoCo establishment types like Bob Albrecht and Don Inman to real comers like Roger Schrag and controversial mavericks like Dr. Marty Goodman.

RAINBOWfest CoCo Beach provided a chance for in-depth, one-on-one explanations when time permitted as well as aisle-blocker, crowd-stopper demos that reminded one of the state fair midway barkers hawking vegetable slicers. Most of those attending were so engrossed in examining the newest in software and hardware that when *the Rainbow's* Jim Reed mistakenly announced that the Radio Shack booth was closing out its 64K ECB machines for just \$149, it caused no stir at all. No, there were no corn dogs, but an elaborate Hyatt sandwich station just outside the ballroom drew a lot of takers.

By the end of each day, most people had plenty to fill their shopping bags: souvenir tee-shirts to arcade games, database programs to hard disk drives.

Will we be back next year? You bet! And, in the meantime, we'll visit New Brunswick (March 30-April 1) and Chicago (June 22-24). The CoCo Community and RAINBOWfest are too big to stay in one place.



Richard Parry of Speech Systems discusses voice synthesis and music while Roger Schrag follows up his seminar on machine language with an impromptu chalk talk.



Programmer Steve Bjork (left) talks shop with Gordon Monnier of MichTron while Saturn's Arnie Shiffman greets two of the more than 8,000 people attending.



Ron Krebs (left) of Mark Data chats with Alex Webster of Software Plus. Sue and Paul Searby get ready for the CoCo Community Breakfast. The Radio Shack exhibit (below) was one of the hubs of activity.



KRON

WITH FOUR SCREENS
• TANKS • SPIDERS • BLOCKS • CYCLES

Battle spiders! Blast your way through the descending wall of blocks! Defeat the enemy tanks! Trap the menacing cycles! Increasing levels of difficulty make each a real challenge! Each screen is totally different from the rest and provides state-of-the-art, fast-paced action!

KRON is 100% machine language and has high resolution multi-color graphics. It has many great sounds, maintains the top scores, plus has a pause feature and display mode. See the review in the February '84 Rainbow: "well-conceived," "rates with the best."

32K EXTENDED-JOYSTICK TAPE-DISK \$26.95-\$29.95

KINGPEDE

THE ULTIMATE PEDE GAME

We believe this to be the best pede game available for the Color Computer! You'll do battle with spiders, worms, poison mushroom plants, the mushroom replenishing snails, arrows, beetles, the pedes, and swarms of wasps! The action is fast and challenging with three difficulty levels to choose from.

KINGPEDE has high resolution machine language graphics and a huge variety of sounds. The joystick control is smooth and positive with the option of using analogue or eight-directional type of joysticks!

32K EXTENDED-JOYSTICK TAPE-DISK \$24.95-\$27.95

COLOR TAPE MANAGER

- copies tape based software (even most auto starts)
- handles programs with varying block lengths
- deals with missing end of file blocks
- loads and saves data with or without a file-name block
- displays memory in hex (or decimal) and ascii
- allows the changing of memory in decimal or hex
- rapidly scans memory using the arrow keys with auto-key repeat
- converts numbers from hex to decimal or decimal to hex
- allows input in hex or decimal
- merges multiple basic programs into one
- appends machine language to basic (example included)
- appends multiple machine language programs into one
- displays the start, end, and execute addresses of ML programs
- displays the buffer start, end, and top addresses
- converts ML programs into basic data statements which can be loaded as, or merged with, a basic program
- turns the audio and cassette motor on and off with one key commands
- finds the end of programs on tape even from within a program with a skip file command
- allows the transferring of control to other programs with a go command
- moves blocks of memory from start through end address to new start address
- allows the changing of the origin (start adds) of ML programs
- has inverted displays which lessen eye fatigue
- has an 8,380 byte loading buffer with 16K systems and 24,760 byte loading buffer with 32K systems

16K EXTENDED-MINIMUM

TAPE DISK \$19.95-\$22.95

COLOR DISK MANAGER

Finally, a disk utility which will handle virtually all of your disk related needs! COLOR DISK MANAGER will do selective initializations, verifies, backups, repairs and much more!

- will initialize single tracks, a range of tracks, or the entire disk to more than 35 tracks
- allows you to make a backup of the directory out of reach of basic and put it back if a directory crash occurs
- has a recover file command which will load entire files off the disk if the directory crashes and the allocation table is good
- will repair or salvage crashed disks several ways
- is 64K compatible allowing a 64K backup
- does backups by track, a range of tracks, or the whole disk (will do more than 35 tracks)
- gives an allocation table map with granules x-referenced to tracks and sectors, and showing which granules are used
- displays a file granule map showing which granules, tracks, and sectors the file uses, and the length
- will do a directory displaying file names in two columns, the number of free granules, and the free bytes if below 85535
- loads and saves, sectors, tracks, or files
- loads files two ways, as done by basic, or with header bytes left in, which helps in studying how files are saved on disk
- has a kill file command
- verifies tracks or the entire disk showing the track and sector if an error occurs, with the option to continue or stop
- is multiple drive compatible
- has an append sector command
- allows you to save a block of memory to disk
- transfers programs from tape to disk
- has a rapid scan feature which allows you to scan the disk by tracks and sectors using the arrow keys
- will dump memory to the screen in ascii, good for listing basic programs or source files
- has a move memory block command, and a transfer control command
- converts decimal to hex or hex to decimal
- allows you to examine memory using the arrow keys with displays in hex (or decimal) and ascii
- will load and execute rompoc's saved on disk
- has a move rom to rom command
- allows you to change in origin (start addr.) of ML programs
- displays the start, end, and execute addresses of ML programs

32K-64K EXTENDED

DISK \$34.95

OREGON COLOR COMPUTER SYSTEMS

— DEALER INQUIRIES INVITED —

PLEASE ADD \$2.00
POSTAGE/HANDLING
SEND ORDERS TO:

OREGON COLOR COMPUTER SYSTEMS
P.O. BOX 11488, EUGENE, OR 97440

In Pursuit Of Captain 'Hook'

A report on the piracy seminar at RAINBOWfest-Long Beach

By Bill Nolan
Rainbow Contributing Editor



One of the best attended and most controversial seminars at the recent RAINBOWfest in Long Beach, Calif. (which was an absolutely outstanding event), was the panel discussion held on the subject of software piracy.

The members of the panel were Martin Goodman, M.D., a general practitioner and anesthesiologist, owner of Cheshire Cat Software, and a CoCo enthusiast; Paul Searby, owner of Computerware; and Bob Rosen, owner of Spectrum Projects, and SYSOP of the Rainbow Connection Bulletin Board. Each of these gentlemen made a short opening comment, and then questions from the audience were fielded. Jim Reed, managing editor of *the Rainbow*, moderated the discussion.

Goodman, who has become well known to CoCo users because of his skill at "breaking" protected software, spoke out strongly in his opening remarks for more communication between software vendors and customers. He also pointed toward what he believed to be a strong need for more accountability from vendors as to advertising claims, warranty, and providing of backup media in a reasonable way.

Searby is an outspoken believer who has taken the lead in anti-piracy campaigns. His opening comments reflected his conviction that piracy (he always says "theft", not "piracy") is the biggest problem facing software vendors and software users alike. He feels that software theft is causing vendors of good software to leave the field, and he cautioned that the currently rampant software theft problem has, and will, result in higher prices and less software being available.

Searby provided a quick overview of the rather extensive costs involved in bringing a new program to the marketplace

— costs that often reach \$10,000 according to Searby — and he reminded people that these costs must be recovered by the sales of the program. If fewer copies are sold because of piracy, then each copy that is sold has to bring a higher price in order for the vendor to recover his costs, and (hopefully) make a profit. He mentioned also that publishers sell most of their programs to dealers and distributors at about half of the suggested retail price, and that the price has to be set accordingly. Searby also said that some vendors who had previously been a problem from the standpoint of warranty and backup have made great improvements in these areas, due to efforts within the industry to police itself.

During the question period, it was asked why some companies put so much protection onto their tapes and disks that loading becomes a problem. Datasoft, in particular, took a lot of "heat" on this subject, with one dealer in the audience indicating a return rate of 90 percent on *Zaxxon* tapes. A representative of Datasoft responded by saying that Datasoft had not manufactured the tapes. He also provided some numbers to indicate the size of the piracy problem that led them to institute the protection to begin with. Apparently, there were about 5,000 copies of *Zaxxon* sold, (Searby indicated that, with most programs, 3,000 copies sold over a one-year period is considered outstanding), yet there are an estimated 300,000 copies in existence, for a ratio of 60 stolen copies to every legitimate copy of *Zaxxon*. A member of the audience remarked that when Radio Shack began selling *Zaxxon*, they sold it *without* the protection on the tape.

It was asked what was "public domain," and whether or not programs typed in from magazines were okay to pass around. Reed, from *the Rainbow* fielded this one, and he said that every issue of *the Rainbow*, and almost every other magazine as well, was copyrighted in its entirety, and that in addition, the authors of the various programs retained their own copyright, so these were not "public domain," and could not be legally distributed or placed on bulletin boards.

(Bill Nolan and his wife Sara operate Frickly-Pear Software. Bill also teaches computer science at a local college and is DM at a regular weekly fantasy game.)

(continued on Page 286)

The HJL-57 Keyboard



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.

Order by Phone Anytime

716-235-8358

24 hours, 7 days a week



PRODUCTS INC.

955 Buffalo Road • P.O. Box 24954
Rochester, New York 14624

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. For dealer information in Eastern U.S. and Canada, call collect: 617-586-7814, Advanced Computer Services (distributor), 74 Plain Street, Brockton, MA 02401.

Marrying Machine Language To BASIC

By Richard A. White
Rainbow Contributing Editor

James H. DeStafeno of Swedesboro, New Jersey wrote *the Rainbow* asking a number of questions which might occur to you if you have become conversant with BASIC and start looking at machine language for the first time. He notes that ROM and memory maps are being printed without instruction on how to use them. Other foggy BASIC commands include *CLEAR xxx,yyy*, *USR*, *DEFUSR* and offset loading. *PEEK*, *POKE* and *VARPTR* have been recently covered in *the Rainbow*, but belong with the above commands in that they deal directly with CoCo's memory.

The 6809 microprocessor can directly address 65535 bytes of memory. A memory map describes in a table, diagram or listing where and what is in the memory. The memory map depends on the operating system in the machine at the time. Color BASIC is an operating system that defines a basic memory map for the CoCo. Extended Color BASIC changes this map in detail as it allocates space

for the new functions it provides, but does not change its basic structure. Disk BASIC needs room to operate too, so it grabs off some more of the memory and the memory map changes again. If you do a *PRINT MEM* in a Color BASIC machine and then in a Disk BASIC machine, you get a much smaller number in the Disk machine. The memory is still there, but Extended BASIC and Disk BASIC are using it.

Extended Color BASIC Computer Memory Map

Decimal Address	Contents	Hex Address
0-1023	System Use	0-3FF
	Text Screen	
1024-1535	Memory	400-5FF

Graphic Screen Memory

1536-3071	Page 1	600-BFF
3072-4607	Page 2	C00-11FF
4608-6143	Page 3	1200-17FF
6144-7679	Page 4	1800-1DFF
7680-9215	Page 5	1E00-23FF
9216-10741	Page 6	2400-29FF
10742-12287	Page 7	2A00-2FFF
12288-13823	Page 8	3000-35FF

Program and Variable

13824-16383 Storage 3600-3FFF
16K Machine

Program and Variable

16384-32767 Storage 4000-7FFF
32K Machine

32768-40959 Extended BASIC ROM 8000-9FFF

40960-49151 Color BASIC ROM A000-BFFF

49152-65279 Cartridge Memory C000-FE9F

65280-65535 Input/Output FF00-FFFF

Let's examine the above memory map in some detail. In the first 1,023 bytes, BASIC keeps its notes that it needs to run. These are things like the address of the start of BASIC (25 and 26), the end of BASIC (27 and 28), variable table addresses, the end of memory and a myriad of other details. Ever wonder how BASIC keeps track of where the cursor is on the text screen? That's in 136 and 137. When you type on the keyboard, things generally don't happen other than characters appearing on the screen until you press [ENTER]. That's because the characters are saved in a memory area

(Richard White has a long background with microcomputers and specializes in BASIC programming. Along with Don Dällberg, he is the author of the TIMS database management program.)

called a buffer until a carriage return character is sent by the [ENTER] key. This BASIC line input buffer starts at decimal 832 and is 255 bytes long.

Another important buffer is the cassette file data buffer which starts at decimal 471 and is 256 bytes long. When you output data to a cassette file, data is temporarily stored here until the buffer is full and then dumped to tape. Upon loading a cassette file, data is stored here for BASIC to read and process. Other earlier computers didn't have such a buffer and each piece of data was individually sent to tape along with a time consuming header. Loading or saving a file can be an all night chore with these machines.

It is well beyond the scope of this column to deal individually with each item in BASIC's scratchpad; most you will never need to use directly. Some you set using BASIC commands, but BASIC does the work for you. In any case, this 1K chunk of memory is one of the most used in your machine. While it is not included in the number you get when you *PRINT MEM*, it is working hard for you nonetheless.

Next comes the vital screen memory. It extends from decimal 1024 to 1535 and has one byte for each possible character location on your text screen. When you print to the screen, BASIC stores the characters here. Your video display generator chip (6847) reads this data and converts it into the picture it sends to your TV or monitor. Your video display generator chip deals with graphics in much the same way when you use the graphics modes. It reads the assigned memory area and generates a picture. Motorola devised this method years ago for use with the 6800 microprocessor. In a recent article in *BYTE* magazine, Apple people were making a big thing about using the technique in the new Macintosh. The only thing different is that the Mac uses a 68000 instead of a 6809 and has a 22K graphics memory space rather than the 6K used for high resolution graphics in the CoCo. The 8088 microprocessor in the IBM PC works differently from the 6809 or 68000 and a whole board of chips are necessary to do what one or two chips do in CoCo or Mac. This is one of those details that explain why a \$260 machine can do so much of what a \$3,000 machine will do.

Next come the graphics pages. Color BASIC does not have graphics capability from BASIC, so the BASIC program default start address is 1536. On a

cold start, Extended BASIC reserves four pages for memory, so the start of a BASIC program is at 7680, but you can use *PCLEAR* to change this.

For example, if you enter *PCLEAR1*, only the first graphics page is reserved, and the BASIC program will load starting at 3072. This allows 12,711 bytes for BASIC program and variables in a 16K machine. On the other hand, a *PCLEAR8* moves the start of BASIC all the way up to 13824 leaving a trifling 2,559 bytes for BASIC and variables.

In a 32K or 64K machine, the RAM between 16384 and 32767 is all available for program and variables. In a Color BASIC machine, this is a large 31,231 bytes. With Extended Color BASIC,

"The trick is to size your string storage to meet your program's needs without unduly limiting your program's size."

PCLEAR1 allows 29,695 bytes, there are 25,087 bytes available with *PCLEAR4* and 18,933 available with *PCLEAR8*.

If you do a *PRINT MEM* under one of the combinations described above after a cold start, the number returned will be 200 bytes smaller than I show. If you have an Extended BASIC machine and enter *PRINT MEM* immediately after turning it on and getting the Extended BASIC message, you will read 24,887 rather than 25,087. The difference is the 200 bytes that BASIC automatically reserved for strings. You change this by using *CLEAR 100* to reduce it to 100 bytes. Maybe your program is going to store a lot of string data so you *CLEAR 5000* or even *CLEAR 10000*. This reserved space is no longer available for a BASIC program and most variables. Only string data can be placed there. It's not lost since you have to put string data somewhere. The trick is to size your string storage to meet your program's needs without unduly limiting your program's size.

CLEAR can carry two arguments, for example *CLEAR 200,27000*. This says that BASIC may not use any memory above 27000 in a 32K machine, and that the 200 bytes just below 27000 in memory are reserved for string storage. Machine language programs may be loaded above 27000 and *EXECuted* without fear of being "walked-on" by BASIC. Prickly Pear's *Colorkit* is a machine language set of editing tools that I always have running when I do any serious BASIC programming work. It starts at 27000 in my 32K machine so I have to type *CLEAR 200,27000* from the keyboard before loading it. Otherwise, CoCo goes west and I have to turn it off and back on to recover. You want

to reserve only the amount of memory for machine language that you need. I used *CLEAR 200,27000* since that is what is required to use *Colorkit*. If you had a 1,000-byte machine language program then *CLEAR 200,31767*.

We have slid into the dual operation of BASIC and machine language programs at the same time. In the example above, *Colorkit* can be running while you run the BASIC program you are working on. Actually there are three programs working simultaneously since your BASIC interpreter is a machine language program. Really, each is taking its own turn and then handing control back to another. Overall control of this rests with addresses or "hooks" stored in the system portion of memory below 1023. We are getting deep fast here, and disengagement is preferable to total confusion. Perhaps this leaves you with some flavor of what can be going on that we do not see clearly.

A simpler exercise is to store a machine language routine in memory and call it from a BASIC program when

you want to use it. Starting with Color BASIC, you need to *POKE* the execution address of the machine language into memory locations 275 and 276. Then when you need to call the routine from inside a BASIC program, you use the statement $A=USR(0)$. You can write your machine language routine to use the ROM call *INTCNV* to get the argument with *USR, 0* in this case and put it in the D register of the microprocessor. Generally you won't want to bother with this. You can also transfer data to the machine language routine by *POKEing* values to some reserved area of memory. The routine then can get the values, work on them and then store new values for BASIC to get by peeking. Now you are really down at the machine level, dealing with memory on a byte-by-byte basis.

Some have been trying to get a handle on assembly or machine language programming by trying to understand how to interface it with BASIC. A better way is to learn assembly language, at least the simpler aspects, and then work back to the interface with BASIC. When you understand what simple machine language programs are and how they work, you will understand more clearly what the BASIC interface tools are doing. *TRS-80 Color Computer Assembly Language Programming* by William Barden, Jr., Radio Shack cat. no. 62-2077, is a good starter reference.

Extended Color BASIC broadens the machine language interface, allowing a BASIC program to call any of 10 machine language routines (numbered 0 to 9). First the execution address of each routine to be used must be defined to BASIC, not *POKEd* into memory as with Color BASIC. The format is — $DEFUSRn = \text{address}$. Say I had three routines whose execution addresses were 31000, 31500 and 32000, each address being also the first byte of each routine. Before loading these into the computer, either the program or the operator would need to do $CLEAR \text{xxx}, 31000$ to protect the machine language area. Next the BASIC program would need to define the execution addresses as follows — $2000 \text{ DEFUSR0}=31000 : \text{DEFUSR1}=31500 : \text{DEFUSR2} = 32000$. A machine language routine is then called with a $USRn$ statement — $A=USRn(B)$. To call routine one, use $100 \text{ A}=USR1(0)$. When the routine completes its work, control is returned to either the next statement in the line or to the next line in the BASIC program.

While it is desirable to put machine language routines either below BASIC in

★ GRAND OPENING SPECIAL ★

We, at Michtron want to celebrate our moving into our new building. To share our festive spirit with you we are making these special package offers for the next 60 days.

Disk Drive and Controller only \$329.95. This may not be the lowest price you will find in the Rainbow, but we can guarantee it will be the best disk drive you can buy. Most special prices are for big, old, outdated full size drives. We are offering you the newest design, Slim Line TEAC disk drives. These are exceptional quality 40 track disk drives. They are guaranteed for 6 months, twice as long as most disk drives. For a controller we will offer the J & M with gold plated contacts. As a special bonus with each disk drive, we will include a dual power supply and case. Now or at a later date you can add a second disk drive for very little money:

1 TEAC 40 Track Slim Line Disk Drive and Controller — \$329.95

2 TEAC 40 Track Slim Line Disk Drives and Controller — \$479.95

We buy approximately 5,000 disks a month for resale to our customers and for our own use as a software publisher. We buy only premium quality SENTENAL diskettes. We buy them in bulk (no Labels, no boxes) to save money. In turn we pass these savings on to you. These diskettes are unconditionally guaranteed to be the finest you have used or we will promptly give you a refund. The diskettes are guaranteed by both Sentenal and MICHTRON for LIFE, if they ever cease to work, return them and we will send you new ones.

10 Disks with Tyvek Sleeves — \$19.95

10 Disks with Vinyl Sleeves — \$21.95

7 Games At Fantastic Prices!

CATALYST (32K) a great game reviewed in the MARCH issue of RAINBOW . . . **CHOPPER STRIKE** (16K or 32K) fly your helicopter over the most varied terrain ever found in a color computer, rescue your army and destroy the enemy . . . **DEMON SEED** (32K) Rated #1 in our top ten for months a great arcade game, with bats and demons swooping down on you. . . . **FURY** (16K or 32K) A great aerial classic, shoot down enemy planes and helicopters . . . **MUDPIES** (32K) one of my favorite games! Received rave reviews in HOT COCO **PACDROIDS** (32K) If you haven't got a PACMAN type game here is a great chance to get one at a low price. Excellent variation of Pacman™ . . . **STRONGHOLD** (16K or 32K) you must protect your city against flying debris using your shields to bounce the projectiles back against your foes.

—SPECIAL PRICING—

Any Two of the above games - Disk or Tape only **\$29.95**

Any Three of the above games for only. **\$44.95**

Each additional game is only. **\$10.00**



6655 Highland Road, Pontiac, MI 48054
(313) 666-4800

Master Charge and VISA OK. Please add \$3.00 for shipping in the U.S.A. - \$5.00 for Canada. Dealers Inquires Invited.

202,752 BYTES

EXTRA*

\$44.44

MORE



*The Howard drive 0 package gives 359,424 bytes of available storage for \$444.39 using our double sided, double density disk and 40 track controller. The regular 35 track drive 0 gives 156,672 bytes for \$399.95. The Howard package gives an extra 202,752 bytes for \$44.44 more.

CONTROLLERS

- DC-1** ROM disk controller reads & writes to 35 and 40 track single and double sided drives with all models of the color computer (J&M) **\$134**
- VC-1** Video interface mounts inside color computer by piggybacking IC on top of interface—no soldering and no trace cuts **\$24.45**
- VC-2** for color computer 2 — monochrome only **\$26.45**
- VC-3** for color computer 2 — color and monochrome **\$39.45**

MEMORY

64K Upgrades

- 64-E1** for E Boards. Remove old Chips **68.45** and replace with this preassembled package - No soldering or trace cuts
- 64-F1** for F Board Preassembled with **64.45** no soldering. Capacitor leads must be cut
- 64-2** for color computer 2. Kit requires **69.45** soldering, no traces to cut.

PRINTER

- RX-80** Epson pin feed **\$333**
- 8148** Serial board with 2K buffer **\$89.95**

Any product may be returned within 30 days for refund if not satisfied.

We handle all warranty & repair work thru our direct contact with the manufacturer.

MONITORS

- 122** Zenith 12" Amber gives excellent resolution and is easy on the eyes **\$134**
- 123** New Zenith green screen for serious programmers and word processing **\$114**
- 131** 13" Color monitor with speaker, composite, and RBG jack (Zenith) **\$334**

All Monitors need video controller

DISKS

- DD-1** 1/2 height 5 1/4" 40 Track SSDD 179,712 bytes available **\$269**
- DD-2** 1/2 height 5 1/4" 40 Track DSDD 359,424 bytes available **\$319**
- DD-3** Dual 3" 40 Track SSDD 359,424 bytes available (Amdek) **\$449**
- CA-1** Cable to connect disk to controller **\$24.44**

Drive 0 needs controller DC-1 above

TV STANDS

- | | | |
|-------------|--|-------------------------------|
| | | COCO 2 |
| TS-1 | 15W x 11D x 4H for 13" screen | TS-2
\$29.50 |
| TS-4 | 24W x 11D x 4H for 19" screen | TS-3
\$39.50 |
| PS-1 | 18W x 15D x 2 1/2H for all popular printers add \$5 for bottom feed slot | |

TV stands come with ROM pack cut-out. Specify ivory or smoked grey.



Howard Medical

Box 2, Chicago, 60690
312 944-2444

please send me the following

Name _____
 Address _____
 City, State Zip _____

Cat. #	Description	Cost
_____	_____	_____
_____	_____	_____
_____	_____	_____

Shipping _____
 Ill. residents add tax _____
 Total _____



The Biggest

The Best



The Indispensable

The RAINBOW

It's called the *premier Color Computer magazine* for good reason. **The Rainbow** is the biggest, best, brightest and most comprehensive publication a happy CoCo ever had! Is there any wonder we get letters daily which praise **the Rainbow**, the magazine one reader calls "A Pot Of Gold" for his Color Computer?

The Rainbow features more programs, more information and more in-depth treatment of the TRS-80 Color, TDP System-100, MC-10 and Dragon-32 and 64 computers than anyone else.

Each monthly issue is well over 320 pages and contains more than two dozen programs, some 15 regular columns and 30 or more product reviews. And advertisements: **the Rainbow** is known as *the* medium for advertisers—which means every month it has a wealth of information unavailable anywhere else about new products! More than 200 companies advertise in its pages every month.

But what makes **the Rainbow** its people. People like Bob Albrecht, the master teacher of computer programming. People like Don Inman, one of the world's best computer graphics authors. Experts like Dick White, one of the most knowledgeable writers about BASIC. Or Dan Downard, **Rainbow** technical editor, who answers our readers' toughest questions. Educators like award-winning **Rainbow** columnist Steve Blyn. Advanced programmers like Dale Puckett, who guides you through Radio Shack's OS-9 operating system. Electronics specialists like Tony DiStefano, who explains the "insides" of the CoCo. These people, and many others, visit you monthly through columns available only in **the Rainbow**.

Special programs on using *Spectaculator*. An income tax reporting system. Complete Adventure games and Simulations. **The Rainbow's** unique *Scoreboard* of arcade games. And games—lots of them—super graphics and utilities, the world's first four-color computer magazine centerfold! And much, much more.

Join the tens of thousands who have found **the Rainbow** to be the absolute necessity for their CoCo. With all this going for it, is it surprising that more than 95 percent of **the Rainbow** subscribers renew their subscriptions?

We're willing to bet that, a year from now, you'll be doing the same. For more information call (502) 228-4492.

Rainbow On Tape Tops Typing

Tired of spending all your valuable computer time typing in those long, but wonderful, **Rainbow** programs each month? Now there is **Rainbow On Tape** to help ease the pain.

Each month all the lengthy programs (over 20 lines) in **the Rainbow** can come to you ready-to-run, thanks to **Rainbow On Tape**. More than 20 programs every month in all! At \$70* per year — or \$8 a tape** — it is the biggest bargain going.

Back issues are available beginning with April, 1982 (except May 1983). Each month's tape will arrive approximately the same time as your current month's issue of **the Rainbow**.

YES! Sign me up for the biggest bargain going . . . **Rainbow On Tape!**

- NEW RENEW (Attach Label)
- A Full Year A Month (Specify Month & Year _____)

Name _____

Address _____

City _____ State _____ ZIP _____

Payment Enclosed

Charge VISA MasterCard American Express

Account Number _____

Signature _____ Card Expiration Date _____

*Subscriptions to **Rainbow On Tape** are \$70 in the United States, \$80 U.S. funds in Canada and Mexico and \$95 U.S. funds in all other countries.

**Back issues of the tapes are \$8 in the United States, \$10 U.S. funds for Canada, Mexico and all other countries.



Get Your Very Own Pot O' Gold!

Here's your chance to have a Pot O' Gold full of programs, articles and information about CoCo every month of the year! A subscription to **the Rainbow** is only \$28* and you won't miss a single chock-full issue.

As the premier magazine for the TRS-80 Color, TDP-100 and Dragon-32 and -64 computers, **the Rainbow** has more of everything — and greater variety, too. Do yourself and your CoCo a favor and subscribe to **the Rainbow** today!

We accept VISA, MasterCard and American Express. Non-U.S. rates higher. U.S. currency only, please.

YES! Sign me up for a year (12 issues) of **the Rainbow**.

- NEW RENEW (Attach Label)

Name _____

Address _____

City _____ State _____ ZIP _____

Payment Enclosed

Charge VISA MasterCard American Express

Account Number _____

Signature _____ Card Expiration Date _____

*Subscriptions to **the Rainbow** are \$28 a year in the United States. Canadian and Mexican rate is \$35 U.S. funds. Surface rate elsewhere is \$65 U.S. funds. Air mail is \$100 dollars U.S. funds. All Subscriptions begin with the current issue. Please allow 5-6 weeks for the first copy.



What goes well with *the Rainbow*?



Rainbow On Tape!

We call it the other side of *the Rainbow*, and we may have to raise the price just to call your attention to it. With more than two dozen programs every month, **Rainbow On Tape** is a luxury service at a bargain basement price. At \$6.50 for a single copy, that's only 27¢ a program. And, with a full year's subscription, for \$60, we're practically giving it away.

What is it? **Rainbow On Tape** is a monthly, cassette tape adjunct to *the Rainbow* and it's brimming with all the programs (those over 20 lines long) that fill the pages of the magazine. All you do is pop the cassette in your tape recorder and they're ready to run. No more lost weekends — or weeknights — typing, typing, typing. With **Rainbow On Tape**, you must read the article in the magazine then, in seconds, you load it up and run it.

Yes, **Rainbow On Tape** is brimming with the programs that fill *the Rainbow's* pages each month. And, yes, you could type them in yourself, as many people do. But all of them? Every month? There simply isn't enough time.

Isn't it time your CoCo became a fulltime computer instead of a typewriter. Think how your software library will grow. With your first year's subscription, you'll get almost 300 new programs: games, utilities, business programs, home applications — the full spectrum of *the Rainbow's* offerings without the specter of keying in page after page and then debugging.

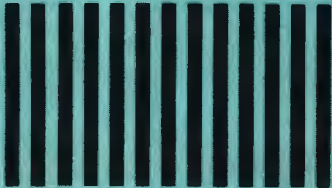
Rainbow On Tape — the "meat" of *the Rainbow* at a price that's "small potatoes." Food for thought. To get your heaping helping, just fill out and return the attached reply card. No postage necessary.

Discover the other side of *the Rainbow*. It's not only a time-saver, it's the key to a whole new outlook!

BUSINESS REPLY CARD
First Class PERMIT No. 1 Prospect, KY
POSTAGE WILL BE PAID BY ADDRESSEE
RAINBOW
P. O. Box 209
Prospect, KY 40059



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY CARD
First Class PERMIT No. 1 Prospect, KY
POSTAGE WILL BE PAID BY ADDRESSEE
RAINBOW
P. O. Box 209
Prospect, KY 40059



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



CASHMAN

By Doug Frayer and Bill Dunlevy

The screen is exploding with colorful, fast moving animation like you've never seen. The speaker is alive with every kind of sound imaginable! Best of all, the player's eyes are glowing with fascination and wonder of this classic creation. THE GAME??? CASHMAN! So colorful, so imaginative, so all out fun, that you'll wonder why you ever settled for anything less!

Dozens of levels and screens (more than FORTY!) let anyone from beginner to expert have as much excitement, challenge, and good clean fun as they can stand! Even the least adept player can have the time of their life with CASHMAN, yet with the increased excitement of special Mystery Pieces and Expert Puzzle Screens, the most experienced arcade addict is guaranteed to never stop playing!!!

32K COLOR COMPUTER TAPE \$27.95



Play by yourself or invite the ultimate challenge of simultaneous two player competition! Run along the colorful girders, jump across the tremendous chasms, climb the wobbly ladders, or grab a BYRD and fly to get the loot before your opponent does! Be careful though, KATS are on the prowl and wrestling with them can be a challenge.

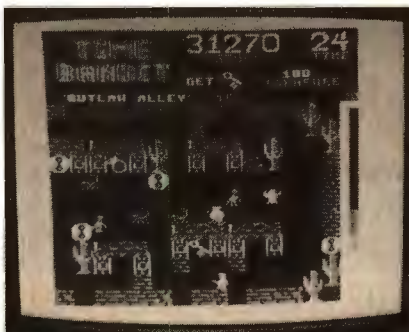
CASHMAN's classical play is so original and so much fun that no arcader whether a veteran or a rookie, can afford to pass it up.

So run, jump, climb, or fly to the nearest Color Computer and play the ultimate . . . CASHMAN! (P.S. CASHMAN lets you play against the computer or play 2 players simultaneously.)

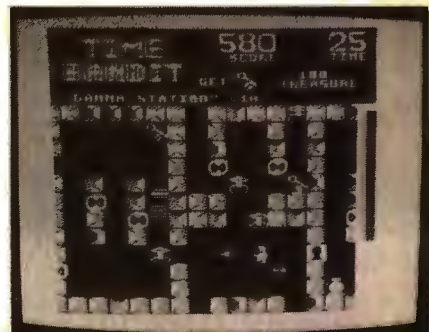
DISK \$29.95

TIME BANDIT

This month is the first month that the entire top ten panel had copies of TIME BANDIT and they overwhelmingly voted it into first place. Never before has a game received so many first place votes. At the Dallas RAINBOWfest and at the Pasadena Color Expo, arcade players were unanimous in the praise of TIME BANDIT. "The best original game ever written for the COCO" . . . "My dad said I could buy only one game and this is the best game here" . . . "Best game at the show" . . . "Best game I've ever seen on a home computer" . . . "Great Game" . . . "Only game I bought at the show" . . . These are comments we heard about TIME BANDIT at these two shows . . . I can say without a doubt that TIME BANDIT is the best game on the market for the COCO.



WESTERN WORLD: Visit the Lost Maverick Mine, Dead Man's Pass, (Visit? Escape!) Tombstone Jail, and many more! A variety of screens.



SPACE WORLD: Explore Hy-perspace, the bizarre Light Barriers, the Insidious Grid, Gamma Station the Enterprise and others! Bright, Clear graphics!

FANTASTIC ADVENTURES AND UNLIMITED RICHES AROUND
WHEN ONE TRAVELS THROUGH TIME — YOU ARE THE TIME BANDIT!

Thanks, to Bill Dunlevy and Harry Lafnear, you can transform your Color Computer into the ultimate arcade experience. 32K has never looked or played better!

Tired of games that have only a few screens or force you to follow a strict order of levels? In TIME BANDIT, you virtually create your own game! You can choose from more than TWENTY places during the entire game, and each place has more than 15 distinct variations and levels of difficulty; this means over 300 variations in all!

You can use the TIMEGATES to travel to three different Worlds of Time, each one containing a multitude of colorful and unique adventuring areas. Visit FANTASY WORLD,

WESTERN WORLD, or SPACE WORLD. Avoid or destroy the Evil Guardians: the Watching Lurker, Angry Elmo, Killer Smurphs, and lots more! Find the keys which remove various locks preventing your escape. But hurry Bandit—your power is dwindling and time is fleeting! This new machine language game is so exciting, challenging, and fun that you need never leave your home to find an arcade again! Ultra crisp Supergraphics that include colorful scrolling landscapes and full animation of a multitude of characters, amazing sound, and literally HUNDREDS of screens—it's all here! The conquest of time and space awaits you.

32K COLOR COMPUTER TAPE \$27.95
DISK \$29.95



FANTASY WORLD: Conquer the halls of Doom, the Mystic Maze, the Underworld Arena, and other medieval places. Pictured are the three different time gates.



6655 Highland Road, Pontiac, MI 48054

(313) 666-4800

Master Charge and VISA OK. Please add \$3.00 for shipping in the U.S.A. - \$5.00 for Canada. Dealers Inquires Invited.

the graphics pages if you are not using graphics or in a protected space at the top of memory, it is not necessary that they be assembled in the final memory location. In other words, routines that are written in relocatable code can be moved around in memory and still work. If you upgrade to a 32K or 64K machine, you would like to take advantage of that memory and you cannot if you continue to load machine language routine in protected memory below 16383. Yet your routines on cassette or disk are made to load into the lower memory area. Offset loading to the rescue. In a simple move from 16K top-of-memory to 32K top-of-memory, do *CLOADM "PROGNAME", 16384* or *LOADM "PROGNAME", 16384*. The program will load 16384 bytes higher in memory. To make it easy later, *C-SAVEM* or *SAVEM* the program from higher memory using the new start, end and execute addresses. It will now be on your tape or disk with these new addresses and can be loaded directly without offset.

One of the neater tricks around is to hang your machine language routines onto your BASIC programs so they load and save with the BASIC program.

To understand this, we need to know what the end of a BASIC program looks like and to what address the end of BASIC pointer at locations 27 and 28 points. Each line of BASIC in memory ends with a zero. There are three zeros in a row at the end of a BASIC program. The end of BASIC pointer carries the address of the memory location following the third zero. Load a machine language routine starting at the second zero marking the end of BASIC, then add three zeros after the machine language and change end of BASIC to hold the address following the new three zeros. At minimum, you will need a machine language monitor program that can read and change individual memory locations. *Colorkit* includes both the monitor and a utility to attach the machine language routine automatically to a BASIC program. Now when you save and load the BASIC program, the machine language loads and saves with it. If you edit the BASIC program, its length changes and the machine language is moved up or down in memory with the program.

The next problem is to call the machine language whose execution address changes from time to time as you edit

BASIC. Since the end of BASIC pointer changes the same amount and direction as the location of the machine language, we can use it for a reference. In Extended BASIC, this will do the job: *100 DEFUSRO = 256*PEEK(27) + PEEK(28) - X* where X is the number of bytes from end of BASIC to the execution address of your routine.

Now why would one want to play silly games like we have been talking about? Program speed is one good reason. A sorting routine in BASIC is slow, even if you use the fastest type of sort. In comparison, even the slowest sorting method in machine code is 10 to 100 times faster. Writing a whole program in machine code would be a real drag. Writing just a sort and hooking it to a BASIC program that does as well as the rest of the things you want done is much less painful. Games are another area that benefit from the use of key machine language routines doing only things that BASIC is slow at.

My, how far we have strayed from our memory map discussion. Thus far our adventures have been confined to the lower 32K of memory. At first blush, the memory space from 32768 to 65280 seems pretty simple. In order

Metric Industries

For the color computer and TDP100

Model 101 Interface \$54.95

- Serial to Parallel Interface
- Works with any Centronics Compatible Printer including Radio Shack, TDP, Gemini, Epson, Gorillia and many others
- Six switch selectable baud rates (300 to 9600)
- 90 day warranty
- Power Supply included



Model 102 RS-232-C Switcher

- Switches all three data lines
- Indicator lights let you know computer is on
- 3 position switch has silver plated contacts for high reliability
- Color coded lights indicate switch position
- Color coded labels for your printer, modem etc., supplied

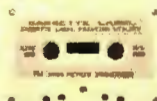


\$35.95



Cassette Label Program \$6.95

- Prints five lines of information on pin-feed cassette labels
- Menu driven — easy to use



- Uses special features of your printer for standard, expanded and condensed characters
- 24 free labels included with program
- Auto centering features for each line of text
- 16K ECB required

General Items

- Gemini 10X Printer **\$319.00**
- Special Save — Printer & Interface **\$360.00**
- C-10 Cassettes **\$7.50/dozen**
- Hard plastic boxes **\$2.50/dozen**
- Pin-feed Cassette labels **\$3.00 per 100**
- Free shipping on all orders over \$50.00
- Add \$3.00 for shipping on orders under \$50.00
- Ohio residents add 5.5% sales tax
- Phone order line for VISA and MASTERCARD, orders accepted 24 hrs. a day, call **513-677-0796** or send check or money order to:

**Metric Industries
Department R
P.O. Box 42396
Cincinnati, OH 45242**

Dealer Inquiries Invited

there is the Extended BASIC ROM, the Color BASIC ROM, cartridge memory and input/output. The Disk BASIC ROM occupies the lower 6K of the cartridge memory space in a disk system. At minimum, Color BASIC and input/output, our beloved SAM chip (6883), must be present to provide a minimum operating system. Using either cassette or disk, machine language routines can be loaded that cause drastic memory map changes to occur. Some of these have been published in recent back issues of *the Rainbow*. A first step is to copy the ROMs to low memory, switch CoCo to 64K RAM and copy the ROM code back into upper memory in the same locations that it occupied in ROM. Next it was discovered that Extended Color BASIC is entirely relocatable, and that if it is moved above Color BASIC or Disk BASIC, that BASIC could use RAM up to 40959. This is the so called 40K move and a number of commercial and published programs are available. Another interesting approach is the one developed by Jorge Mir to modify a BASIC program and load it above Disk BASIC. This is in the October 1983 *Rainbow*.

Another tact is to switch the upper 32K RAM in and out under control of a machine language program and use the upper RAM for data storage. BASIC is operational whenever the machine is in the ROM mode. Under these conditions, 96K of memory space is in use. In any case, the memory map is one thing at one time and something else at another. These are enhancements to the BASIC operating environment and do not cause major changes to BASIC. Properly written, a BASIC program that runs in the normal ROM-RAM map should run in an all RAM or switched mode as well. Changes required should be restricted to those necessary for the program to take advantage of its new environment.

At this point there is much that I have not covered and some that I have touched only lightly. The disk system memory map is one that is not discussed. One reason is that it varies depending on how many disk buffers are in use. Another is that there are many more non-disk readers than those with disks. The whole area of switching from ROM to RAM in the upper 32K space could well be the subject of a separate article apart from this column. For now, let's get the basics in place, even when they seem rather complex themselves.

VOLKSMODEM™

The Modem That Speaks Everyone's Language



Only:
\$69.95

- Easy installation—connects directly to wall phone jack
- Voice/Data Switch—permits routine phone use without disconnecting modem
- Full/Half Duplex Switch (Half necessary for certain older computer models)
- 300 Baud (bits per second)
- Bell 103 compatible
- Automatically selects originate/answer mode

- Advanced circuitry has low power consumption for long battery life (approximately two years)
- Requires 9 volt battery (not included)
- Lifetime Limited Warranty

ANCHOR AUTOMATION, INC.
6913 Valjean Avenue, Van Nuys, CA 91406

★★★ MODEM SPECIAL ★★★

Anchor Volksmodem	\$69.95
DFT II Tape or Disk	25.95
Cable COCO to Modem	12.95
List Price	\$108.85



Special

HALF PRICE SALE!

ITEM	LIST PRICE	SALE PRICE
Cosmic Clones (Mark Data)	(24.95/27.95)	(12.50/13.95)
Shark Treasure (Computerware)	(24.95/27.95)	(12.50/13.95)
Color Graphics Editor (SSM)	Tape 19.95	9.95
Pacdroids (Programmers Guild)	Tape 19.95	9.95
Ninja Warrior (Programmers Guild)	Tape 29.95	14.95
Phantom Slayer (Screenplay)	Tape 19.95	9.95
Invaders Revenge (Screenplay)	Tape 19.95	9.95
Balloon Attack (Computer Shack)	(19.95/21.95)	9.95

MichTron

1691 Eason • Pontiac, Michigan 48054

6655 Highland Road, Pontiac, MI 48054
(313) 666-4800

Master Charge and VISA OK. Please add \$3.00 for shipping in the U.S.A. - \$5.00 for Canada. Dealers Inquires Invited.

A Change Of Address

By Dennis Derringer

Recently, quite a few programs have been popping up that show an effective means of relocating machine language programs in memory. Of course, to have a machine language program load at a higher address only requires an offset value placed after the filename when it's *LOADMed*. Unfortunately, Microsoft didn't include a syntax for negative offsets to load programs lower in memory. This spurred the challenge to offer a means of relocating programs after they're loaded in memory. Most of these programs dealt with a technique using *PEEK* and *POKE*, either in BASIC or a machine language version, to move an area of memory from one location to another. Effective, yes, but it still required you to calculate the new *LOAD*, *EXEC* and *END* addresses so that it can be *SAVEMed*.

Being one who likes things nice and simple, I proceeded to find a quick method to relocate machine language programs and at the same time, have the addresses changed. Studying the method by which a machine language program is stored on disk revealed that the three magic numbers are right there on the disk with the program. All that was needed was a routine that could read these numbers and then have new ones put in their place. This is where the flexibility of *RS-DOS* really proved outstanding.

Regardless of how a file is stored, you can *OPEN* it for direct (random) access with a record length of one and then, by checking the length of the file (LOF), obtain the exact number of bytes that it contains. For machine language programs, the second and third byte in the file represent the MSB and LSB values for the *LENGTH* of the program. The fourth and fifth bytes represent the MSB and LSB values for the *LOAD* address. The last two bytes in the file represent the MSB and LSB values for the *EXEC* address. The actual numbers for the MSB and LSB values are the ASCII value of the character. The number which they represent is calculated by the formula $MSB*256+LSB$.

The utility program will obtain these values and let you indicate a new *LOAD* address. The *LENGTH* and *EXEC* values are automatically recalculated and then the new values are stored back on the disk. This is how the program breaks down:

(Dennis Derringer, president of Derringer Software, Inc., is a self-taught programmer and has been marketing software for the color computer since 1982.)

Line	
90-180	Receive input for filename and get values from disk (include extension).
200-250	Display values and receive input for new <i>LOAD</i> address.
270-390	Calculate new values, display values and store result back on disk.

This routine works with any program that has been *SAVEMed* using the standard syntax. Exercise caution when using with commercially purchased software, they don't always use standard techniques.

250 151
END 111

The listing:

```

10 *****
20 * CHANGE ML ADDRESS ON *
30 * DISK. 32K EXT. DISK *
40 * BY DENNIS DERRINGER *
50 * DERRINGER SOFTWARE, INC*
60 * JANUARY - 1984 *
70 *****
80 CLS: CLEAR 1000
90 PRINT "FILENAME: ";: LINE INPUT
  FI#
100 IF FI#="" THEN END
110 OPEN "D", #1, FI#, 1: IF LOF(1)=0
  THEN CLOSE: KILL FI#: RUN
120 FIELD #1, 1 AS F#: LF=LOF(1)
130 FOR Q=1 TO 5: GET #1, Q: BY (Q)=ASC(
  F#): NEXT Q
140 B=0: FOR Q=LF-4 TO LF: B=B+1
150 GET #1, Q: BE (B)=ASC (F#): NEXT Q
160 LD#=HEX# (BY (4) *256+BY (5))

```



```

170 E$=HEX$(BE(4)*256+BE(5))
180 LN$=HEX$(BY(2)*256+BY(3))
190 PRINT
200 PRINT"LOAD ADDRESS = ";LD$
210 PRINT"END ADDRESS = ";HEX$(
VAL("&H"+LD$)+VAL("&H"+LN$))
220 PRINT"EXEC ADDRESS = ";E$
230 PRINT"LENGTH = ";LN$
240 PRINT
250 PRINT"NEW LOAD ADDRESS = ";:
LINE INPUT NL$
260 IF NL$="" THEN CLOSE:RUN
270 OF=VAL("&H"+E$)-VAL("&H"+LD$)
)
280 NL=VAL("&H"+NL$)
290 NE=NL+OF
300 BY(4)=INT(NL/256)
310 BY(5)=NL-(256*(INT(NL/256)))
320 BE(4)=INT(NE/256)
330 BE(5)=NE-(256*(INT(NE/256)))
340 PRINT"NEW END ADDRESS = ";H
EX$(NL+VAL("&H"+LN$))
350 PRINT"NEW EXEC ADDRESS = ";H
EX$(BE(4)*256+BE(5))
360 FORQ=1TO5:LSET F$=CHR$(BY(Q)
):PUT#1,Q:NEXTQ
370 B=0:FORQ=LF-4 TO LF:B=B+1
380 LSET F$=CHR$(BE(B)):PUT#1,Q:
NEXT Q
390 CLOSE
400 PRINT:PRINT"PRESS enter TO R
UN AGAIN ";:LINE INPUT X$
410 RUN

```

About Your Subscription

Your copy of the *RAINBOW* is sent second class mail and, for subscribers in the United States, the date of mailing is printed on the label. If you do not receive your copy by the 25th of any month, send us a card and we will mail another immediately via first class mail.

You must notify us of a new address when you move. Notification should reach us no later than the 15th of the month prior to the month in which you change your address. Sorry, we cannot be responsible for sending another copy when you fail to notify us.

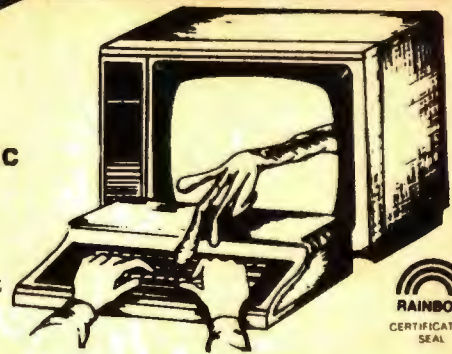
Your mailing label also shows an "account number" and the subscription expiration date. Please indicate this account number when renewing or corresponding with us. It will help us help you better and faster.

For Canadian and other non-U.S. subscribers, there may be a mailing address shown that is different from our editorial office address. Do not send any correspondence to that mailing address. Send it to our editorial offices at P.O. Box 209, Prospect, KY 40059. This applies to everyone *except* those whose subscriptions are through our distributor in Australia.

NEW

E.T.T. ELECTRONIC TYPING TEACHER

by
CHERRYSoft



Learning to type the right way can save you hours of tedious work when entering programs into your CoCo, and this is just what ETT was designed to do. Devote a little time every day practicing with ETT and before you know it you will be typing with confidence. Entering those programs will no longer be the chore it used to be.

ETT's video keyboard lets you practice with all the keys labeled, all the keys blank or only the "home" keys labeled. The visual cues guide you while you learn to type without watching your fingers. ETT shows you accuracy, response time, and words per minute. You will quickly see that you are improving with practice.

With the sentences provided by ETT learning to type can be fun. Over 1000 variations chosen because they include every letter in the alphabet. You can also create your own practice sets. This outstanding program was written by a certified teacher and professional programmer and comes with a ten page student manual-study guide. Requires 16K Extended Basic.

Cassette **\$21.95**

ETT NOW AVAILABLE FOR COMMODORE 64
CASSETTE \$24.95 DISK \$29.95

NEW

MASTER CONTROL II

The best doesn't always cost more and MASTER CONTROL II is a good example. What would you be willing to pay for a program that would cut your typing time by more than 50% and eliminate hours of debugging because you misspelled a command word? For example the command `STRING$` (requires nine strokes) with MASTER CONTROL II you only require two strokes, just hit the down arrow key twice and it's done, and no mistakes. That is just one of the 50 pre-programmed commands available to you. If that isn't enough you also have the ability to customize your own key to enter a statement or command correctly, automatically every time. But that's not all, how about automatic line numbering. Just enter the starting number and the increment you want and MASTER CONTROL II will do it for you. You also have direct control of MOTOR, AUDIO and TRACE plus a direct RUN key. Sounds great? Well, thousands of color computer owners have been enjoying these features for years. But now the new MASTER CONTROL II also has the following features:

- *New plastic overlay that can be removed when you are not using MASTER CONTROL II.
- *New documentation, to help you get the most from the program.
- *New repeating keyboard.

Cassette **\$21.95**

Include \$2.50 Shipping and Handling in U.S.-\$5.00 Foreign

MasterCard VISA
**CoCo
Warehouse**

**FREE
CATALOG**

Where Shopping By Mail is "USER FRIENDLY"
500 N. DOBSON - WESTLAND, MI 48185
Phone (313) 722-7957

**DEALER
INQUIRIES
INVITED**

The best in software for kids!

THE MONEY SERIES BY STEVE BLYN

DOLLARS & SENSE 16K EOB \$14.95
Player buys familiar items using dollars and coins to practice using money correctly.

McGOGO'S MENU 16K EOB \$14.95
Learn to buy and add up your purchases from a typical fast-food restaurant menu.



MONEY-PAK 32K EOB \$22.95
A combined and menu driven version of the above programs. Includes play money. Reviewed - Rainbow 7/83

THE QUIZ MAKER by David Stanley
32K EB. tape \$24.95 disk \$27.95
A program that enables a teacher to create tests or a student to study for tests in any subject area. Your questions and answers may be saved for future use. Short answer, true-false, fill-in and other quiz formats are supported. Printer option for hard copy test generation. Program randomizes questions, keeps track of score and provides a variety of testing formats.

COLORGRADE 32K EOB \$29.95
A great aid to teachers. Records and calculates grades for up to 6 classes of up to 40 students each. Uses number or letter grades, named or numerical periods and gives a weighted average. Easy to use. Full directions. DISK ONLY. By David Lengyel.

BEYOND WORDS 32K EOB \$19.95 Each
These Language Arts programs cover common misspellings, and synonyms/antonyms on each level. Additionally, Level 1 tests contractions and abbreviations, Level 2 tests homonyms, and Level 3 tests analogies. Each program has 3 parts and contains over 400 questions and uses over 800 words. All tests are grade appropriate. User modifiable (directions included). Printer option.
Level 1 Grades 3-5
Level 2 Grades 6-8
Level 3 Grades 9-12
DISK VERSION Each \$23.95

New



KING AUTHOR'S TALES by Steve Blyn
32K EB. disk or 16K EB. tape \$29.95
An exciting new program that allows users to create and save original stories on files. Saves optional questions and answers for each page, and title page picture, too. Kids can write compositions, teachers/parents can create reading comprehension material. Rewrite, correction, review, and printer features. Includes a selection of stories and pictures.

THE MATH TUTOR SERIES 16K Ext.
These tutorials take the child through each step of the example. All programs include HELP tables, cursor and graphic aids. All allow user to create the example, or let the computer choose. Multi-level. Great teaching programs. By Ed Guy.
LONG DIVISION TUTOR \$14.95
MULTIPLICATION TUTOR \$14.95
FACTORS TUTOR \$19.95
FRACTIONS TUTOR (Addition) \$19.95
FRACTIONS TUTOR (Subtraction) \$19.95
FRACTIONS TUTOR (Multiplication) \$19.95
Any 2 FRACTIONS programs \$29.95

FIRST GAMES by Penny Bryan
32K EB. tape \$24.95 disk \$27.95
First Games contains 6 menu-driven programs to delight and teach your early learners (ages 3-6). These games enrich the learning of colors, numbers, lower-case letters, shapes, memory, visual discrimination and counting.

MATH INVADERS by David Steele
16K EB. \$17.95
A multi-level 'Space Invaders' type game to reinforce the 4 basic math operations (addition, subtraction, multiplication and division). Problems become more difficult as you progress. Hi-res. graphics, joystick required.

MORE LEARNINGWARE

(ALL PROGRAMS IN 16-K EXTENDED EXCEPT WHERE NOTED)

CONTEXT CLUES - by Steve Blyn - Multiple choice reading programs. Specify grade 4,5,6 or 7. each \$17.95

VOCABULARY BUILDERS - 32K - Great for last preparations. 200 questions, multiple choice, modifiable, printer option. I (grades 3-5), II (6-8) or III (9-12) each \$19.95

READING AIDS 4-PAK - Child creates own reading material. \$19.95

GRAPH-IT - by D.Steele - Graph sets of algebraic equations. \$14.95

HISTORY GAME-32K - by J. Keeling - "Jeopardy" type US facts game \$14.95

KNOW YOUR STATES - 32K - by J. Keeling - Name all hi-res. states \$19.95

MUSIC DRILL - by D.Steele - Identify notes of many scales. \$19.95

GRAPH TUTOR - 32K - by C. Phillips - Create, use line, bar, pie pictographs. Hi-res \$19.95

PRESCHOOL SERIES - By J. Kolar. each \$11.95
Pra. 1-Counting, number recognition; Pra. 2 - Simple Addition;
Pra. 3 - Alphabet Recognition.

FRENCH OR SPANISH BASEBALL - By S. Blyn each \$11.95
Vocabulary practice. 200 words. Modifiable. Specify language.
Also in 32K (500 words) \$19.95

HEBREW BULLETIN BOARD - by J. Kolar - utility to print words. \$15.95

HEBREW ALPHABET - Learn the letters of this alphabet. \$11.95

***A BYTE OF COLOR BASIC - Beginner's manual & exercises \$ 4.95

FUN and GAMES

(ALL PROGRAMS IN 16-K EXTENDED EXCEPT WHERE NOTED)

CIRCUS ADVENTURE - by Steve Blyn 16K - Kids adventure game. \$11.95

SCHOOL MAZE - by Steve Blyn 16K - Kids graphic adventure. \$11.95

HAMSTER HUNT - by L&D Weston 32K - Beautiful graphics in this charming new kids adventure game. \$19.95

MR. COGONHEAD - by Steve Blyn - Create over 10,000 funny faces. Surprise commands. Very creative. \$16.95

TALKING WIZARD - voice by Classical Computing - Child-sized Eliza-Freud game. Computer speaks to you. \$19.95

HORSERACE - by REP Armstrong - Hi-res. race for all ages. \$11.95



Dealers inquiries invited.



(212) 948-2748

Dept. R 227 Hampton Green, Staten Island, N.Y. 10312

Send for catalog with complete descriptions.

Please add \$1.00 per order for postage. N.Y. residents, please add proper tax. FREE set of BINARY DICE, including full directions, with orders of 2 or more items

Authors: We are seeking quality children's software for leisure or learning. Write for details. Top Royalties.

TRS-80 Color Computer. TDPSystem 100.

FOR YOUR CONVENIENCE

Blank Cassettes with Labels	3 For \$ 2.00
Popular Brand Diskettes	3 For \$10.00
Disk Head Cleaner Kit	each \$25.00
Looseleaf Diskette File (hold 4)	2 For \$ 3.00



Create messages in bright color graphics with . . .

Color Graphic Banner

By Doug Lindsay

This article describes, in detail, modifications that I have added to a fine program by Mr. David Steyer (see *the Rainbow*, January 1983, Page 190). The modifications are designed to take advantage of some of the capabilities of Radio Shack's CGP-220 and produce "solid" color or inverse graphic characters using the CGP's "bit-image" mode. If you liked this program running in the non-graphics mode, as I did, then I'm sure you will enjoy the colorful result of this modification running your CGP-220. The printer control code additions/modifications, which represent the primary alterations, are documented within the BASIC program lines and, although they are for the CGP-220, probably are easily adaptable to codes for other printers capable of "bit-image" graphics.

Color Graphic Banner utilizes the ability of the CGP-220 printer to switch back and forth between the text and bit-image modes. The text mode is the mode the printer is in when it is switched on and is primarily utilized to print alpha-numeric characters. By using special printer control codes, the CGP can alter the color of text characters and can be set to the bit-image mode, in which it "assumes" that it will receive instructions for printing a dot or column of dots (up to seven dots high) in one or more of up to 640 such columns across in one row. In addition, upon entering the bit-image mode the printer "assumes" that any such rows of dot-columns will be adjacent to one another vertically and, thus, a line-feed in this mode leaves no space between rows. When exiting the bit-image mode, the color, and other conditions, which existed prior to entry, are restored.

With this information in mind, I shall discuss all the changes in the listing that follows.

The first modification occurs in line 60 which clears twice as much string space, since I chose to add strings in which to build graphics information and store control codes while retaining the original string variables. The poke in line 60 is optional and allows data to be sent at the highest rate at which the CGP-220 can operate. You must, however, make sure that the Baud rate select switch (located on the rear panel of the printer) is placed next to the proper setting. That is, if you elect *not* to use the poke, set the switch next to the number 600. If you leave the poke in, set the switch next to the number 2400.

Line 100 contains a change in the input to variable "LG" and, thus, allows for selection of the CGP's 91 text-column line width.

Line 120 prompts for a wider (seven instead of five) suggested character width because the bit-image line-feed compacts rows of graphics which makes the *Color Graphic Banner* characters narrower than the non-graphic ones.

Line 145 adds a brand new input statement which prompts the user to select a character color and stores the numerical code for the selection in the variable "CL." The color codes are listed in the CGP-220 manual, but please note that I have chosen to modify two of the designations. I'm sorry, but what the book calls violet looks like blue to me and vice versa.

Line 275 directs storage of a series of control codes in variable "LF\$." CHR\$(18) places the CGP in the bit-image mode, CHR\$(13) does a line-feed (remember, it's compact because of the bit-image mode) and CHR\$(30) causes an exit from the bit-image mode, as well as restoration of all prior text mode conditions. This allows using simpler BASIC commands to send blank spaces to the printer rather than utilizing a more complex print-head positioning routine.

Line 485 simply sends the CGP's color change control code CHR\$(27) "T" followed by the numerical color code stored in variable "CL."

Line 510 retains the original program's string variable "B\$" to control centering of graphic characters on the banner. Lines of characters are built in a new variable "GF\$." This variable builds a line of "solid" color and/or

(Doug Lindsay is a personnel analyst for the City of Everett (Wash.) He possesses a bachelor's degree in psychology and a master's in public administration. Doug finds satisfaction in both serious and not-so-serious Color Computer programming.)

spaces of a particular height (as specified in variable "HH"). The actual color graphic portion of the line consists of the following: CHR\$(18), for bit-image initiation; CHR\$(28), signals repetitions of a graphics dot-column; CHR\$(HH*7), sends the number of repetitions; CHR\$(255), defines the dot-column pattern to be repeated (in this case it is a 7-dot column). This sequence of codes causes printing of HH*7 dot-columns in a row. Each column, in turn, is 7 dots high. CHR\$(30), as you may recall, causes exit to the text mode. The "solid" color graphic effect, of course, results from the density of the lines of color dot columns "packed" together by means of the bit-image line-feed. The banners produced are colorful and easily read even from quite a distance.

Line 540 clears the graphic line-building strings before looping to set up the next line of graphic information to be sent.

Line 555 sends a line-feed code merely to empty the printer buffer and, thus, avoid incidental printing of garbage. This line also clears the screen and prompts for an easy restart. I have found that mixing various colors of letters, words and/or symbols by creating them one at a time can yield eye-catching banners, nametags, labels etc.

Line 560 restarts or prints some colorful credits, prior to setting the print color to black and ending the program.

As Mr. Steyer stated in the article that was published with the original version, the program supports all ASCII characters (though the lowercase letters are sans descenders) and I've found that attractive name tags can be generated in the inverse mode. For example, try a character height setting of one and width of two. These settings yield elongated graphic characters such as those in the sample output.

I hope you have fun creating your messages in bright color

graphics. Kids of all ages seem to take great pleasure in seeing their name in a *Color Graphic Banner* and, if you're not too shy, you can drop hints that CGP ink packs (as well as paper) make really nice gifts!

145	.....	80
320	.....	12
485	.....	161
580	.....	233
END	.....	189

The listing:

```
60 CLEAR 500:POKE 150,18 ' MOD T
0 CLEAR EXTRA STRING SPACE AND P
OKE CGP'S HIGHEST (2400) BAUD RA
TE
70 DIM A*(3),D*(4),E*(6)
80 GOSUB 580
90 CLS:PRINT"* C. G. B A N N E R
*":PRINT"BY DAVID STEYER":PRINT
"WITH CGP MODS BY DOUG LINDSAY":
PRINT
100 INPUT"91 OR 132 COLUMN PRINT
ER (9/13)";LG:IF LG=9 THEN LG=91
ELSE IF LG=13 THEN LG=132 ELSE
'CGP MOD FOR 91 COL. CAPABILITY
110 PRINT"CHARACTER HEIGHT (1-";
```

HARDWARE PRODUCTS FOR THE TRS-80 COLOR COMPUTER*

SOLDERLESS MEMORY UPGRADES

Installs in 15 minutes without removing SAM chip. Includes fully-illustrated instructions, IC extractor, RAM button, and 90-day unconditional warranty. Please specify board series. These upgrades are not compatible with the Color Computer 2.

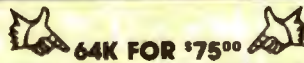
4K-16K.....\$20⁰⁰ • 16K-32K.....\$40⁰⁰ • 4K-32K.....\$50⁰⁰

SERIAL SWITCHER

Bi-directional switcher allows you to expand your serial port to two or three peripherals or to connect one peripheral to two or three computers. 2 Ports.....\$25⁰⁰ • 3 Ports.....\$30⁰⁰
Available with mounted Pilot Light—Add \$5⁰⁰

I.C.s

Basic ROM 1.2\$35⁰⁰
E.C.B. ROM 1.1\$60⁰⁰
D.E.C.B. ROM 1.1\$35⁰⁰
6809E—CPU\$25⁰⁰
6883—SAM\$25⁰⁰
6847—VDG\$20⁰⁰
6821—PIA\$8⁰⁰
All four, only\$65⁰⁰
6822—H.D. PIA\$15⁰⁰
4164—64K RAM\$6⁰⁰
Set of eight\$50⁰⁰
4116—16K RAM\$4¹⁰
Set of eight\$8⁰⁰



64K FOR \$75⁰⁰

Price includes expert installation, a 64K RAM Button, 64K Software (specify disk or cass.), a 64K User Sheet, Return Shipping, and a 90-DAY UNCONDITIONAL WARRANTY. Requires 1.1 or newer Basic ROM. Send your operating 285 (F) Series Color Computer, TDP-100, or Color Computer II with a Cashier's Check or Money Order for fastest return. For D, or E Series boards, add \$20⁰⁰. If necessary, add \$35⁰⁰ for new ROM.

TERMS: Cashier's checks and money orders for immediate delivery • Personal checks allow 2 weeks • Orders \$100 to \$199 save 10% • \$200 and over save 15% • 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

***FREE*
CATALOG**

• RADIO SHACK™ COLOR COMPUTER ADVANCED MATH PROGRAMS for ENGINEERS • PHYSICISTS • STUDENTS

FUNCTION GRAPHING MODULE 16K EXT-\$19.95

- * HIGH RESOLUTION GRAPHS
- * GRAPH ANY FUNCTION — 4 AT ONCE
- * PARAMETERS EASY TO CHANGE
- * AUTO-SCALING OPTIMIZES GRAPH SIZE
- * COMPUTE FUNCTION VALUES & ZEROS
- * INTERSECTION OF FUNCTIONS
- * COMPLETE MANUAL — PROGRAM ON TAPE

CALCULUS MATH MODULE 32K EXT-\$37.95

- * INCLUDES THE GRAPHING MODULE ABOVE
- * LOAD UP 9 FUNCTIONS AT ONCE
- * FIND AND COMPUTE MAXIMA & MINIMA
- * NUMERIC INTEGRATION & DIFFERENTIATION
- * COMPOSITE AREAS
- * HANDLES PIECEWISE CONTINUOUS FUNCTIONS
- * HARD COPIES OF DATA AND/OR GRAPH
- * COMPLETE MANUAL — ON TAPE OR DISK



CALCSOFT

P.O. BOX 401

ST. ANN, MO 63074



**SEND CHECK OR MONEY ORDER
Add \$2.00 for shipping**


```

INT(LG/10)");:INPUTHH:IF HH<1 0
R HH>INT(LG/10) THEN 110
120 PRINT"CHARACTER WIDTH (1-10)
":IFLG=91 THEN PRINT"(7 OR LESS
RECOMMENDED)" ' CGP MOD FOR SLIG
HTLY WIDER CHARACTERS BECAUSE OF
COMPACT BIT-IMAGE LINE FEED
130 INPUTWD:IF WD<1 OR WD>10 THE
N 120
140 INPUT"INVERSE (Y/N)";Y$:IF Y
$="Y" THEN Y$=" " ELSE Y$="1"
145 INPUT"COLOR (BK/R/G/Y/V/M/BL
)";CL$:IFCL$="BK"THENCL=48 ELSEI
FCL$="R"THENCL=49 ELSEIFCL$="G"
HENCL=50 ELSEIFCL$="Y"THENCL=51
ELSEIFCL$="V"THENCL=52 ELSEIFCL$
="M"THENCL=53 ELSEIFCL$="BL"
THENCL=54 ELSE145 ' CGP MOD LOADS PR
INTER COLOR CODE INTO CL
150 PRINT"ENTER BANNER TEXT (32
CHARACTER LIMIT)"
160 LINEINPUT TX$
170 IF TX$="" OR LEN(TX$)>32 THE
N 150
180 A$=A$(RY)
185 LF$=CHR$(18)+CHR$(13)+CHR$(3
0) ' CGP MOD LOADS PRINTER CONTR
OL CODES FOR BIT-IMAGE LINE FEED
INTO LF$
190 PMODE4,1:PCLS1:SCREEN 1,0

```

```

200 IF Y$=" " THEN PCLS0
210 FOR I=1 TO LEN(TX$)
220 A=ASC(MID$(TX$,I,1))-32
230 IF A<24 THEN RY=0 ELSE IF A<
47 THEN RY=1 ELSE IF A<70 THEN R
Y=2 ELSE RY=3
240 A=A-(RY*23)
250 FOR X=0 TO 4
260 IF A=0 THEN Y=0:GOTO280
270 Y=VAL("&H"+MID$(A$(RY),((A-1
)*10)+(X*2)+1,2))
280 D$(X)=" "
290 IF Y>127 THEN Y=Y-128:D$(X)=
"1 "
300 IF Y>63 THEN Y=Y-64:D$(X)=LE
FT$(D$(X),1)+"1 "
310 IF Y>31 THEN Y=Y-32:D$(X)=LE
FT$(D$(X),2)+"1 "
320 IF Y>15 THEN Y=Y-16:D$(X)=LE
FT$(D$(X),3)+"1 "
330 IF Y>7 THEN Y=Y-8:D$(X)=LEFT
$(D$(X),4)+"1 "
340 IF Y>3 THEN Y=Y-4:D$(X)=LEFT
$(D$(X),5)+"1 "
350 IF Y>1 THEN Y=Y-2:D$(X)=LEFT
$(D$(X),6)+"1 "
360 IF Y>0 THEN D$(X)=LEFT$(D$(X
),7)+"1"
370 NEXT X
380 E$(0)=LEFT$(D$(0),5)

```

Co Co - Cooler



- Brings operating temperature to ambient, regardless of accessory load



- Reduces temperature of ENTIRE computer... not just the SAM chip

- Easy 1-minute installation • \$39.95

Companion Keyboard Cover \$7.95
Co Co Software

- For Fastest Service Send Money Order Or Certified Check
- Add \$2.00 Shipping For Continental U.S.
- Add \$4.00 Shipping For Alaska, Hawaii & Canada
- Add \$15.00 Shipping For Overseas
- Add \$3.00 For 220-250 Volt Model
 - Calif. Residents Add 6 1/4% Sales Tax
 - Will Ship C.O.D. On U.S.A. Shipments Only
 - All Merchandise Shipped From Stock

REM Industries, Inc.
9420 "B" Lurline Ave., Chatsworth, CA 91311
(213) 341-3719

SOFTWARE PRODUCTS FOR THE TRS-80 COLOR COMPUTER®

EDITRON™ Full-Screen BASIC Program Editor SAVES YOU TIME!

Let EDITRON 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. EDITRON 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 24 pages of comprehensive, easy-to-read Documentation.

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

CASSETTE.....\$ 35 DISKETTE.....\$ 40



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

VIDTRON

★ FREE ★
CATALOG


```

390 E$(1)=RIGHT$(D$(0),3)+LEFT$(
D$(1),2)
400 E$(2)=MID$(D$(1),3,5)
410 E$(3)=RIGHT$(D$(1),1)+LEFT$(
D$(2),4)
420 E$(4)=RIGHT$(D$(2),4)+LEFT$(
D$(3),1)
430 E$(5)=MID$(D$(3),2,5)
440 E$(6)=RIGHT$(D$(3),2)+LEFT$(
D$(4),3)
450 FOR X=0 TO 6:FOR Y=1 TO 5
460 IF MID$(E$(X),Y,1)=Y$ THEN P
RESET(Y+(I-1)*8,3+X) ELSE PSET(Y
+(I-1)*8,3+X)
470 NEXT Y,X
480 NEXT I
485 PRINT#-2,CHR$(27) "T" CHR$(C
L) ' CGP MOD SENDS CONTROL CODE
FOR COLOR (CL) SELECTED IN LINE
145 TO PRINTER
490 FOR I=LEN(TX$)*8 TO 0 STEP-1
500 FOR Y=1 TO 10
510 IF PPOINT(I,Y)=0 THEN B$=B$+
STRING$(HH,"*"):GF$=GF$+CHR$(18)
+CHR$(28)+CHR$(HH*7)+CHR$(255)+C
HR$(30) ELSE B$=B$+STRING$(HH,"
"):GF$=GF$+STRING$(HH," ") 'CGP
MOD IN THIS LINE BUILDS LINES OF
"SOLID" COLOR AND/OR SPACES IN

```

```

GF$
520 NEXT Y
530 FOR R=1 TO WD:PRINT#-2,STRIN
G$(INT(LG-LEN(B$))/2,32);GF$;PR
INT#-2,LF$;:NEXT R ' CGP MOD IN
THIS LINE SENDS COLOR/SPACES (GF
$) AND BIT-IMAGE LINE FEED (LF$)
TO PRINTER. NOTE THAT B$ IS RET
AINED TO GOVERN THE CENTERING OF
CHARACTERS ON THE PAPER
540 B$="":GF$="" ' CGP MOD HERE
CLEARS GRAPHICS STRING (GF$)
550 NEXT I
555 CLS:PRINT#-2,LF$:PRINT@203,"
AGAIN Y/N?"; ' CGP MOD HERE SEND
S A LINE FEED TO CLEAR THE PRINT
ER BUFFER. REMAINDER OF THIS LI
NE ALLOWS EASY RE-ENTRY WHEN CHA
NGING LETTER OR WORD COLOR
560 A$=INKEY$:IFA$="" THEN 560 ELSE
IFA$<>"Y" THEN PRINT#-2," * C. G.
B A N N E R * BY DAVID STEYER 19
82 RAINBOW MAGAZINE":PRINT#-2,C
HR$(27)"T"CHR$(54);"with CGP-220
mods by Doug Lindsay 1984":PRIN
T#-2,CHR$(27)"T"CHR$(48);STRING$
(10,10):ENDELSE 90
580 A$(0)="6318C0318052800000000
2B60DA8007568E2D5C0C644444C60452
88AC9A01110000000088842082082084
22200011DF710000109F210000000C61
1000001F0000000000003180004444400
074675CC5C023084211C074426443E07
44260C5C01195F10840FC21E0C5C0746
1E8C5C0FC44442100"
590 A$(1)="7462E8C5C07462F0C5C00
3180630006300C611000888820820003
E0F8000820822220074444200807442D
AD98022A31FC620F463E8C7C07461084
5C0F46318C7C0FC21E843E0FC21E8420
074610BC5C08C63F8C62071084211C03
8842149808CA98A4A2084210843E08EE
B58C6208C7359C620"
600 A$(2)="746318C5C0F463E842007
4631ACDE0F463EA4A207460E0C5C0F90
84210808C6318C5C08C6318A8808C635
AEE208C544546208C54421080F844E44
3E039084210E00410410400E10842138
023AA4210800111F4100000000000000
01C17C5E0843D18C5C0001F0841E0085
F18C5C0001D1F41C0"
610 A$(3)="0191E42100001F1785C08
43D18C62020184211C01004214980842
32E4A2061084211C0003D5AD6A0003D1
8C620001D18C5C0003D1F4200001F178
420003D184200001F0707C0023C8420C
0002318C5C0002318A880002B5AD5C00
022A22A2000231784C0003E2223E0"
620 RETURN

```

2 FOR

OUR 5th ANNUAL SUPER SALE IS ON
THRU 5/84 - SELECT 2 PROGRAMS AND PAY THE
PRICE OF THE HIGHEST. IT'S A 2 FOR 1 SALE

MURDER - A SEMI-GRAPHIC CRIMEBUSTING
REALISTIC ADVENTURE 14.95

EKG - ARCADE ACTION AS YOU ENTER THE
HEART THROBBING MONSTER HUNT 14.95

BUGGER - ARCADE ACTION AS YOU ELUDE
THE MONSTER SPIDERS 14.95

JAIL - A COMBINATION OF SPELLING, FUN
PROGRAMS. JUMBELED UP WORDS, HINTS
USER CONTROL, IT'S ALL HERE..16.95

2PER - 2 LOW RES GRAPHIC GAMES ON ONE
TAPE. GONDOLA - FLY OVER THE HILL
AND LAND BETWEEN THE TREES, IF YOU
CAN. COPYCAT - SIMON TYPE FUN 9.95

16K EXT BASIC REQ'D (ARCADE ACTION IS
MACHINE LANGUAGE BUT ACCESSES EXT ROM)

MC, VISA or COD 24 HOUR SERVICE
ADD \$2 PER ORDER FOR P&H

tel 203/644-1817

Mr Rs

68 KELLY ROAD
50 WINDSOR CT
06074



VIPTM Library

Personal Productivity Tools for Modern Times



The Library Concept

State of the Art, Quality, Integrity, Compatibility and Affordability. Five things good software must possess. Five things that epitomize the **VIP LibraryTM**. Each program is the diamond of its class, true excellence. These programs are first in features, first in power, first in memory, and all are affordably priced. And for your convenience all disk programs can be backed up.

State Of The Art

All **Library** programs are written in machine code specifically for the Color Computer, to work without the interference of a separate operating system such as FLEX. From this comes speed and more workspace for you. Unlike other programs for the Color Computer which are said to be 64K compatible, **VIP LibraryTM** programs are not limited to between 24 and 30K of workspace in 64K. **Library** programs have Memory Sense with **BANK SWITCHING** to fully use all 64K, thus giving up to 51K with a disk version and up to 53K with a tape version.

Easy To Use

Each **Library** program was carefully designed to be extremely easy to use. Built-in on-screen help tables are at your fingertips, as are menus of all kinds. Every effort is made to use logical, intuitive and easy-to-remember commands. The manuals have been thoughtfully prepared to cover every aspect of the program, and they have complete tutorials to get you going right away. We set the standard!

Lowercase Displays

State-of-the-Art graphics allow instant use of four display colors, and eight lowercase displays featuring descending lowercase letters. You can select from 51, 64 or 85 columns by 21 or 24 lines per screen, with wide or narrow characters in the 64 display. These screens provide a pleasant and relaxing way to perform your tasks, with as much text on the

"... PICTURE getting your instantaneous investment report over the phone, using it in your spreadsheet calculation, generating a report, and writing a memo including that report and data from your database with your word processor, and all this with VIP LibraryTM programs ..."

screen as is possible. Each program is easy to learn and a joy to use. We take pride in the stringent testing done to make these programs perform flawlessly. Every feature, every convenience, sleek, simple and elegant.

Total Compatibility

All **Library** programs are compatible. Transfer and use of files between programs is easy and carefree. What's better, when you have learned one program the others will come easy. And every program is the best of its kind available.

The Library Programs

For your writing needs is the **VIP WriterTM**, and its spelling checker, the **VIP SpellerTM**. For financial planning and mathematical calculations you can use the **VIP CalcTM**. To manage your information and send multiple mailings there is the **VIP DatabaseTM**. For sending all these files to and from home or the office and for talking to your friends you can have the **VIP TerminalTM**. Finally, to fix disks to keep all your **Library** files in good repair we offer the **VIP Disk-ZAPTM**.

Mini Disk Operating System

The Disk versions each have a Mini Disk Operating System which will masterfully handle from 1 to 4 drives. It offers smooth operation for such features as the ability to read a directory, display free space on the disk, kill files, save and automatically verify files, and load, rename and append files. **Library** programs simply do not have the limitations of BASIC.

Professionalism

The **Library** will grace your work area with the professionalism it deserves. Welcome the **VIP LibraryTM** into your home and office.

A description of each of the **Library** programs, with the special sale price, is contained in the following pages. Please indulge!

©1983 by Softlaw Corporation

VIP Writer™

(Formerly Super "Color" Writer II)
By Tim Nelson

RATED TOPS IN RAINBOW, HOT COCO, COLOR
COMPUTER MAGAZINE & COLOR COMPUTER WEEKLY

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... Features for the professional, yet it is easy enough for newcomers to master... Certainly one of the best word processors available for any computer..." October 1983 "Rainbow"

"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 61K of workspace with the rompak 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, typomatic 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.

32K. (Comes with tape & disk) \$59.95

(Includes VIP Speller)



NEW

VIP Speller™

WITH A 60,000 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 Scripsit™ 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 for easy disk manipulation.

32K DISK ONLY \$39.95

Lowercase displays not available with this program.

RAINBOW



VIP Calc™

(Formerly Super "Color" 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 * Typomatic 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.

32K (Comes with tape & disk) \$59.95

32K has no hi-res displays, sort or edit.

Check These Library Prices:

- Fully CoCo 2 Compatible
- Nine Display Formats: 32 by 16
51, 64, 85 by 21 or 24
- True Lowercase & Descenders
- Four Different Display Colors
- 32 & 64K Compatible
- Memory Sense - Bank Switching
- Up to 51K Disk, 53K Tape
- Mini Disk Operating System
- Compatible With All Printers

VIP Terminal™

(Formerly Super "Color" Terminal)

RATED BEST IN JANUARY 1984 "RAINBOW"

By Dan Nelson



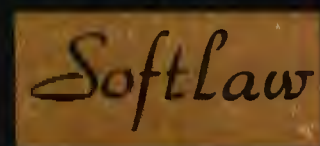
From your home or office you can join the communication revolution. The **VIP Terminal™** opens the world to you. You can monitor your investments with the Dow Jones Information Service, or broaden your horizons with The Source or Compuserve, bulletin boards, other computers, even the mainframe at work.

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 common to the **Library**.

32K (Comes with tape & disk) \$49.95
(Tape comes in 16K but without hi-res displays)



9072 Lyndale Avenue So. 612/881-2777

Minneapolis, Minnesota 55420 U. S. A.

TR5-80 is a trademark of Tandy Corp. VisiCalc is a trademark of VisiCorp.

**AUTHOR'S SUBMISSIONS
ARE ENCOURAGED.**

VIP Database™

(Formerly Super "Color" Database)

INCLUDES MAIL MERGE CAPABILITIES TOO!

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.

32K DISK \$39.95

64K Required for math package & mail merge



VIP Disk-ZAP™

(Formerly Super "Color" Disk-ZAP)

RATED 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-page Operators Manual which teaches disk structure and repair.

16K DISK \$49.95

Lowercase displays not available with this program.

For Orders ONLY
— Call Toll Free —

1-800-328-2737

Order Status and Software Support call (612) 881-2777

Available at Dealers everywhere.

If your Dealer is out of stock ORDER DIRECT!

In Canada distributed by Kelly Software Distributors, LTD.
P.O. Box 11932, Edmonton, Alberta T5J 3L1 (403) 421-8003

MAIL ORDERS: \$3.00 U.S. Shipping (\$5.00 CANADA; \$10.00 OVER-SEAS). Personal checks allow 3 weeks.

All Disk Programs are also available on 3" Diskettes for the Amdek Color AMDISK-III Micro-Floppy Disk System for an additional \$3.00 each.

©1983 by Softlaw Corporation

RAINBOW Info

How To Read Rainbow

Please note that all the BASIC program listings you will find in *the Rainbow* are formatted for a 32-character screen — so they will show up just as they do on your CoCo screen. One easy way to check on the accuracy of your typing is to compare what character “goes under” what. If the characters match — and your line endings come out the same — you have a pretty good way of knowing that your typing is accurate.

We also have “key boxes” to show you the *minimum* system a program needs. But, *do* read the text before you start typing.

Finally, the little cassette symbol on listings indicates that program is available through our *Rainbow On Tape* service. An order form for this service is on the insert card bound in the magazine.



The Rainbow Seal

The Rainbow Certification Seal is our way of helping you, the consumer. The purpose of the Seal is to certify to you that any product which carries the Seal has been physically seen by us and that it does, indeed, exist.

Manufacturers of products — hardware, software and firmware — are encouraged by us to submit their products to *the Rainbow* for certification. We ascertain that their products are, in actuality, what they purport to be and, upon such determination, award a Seal. This lets you know that we have seen the product and that it does, indeed, exist.

The Seal, however, is not a “guarantee of satisfaction.” The certification process is different from the review process. You are encouraged to read our reviews to determine whether the product is right for your needs.

There is absolutely no relationship between advertising in *the Rainbow* and the certification process. Certification is open and available to any product pertaining to CoCo. A Seal will be awarded to *any* commercial product, regardless of whether the firm advertises or not.

We will appreciate knowing of instances of violation of Seal use.

Using Machine Language

Machine Language programs are one of the features of *the Rainbow*. There are a number of ways to “get” these programs into memory so that you can operate them.

The easiest way is by using an Editor-Assembler, a program you can purchase from a number of sources.

An editor-assembler allows you to enter mnemonics into your CoCo and then have the editor-assembler assemble them into specific instructions that are understood by the 6809 chip that controls your computer.

When you use an editor-assembler, all you have to do, essentially, is copy the relevant instructions from *the Rainbow's* listing into CoCo.

Another method of getting an assembly language listing into CoCo is called “hand assembly.” As the name implies, you do the assembly by hand. This can *sometimes* cause problems when you have to set up an ORIGIN statement or an EQUATE. In short, you have to know something about assembly to hand assemble some programs.

Use the following program if you wish to hand assemble machine language listings:

```
10 CLEAR200,&H3F00:I=&H3F80
20 PRINT "ADDRESS:";HEX$(I);
30 INPUT "BYTE";B$
40 POKE I,VAL("&H"+B$)
50 I=I+1:GOTO 20
```

This program assumes you have a 16K CoCo. If you have 32K, change the &H3F00 in Line 10 to &H7F00.

What's A CoCo

CoCo is an affectionate name which was first given to the TRS-80 Color Computer by its many fans, users and owners. As such, it is almost a generic term for three computers, all of which are very much alike.

When we use the term CoCo, we refer to the TRS-80 Color Computer, the TDP System-100 Computer and the Dragon-32 Computer. It is easier than using the three “given” names throughout *the Rainbow*.

In most cases, when a specific computer is mentioned, the application is for that specific computer. However, since the TDP System-100 and TRS-80 Color are, for all purposes, the same computer in a different case, these terms are almost always interchangeable.

Rainbow Check PLUS

The small boxes that you see accompanying programs in the *Rainbow* “Check system,” which is designed to help you type in programs accurately.

Rainbow Check PLUS will count the number and values of characters you type in. You can then compare the numbers you get to those printed in *the Rainbow*. On longer programs, some benchmark lines are given. When you reach the end of one of those lines with your typing, simply check to see if the numbers match.

To use *Rainbow Check PLUS*, type in the program and *CSAVE* it for later use, then type in the command *RUN* and press [ENTER]. Once the program has run, type *NEW* [ENTER] to remove it from the area where the program you're typing in will go.

Now, whenever you press the down arrow key, your CoCo will give you a checksum based on the length and content of the program in memory. This is to check against the numbers printed in *the Rainbow*. If your number is different, check the listing carefully to be sure that you typed in the correct BASIC program code. For more details on this helpful utility, refer to H. Allen Curtis' article on page 21 of the February 1984 *Rainbow*.

Since *Rainbow Check PLUS* counts spaces and punctuation, be sure to type in the listing exactly the way it's given in the magazine.

```
10 CLS:X=256*PEEK(35)+178
20 CLEAR25,X-1
30 X=256*PEEK(35)+178
40 FOR Z=X TOX+77
50 READ Y:W=W+Y:PRINT Z,Y;W
60 POKE Z,Y:NEXT
70 IFW=7985THEN80ELSEPRINT
  "DATA ERROR":STOP
80 EXEC X:END
90 DATA 182,1,106,167,140,60,134
100 DATA 126,183,1,106,190,1,107
110 DATA 175,140,50,48,140,4,191
120 DATA 1,107,57,129,10,38,38
130 DATA 52,22,79,158,25,230,129
140 DATA 39, 12, 171,128,171,128
150 DATA 230,132,38,250,48,1,32
160 DATA 240,183,2,222,48,140,14
170 DATA 159,166,166,132,28,254
180 DATA 189,173,198,53,22,126,0
190 DATA 0,135,255,134,40,55
200 DATA 51,52,41,0
```


RAM/ROM Upgrade Roundup

By Ed Ellers

Rainbow Technical Assistant

There have been many words written on how to upgrade the various models of the Color Computer and TDP System 100 to get more memory and Extended Color BASIC. With the presence of at least four different versions of the CoCo's main circuit board (each changing various aspects of memory expansion), it's easy to get confused trying to find out how to do the job. At the *Rainbow* editorial office, we've kept a two-page sheet around that tells how to do a number of different mods. When I found out how different the Color Computer 2 was from the earlier models, I decided it was time for an update to put all the upgrade information together in one place.

What's The Difference?

When Radio Shack first introduced the Color Computer in 1980, it started not with version A, as one might expect, but with a board identified as version D. This circuit board was designed to accept either 4K or 16K of RAM and either 8K or 16K of ROM. The first 8K was for Color BASIC with the second 8K reserved for future use, but by the time the CoCo was actually announced Radio Shack had decided to offer Extended Color BASIC. (Fortunately, they did not repeat the earlier mistake on the Model I where they set up the unit for 4K of ROM and had to go to an extender board for the 12K Level II BASIC.) In 1981 Radio Shack decided to offer the CoCo with 32K RAM; to do it Tandy modified the board to use half of the capacity of a set of 64K RAM chips. Since the modification was rather complex and hard to do in production, they went to the version E board which could accept 4K, 16K or 64K RAMs.

In 1982, as the TDP Electronics division prepared to enter the personal computer market with the System 100, Tandy developed what it calls the NC board (which is often referred to as the 285 or F board). This board was designed to meet slightly relaxed FCC specifications, and used either 16K or 64K RAM chips. The NC board was designed to make available the all-RAM mode that all CoCos had the potential for, but which had not been implemented in the earlier designs. The NC board went into all TDP System 100 units; when Radio Shack dropped the 4K CoCo, the NC board began to appear in their units late that year.

"When I found out how different the Color Computer 2 was from the earlier models, I decided it was time for an update to put all the upgrade information together in one place."

Because the CoCo was priced quite a bit higher than its close competition, Tandy decided to redesign the entire machine into a unit that would cost much less to manufacture. The assignment, making a computer that was much cheaper than the existing CoCo but did exactly the same things, would appear difficult to anyone who is familiar with the CoCo's already efficient design. But the engineers in Fort Worth were able to do it, partly by getting rid of the regulated +12V, -12V and -5V power supplies with the use of new single-supply RAM chips in the 16K models of the new Color Computer 2. This was at about the same time that Radio Shack decided to offer OS-9 and an improved keyboard for the CoCo; the CoCo 2 was initially sold in 16K versions only and the regular CoCo (which was equipped for 64K, but advertised as 32K) was given the new keyboard and a white case and renamed the 64K Color Computer.

If you have a Color Computer with a black border around the keyboard and a RAM size button on top, you have either a D or E board. If you have a CoCo with a gray border around the keyboard and a model number ending in A (or if you have a TDP System 100), you have an NC board; if it has Radio Shack's "32K" RAM then you already have 64K. If you have the Color Computer 2, it's a whole new ballgame.

A Few Precautions

1) *Unplug the computer* before you start making any of these modifications. Even though the machine is turned off,

there may still be a small current flowing in the CoCo's circuitry, which could cause damage when you start plugging and unplugging chips; there will definitely be 120 volts present on the power transformer, and you could get a very nasty (not to mention dangerous) shock if you make contact with it!

"The D and E board upgrades take a bit of wiring to get 64K . . . the NC board is not particularly difficult, and the Color Computer 2 is the easiest of all."

2) The RAM chips (and, to a lesser extent, the other integrated circuits in the computer) can be damaged by static electricity. The new chips you will be installing will usually be on a black conductive foam pad. Just before you install them, touch the pad to either the shield (if any) over the circuit board or to the RF modulator unit's metal case. (Use the pad to hold the old RAM chips you took out, so they will be protected until you install them in something else.)

3) Use a soldering iron (not a gun) rated at around 40 watts or less. The components and circuit board can take the

heat needed for soldering, but the heat of the bigger irons and guns (designed for radio, TV repair work) can easily damage them. A grounded iron (with a three-prong plug) is helpful, but not really necessary; if you have a cordless soldering iron, it would be ideally suited for this work.

4K to 16K

To install 16K RAM in a 4K CoCo (D or E board), you need only a set of eight 4116 RAM chips. These should be rated at 200 nanoseconds or faster (which most are these days). When you open the case and remove the shield, you will find the 4K chips in sockets U20-U27. Remove them one at a time by gently prying them out with a small screwdriver or nail file; insert a 16K chip in place of each one, with the notch on one end in the same direction. Now locate two jumpers marked 4K on one side and 16K on the other; one is next to the 6883 SAM chip (U10) and the other is between the two 6821 PIA chips. Change each of them to the 16K position. With Color BASIC, you should now get a response of 14631 to *PRINT MEM*.

All The Way to 64K

To upgrade a 4K or 16K CoCo to 64K, you will need a set of eight 4164 64K RAM chips, as well as a few feet of thin insulated wire (wire-wrap wire is normally used, but you can also use wire taken out of telephone cable). The D and E board upgrades take a bit of wiring to get 64K (the D version has to be rewired even to get 32K); the NC board is not particularly difficult, and the Color Computer 2 is the easiest of all. On a D or E board, I would first install the chips and get the computer going as a 32K unit before doing the 64K modification. (If you have the D or E board, check the Color BASIC ROM's copyright date; if it's marked (C) '80 you will need to replace it. See BASIC ROM Upgrades below.)

D Board: This board has only the two jumpers that I mentioned in the 16K upgrade instructions. After removing the shield cover, check to see that the jumper next to the 6883 SAM chip (marked U10) is in the 16K position and remove the jumper between the two PIA chips. To change the power connections to the RAM chips, bend up pins 1, 8 and 9 of each chip. (With the notched end of the chip facing away from you, pin 1 is at the upper left, pin 8 is at the lower left and pin 9 is on the lower right.) After inserting the RAM chips in place of the old 16K chips, wire pins 1 and 8 of each RAM chip to pin 9 of that chip's socket. Wire the pin 9s on all the chips together and connect them to pin 35 (the sixth pin from the top on the right side) of the SAM chip. Connect pin 12 of U4 to pin 16 of U8. Check to make sure that none of the bent-up pins are touching anything, and that all the pins are well below the edge of the shield wall. (Skip the next paragraph.)

E Board: There are five jumpers in this board and two more jumper locations that don't have jumper plugs on them. Move the jumper located between U8 and U4 and the three jumpers next to the keyboard connector to the 32K position, and check to see that the jumper just below C44 is set to the 16K/32K position. Solder the two pins next to C44 together; find the three pins (marked LOW and HIGH) next to U29 and solder the LOW pin to the center pin. Cut off one

OUR PROGRAMS AREN'T JUST FOR KIDS

EVERYONE LOVES OUR ENTERTAINMENT AND BUSINESS PROGRAMS

■ **GOLF** Tee-off to great fun with our golf game. One to four players can enjoy these 18 holes while your computer keeps track of players, scores, and delivers a scorecard at the end of each round. Use on Radio Shack Color Computer (16K Extended Color Basic).

■ **FORGET-ME-NOT MAIL MYNDER** Never forget a friend. With Mail Mynder you can update your mailing list quickly. You'll even be able to print a return address with each entry. Mail Mynder prints on two wide dry gum, or adhesive-backed mailing labels. Disk System allows maximum storage capacity; Cassette System stores up to 75 addresses. Use on Radio Shack Color Computer (16K Extended Color Basic).

YES!! Send me the programs I have checked below. I have enclosed a check or money order.
 Send me further information about great business and entertainment programs.

QTY.		PRICE EACH	EXTENDED PRICE
	GOLF Color Computer Cassette (No REM1100C) Disk (No REM1100D)	\$19 95 \$24 95	
	FORGET-ME-NOT-MAIL MYNDER Color Computer Cassette (No REM1310C) Disk (No REM1310D)	\$9 95 \$12 95	
YOUR ADDRESS		Sub Total (Shipping included)	
Name		Tax (NC Res. add 4%)	
Address		Total	
City	State Zip		

US Funds Only

APM

Access Programs Marketing, Ltd.
 P.O. Box 23275
 Charlotte, NC 28212

side of each of the capacitors C61, C31, C64, C35, C67, C45, C70 and C48. Replace each of the 16K RAMs with the 64K chips.

With 32K RAM, you should get a response of 31015 to *PRINT MEM* (24871 with Extended Color BASIC). If all is well, unplug the computer again. Pull U29 (74LS02) and U11 (74LS138) from their sockets, bend up pins 4, 5 and 6 of U29 and pin 5 of U11 and reinsert them. Connect pins 6 and 8 of U29 together (pin 8 was not bent up), connect pin 4 of U29 to pin 5 of U11, and connect pin 5 of U29 to the pin marked TPI on the board. The computer should work the same under BASIC as it did before you took out the two chips. (To try the other half of the RAM, you will need to run some program that uses 64K, such as OS-9 or *Telewriter-64*, and see if it works as expected.)

Radio Shack 32K: If your D or E board CoCo was purchased with 32K RAM (or upgraded by Radio Shack), you most likely have a good set of 64K RAMs in place and you will only need to perform the 64K addressing modification above. If the LOW-HIGH jumper (on an E board) is set to HIGH, or if the connections to U4, U8 and/or U10 (on a D board) are different from those given here, you will probably have to put in new 64K chips because the ones you have are good in the high half only. If you put in new RAMs, move the jumper to LOW (on an E board) or change the wiring (on D).

NC Board: The RFI shield is held in place by lugs under the board. Pry down the two lugs near the left edge of the board, then pry the shield loose from the top of the board. Clip out capacitors C58, C60, C62, C64, C66, C68, C70 and C72 (these are the nearest of the two capacitors next to each RAM socket). Change the two jumpers next to U21 and one

above U28 to the 64K position. Solder the two jumper pins next to U17 together. Replace the 16K RAMs with the 64K chips. When you put the shield back on, bend those tabs you can reach back into place.

Color Computer 2: Unplug the keyboard cable and set the keyboard aside. Replace the 16K RAMs with the new 64K chips. Locate the two adjacent holes at W1 next to the IIA chip (MC6822P) and connect them together. Plug the keyboard back in.

With 64K RAM, you should get a response of 31015 to *PRINT MEM* (24871 with Extended Color BASIC). Unless something very odd is wrong with your machine, the 64K mode should now work. Color Computer 2 users should note that the 16K chips that came out of the CoCo 2 are *not* 4116s; they are 2118s, which use a single +5V power supply and *will not work* in earlier CoCos (either as replacements or for "piggyback" RAM expansion). In the same way, the 4116 RAMs cannot be used in the CoCo 2.

BASIC ROM Upgrades

Extended Color BASIC: The upgrade kit (Radio Shack catalog number 26-3018) consists of the ECB ROM chip and the *Going Ahead with Extended Color BASIC* manual. Any Radio Shack store or dealer can get it for you, though some sales people may not know that they can sell it without installation or may be unwilling to do it. The only thing you have to do is insert the ROM chip in the empty socket next to the Color BASIC ROM. (ECB does require at least 16K of RAM to operate.)

Color BASIC Revisions: Tandy has released three different versions of the Color BASIC ROM, all of which carry the part number 8040364. Version 1.0's major characteristics were that it used a 7-bit format for printer output (and therefore could not use bit-image graphics on Radio Shack printers) and that it worked only with 4K and 16K RAMs (not 64Ks). Version 1.1 (8040364A) allowed the use of 64K RAM chips and used an 8-bit printer format. Version 1.2 (8040364B) cleaned up a few bugs in the Color BASIC math functions, and the extensively rewritten interpreter runs faster than earlier versions did. As with Extended Color BASIC, installing the new ROM only involves putting it in its socket (in this case, replacing the old ROM chip). Socket numbers vary, but the Color BASIC ROM will always be in the lower-numbered position of the two 24-pin sockets (Extended Color BASIC will be in the higher-numbered socket).

Color Computer 2 Cartridge Port

The Color Computer 2, as mentioned above, uses single-supply 16K and 64K RAMs. Because of this, Tandy left out the regulated +12V supply, which the disk controller and X-Pad depended on for power, so the CoCo 2 normally can't use them (unless you have the Multi-Pak Interface). An unregulated +12V source *is* available, and it's easy enough to put it on the edge connector where it can do some good. Locate the four diodes (CR1-4) next to the power transformer. Run a wire from the cathode (banded end) of either of the two larger diodes (CR3 or CR4) to pin 2 of the edge connector. This pin is clearly marked, and is on the end at the back of the unit.

CY-BURNET-ICS

Specializing In Educational Software
For TRS-80 COLOR COMPUTER & TDP SYSTEM 100

SUBTRACTION DRILL—an all inclusive subtraction program for KINDERGARTEN THROUGH FIFTH GRADE. Large colorful letters presented in VERTICAL COLUMNS with RIGHT to LEFT PROGRESSION. Computer displays correct answer after two misses. ERASE, QUIT, and TUTOR options provided. GRAPHIC and MUSICAL REWARDS. AUTO RUN, MENU DRIVEN- 13 LEVELS: 1) sequential facts 0-0 thru 5-5; 2) sequential facts 6-6 thru 10-10; 3) random facts 0-0 thru 5-5; 4) random facts 6-6 thru 10-10; 5) minuends to 99 with no regrouping; 6) random facts 10 thru 18; 7) minuends to 999 with no regrouping; 8) minuends to 99 borrowing a 10; 9) minuends to 999 borrowing a 10; 10) minuends to 999 borrowing a 100; 11) minuends to 990 borrowing 10's & 100's; 12 & 13) auto flash for levels 1 & 2 with remainder shown. TUTOR provided for levels 8, 9, 10, & 11.



MINIMUM REQUIREMENTS 32KEB (C) \$24.95 (D) \$29.95

PRIMARY NUMBER SKILLS—for PRESCHOOL through FIRST GRADE. AUTO RUN, MENU DRIVEN early number skills drill with TWELVE PROGRAM OPTIONS on an easy to read menu. SIDE ONE **SPEECH SYNTHESIZED** whereas opposite side contains machine language musical rewards. Levels included are: E) matching numbers 0 to 9 with speech; 0) matching numbers 0 to 9 without speech; 1) matching numbers 10 to 99; 2) next number 10 to 99; 3) missing number 1 to 20; 4) missing number 20 to 99; 5) missing number 100 to 999; 6) count by TWOS 1 to 20; 7) count by TWOS 20 to 99; 8) count by FIVES 1 to 95; 9) count by TENS 10 to 90; and T) count by TENS up to 990. Numbers are displayed in LARGE BLOCK NUMERALS with contrasting yellow on blue. QUIT KEY returns to menu. HELP KEY gives correct number and activates SPEECH SYNTHESIZER for Levels E and 0. GRAPHIC REWARD for each correct answer and musical reward after completing 10 problems.

MINIMUM REQUIREMENTS 32KEB (C) \$24.95 (D) \$29.95

Send self-addressed stamped envelope for free catalog.

• Add \$1.00 per program for shipping and handling. Tennessee residents add 7% sales tax. Mail Check or Money Order to:

CY-BURNET-ICS

5705 Chesswood Drive, Knoxville, TN 37912
Phone 615-688-4865

Out Of Diversity, An Evolving Curriculum

By Michael Plog, Ph.D.
Rainbow Contributing Editor

From time to time, there are little "guideposts" or signs about progress in educational use of computers. One such guidepost is an annual poll of new college freshmen. The survey is conducted jointly by the University of California at Los Angeles (UCLA) and the American Council on Education. Results are based on a statistically adjusted sample of 254,317 freshmen who entered two- and four-year colleges in the fall of 1983.

Among the many topics covered in the poll is one question of interest to us. It seems that 37.5 percent of college freshmen have written a computer program. More males than females have written computer programs, but not as many more as expected: 43.6 percent males compared with 31.6 percent females. Students attending universities tend to have more computer experience than students attending colleges; and those in private colleges and universities tend to have more experience than students in public institutions.

There were many findings contained in the survey. If any of you want to examine the entire survey, you can purchase the results (\$8.25 prepaid) from the Cooperative Institutional Research Program, Graduate School of Education, University of California, Los Angeles, Calif., 90024. The question for this month relates less to the number of freshmen programming computers than to what it is they have learned during their high school experience.

Because computer education is relatively new in schools, there is no standard list of educational experiences for students. The curriculum for computer education is still evolving, unlike the curriculum for other subjects in schools.

Most fields of study have a defined area of knowledge that is more or less agreed upon by scholars within the specialty. For example, if students have taken a course in biology, it is reasonable to expect they know about digestion and reproduction. Eating is something common to animals, as is procreation. It is likewise reasonable to expect students completing a course in mathematics to know addition, subtraction, multiplication, and division. A study of arithmetic

is simply not complete without such knowledge, and more advanced courses in mathematics have to begin with arithmetic.

In a similar thought, any student who has taken a course in government should know the differences between the Senate and the House of Representatives. Any student who has taken a course in auto repair should know what a spark plug is.

Some fields of study are less well-defined than others. Math and science are traditionally the "hard" sciences, and as such have a more commonly agreed upon set of facts for students to learn. Even in the less well-defined subjects, however, there are some commonalities. I used to be a social studies teacher. Students in my world history classes might have walked away with a different set of facts than those in a class of some other teacher. It is reasonable to expect, however, that a world history or world culture class should contain something on Europe.

Ah, but computer education; that is different from other fields of study. Consider those college and university freshmen who have written a computer program during their high school career. We can make no assumptions about what they learned. It might be fair to assume that most of the students wrote a program on a microcomputer, not a mainframe. Beyond that, there is little that is expected to be common in their educational experiences. We do not even know what a "program" is. My first thought (and possibly yours) is a program in BASIC. However, we might be wrong in that assumption. Some people consider a set of commands for a spreadsheet or data management software to be a "program." It is even conceivable that a student and teacher could consider commanding a word processing system to prepare a set of mailing labels and a personalized form letter as a program.

What we are talking about here is an accepted curriculum for computer education. Not an entire guide to a course, nor lesson plans for teachers, but a commonly approved set of experiences expected of students who have completed a course of study in microcomputers. In all probability, the accepted curriculum will not be available in the near future.

The problem is one of leadership. True, many people and groups are willing to offer leadership to the community of computer educators. There are few educators willing to follow each of the self-appointed leaders. It is hard to be a leader with no followers.

In other fields of education, there are traditional areas of leadership for curriculum development; not so in computer

(Michael Plog received his Ph.D. degree from the University of Illinois, the M.S. from Memphis State University, and the B.S. from the University of Tennessee. For his foreign/research language option required for the doctorate, he naturally selected computer language. Michael currently works for the Illinois State Board of Education as a research and evaluation specialist.)

education. And it appears that some of the traditional places for curriculum leadership are not possible to use for computer education.

First, let's quickly dismiss a few organizations for leadership. The United States Department of Education will be of almost no help in determining curriculum. This organization (and indeed, the rest of the federal government) provides leadership in areas other than curriculum. By targeting funds for specified activities, policy is determined. The federal government can determine that computer education is something important for schools, but cannot provide curriculum suggestions.

The reasons for this are many. The federal people are very careful about local control. After all, those local people vote for the members of Congress. Local control in education is a powerful argument; one which is not easily attacked by federal elected officials. The Department of Education does not provide curriculum leadership in other areas, even mandated fields, such as special education.

State education agencies are probably not the place to look for leadership in curriculum, either. The argument for local control is just as powerful at the state level as it is at the

"At some time in the future, we will have an accepted curriculum for computer education. Until then, let us enjoy the diversity of creativity that exists now."

federal level. Also, many state governments do not have people with the expertise to plan curriculum. Leadership from state agencies is generally in areas other than curriculum.

Traditionally, curriculum is determined by a combination of public school teachers, university professors in the field of study, and textbook authors (who tend to be teachers in public schools or universities). The forum for these people to share ideas is typically professional organizations. There are national organizations for teachers in mathematics, science, social studies, and many more narrow fields or disciplines. These organizations have periodicals where experts in the field present views and ideas, sometimes even entire course outlines. The organizations also provide materials to teachers and provide reviews on textbooks.

In all the mainstream disciplines, professional organizations have developed over time, and gradually evolved into positions of leadership for the respective disciplines. Of course, they also had several decades (in some cases, centuries) of past tradition to draw upon. Computer education lacks both the national accepted organization of professionals and the long tradition of what constitutes the field of study.

It is unreasonable to expect educators to agree on the curriculum of computer education quickly. In time, a few authority figures may emerge, and some universities will offer degrees in computer education. National organiza-

tions will develop and grow, and eventually one or two will assume the leadership position for curriculum.

Until that happens, however, the subject of teaching about computers will remain a topic somewhat unique to each school. This situation has positive as well as negative points. The negative side is that we, as the public, will not be sure of what knowledge a student has upon completing a course in computers. The positive feature is that experimentation produces possibilities of quality, which can be shared with other educators. After a while, the best of what has been developed can be used by many people, thus sharing good ideas.

There may be no way to speed the process; we may have to let the natural course of events happen, then observe the results. At some time in the future, we will have an accepted curriculum for computer education. Until then, let us enjoy the diversity of creativity that exists now.

I have one additional task this month. I must apologize to you, the reader. In a past article I said that a disk drive in a mainframe establishment contained a googol byte of storage. That is incorrect. The drive has a giga byte, not a googol byte of storage. A giga byte is the number 1 followed by 9 zeros; a googol is the number 1 followed by 100 zeros. Some of you wrote in explaining that it would be impossible to build a machine with a googol byte of storage. So, I have mixed feelings. It is never pleasant to state something in writing that is simply wrong. On the other hand, I do appreciate people reading this column and communicating with me about it. So, thanks for writing to point out the mistake. I am sorry I gave wrong information. I am pleased, however, that you helped me learn something new.

RETURN OF THE JET-I

If you liked the forest chase scene, you'll love RETURN OF THE JET-I from ThunderVision.

Possibly the best game you have ever played on your color computer!

Reviewed in the April 1984 issue of RAINBOW.

16K cassette, one or two players . . . **\$24.95**

Available only from ThunderVision, makers of JOWST

Dealer Inquiries Welcome.
Pay by check, Money
Order, C.O.D. or



THUNDERVISION

P.O. Box 30012
Grand Junction, Colorado 81503
(303) 245-4208

Write for our FREE catalog.

● We Pay Shipping ●

REVIVAL

By Barry E. Becker

The salvation of a gang of dirty old characters is accomplished by virtue of cleanliness.

I had been experiencing a definitely disturbing difference in the definition of the descenders on the lowercase letters on my Gemini 10 printer. The effect was inconsistent, however, and had not been noticeable when the unit was new. So I suspected that something suspicious was afoot with the head.

A call to the local authorized service center confirmed that the condition could certainly be caused by a collection of dirt on the print head, and could be cured by carefully cleaning it.

The recommended remedy for removal of the residue is isopropyl alcohol, followed by application of a very, very light lubricant.

It is necessary to remove the head from the printer first. In the case of the Gemini 10, it is a simple task. Only two screws secure the head in its resting place. After they are removed, the head lifts straight up out of its mount. A flexible, printed circuit cable goes to a connector on a small phenolic board below. A plastic tab on the flexible cable provides a means of grasping the cable and gently pulling it free with a wiggling motion to the right.

I went through the cleaning process twice. After the first time, the problem persisted, so I persevered and promptly performed the procedure again. Before the second round, I looked at the business end of the print head with a microscope. Apparently transferring the ink from the ribbon to the head is very tough stuff! A gentle rinse with the alcohol is not sufficient to remove all of the offending material.

**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

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!

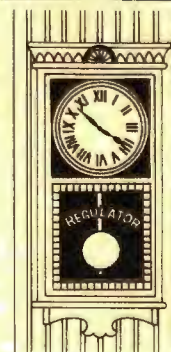
CoCo 16K ECB Tape: \$16.95

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

MASTER DESIGN

(C) 1984 By Derringer Software, Inc.

DOES MORE THAN JUST DRAW PICTURES

IT'S A TEXT DESIGNER

Master Design has the ability to generate lettering in the graphics mode from sizes 2 to 32 and in a wide range of styles. Size 2 offers a 42 x 22 line format while size 32 creates letters that take up over half the screen. Lettering can be skinny, bold, textured, tall, drop shadow, raised shadow and in different thickness. There's nine different settings for thickness and nine different settings for creating open lettering.

IT'S A GRAPHICS EDITOR

Take full advantage of hi-res commands including GET, PUT, CIRCLE, PCOPY, PMODE, LINE, BOX, BOX FILL, PAINT and other special features available only with Master Design. Master Design utilizes a "two cursor" concept to allow quick formatting of boxes, lines and special patterns such as dot patterns for shading and diagonal, vertical or horizontal lines for creative backgrounds. You can create designs and use the TEXT designer to label areas or place titles. You can also create mirror images of the display.

COMES WITH A SCREEN PRINT ROUTINE

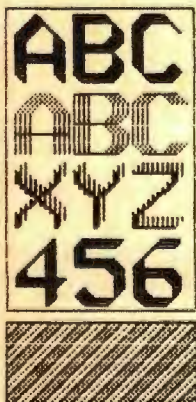
Master Design comes with a 7 bit and 8 bit version of a hi-res screen print routine so no matter what your printer is, we have it covered. Works in any mode and can print normal or reversed images.

DISK and CASSETTE I/O

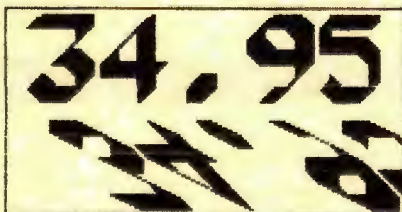
Save and load your creations to and from disk or cassette. You can even load hi-res displays created by other programs to make changes.

INTERFACES WITH TELEWRITER-64

Wouldn't it be nice if you could design your own letter head in hi-res graphics and then print it out while using Telewriter-64? Master Design offers just that capability! The Letter Head Utility will let you convert any hi-res display so that it can be accessed while using Telewriter-64! The BASIC program modules are provided with step by step instructions. These BASIC modules can also be used in your own BASIC programs for printing displays without having to use the graphic pages. You can have upto 88 pages of graphics linked together for printing!



THIS IS A
SMALL EXAMPLE
OF WHAT YOU
GET FOR JUST:



**DERRINGER
SOFTWARE
INC.**  TM

Send Check or Money Order to:
Derringer Software, Inc.,
P. O. Box 5300
Florence, S. C. 29502-2300

Vlax/MC customers can call: (803) 665-5676 — 9:00 - 5:00 edt

Requires 32K with at least one disk drive
(include \$2.00 for shipping and handling)

Telewriter-64 (C) 1983 by Cognitec

The gunk can be removed by applying the alcohol with some force or pressure. A rubber syringe or some similar device should suffice. I used a rubber bulb and teflon tube intended for desoldering. I filled the bulb with alcohol, much like using a huge medicine dropper, and forced it (as briskly as I could) over the face of the print head and into the cavity just behind the face of the head. An ear wash syringe will do just as well.


Make sure that the alcohol does not attack the syringe material! Apply a small amount to the surface of the syringe and wipe it with a white cloth or swab. If any of the color comes off, *do not use it*. You must only use materials that are not attacked by the solvent, otherwise you could really gum-up the works.

Several strong, sloshing rinses are necessary to remove all the gunk. A jeweler's loupe, magnifying glass, or low powered microscope will reveal the condition of the wires directly behind the face of the head. If you can see any globs of ink on the wires inside the cavity behind the head surface, then more washing is necessary. Do not touch or push on the wires. Let the alcohol do the work. Force applied to the wires would probably cause irreparable damage to the print head.

After you are satisfied that the head is really clean, apply a very small amount of a very, very light lubricant. I used something called LPS1, which comes in a spray can. Rather than spraying the head, I recommend collecting a bit of the spray in the cap or a small cup, and applying it to the outer surface and behind the face with a toothpick, *very gently*. You may spray it if you'd rather, but don't saturate it. A little dab'll do ya. Products like WD-40 or CRC 5-56 will probably work just as well. Wipe off the excess from the outside with a clean soft cloth or swab.

Replacing the head on the Gemini is fairly easy. The only caution to observe is in tightening the screws. Do *not* apply a lot of force or you may strip the threads in the mounting holes. Just slightly snug is sufficient. A dab of clear nail polish applied to the screw heads will prevent them from coming loose. Reconnecting the flexible printed circuit cable requires remembering the way it came out, and slipping it back in the connector the same way. A little wiggling and jiggling may be necessary. Be gentle.

The procedure described here is specifically for the Gemini printer. I suspect that most printer heads could be cleaned the same way, but don't take anything for granted. If you think your head could use a cleaning, call the manufacturer or local authorized service center and find out whether it's advisable to clean it yourself, what solvents are acceptable, what lubricants, if any, are acceptable, and what cautions to observe.

Having stated the preceding disclaimers, let me say that the joy is not really in the cleaning, but in the resulting clear, crisp letters that once again pour forth from the print head. 

(Barry Becker, an electrical engineer, has been designing solid-state electronic circuits for more than 20 years. Of his wife and three children, only his youngest son Rob [also a Rainbow author] shares his enthusiasm for the CoCo.)

Custom Software Engineering, Inc.

807 Minutemen Causeway (D-2), Cocoa Beach, Florida 32931
(305) 783-1083

For information or technical support, please call between 5:30 and 8:30 P.M. Eastern time.

*RAINBOW
REVIEW DATES

*RAINBOW
REVIEW DATES

*JAN '83

*NEW

DISK DOUBLE ENTRY - If you have spent hours trying to balance your Debits and Credits, this program is for you! Designed for small business, club, and personal use. Enter transactions in a journal type format. Program will maintain current account balances, produce Trial Balance, Income, and Balance Sheet reports and complete Account Ledgers. Will handle up to 300 accounts including report headings and totals. Up to 1400 average transactions on a diskette. Summary reports and four levels of subtotals available. REQUIRES 32K and a user understanding of standard double entry accounting concepts. - \$44.95 in BASIC with Machine Language subroutines.

COMMAND STREAM PROCESSOR - Adds a new dimension to the power of your Color Computer! A program to run your other programs. Will allow you to prepackage a stream of direct system commands as well as INPUT and LINE INPUT to your BASIC program. This results in a totally automated stream of activity. If you understand your computer and the flow of activity required for your total operation, you are ready for the power of Command Stream Programming. In completely relocatable Machine Language - \$19.95.

*DEC '83

STATEMENT WRITER - For use with (and requires) Disk Double Entry. Produces statements suitable for billing from your Receivable accounts. Provides mailing labels to use with your statements and account summaries. Designed and documented to allow you to change formats to accommodate your own special needs. \$34.95.

That's INTEREST-ing - Time to let your computer do some real computation! This program will help you solve problems dealing with time, money, and INTEREST. Calculates present value, future value, and capital recovery for any combination of payments you specify. Rate of Return computation to predict how hard your money will be working. Special section to compute bond yields (current and to redemption). Amortization schedules about any way you want them - even allows you to change terms in mid schedule! All answers available on screen or printer. \$29.95 in BASIC.

*NOV '83

*OCT '82

DISK DATA HANDLER - 64K - Designed to use the full 64K RAM, but may also be configured for 32K. Uses standard ROM's - No special operating system required! Allows you to design disk data files for your specific needs. You define a basic record of up to 14 fields and 246 characters. Provides fast selection and sorting based on any field or combination of fields in this record. Powerful on screen input and update. User defined output of reports to screen, printer, or disk files which may be read by your BASIC programs for any computational or special formatting requirements. Printer reports allow headings, page breaks, and page numbering, and let you pass control codes to drive your printer's special features. Maximum number of records you may work with at one time will depend on RAM configuration and record size - 64K (32K) 1850 (500) - 21 char records, 179 (49) - 246 char records. An optional Extended record linked to the basic record may also be defined. The size of this Extended record is not a factor in determining maximum number of records. Will provide the growth capability needed for your increasingly sophisticated applications. NOW - also includes a listing of a short program to read directory information from your disks and produce a combined file index. \$54.95 in BASIC with Machine Language subroutines.

MATH TUTOR - Five programs that go from math fact (+, -, X, /) drill to full addition, subtraction, multiplication, and division at four levels of difficulty. Provides a step by step approach with error correction and rewards for good performance. - \$13.95 in BASIC.

*SEP '82

*SEP '82

*JUNE '82

DATE-O-BASE CALENDAR - Puts you in charge of your schedule! Graphically displays any monthly calendar between 1700 and 2099. You put in up to twelve 28 character memos per day - calendar shows where the memos are - call up of day shows details. Use for appointments and a log of past activity. Study the chronology of the American Revolution or note the day your mortgage will be paid off. Search capability allows you to list or print all memos between two specified dates or only ones meeting key word criteria. Date computation shows elapsed time between two dates in days, weeks, months, and years. REQUIRES 32K in BASIC.

SPELLING TEACHER - Up to 200 of their spelling words stored on tape or disk are presented in four lively study modes including a scrambled word game. - \$12.95 in BASIC.

*AUG '82

*MAY '82

TAPE DATE-O-BASE CALENDAR - \$16.95 - (max. 400 memos/tape file).

DISK DATE-O-BASE CALENDAR - \$19.95 - (over 4,000 memos/disk - max. 300 memos/month).

ALPHA-DRAW - A subroutine designed to let you easily add characters to your graphic displays. You define X and Y coordinates and a string variable of one or more characters and Alpha-Draw will do the rest. Includes all keyboard characters. Comes with instructions for a true line numbered merge of tape files. Works great with the Screen Print program! - \$8.95 in BASIC.

GRAPHIC SCREEN PRINT PROGRAM - Works in ALL PMODES and lets you shift screen image anywhere on the printed page. Relocatable code lets you use all of your 16K or 32K machine. Available for Color Basic 1.0 and 1.1/1.2. Use EXEC 41175 to see which you have and SPECIFY with order. In Machine Language.

SPECIFY PRINTER TYPE

\$7.95 - For TRS-80® LP-VII/VIII & DMP 100/200/400/420.

\$9.95 - For Epson GRAFTRAX®, NEC® PC 8023 A-C, IDS-440/445, Paper Tiger® 460/560, Micro Prism® 480, Prism® 80/132 (with dot plotting), TRS-80® DMP-120, TDP-1, Micro Peripherals, Inc. 88G/99G, PROWRITER®, Centronics 739, Mircoline® 82A/83A (with OKIGRAPH I) /84/92/93, Star Micronics, Inc. GEMINI 10/10X/15 and Gorilla Banana. (Trademarks of Tandy Corp., Epson America, Inc., C-Itoh, NEC America, Okidata Corp., Integral Data Systems, Inc.)

ALL PROGRAMS require Extended Color Basic and are delivered on cassette. All, except Tape Date-O-Base Calendar, are DISK System compatible.



For VISA and Master Card orders:
Include type, account number, expiration date, signature and phone number.
Sorry! No COD's.

U.S. and CANADA add \$1.00 per order for shipping.
Overseas \$2.50 per order. All prices in U.S. dollars.
Florida residents add 5% sales tax. Return within two weeks if not completely satisfied.



COMPUTERWARE'S OS-9 EXPERTS

We have three years of experience and expertise with OS-9!
So join the experts and unleash the full potential of OS-9 with these products.

RANDOM BASIC

- All OS-9 commands are directly accessible, making it easy to write very powerful utilities with Random BASIC.
- Random BASIC has 9 or 11 digits of precision using BCD arithmetic.
- Extraordinary file handling capabilities include ISAM, random, and sequential file structures. File access is fast and file design is very efficient.
- Existing programs are transportable between operating systems using Random BASIC. This not only saves time and money but also dramatically increases the products available to the user.
- Tested in 5 years of use, Random BASIC is a proven product!
- A complete line of business applications is available today!
- Flexible user input commands make "conversational" programming a snap.
- Output formatting is made easy with Print Using, automatic pagination, left & right justification, easy columnization, and decimal point alignment.
- Programming is fast. The interpreter provides fast program development and debugging. It is self-documenting with extended variable names.
- **Special CoCo graphic & joystick functions**
- Also available on FLEX

\$75⁰⁰

ADVANCED EDITOR

Comprehensive programming editor that is easy to learn and use!

- Auto loads your O-PAK hires for full screen display.
- 41 powerful, yet easy-to-use, commands PLUS 21 line editing commands including character or word insert and delete with automatic expansion and contraction of the line display.
- No counting lines and characters to find and move the pointer!
- Edit files larger than memory.
- Merge files from disk to create programs.
- Fast change, search, insert, delete, move and copy of individual lines or entire blocks.
- Powerful global search and change.
- User defined macros for easy entry.
- Also available on FLEX and RSDOS

\$39⁰⁰



P.O. Box 668 • Encinitas, CA 92024 • (619) 436-3512

Computerware is a federally registered trademark of Computerware.

DISK FIX & UTILITIES

Use your drives to the fullest and unleash the real power of OS-9 with:

- DISK FIX supports double-sided/double-density, 40 tracks, & step rates of up to 6 ms. (That means over 368,000 bytes per drive!) Each drive is separately configurable, allowing any drive combination.
- DMODE allows super easy modification of drive descriptors.
- DIRCOPY is the most powerful of OS-9 copy utilities! Copy complete disks with one command, copy any subdirectory, automatically overwrite exiting files, sort directories in alphanumeric order while copying, replace outdated files with current ones, etc., etc. . . .
- PATCH is a very user-friendly program for inspecting and modifying any disk file. Automatic update of the file's CRC & header, powerful Find/String search capabilities, Relative Address calculation, automatic module identification & location, and memory examine and change are just a few of the capabilities!
- FILELOOK displays file modules
- COMPARE compares a disk file to memory

\$29⁹⁵

THE SOURCERER

The Sourcerer is a menu driven symbolic 6809 disassembler that produces symbolic source code that can be assembled.

- Symbolic mode provides three modes of operation: Zap, Extended, and Full Symbolic.
- Automatic equate generation for labels and symbols outside of disassembly range.
- FCC, FCB, and FDB generation (multiple or single FCB and FDB).
- Add or change your FCC, or FDB table entries between passes.
- Written entirely in 6809 machine language for extreme speed. Disassembles any size program in seconds.
- Position independent code is relocatable to any area of memory.
- User defined symbol/label buffer area for maximum flexibility.
- Produces files with or without line numbers.
- Can produce symbolic labels for all extended addresses.
- Disassemble to disk, printer, or screen.
- Special version included for Hi-Res OS-9
- Also available on FLEX & RSDOS

\$39⁹⁵

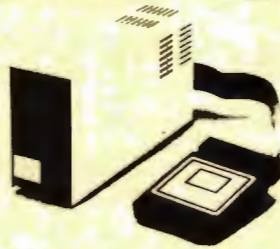
Dealer Inquiries Invited

have hardware &

Largest selection of CoCo Products from One Company!

We also carry: Mark Data, Tom Mix, Frank Hogg, Botek, Kraft, WICO, Star Kits, Dugger's Growing System, Amdek, Signalman, C. Itoh, CompuServe, Comrex, Taxan, Gorilla, Elite Software, Arcade Animation & More! Books Galore!

accessories too!



DISK SYSTEMS

Half-size drives at no additional charge!

Our disk system uses top quality drives plus cable, controller, & manual!

- single drive, single-sided \$425⁰⁰
- single drive, double-sided \$475⁰⁰
- dual drives, single-sided \$650⁰⁰
- dual drives, double-sided \$750⁰⁰
- Amdisk — new 3 1/2" dual drives
drives only \$499⁰⁰
- complete system \$665⁰⁰

J+M SYSTEMS CONTROLLER BOARD

for more reliability & gold connectors!

- with JDOS \$135⁰⁰
- supports double-sided drives and 40 tracks
- with RSDOS \$155⁰⁰

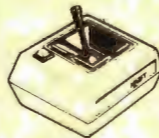


PRINTERS

- Gemini 10x \$369⁹⁵
- w/interface \$419⁹⁵
- C. Itoh 8510 \$409⁰⁰
- w/interface \$459⁹⁹
- Letter Quality Juki Printer \$545⁰⁰
- w/interface \$595⁰⁰
- Botek Interface \$64⁹⁵
- (parallel to serial interface)

KRAFT JOYSTICK \$37⁹⁵

high performance with linear pots & switch selection between self-centering or free-floating



WICO joystick adapter \$18⁹⁵
(interface Atari type joysticks to the Color Computer)

BUMPER STICKERS!! \$1⁰⁰ each



\$

ATTRACTIVE AUTHORSHIP PROGRAM

for independent programmers who want to turn software into cash! Call or write for details.

VIDEO PLUS \$24⁹⁵

interface for original CoCo and either a monochrome or color composite video monitor

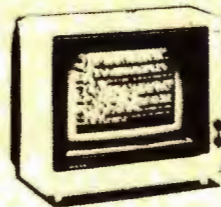
VIDEO PLUS II M \$26⁹⁵

interface for CoCo II and a monochrome composite video monitor

VIDEO PLUS II C \$39⁹⁵

interface for CoCo II and a color composite video monitor

VIDEO CLEAR for TV output \$14⁹⁵
(eliminates RF interference)



MONITORS

Buy your monitor from Computerware and you get your Video Plus for \$5 LESS !!

(Monitor and Video Plus) must be purchased together)

- Gorilla green screen \$104⁹⁵
- Gorilla amber screen \$124⁹⁵
- 13" Color with Audio \$295⁰⁰

DISKETTES — Name brand — double density
Pkg of 5 \$14⁹⁵ Box of 10 \$26⁹⁵

64K RAM SET — Special!

Now including instructions for the CoCo III!
(requires rev. E or higher motherboard) \$54⁹⁵

"Your Color Computer" by Doug Mosher — for beginner to experts! Excellent ideas, hints, & reviews

Reg. \$16⁹⁵ Our Price \$12⁹⁵



Mail to: **COMPUTERWARE**
P.O. Box 668 • Dept. DO1
Encinitas, CA 92024 • (619) 438-3512

DESCRIPTION	QUANT	PRICE	TOTAL

*SHIP. & TAX TOTAL

VISA MASTERCARD CHECK

CARD # _____ EXP _____

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

SIGNATURE _____

*Shipping: Under \$100 — add \$2 surface, \$5 air/Canada
Over \$100 — add 2% surface, 5% air/Canada
Calif. residents add 6% sales tax.

Watching Important Program Evaluators — The Children

By Fran Saito & Bob Albrecht
Rainbow Contributing Editors

"School Is in the Heart of a Child" is for parents of quite young children. We want to help you work and play with your three- to eight-year-old child and learn to use computers as a joyful family experience. We want to suggest ways to incorporate the home computer as another means to encourage your child's independence, growth, and control over his own life. See the pride on her face as she directs the computer to do what she with deliberation selects. See her head gears switch to "on" as she progresses step-by-step with your presence and caring direction.

We will explore (we hope, with *your* help) the following:

- Specific "teaching" techniques so that the discovery can be the child's own.
- Critical evaluation of software based on extensive playtesting in family and related environments.
- Additional resources to consult: books, magazines, software publishers, networks, etc.
- Suggestions for interludes and fun times away from the computer (a must!): call the librarian for specific information; watch a TV program together and discuss it; work together as volunteers in a community project; take a fall (or spring or winter or summer) awareness walk . . .
- Whatever we learn from families we work with in Menlo Park or from you, our readers. Let's pool our knowledge. Let's share our experiences as we all learn from our children.

We will also provide many small programs you can type in and use right now.

Learning is more than just what goes on in a school classroom nine months out of a year. Learning covers all the knowledge and understanding we gain through reading or observing or experiencing. Learning is discovery; learning occurs everywhere. All of us are learning all the time.

—Laran Stardrake

Long Live RAINBOWfest!

We have just returned from RAINBOWfest in Long Beach. Eleven members of the Dymax family (The Dragons of Menlo Park) made the pilgrimage and revelled in meeting and talking with people, cruising the exhibit area, learning new stuff. Kudos to Lonnie and everyone for a great convention — it reminded us of the first days of the West Coast Computer Faire when things were still new and brightly shining. Long Live RAINBOWfest! We'll be back.

(Fran Saito holds a degree in education from the University of Hawaii and has taught preschool and elementary students. She feels her inspiration comes from Mariko, her five-year-old daughter. Well-known author Bob Albrecht also writes the "GameMaster's Apprentice" feature for the Rainbow each month.)



DragonSmoke

We suggest you read "Intelligent Schoolhouse: Readings on Computers & Learning," edited by Dale Peterson. From Reston Publishing Company, 11480 Sunset Hills Road, Reston, VA 44090. A rich compendium of essays written by people in schools and outside of schools. Here is a small selection of contents pertinent to "School Is in the Heart of a Child."

- "Computer as Mudpie" — Seymour Papert
- "The World's Most Expensive Flash Card" — Herbert Kohl
- "The Pedagogy of Games" — Ramon Zamora
- "Computer Literacy: The What, Why, and How" — Arthur Luehrmann
- "What Makes Computer Games Fun? Guidelines for Designing Educational Computer Programs" — Thomas W. Malone
- "Computers in Public Places" — Ann White Lewin
- "A Computer in the Nursery School" — Ann McCormick Piestrup
- "Special Help for Special Children: Carl, Mrs. Brown, and the Computer" — Mary M. Humphrey & Glenn M. Kleiman
- "Computers and the Autistic Child" — Richard E. Frost

Lots of folks believe LOGO is better than BASIC as a kid's first computer language, especially for younger kids. We agree. Next time, we will include some introductory material on "CoCo LOGO," or "Color LOGO" as Radio Shack calls it. In the meantime, we suggest you hurry on down to your friendly Radio Shack store and get a copy of Color LOGO (Program Pak or disk) and the following booklets.

- "Color LOGO Guide for Teachers: Book One" (Cat. No. 26-2761) by Don Inman & Bob Albrecht.
- "Color LOGO Guide for Parents: Book One" (Cat. No. 26-2763) by Ramon Zamora & Bob Albrecht.

If you join the LOGO revolution, also join the Young People's LOGO Association, 1208 Hillsdale Drive, Richardson, TX 75081.

We have a small roll-around bookcase containing books, magazines, and other resources we frequently consult for information and inspiration when we write for parents and kids. For a current list of things we like, send a self-addressed, stamped envelope to DragonSmoke, P.O. Box 310, Menlo Park, CA 94026.

Join The Koala Krusade!

We have been playing with Koala Pads on ATARI computers and watching kids become entranced with this delightful touch pad. We are convinced that touch pads such as the Koala Pad are a major break through in using computers — especially for younger kids. Alas — you can buy Koala Pads for Apple, ATARI, Commodore 64, and IBM PC — but not for the CoCo. Hmm . . . suppose multitudes of us implored Koala Technology to make a CoCo version? We volunteer to be a clearing house and collect entreaties for a CoCo Koala Pad. If you would like to have a Koala Pad for your CoCo, please send us your requests. We will collect and send or deliver them to the people at Koala. Send your entreaty to:

- Koala Krusade, P.O. Box 310, Menlo Park, CA 94026
- If you want to contact Koala directly, write to:
- Koala Technologies Corporation, 3100 Patrick Henry Dr., Santa Clara, CA 95050

Playtesting, First Impressions

ComputerKid, USA! puts computers in the hands of kids in youth organizations, alternative schools, and at home in order to playtest and evaluate educational software in places that are *learner-centered*, instead of *teacher-centered*. We now have the following sites.

- Herbert Hoover Boys' Club in East Menlo Park, California. Boys and girls of many ages.
- Greenoaks Montessori School in Menlo Park. Kids from three to six years old.
- Our own playtest room. Kids and their parents come after school to try out educational software.
- Greene Community School, Greene, Iowa. A CoCo in the elementary school library can be checked out for home use. Greene is a rural community of about 1300 people.
- Roving CoCos on loan to Menlo Park families who will playtest software and report on their experiences.
- Roving software on loan to Menlo Park families who have their own CoCos.

Tim Finger is Director of ComputerKid, USA! He has been doing this full-time for two years. He begins by trying programs himself to get the "feel" of the software. Then, he uses the programs with a bunch of kids and learns more by watching them. Finally, the software goes to other playtest supervisors who work with kids and fill out formal evaluation forms. Below is the story of Tim's first playtest of some items from Radio Shack.

- *Star Trap* (RS Cat. No. 26-2510 . . . \$19.95)
- *Grobot* (RS Cat. No. 26-2527 . . . \$19.95)
- *Ernie's Magic Shapes* (RS Cat. No. 26-2524 . . . \$19.95)
- *X-PAD* (RS Cat. No. 26-1196 . . . \$99.95)

Jan. 30, 1984. Greenoaks Montessori School. Age: five.

The room is buzzing today when Tim walks in. There are two nurses dressed in their white uniforms, circulating in the classroom and asking questions of the children. The children think it's pretty neat and are very excited. So excited that it's difficult to calm down when Tim is ready for his first group and his first game, *Star Trap*. The object is to trap a shooting star that is speeding through a maze. The game is directed to ages seven and older, but part of Tim's purpose is to see what games can be effectively used by parent and young child together. Can the age level be brought down because parent is working with child? The game depends on manipulation of the joystick. This group of five-year-olds likes the idea of the game, to capture the evasive star, but they have little control over the joystick. The right and left movements they have practiced become totally confused when the game requires that they be quick and automatic. The movement goes too quickly for them.

Tim: There is too much play in this joystick and the responses are slow, sluggish. Another thing I look at are the color graphics. Is there variation in color? Is it pleasing to the eye? For this game, I would say no.

I see possibilities for this game, though. For the child who has more control over the joystick there could be some benefits: he/she could learn to anticipate movements, to think ahead and could become quite creative in setting up blocks.

Grobot is the second game Tim sets up. This time he has two small helpers who have learned to put the cassette in the tape recorder and to rewind. They all are slowly on their way to being in control of setting up the computer; Tim is pleased with their progress.

Grobot is directed to children 10 and older and is about growing plants in different climates.

Here again the children like the idea of the game and seeing the plants grow and flower, but for them there are too many things to watch for and control: pests from above and below, flowers to be plucked quickly, decisions to be made by choosing from too many selections.

The names for the plants look and sound strange to Tim. Bagalabra. Twiskis. Kalidobean. "Why," wonders Tim, "aren't real plants used with their real names and characteristics?" Like tulip. Maple. Coconut tree. Would the children relate more to those names and the concept of ideal habitats for different plants?

Feb. 7, 1984. Greenoaks. Age: three.

Tim and his helper, Sheri, have been frustrated in the preparation of this game. Directions in the manual for the set-up are not precise and they learn, after much effort has been expended to no avail, that this drawing pad works only on the older model CoCo. (This is the *X-Pad*. It does not work on the CoCo2 unless you add the multipak interface or slightly modify the CoCo 2. We expect the *X-Pad* will be discontinued in favor of a touch pad more like the Koala Pad.)

this drawing pad, has to be very accurate. Lots of picture-perfect graphics would be very welcome.

Tim: Who can type in the letter R?

David quickly seeks and presses. The letter R appears on the screen. David is almost four years old and is the hotshot of the group. He understands the directions easily and responds accurately. He finds U, then N and the [ENTER] key.

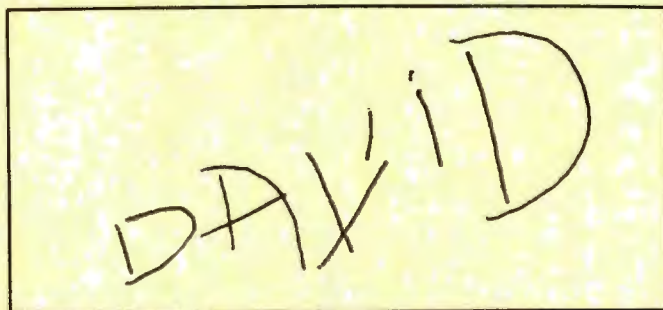
Ready to go, the drawing pad only awaits a drawer.

Tim: Would you like to try?

He asks the three-year-old on the side of him. The child declines. The child on the other side also declines.

Tim: Alright. *Who* wants to try this?

David's hand shoots up and he comes over. Carefully he prints his name on the clean white sheet of paper covering the grey metal drawing pad.



Tim: Look at the TV screen, David.

A smile of satisfaction crosses David's face as he sees his name, in rainbow colors, on the screen.

Now Tim draws a circle and straight lines emanating from it.

"What is this?" he asks.

"A sun!" chorus the children.

He draws what looks like a building within the sun.

"And what is this?" he asks again.

"A house," they say.

"Have you ever seen a house in the sun?"

One child nods with surety. That's David. Most do not respond. One or two look questioningly at Tim. Tim only grins.

He erases the screen and then draws four circles one on top of each other, the largest circle on the bottom, the smallest at the top.

Tim: "What is this?"

Children: "A snowman."

Tim: "That's a funny-looking snowman. Is he missing something?"

Children: "A hat. Arms. Hands."

Together he and the children complete their snowman and while Tim laughs at the lopsided figure, the children don't find it lopsided at all. That's the way Frosty is supposed to look, their expressions say.

In like manner, the little group goes through filling in parts of a car. It ends up finally a fire engine. Tim now asks, waving the pen, "Who would like to try this?"

He asks Ria. She says that she would, but that she'll need some help. Tim nods and hands her the pen. Ria discovers that unless she presses down with the pen hard enough, her mark doesn't appear on the screen, although it does appear on the paper. So she concentrates on pressing down harder and sure enough, her name, too, appears on the screen. She is pleased at her name in rainbow colors.

Everyone, teachers and children, likes this drawing pad concept. Join the Koala Crusade! The possibilities are infinite for young child and parent to create a picture together. The patterns lend themselves toward beautiful abstract designs and the rainbow colors are very pleasing to the eye. No one needs to be an artist, as everything looks good.

In short, this is a creative, fun activity. It is something that can be used repeatedly with new inspiration. It encourages development of another level of perceiving — what I draw on this paper appears simultaneously on the screen. While

the RAINBOW's

ADVENTURE CONTEST

Enter your Adventure program in the Rainbow's Adventure Contest! You will have the chance to win valuable prizes and to share your Adventure with thousands of Color Computer, TDP-100 and Dragon-32 owners worldwide.

Just look at all these prizes . . .

For our winner:

An Amdisk-III 3" microfloppy dual drive valued at \$499 and a J&M controller worth \$150, from Amdek. Plus, any five programs (tape or disk), a \$95 value from Shell Software. Plus, a WICO adapter and two Red Ball joysticks, an \$89.95 package from S & S Arcade Supplies.

For our runner-up:

The USI 1400/c 14" color monitor with sound and one double driver interface, a \$425 package from JARB Software. Plus, a WICO adapter and two Quick Shot joysticks, a \$59.85 package from S & S Arcade Supplies. Plus, any three programs, a \$57 value from Shell Software.

For third place:

A Color I+ 13" color monitor with nonglare screen and audio headphone jack, worth \$399 from Amdek. Plus, any two programs, a \$40 value from Shell Software. Plus, a WICO adapter worth \$19.95 from S & S Arcade Supplies.

And these special awards:

A Disk Drive and Controller	.....the Rainbow
\$400 gift certificate toward the purchase of software and two T-shirts	.....Microware
Complete VIP Library worth \$320	.....Softlaw Corporation
Banana Printer with cable worth \$269.95	.....Delker Electronics
\$250 gift certificate toward the purchase of software	.....Prickly-Pear Software
	.....PBH Computer
Surprise Package, \$149.95	.....Products, Inc.
BCM 12" Monochrome Monitor, \$105	.....Computer Plus
\$100 gift certificate toward the purchase of software	.....Computerware
Color Computer FLEX with DBASIC Software, \$99.95	.....Frank Hogg Laboratory
\$75 gift certificate toward the purchase of software	.....Computer Island
One complete copy of the Homebase Computer System, \$75	.....Homebase Systems
Super Pro Keyboard, \$69.95	.....Mark Data Products
Real Talker, \$59.95	.....Colorware Inc.
\$50 software certificate	.....Spectrum Projects
Super Backup Utilities, \$49.95	.....Computize Inc.
Hayes Computer Controller Joystick, \$44.95	.....MichTron
Disk or cassette version of <i>Revolution</i> , \$19.95	.....Inter+Action

RULES: All programs must be original works, no "conversions." Entries must be postmarked by May 1 and become the property of Falsoft, Inc., publisher of *the Rainbow*. Decision of the judges is final. Duplicate prizes will be awarded in the case of ties. Winning programs to be featured in a special *Rainbow* Adventure issue. Mark entries "Adventure Contest Editor" and send to *the Rainbow*, P.O. Box 209, Prospect, KY 40059.

initially the concentration is wholly on the paper image, soon the child, while drawing, looks to the screen for direct feedback. (Excellent preparation for Apple's MacIntosh and other ICON/WINDOW computers of the future.)

Drawbacks: Cost is high — \$199. Putting in this program is not that simple for beginners. While our three-year-old needed practice in holding the pen and pressing down hard enough, we note that the pad, according to directions, can be programmed so that only movement of the pen is sufficient to produce effect.

Feb. 13. Greenoaks. Ages: five through six.

Much to his dismay, *CoCohead* by Computer Island does not work with the equipment on hand today, so Tim dregs up *Ernie's Magic Shapes* again. (We will try *CoCohead* another time.)

The testing with a giggly group of four young lads brought up the reality of black and white TVs. Not only was it less vivid and beautiful but the games involving color perception, of course, do not work (in this case, more than half of the game choices). For how many people, schools, or centers out there is this a problem? Is it something that should be brought to the attention of software people?

The four boys do the game very well. In fact, the challenge and excitement seem to be lacking. Have they tired of this game? At this age level, has it no more appeal after they have done it a couple of times?

Florence, in the second group of children, says, "I've seen enough of Ernie, Tim. Let's play something else."

For some of these children, then, the game has already lost its appeal. For home use, a program must have "staying power" in order to justify its purchase. Does *Ernie's Magic Shapes* have staying power? We don't know yet — what do you think?

Help!

Help us playtest and evaluate CoCo software. Send us a stamped, self-addressed envelope and we will send you a bunch of playtest evaluation forms and directions on how to use them. Fran & Bob, P.O. Box 310, Menlo Park, CA 94026.

Wordsworth

Assign a number score (LS) to each letter of the alphabet, A through Z, as follows:

A=1	H=8	O=15	V=22
B=2	I=9	P=16	W=23
C=3	J=10	Q=17	X=24
D=4	K=11	R=18	Y=25
E=5	L=12	S=19	Z=26
F=6	M=13	T=20	
G=7	N=14	U=21	

A word's worth (Wordsworth) is its numerical value, obtained by adding the values of the letters in the word. For example:

HOBBIT is worth $8+15+2+2+9+20 = 56$ points
 DRAGON is worth $4+18+1+7+15+14 = 59$ points
 TROLL is worth $20+18+15+12+12 = 77$ points

From now on, for quite some time, we will suggest Wordsworth activities for you and your child. So . . . we must select a dictionary. We choose the following:

■ "THE SESAME STREET DICTIONARY." Random House/Children's Television Workshop.

Get it at your friendly local book store. If they don't have it, call Random House toll free: 800-638-6480. Ask for Customer Service.

We will send a small stuffed dragon to the first child (earliest postmark), age three to eight, who sends us the answers to the following questions. *All answers must be bold face words in "THE SESAME STREET DICTIONARY."*

- 1) What three-letter word has the smallest Wordsworth?

- 2) What three-letter word has the largest Wordsworth?

- 3) What four-letter word has the smallest Wordsworth?

- 4) What four letter word has the largest Wordsworth?

- 5) What is the first word (alphabetically) to have a Wordsworth of exactly 100? _____
- 6) In the entire dictionary, what word has the largest Wordsworth? _____
- 7) What is the longest word (most letters) having a Wordsworth of exactly 100? _____

We hope that parents and children have a wonderful time browsing through "THE SESAME STREET DICTIONARY."

Most of the work and play in answering our Wordsworth challenge is *people work*: browsing a dictionary, thinking about the questions, creating strategies — most enjoyable! People are well equipped to do this kind of work/play.

Some of the work is grungy stuff: looking up letter scores, adding numbers.

Hmmm . . . why not let CoCo do some of the grungy stuff? Here is our first Wordsworth program.



```

100 REM**WORDSWORTH #1 SCH 4-1
110 CLS
200 REM**ASK FOR A WORD
210 PRINT
220 INPUT "YOUR WORD"; WRD*
300 REM**WL IS LENGTH OF WORD
310 WL = LEN(WRD*)
400 REM**START WORDSWORTH AT 0
410 WW = 0
500 REM**COMPUTE WORDSWORTH
510 FOR L=1 TO WL

```

(cont.)


```

520 : L$ = MID$(WRD$,L,1)
530 : IF ASC(L$)<65 THEN 570
540 : IF ASC(L$)>90 THEN 570
550 : LS = ASC(L$) - 64
560 WW = WW + LS
570 NEXT L
600 REM**PRINT THE WORDSWORTH
610 PRINT "THE WORDSWORTH IS" WW
700 REM**GO FOR ANOTHER WORD
710 GOTO 210

```

Look For Words

This program fills the screen with random letters. Can you find words on the screen? Write down any words you find. When in doubt, consult a dictionary.

```

100 REM**RANDOM LETTERS SCH 4-2
110 C$="BCDFGHJKLMNPQRSTVWXYZ"
120 V$="AEIOU"
130 PV=30
200 REM**PUT LETTERS ON SCREEN
210 CLS
220 FOR SP=0 TO 447
230 : GOSUB 910 'PICK A LETTER
240 : PRINT @SP, L$;
250 NEXT SP

```

(cont.)

```

300 REM**TELL HOW TO DO AGAIN
310 PRINT @480,"FOR MORE LETTERS
, PRESS SPACE";
320 K$=INKEY$:IF K$="" THEN 320
330 IF K$=" " THEN 210 ELSE 320
900 REM**PICK A LETTER SUBR.
910 R = RND(100)
920 IF R<=PV THEN 930 ELSE 950
930 L = RND(5)
940 L$ = MID$(V$,L,1): RETURN
950 L = RND(21)
960 L$ = MID$(C$,L,1): RETURN

```

The subroutine in block 900 picks a letter (L\$). Lines 910 and 920 decide whether to pick a vowel or a consonant. In line 130, we set the probability of picking a vowel (PV) at 30 percent. In line 910, the value of R can be any number from 1 to 100. If R is less than or equal to PV (line 920), the CoCo will pick a vowel in lines 930 and 940. However, if R is greater than PV, the CoCo will pick a consonant in lines 950 and 960. You can change the probability of getting a vowel by changing the value of PV in line 130. Happy word hunting!

Help!

If your home has a kid, three to eight years old, and a CoCo, please share your experiences in using your CoCo with your child. If you write to us, please tell us if it is OK to print all or part of your letter in this column. Fran and Bob, P.O. Box 310, Menlo Park, CA 94026.

MUL-T-SCREEN

COLOR CHARACTER GENERATOR

HAS ALL STANDARD FEATURES

- Total of 10 character sizes, from 8*4 to 42*24.
- Mix text & graphics in any PMODE.
- Mix up to 5 character sizes in 4 colors on one screen.
- Recognizes all commands & keys.
- Full underline in all PMODES.
- Recognizes CLS, PRINTTAB, PRINT@, as well as its own cursor controls.
- Includes 2 sample BASIC programs.

INCENTIVE SOFTWARE

P.O. BOX 7281

Port Huron MI 48301 U.S.A.

or

P.O. BOX 323 Station-B

London Ont. Canada N6A 4W1

(519) 681-0133



HAS MANY MORE FEATURES THAN HIGHER PRICED PROGRAMS

- Prints vertically.
- Pos. & neg. screen dumps in 2 sizes.
- 4 defineable limited text screens can limit the text anywhere from a single character to the entire screen.
- Regular and graphic scroll types.
- Horizontally scrolling one line screens. Up to 4 can be used at the same time.
- Special trace delay for debugging.
- Printer control outputs characters to screen & printer simultaneously.

MIN. 16K (EXT. BASIC NOT REQUIRED)

TAPE - 24.95 US or 29.95 CDN

DISK - 27.95 US or 32.95 CDN

7% SALES TAX - ONTARIO ONLY

OUTSIDE U.S. & CANADA ADD \$2

SELECTED SOFTWARE

FOR THE COLOR COMPUTER

HARDWARE DISCOUNTS:
TAKE 10% OFF THE PRICE OF TWO OR 15% OFF THE PRICE OF 5 OR MORE!

UPGRADE YOUR COLOR COMPUTER!

Complete solderless kits with easy-to-follow instructions.

4K-16K For All Boards	\$19.95
4K-32K For All Boards	\$54.95
16K-32K For All Boards	\$39.95
64K For E & F Boards & Color Computer 2	\$59.95

**IF POSSIBLE, PLEASE SPECIFY BOARD REVISION WITH ORDER.*

Note: All ICs used in our kits are first quality
200NS Prime Chips and carry one full year warranty.

'REAL TALKER'
HARDWARE VOICE SYNTHESIZER
by COLORWARE
with Votrax Chip ready to plug in and talk.
Comes with software on cassette & user's manual.
CARTRIDGE **\$59.95**

VIDEO PLUS by COMPUTERWARE

This fine unit will allow you to connect your color computer to a monochrome or color video monitor. No soldering required. Comes with easy installation instructions. **\$24.95**

BOOK: Color Basic Unravelled by Spectral Associates **\$19.95**

SOFTWARE DISCOUNTS
TAKE 15% OFF THE PRICE OF ONE, 20% OFF THE PRICE OF TWO OR MORE!
All programs are in 16K machine language unless noted.

TOM MIX SOFTWARE

	TAPE	DISK
* TOUCHSTONE (32K) Excellent Tut-Type arcade game.	\$27.95	\$30.95
* BUZZARD BAIT (32K) Just outstanding!	\$27.95	\$30.95
* DONKEY KING (32K) Just outstanding!	\$26.95	—
* KATERPILLAR Excellent graphics.	\$21.95	—
* TRAP FALL Just like Pitfalls.	\$27.95	\$30.95
* PROTECTORS (32K) Excellent graphics.	\$24.95	—

SPECTRAL ASSOCIATES

* CUBIX (32K) Outstanding with 16 skill levels.	\$24.95	\$28.95
** FROGGIE (32K) The best of its type.	\$24.95	\$28.95
* LUNAR-ROVER PATROL (32K) Just outstanding.	\$24.95	\$28.95
GEOGRAPHY PAC Excellent learning tool with 4 color hi-res. maps. Extended Basic required.	\$32.95	—
* LANCER (32K) Excellent Joust-type game.	\$24.95	\$28.95
* ANDROID ATTACK Comes with 16K and 32K. 32K version will talk.	\$24.95	—
* MS. GOBBLER (32K) Outstanding with 4 different mazes and 16 skill levels.	\$24.95	\$28.95
* WHIRLYBIRD RUN Drop bombs & fire missiles to destroy enemy bases, ships & missiles over a varying terrain.	\$24.95	\$28.95
* GALAX ATTAX Protect your base by shooting alien fighter in formation.	\$24.95	—
* PLANET INVASION Excellent Defender game.	\$24.95	—
* DEFENSE Strikingly good.	\$24.95	—
* SPACE WAR You must break through the enemy fighters and the defenses of Death Star.	\$24.95	—
* GHOST GOBBLER Highly rated Pac Man-type with 16 skill levels and lots of action.	\$21.95	—

INTRACOLOR

* CANDY CO. (32K) Coming Soon!		
** COLORPEDE Just like the arcade.	\$29.95	\$34.95
* ROBOTACK Just like the arcade.	\$24.95	\$27.95

THE PROGRAMMER'S GUILD

** NINJA WARRIOR The ultimate arcade challenge.	\$29.95	—
** PACORIDS The most challenging Pac Man-type.	\$19.95	—

RAINBOW CONNECTION SOFTWARE

RAINBOW SCREEN MACHINE		
TAPE \$29.95	Ext. Basic Required	DISK \$32.95
SUPER SCREEN MACHINE		
TAPE \$44.95	Ext. Basic Required	DISK \$47.95

DATA SOFT

	TAPE	DISK
** POOYAN (32K) Glide up & down in your tram car while shooting arrows at vicious, hungry wolves jumping down the valley with air filled balloons. Tape & disk included.	\$29.95	\$29.95
* ZAXXON (32K) Maneuver your ship through a battlefield of state-of-the-art missiles, anti-aircraft tanks and enemy planes. Survive all that and you'll meet the deadly ZAXXON Robot!	\$39.95	\$39.95
** MOON SHUTTLE Pilot your moon shuttle through outerspace avoiding man-o-wars, meteors, bomb launchers and expandos to meet the prince of darkness. But watch out for his darkest side.	\$29.95	\$29.95

COMPUTERWARE

* JUNIOR'S REVENGE (32K) Climb vines avoid obstacles & creatures to save your Father from Luigi.	\$28.95	\$31.95
* GRAN PRIX (32K) Race against the clock and challenge the Mario Andretti in your soul.	\$21.95	\$24.95
* DOODLE BUG Just like Ladybug.	\$26.95	29.95

ELITE SOFTWARE

* ZAKSUNO (32K) Fly your spaceship through enemy star bases. Avoid guided missiles, lasers and firing turrets. Can you reach their leader?	\$26.95	—
---	----------------	---

ANTECO SOFTWARE ROMPAK ONLY

* 8-BALL For the pool-table lover.	\$29.95
* GHOST GOBBLER by Spectral Associates	\$26.95
* WHIRLYBIRD RUN by Spectral Associates	\$26.95

ADVENTURE INTERNATIONAL

SAIGON: THE FINAL DAYS The most truly unique adventure ever.	\$24.95	—
ADVENTURELAND Wander through an enchanted realm and try to recover the 13 lost treasures.	\$19.95	—
EARTHQUAKE You will fear for more than your own life.	\$24.95	—
** TRIAO (32K) Excellent new type arcade game.	\$34.95	—
** SEA DRAGON (32K) Outstanding underwater thrills and chills.	\$34.95	—

SUGAR SOFTWARE

TIMS Excellent personal database management system. Extended Basic Required.	\$24.95	—
---	----------------	---

Please note: Software and hardware cannot be mixed for discount.
*Requires Joystick **Joystick Optional

WE PAY POSTAGE on all orders in the United States & Canada. Overseas please add \$3.00. (MN Res. add 6% sales tax.)
We accept Visa, Mastercard, check or money order. U.S. funds only for foreign orders. C.O.D. please add \$2.00

Send to: **SELECTED SOFTWARE, P.O. Box 32228, Fridley, MN 55432**

BOLTYPE

By Mike Fahy

A tutorial on the use of dot graphics

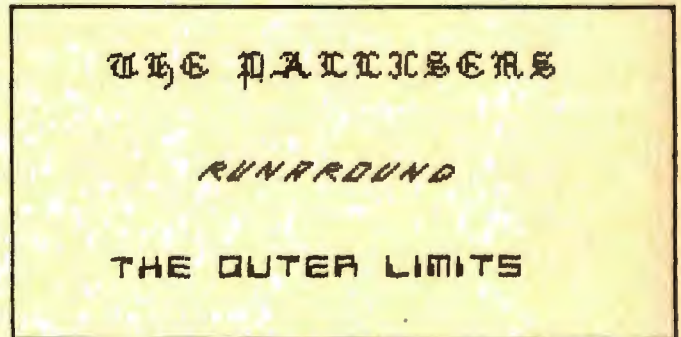
A very interesting feature of most printers is their ability to use dot graphics. Unfortunately, this capability is not used or understood by most owners of printers, such as the Line Printer VII or DMP-100. Sure, there are a few graphic screen dump programs around, but it seems that we should be able to do more than just copy what is already on our screen. I suppose the main reason for the lack of this type of program is the fact that it is difficult to find anything that discusses dot graphics in a way that a person who is unfamiliar with the subject can understand.

BOLTYPE is a 32K Extended Color BASIC program that allows your Line Printer VII or equivalent to print with three new styles: Old English, Italics, and the Futuristic type. To use *BOLTYPE*, simply type or load it in and *RUN*. For those wishing to modify the program to their own tastes, I have supplied a detailed line description. If, for some reason, you don't want to type in the tedious *DATA* statements, you may send a blank cassette, self-addressed double-stamped envelope, and \$4 to Mike Fahy, P.O. Box 943, Havelock, NC 28532.

Before running, make sure the printer is turned on, or the program will "hang-up" in line 60 until it is. Also, make sure the switch on the rear right-hand side of your printer is set to 8BS if you are using a Line Printer VII. This allows the printer to receive eight bits rather than the usual seven. The eighth bit is essential in order for the printer to recognize graphics characters (more on this later).

After all of the data in lines 220-1250 have been read by lines 110-190, the program will display the menu page, which begins at 1450. By selecting A, B, or C, you may choose which type style you desire. Then you will be asked

what you would like to have printed. After entering your message, the program will print your message to the printer in the style which you requested.



While in the Italic or Futuristic mode, the program will use the standard characters for any punctuation or numerals you enter. By using the lowercase mode, you can combine standard characters with the new style. For instance, by entering *BOLTYPE* by *mike fahy*, the printer will type *BOLTYPE* in the desired type and "BY MIKE FAHY" in standard uppercase letters. This does not work while using Old English, however. In this mode, there is no support of any special characters or numerals.

Exactly how does this program work? On Page 15 of the Line Printer VII reference manual, it is explained that in order to use the graphics mode of the printer, you must first enter the mode by typing *PRINT#-2, CHR\$(18)*, which is done in line 100 of this program.

The codes for the graphics patterns are stored in decimal 128 to 255. In other words, printing any characters less than 128 while in the graphics mode will not show any results except for the control codes described on Page 11 of the reference manual. The reason for this is because the most significant bit (MSB), which is the first bit in a graphics character, has to be 1. The remaining seven bits correspond to the seven dots which form one column. The least signifi-

(Mike Fahy is a student at West Carteret High School in Morehead City, N.C., and has been interested in computing for three years. He hopes to meet more people his age who are also serious about programming.)

PROGRAMMER'S SKETCH PAD

Saves Time & is Easy to Use

Durable & Attractive

Have Fun & Learn

Would You Like To Design:

a) BUDGETS

b) INVENTORY LISTS

c) GAMES, GRAPHICS

The Kit includes: Two thick mylar coated **graphs** of the color computer's screen; step by step **instructions** for the beginner; two **demo programs**, and easy to follow "how to personalize" **budgets** that you write.

Each Sketch Pad has print locations on one side and set screen locations on the other, along with their corresponding commands and color codes.

Now you can take the screen with you wherever you go; school, work, or play. If you get a good idea, simply pull it out and draw or write down what you thought directly on the screen. When you're done with it, just wipe it off!

Don't delay, order yours today. . .

ONLY \$
CANADA—\$13.50
EUROPE—\$14.50

12

Calif. residents
 add 6% sales tax.
 (Postage paid.)

TO ORDER:
CALL (707) 722-4280
 or **WRITE TO:**

SYNTACTICS®

REDCREST, CALIFORNIA 95569

ORDER FORM SP1



Quantity

Name _____

Address _____

City _____ State _____

Country _____ Zip _____

Charge:  

Acct. No. _____

Expiration Date _____

Signature _____


```

Y):NEXTY,X:FORY=1TO4:READF(9,Y):
NEXTY
210 FORX=10TO26:FORY=1TO9:READF(
X,Y):NEXTY,X
220 DATA 128,128,128,130,129,229
,185,166,191,240,128,128,128,-1
230 DATA 130,129,129,129,131,130
,128,128,128,129,131,130,129,-1
240 DATA 130,129,145,254,128,254
,137,137,142,240,-1
250 DATA 128,130,129,129,129,130
,130,130,129,128,-1
260 DATA 144,252,130,253,129,129
,130,130,192,-1
270 DATA 128,128,129,130,130,130
,130,129,128,-1
280 DATA 128,130,146,250,133,249
,129,130,252,-1
290 DATA 130,129,129,129,131,130
,130,129,128,-1
300 DATA 144,252,130,253,145,145
,162,130,192,-1
310 DATA 128,128,129,130,130,130
,130,129,128,-1
320 DATA 128,128,130,129,145,254
,128,254,145,130,130,129,-1
330 DATA 130,129,129,129,131,130
,130,128,128,128,128,128,-1
340 DATA 144,252,130,192,190,145

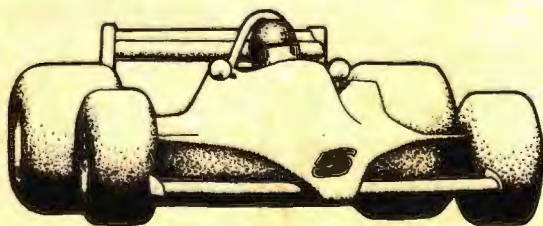
```

```

,138,138,241,-1
350 DATA 128,128,129,132,132,132
,132,129,129,-1
360 DATA 130,145,253,130,254,145
,137,144,224,-1
370 DATA 128,130,129,129,130,130
,161,144,143,-1
380 DATA 130,129,145,254,128,254
,129,129,130,-1
390 DATA 129,130,130,129,128,129
,130,130,129,-1
400 DATA 128,130,129,145,254,129
,254,129,-1
410 DATA 130,129,129,131,130,130
,129,128,-1
420 DATA 130,145,189,130,254,145
,177,178,208,-1
430 DATA 130,129,129,131,130,130
,128,129,130,-1
440 DATA 130,145,189,130,254,129
,129,130,128,-1
450 DATA 128,130,129,129,129,131
,130,130,129,-1
460 DATA 130,145,254,129,145,254
,146,253,129,129,254,128,128,-1
470 DATA 128,130,129,128,130,129
,128,129,130,128,129,130,129,-1
480 DATA 130,145,255,130,253,129
,129,254,145,128,-1

```

SOFTWARE FOR THE TRS-80* COLOR COMPUTER!



REVOLUTION!

You accelerate hard down a long straightaway, braking heavily at the end for a sharp corner. You slice smoothly through the esses, and then boldly keep the power on for a fast sweeper. The Ferrari drifts dangerously near the edge, but you make a tiny correction in the steering, and you are through.

The finish line flashes by, and suddenly you are in the pits. The car falls silent. You see your lap times being held up. Your final lap was a new lap record! At last, you permit yourself a small smile.

You have mastered this powerful car on a difficult track, driving with the assurance and precision that comes only from long hours of practice.

You are driving an *authentic* race car. You are playing **REVOLUTION!**

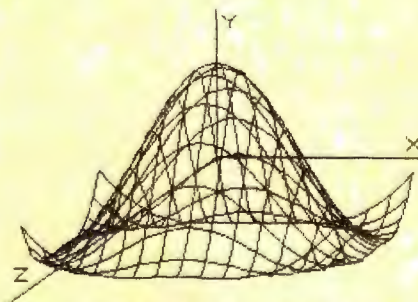
REVOLUTION!	For 32K Disk	\$24.95	Requires Joysticks
	For 16/32K Cassette	\$21.95	& Extended Basic
	<i>Or write for more info.</i>		

NOTE: graphics on 16K version are slightly different. 16K and 32K versions included on all cassettes.

SOFTWARE AUTHORS!

Inter+ Action is looking for new software to market. We are especially interested in disk-based software for the TRS-80 Color Computer.

For more information, contact Inter+ Action's Software Review Manager.



MATHMENU

MATHMENU is a powerful menu-driven system to turn your Color Computer into an intelligent, flexible tool for mathematics and engineering. MATHMENU takes the tedium out of math, leaving your full brain power to attack the "meat" of your problems. By rapidly performing integration and differentiation, solving quadratic equations, plotting user defined functions and much more, MATHMENU can help simplify the most complex problems. Whether you are a student or a professional, if you use math, you need MATHMENU.

MATHMENU	For 32K Disk	\$49.95	Plotting Requires
	For 16K Cassette	\$44.95	Extended Basic
	Documentation only	\$5.00	
	<i>Or write for free brochure.</i>		

New York residents add 7% sales tax.

Allow 2 to 3 weeks for delivery.

*TRS-80 is a trademark of Tandy Corporation.



Inter Action

31 Rose Court • Amherst, NY 14226 • (716) 839-0943

490 DATA 128, 130, 129, 128, 129, 130
 , 128, 129, 130, 129, -1
 500 DATA 144, 252, 130, 160, 158, 129
 , 253, 130, 252, -1
 510 DATA 128, 128, 129, 130, 130, 130
 , 130, 129, 128, -1
 520 DATA 130, 145, 254, 130, 253, 129
 , 129, 254, -1
 530 DATA 130, 129, 191, 129, 130, 130
 , 130, 139, -1
 540 DATA 144, 252, 130, 160, 158, 129
 , 253, 130, 252, 128, -1
 550 DATA 128, 128, 129, 130, 130, 130
 , 130, 129, 130, 130, -1
 560 DATA 130, 145, 254, 130, 253, 145
 , 145, 238, 128, 128, -1
 570 DATA 128, 130, 129, 128, 129, 130
 , 128, 129, 130, 129, -1
 580 DATA 128, 150, 169, 169, 169, 170
 , 145, 224, -1
 590 DATA 130, 129, 129, 129, 130, 130
 , 129, 128, -1
 600 DATA 130, 145, 249, 133, 129, 190
 , 130, 254, 129, 192, -1
 610 DATA 128, 128, 128, 129, 130, 130
 , 130, 130, 129, 128, -1
 620 DATA 145, 254, 128, 128, 254, 129
 , 254, 129, 128, -1
 630 DATA 130, 129, 130, 130, 130, 129

, 131, 130, 129, -1
 640 DATA 130, 145, 254, 128, 254, 128
 , 129, 254, 129, -1
 650 DATA 128, 128, 129, 130, 130, 130
 , 129, 129, 128, -1
 660 DATA 130, 145, 254, 128, 128, 254
 , 145, 254, 144, 128, 129, 255, -1
 670 DATA 128, 128, 129, 130, 130, 130
 , 129, 129, 130, 130, 129, 128, -1
 680 DATA 194, 129, 145, 146, 252, 146
 , 145, 129, 194, -1
 690 DATA 129, 130, 130, 129, 128, 129
 , 130, 130, 129, -1
 700 DATA 130, 145, 254, 128, 128, 254
 , 129, 254, 129, -1
 710 DATA 162, 145, 146, 162, 162, 161
 , 147, 140, 128, -1
 720 DATA 130, 129, 193, 161, 145, 138
 , 134, 162, 145, 144, 224, -1
 730 DATA 130, 129, 129, 129, 129, 130
 , 130, 130, 130, 129, 128, -1
 740 DATA 192, 160, 144, 216, 180, 146
 , 138, 134, 130
 750 DATA 192, 224, 208, 216, 212, 210
 , 178, 138, 132
 760 DATA 192, 224, 208, 200, 196, 130
 , 130, 130, 130
 770 DATA 192, 224, 208, 200, 164, 162
 , 146, 140, 128

They Driving Force!

JFD - COCO DISC SYSTEM - \$449

J & M Systems, Ltd. is a leader in the Model III marketplace with our JFD-III Disc Controller. With thousands in operation, we have set new standards in controller performance and reliability. We bring these same high standards to the COCO, resulting in the highest quality disc controller system on the market. Compare these functions before you buy:

- Price. \$449 includes controller, first drive, disc basic in ROM, and manuals. Just plug it in.
- Never needs adjusting. Our exclusive Digital Phase Lock Loop Data Separator and Digital Pre-comp Circuit eliminates the 3 adjustments found on other controllers.
- High quality standard production disc drives. For improved service and reliability. Tandon & Teac drives provide twice the read sensitivity that the drives found in other disc systems do, and hold their alignment far longer.
- Gold-plated card edge connectors throughout.
- Software compatible with Radio Shack Disc Basic, Flex, and OS/9.

J & M Systems, Ltd., 137 Utah NE, Albuquerque, N.M. 87108
 (505) 265-1501




J&M SYSTEMS, LTD.

780 DATA 192, 224, 208, 200, 140, 138, 130, 130, 130
 790 DATA 192, 160, 144, 136, 140, 138, 130, 130, 130
 800 DATA 192, 224, 208, 200, 164, 146, 146, 130, 130
 810 DATA 192, 160, 144, 200, 172, 154, 136, 132, 130
 820 DATA 192, 192, 224, 208, 138, 134, 130, 130, 128
 830 DATA 192, 224, 208, 192, 160, 144, 136, 132, 130
 840 DATA 192, 160, 144, 184, 212, 146, 136, 132, 130
 850 DATA 192, 224, 208, 200, 196, 194, 128, 128, 128
 860 DATA 192, 160, 144, 136, 132, 222, 168, 148, 142
 870 DATA 160, 144, 136, 244, 174, 144, 136, 132, 130
 880 DATA 192, 224, 208, 200, 196, 162, 146, 138, 134
 890 DATA 192, 160, 144, 136, 140, 138, 138, 138, 132
 900 DATA 192, 224, 208, 200, 162, 178, 202, 134, 130
 910 DATA 192, 160, 144, 136, 156, 170, 202, 138, 132
 920 DATA 192, 192, 192, 200, 172, 154

, 138, 130, 130
 930 DATA 128, 192, 162, 146, 138, 134, 130, 130, 130
 940 DATA 192, 224, 208, 200, 164, 146, 136, 132, 130
 950 DATA 192, 176, 172, 162, 144, 136, 132, 130, 128
 960 DATA 192, 224, 208, 200, 210, 200, 160, 144, 142
 970 DATA 192, 160, 160, 158, 176, 144, 132, 130, 128
 980 DATA 200, 172, 154, 136, 136, 132, 130, 5, 5
 990 DATA 192, 224, 208, 210, 202, 138, 134, 130, 128
 1000 DATA 248, 255, 137, 137, 137, 25, 5, 248, 128, 128
 1010 DATA 255, 201, 201, 201, 201, 25, 5, 248, 128, 128
 1020 DATA 255, 193, 193, 193, 193, 19, 5, 227, 128, 128
 1030 DATA 255, 249, 193, 193, 193, 19, 3, 190, 128, 128
 1040 DATA 255, 249, 201, 201, 201, 20, 1, 201, 128, 128
 1050 DATA 255, 249, 137, 137, 137, 13, 7, 137, 128, 128
 1060 DATA 255, 249, 193, 193, 201, 20, 1, 251, 128, 128
 1070 DATA 248, 255, 136, 136, 136, 25, 5, 248, 128, 128
 1080 DATA 255, 248, 128, 128
 1090 DATA 248, 248, 192, 192, 192, 19, 2, 255, 128, 128
 1100 DATA 255, 248, 140, 138, 138, 13, 7, 249, 128, 128
 1110 DATA 255, 248, 192, 192, 192, 19, 2, 192, 128, 128
 1120 DATA 255, 249, 129, 255, 129, 12, 9, 255, 128, 128
 1130 DATA 255, 250, 132, 136, 144, 16, 0, 255, 128, 128
 1140 DATA 255, 193, 193, 193, 193, 24, 9, 255, 128, 128
 1150 DATA 255, 249, 137, 137, 137, 13, 7, 143, 128, 128
 1160 DATA 255, 249, 193, 208, 255, 16, 0, 192, 128, 128
 1170 DATA 255, 249, 137, 137, 137, 14, 3, 248, 128, 128
 1180 DATA 207, 201, 201, 201, 201, 20, 1, 249, 128, 128
 1190 DATA 129, 129, 129, 255, 131, 13, 1, 131, 128, 128
 1200 DATA 255, 248, 192, 192, 192, 19, 2, 255, 128, 128
 1210 DATA 143, 159, 160, 192, 160, 14, 4, 143, 128, 128
 1220 DATA 255, 248, 192, 255, 192, 19, 2, 255, 128, 128

CONCORDANCE (Basic-X-Reference)

by EchoSoft

MACHINE LANGUAGE

operates in memory

Does not require ASC II Input from Tape or Disk
 Processes >70 Statements/Second

AN EXCELLENT DEVELOPMENT TOOL

Options include —

— BASIC LISTINGS IN TWO FORMATS:

- Normal Basic Listing
- Pretty Print Listing

— CROSS REFERENCE FOR:

- GOTO
- GOSUB
- PEEK
- POKE
- VARIABLES

— LOCATES ALL SUBROUTINES AND REFERENCES

— CONTROL OF ALL PRINTERS —

- Command Sequence Output
- Header Spacing
- Page Control
- Footer Spacing
- Page Length
- Printer Speed
- Page Width
- On Line Forms Control
- Margin Spacing

— CONFIGURATION ALLOWS EASY SET UP OF ALL PARAMETERS

- ALLOWS INPUT FROM DISK OR TAPE
- WILL OPERATE IN 32K OR 64K SYSTEMS
- IN 64K MODE ALLOWS ALL OF NORMALLY AVAILABLE LOWER 32K FOR BASIC PROGRAM.
- CAN PROVIDE A PRECONFIGURED LINKAGE TO OTHER MACHINE LANGUAGE PROGRAMS.

CONCORDANCE

32K — 64K

Extended/Printer

Media Provided

TAPE \$19.95

DISK \$24.95

CHECK or MONEY ORDER (U.S. Funds)

For U.S. & Canadian Delivery ADD \$2.00 Postage & Handling

For Non U.S. Delivery ADD \$3.50 Postage & Handling

For C.O.D. Orders ADD \$1.50+ Postage & Handling

EchoSoft 17 SKYLINE DRIVE, CHALFONT, PA 18914


```

1230 DATA 247,248,136,136,136,13
6,247,128,128
1240 DATA 143,136,136,248,248,13
6,143,128,128
1250 DATA 193,225,209,201,197,19
5,193,128,128
1270 GOTO1450
1280 PRINT#-2,CHR*(18);:CLS:PRI
NT@491,"italics";:PRINT@0,"";:LI
NEINPUT"message";A*
1290 L=LEN(A*)
1300 FORLL=1TO L
1320 M*=MID*(A*,LL,1)
1330 O=ASC(M*):A=O-64
1340 IF O>96 AND O<123 THEN PRIN
T#-2,CHR*(30);CHR*(O-32);CHR*(18
);:HH=HH+1:IFLL>=L THEN1840ELSEN
EXTLL
1350 IFO<65 OR O>90 THEN PRINT#-
2,CHR*(128);CHR*(128);CHR*(30);C
HR*(O);CHR*(18);CHR*(128);CHR*(1
28);:HH=HH+1:IFLL>=L THEN 1410EL
SENEXTLL
1360 FORY=1TO9
1370 PRINT#-2,CHR*(C(A,Y));
1380 NEXTY
1400 NEXTLL
1410 PRINT#-2
1420 PRINT#-2
1430 GOSUB1450
1440 GOTO1280
1450 '
1460 CLS:PRINT"BOLTYPE 1.0":PRIN
T"COPYRIGHT (C) 1983 BY M. FAHY"
:PRINT
1470 PRINT:PRINT"          A. OLD
ENGLISH":PRINT:PRINT"          B.
ITALICS":PRINT:PRINT"          C.
FUTURISTIC":PRINT:PRINT
1480 LINEINPUT"          SELECT MO
DE :";CV*
1490 IF CV*="A"THEN1530
1500 IF CV*="B"THEN1280
1510 IF CV*="C"THEN1680
1520 GOTO1450
1530 ' OLDE ENGLISH
1540 PRINT#-2,CHR*(18);
1550 CLS:PRINT@490,"old"+CHR*(1
28)+"english";:PRINT@0,"";
1560 LINEINPUT"message";A*
1570 FORFI=1TO2
1580 FORSL=1TOLEN(A*)
1590 PS=ASC(MID*(A*,SL,1))
1600 IFPS<45 OR PS>90THENPRINT#-
2,STRING$(7,128);:GOTO1650
1610 FORTL=1TO LEN(OE*(PS-64,FI)
)
1620 PRINT#-2,CHR*(ASC(MID*(OE*(
PS-64,FI),TL,1)));
1630 NEXTTL

```

MODEM

LOWEST PRICE
EVER FOR A
FULL DUPLEX
ORIG./ANS.
MODEM



69.95

INCLUDES CABLE AND 2 FREE
HOURS ON COMPUSERVE

SAVE-A-BYTE BATTERY BACK-UP \$59.95



See Review in Rainbow December '83

GORILLA/BANANA PRINTER \$199.95

NEW LOW PRICE **64K RAMS 8 FOR \$43.95**

ALL MODULES CARRY 90-DAY WARRANTY
TRY BYTE-BACK MODULES FOR 10 DAYS WITH
NO OBLIGATION

CHECKS
MONEY ORDERS



ASK ABOUT DEALER DISCOUNTS

Mail To:

BYTE-BACK CO.

Shipping and Handling \$4.95

Department R

Rt. 3, Box 147 • Brodie Rd.
Leesville, S.C. 29070

Ph. 803-532-5812

```

1640 PRINT#-2,CHR*(128);CHR*(128
);
1650 NEXTSL
1660 PRINT#-2:NEXTFI
1670 GOTO1450
1680 ' FUTURISTIC
1690 PRINT#-2,CHR*(18);
1700 CLS:PRINT@490,"futuristic"
;:PRINT@0,"";:LINEINPUT"message"
;A*
1710 L=LEN(A*)
1720 FORLL=1TO L
1740 M*=MID*(A*,LL,1)
1750 O=ASC(M*):A=O-64
1760 IF O>96 AND O<123 THENPRINT
#-2,CHR*(30);CHR*(O-32);CHR*(18)
;:HH=HH+1:IFLL>=L THEN1840 ELSE
NEXTLL
1770 IF O<65 OR O>90 THEN PRINT#
-2,CHR*(30);CHR*(O);CHR*(18);CHR
*(128);CHR*(128);:HH=HH+1:IFLL>=
L THEN1840ELSENEXTLL
1780 IF A=9THENO=4ELSEQ=9
1790 FORY=1TOQ
1800 PRINT#-2,CHR*(F(A,Y));
1810 NEXTY
1830 NEXTLL
1840 PRINT#-2:PRINT#-2:GOTO1450

```


PRINTER UTILITY

So you have a large mailing to do? Too many envelopes to address? Don't stamp your foot! Cancel your frustrations with . . .

The Mail

The illustration shows two mailboxes. On the left is an orange mailbox with a dark square window. On the right is a yellow mailbox. A dark shadow is cast between them, suggesting they are on a surface. The background is a light yellow color.

(Charles Thonen is a chief warrant officer in the United States Army presently assigned to Fort Greely, Alaska.)

Mover

By Charles M. Thonen.

After getting the Line Printer VII for my CoCo, I wanted a label program that would print addresses on the two-up dry gum labels that this printer uses. All of the programs in the magazines took the easy way out and just printed the same address on the second label. If only one label is needed, it is a waste of good labels. I wanted a program that didn't duplicate labels and had a good looking screen format. *Mailabel* does both of these and also has the usual edit, add, delete, search, and functions.

The program is written for a 32K machine and is for a tape-based system. A *PCLEAR 1* has to be entered due to the size of the *CLEAR* and *DIM* statements in line 120. The program can easily be changed to disk by the following line changes.

Change the word TAPE to DISK in line 5020
Delete lines 5020 through 5120
Delete the negative sign in lines 5140 and 5180
Change the *PRINT#-1* to *WRITE#1* in line 5160
Change the word TAPE to DISK in line 6020
Delete lines 6040 through 6120
Delete the negative signs in lines 6160, 6170 and 6200

Mailabel is written with subroutines to help follow the program logic. The sort routine is a fast machine language sort from Radio Shack's *Microcomputer News* (Vol. 4, Issue 6).

Mailabel comes up with the main menu page on the screen. There are nine options to choose from. Data can be

input to the program from tape or keyboard. Data can also be added to an existing file. Records can be edited or deleted. Provisions are made to save a file to tape. Records can be printed to the screen and/or printer. This is an unformatted dump to the printer. Labels, either one-up or two-up, can be printed. There is also a search and sort feature.

Both Input Record and Add To List will bring up the Input Record Screen. If a file has already been loaded, the Input Record Option will not operate. This will stop you from wiping out the file already in memory. After entering either a 1 or 3, the Input Record Screen will be up showing the number of the record to be entered. Press [ENTER] after inputting the lines information and the cursor will jump to the next line. If a particular item is not known just press [ENTER]. After inputting the last line, hit [ENTER] and a fresh screen will come up for the next record. Now you can enter another record, or by pressing the down arrow return to the menu.

The Edit option will ask for the record number to edit. If no record number is entered, you will return to the menu by hitting [ENTER]. After entering a record number, that record will be displayed and an orange cursor will come up just to the left of the last name in the record. To go to the next line just press [ENTER]. The cursor will move down to the next line. By pressing [ENTER] when the cursor is on the bottom line the program will recycle to a new Edit screen. Here you can either edit another record or return to the

SUPER PRO KEYBOARD



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

- Only \$69.95
- Original key layout.
- No special software required.
- Fast, simple installation—no soldering.
- Individually boxed with full instructions.
- Professional, low profile, finished appearance.
- U.S. made—high quality, quad gold contacts.
- Smooth "Touch Typist" feel—no sagging.

Rainbow, April '83

A fine piece of hardware from Mark Data Products...It is super and it is professional too...If you are searching for a replacement keyboard, it is an excellent buy...

Hot CoCo, August '83

Like putting leather upholstery in your Volkswagen...Very impressed with the appearance and performance...Could easily pass as original equipment...Installation is very simple...

Color Computer Magazine, June '83

The installation procedure is well detailed and quite simple...Has a professional feel, reacts well to the touch...has held up to some purposeful pounding...

Color Computer News, June '83

Mark Data Products is well known to us "longtimers"... Every bit as finished as if Tandy had done it...The Mark Data Super-Pro is your best buy...The one that is in my CoCo to stay...

Great Computer Software Also

- Adventure Games
- Arcade Games and Utility Software



Mark Data Products

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

All Orders: Please add \$2.00 shipping and handling in the continental U.S. All others, add air shipping and \$3.00 handling. California residents add 6% sales tax. Foreign orders please remit U.S. funds. Software authors—contact us for exciting program marketing details.

menu. If you want to change any line, just position the orange cursor on that line and press the down arrow. That line will be removed and a flashing cursor will appear waiting for new input. Hit [ENTER] when the new information is on the line and the orange cursor will reappear on the top line. After all corrections are made to the record, you can bring up a new Edit screen by continuously hitting [ENTER] until the new Edit screen comes up.

The Delete option will delete any record from the file. If no record number is entered, you will return to the menu. Enter a record number and the record will appear on the screen. If you then decide not to delete the record just press [ENTER] and the program will recycle to a new Delete screen. If you want to delete the record, hit the up arrow. At this time you will be given one last chance to change your mind by answering a sure (Y/N) prompt. By answering N you will be returned to the menu. A Y answer will cause the record to be deleted from the file and the file updated. The program at this point jumps to the ML Sort, line 13000. This sort will place null strings at the end of the array. It then goes to the Y pointer reset at line 13050 and resets the next record available to the first null string that it finds. Option 5 allows you to print all records to the screen and/or the printer. This is an unformatted output to the printer, showing all information in each string to include the delimiters required for program operation. The down arrow will return you to the menu. Options 6 and 7 save and load the file to and from tape. Needed prompts are displayed to allow for proper positioning of the tape. These two subroutines can easily be changed to tape by making the changes detailed earlier.

Option 7 is the main purpose of *Mailabel*. It allows printing of either one-up or two-up labels. The first record and last record prompt have default values built in to someone just pressing [ENTER]. It will then ask if you have one-up or two-up labels. The subroutine at 7000 formats the records correctly. After the records are printed the program will return to the menu.

Option 9 brings up a Sort and Search menu. The sort by last name is the fastest. It goes directly to the ML sort routine. The other three sorts take longer because they have to reconfigure the strings before and after the ML sort. The Search will search the file for any combination of letters and numbers. If you answer the search prompt with nothing the program will start at record 1 and progress through the records.

This program has accomplished everything that I set out to do. At the same time it taught me a lot about string handling and the use of subroutines.

One last thing, if you can afford a disk, by all means get one. Being released from the tape system is like moving from a bicycle to a motorcycle.

260	.....	202	7340	.....	11
1185	.....	151	8130	.....	164
2190	.....	110	8540	.....	112
3110	.....	128	8900	.....	138
4200	.....	152	10040	.....	128
6030	.....	42	11080	.....	191
7060	.....	239	END	.....	34

The listing:

```

10  *  *** MAILING LABELS  ***
20  *  *****
30  *  *** CHARLES M. THONEN  ***
40  *  *** PO BOX 666  ***
50  *  *** FT. GREELY AK 98733 ***
60  *  *****
120 CLS: CLEAR 13000, &H7E6F: DIMS#
(500): GOSUB 12000
130 LL=0: ST#=STRING$(32, "*"); S#(
0)="0"
140 CLS
150 PRINTST#;
160 PRINTTAB(9) "MAILING LABELS"
170 PRINTST#;
180 'PRINTTAB(1) "MEM LEFT="MEM
190 PRINT
200 PRINTTAB(5) "(1) INPUT RECOR
D"
210 PRINTTAB(5) "(2) EDIT RECORD
"
220 PRINTTAB(5) "(3) ADD TO LIST
"
230 PRINTTAB(5) "(4) DELETE RECO
RD"
240 PRINTTAB(5) "(5) PRINT ALL R
ECORDS"
250 PRINTTAB(5) "(6) SAVE FILE"
260 PRINTTAB(5) "(7) LOAD FILE"
270 PRINTTAB(5) "(8) ADDRESS LAB
ELS"
280 PRINTTAB(5) "(9) SEARCH & SO
RT"
290 PRINT
300 INPUT "ENTER CHOICE (1-9) "; M
310 IF M<0 OR M>9 THEN 130
320 ON M GOSUB 1000, 2000, 1030, 30
00, 4000, 5000, 6000, 7000, 8000
330 POKE 65494, 0 'LOWSPEED
340 GOTO 140
1000 '***** INPUT/ADD*****
1010 IF Y>1 THEN RETURN
1020 Y=1
1030 B=1: C=0: GOSUB 11000
1040 PRINT@5, "**** INPUT RECORD
****"
1050 PRINT@70, "INPUT RECORD # "Y
1060 C=0: P=173
1070 S$(Y)=" "
1080 A$=INKEY$: IF A$="" THEN 1080
1090 IF A$=CHR$(13) THEN A$=",":
C=C+1: B=L+2: IF C<7 THEN PRINT@P+
32, CHR$(62);
1100 IF C=1 THEN P=205
1110 IF C=2 THEN P=237
1120 IF C=3 THEN P=269
1130 IF C=4 THEN P=301
1140 IF C=5 THEN A$="*": P=333: C=
6

```



```

1150 IF C=7 THEN 1270
1160 IF PEEK(343)<>247 THEN 1200
1170 L=L-1:IF L<0 THEN 1030
1180 S$(Y)=LEFT$(S$(Y),L)
1185 PRINT@P+POS(0)-14,"." ;
1190 GOTO1220
1200 IF A$=CHR$(10) THEN 1260
1210 S$(Y)=S$(Y)+A$
1220 L=LEN(S$(Y))
1230 PRINT@P,MID$(S$(Y),B,L) ;
1240 IF L=0 THEN 1030
1250 GOTO1080
1260 IF S$(Y)="" THEN RETURN
1270 Y=Y+1
1280 LL=LL+L:GOTO1030
2000 '***** REPLACE *****
2010 N=0:L=0
2020 CLS:GOSUB11020
2030 PRINT@173,CHR$(46) ;
2040 PRINT@7,"***** EDIT *****"
2050 PRINT@405,"TO CHANGE"
2060 PRINT@68,"INPUT RECORD # TO
EDIT";
2070 PRINT@92,"";:LINEINPUTN$:N=
VAL(N$)
2080 PRINT@64," >>>>OLD RECORD T
O REPLACE<<<<"
2090 IF N=0 THEN RETURN
2100 GOSUB10000
2110 ' ***** CHANGE *****
2120 C=1:P=172
2130 PRINT@P,CHR$(255) ;
2140 A$=INKEY$:IF A$="" THEN 2140
ELSE IF A$=CHR$(10) THEN 2150ELS
E 2240
2150 PRINT@P,STRING$(19," ");
2160 PRINT@P+1,"";:LINEINPUTN$
2170 Z=L(C-1)
2180 L$=LEFT$(S$(N),Z)
2190 R$=RIGHT$(S$(N),LEN(S$(N))-
L(C)+1)
2200 IF C=1 THEN S$(N)=N$+R$:GOT
O 2230
2210 IF C=6 THEN S$(N)=L$+N$:GOT
O 2230

```

```

2220 S$(N)=L$+N$+R$
2230 IF C<6 THEN 2100
2240 PRINT@P," ";C=C+1:P=P+32
2250 IF C>6 THEN 2010
2260 GOTO2130
3000 '***** DELETE RECORD *****
*
3010 CLS:GOSUB 11030
3020 PRINT@393," UP ARROW] TO D
ELETE"
3030 PRINT@3,"***** DELETE RECOR
D *****"
3040 PRINT@67,"ENTER RECORD # TO
DELETE ";:LINEINPUTD$
3050 N=VAL(D$):IF N=0 THEN RETUR
N
3060 GOSUB10000
3070 A$=INKEY$:IF A$="" THEN 3070
ELSE IF A$="^" THEN 3085
3080 GOTO3000
3085 PRINT@427,"";:LINEINPUT"SUR
E (Y/N) ";CK$
3090 IF CK$="Y" THEN S$(N)=""ELS
E 3150
3100 FOR Z=173 TO 333 STEP 32
3110 PRINT@Z,STRING$(14,"*")
3120 NEXTZ
3130 FORDL=1TO700:NEXT
3140 GOSUB 13010
3150 RETURN
4000 '***** PRINT ALL RECORDS ***
4010 CLS
4020 PRINTST$;
4030 PRINTTAB(12)"PRINT"
4040 PRINTST$;
4050 PRINT@166,"(1) SCREEN ONLY"
4060 PRINT@198,"(2) PRINTER & SC
REEN"
4070 PRINT@290,"";
4080 LINEINPUT"ENTER CHOICE (1-2
) ";M$:M=VAL(M$)
4090 IF M=0 THEN RETURN
4100 IF M <1 OR M >2 THEN RETURN
4110 CLS:GOSUB 11030
4120 FOR N=1 TO Y-1
4130 GOSUB11030
4140 PRINT@6,"***** PRINT OUT ***
*"
4150 IF Y=0 THEN PRINT@70,"NO RE
CORDS IN FILE":GOTO4190
4160 PRINT@70,"RECORD NUMBER "N
4170 GOSUB 10000
4180 IF M<>1 THEN 4200
4190 A$=INKEY$:IF A$=CHR$(10)THE
N 4220 ELSE IF A$="" THEN 4190
4200 IF M=2 THEN GOSUB 4230
4210 NEXTN
4220 RETURN
4230 IF S$(N)<>"" THEN PRINT@-2,N
;S$(N)

```

16K EXT

SLOT MACHINE

POKER

SIMILAR TO GAMES IN
ATLANTIC CITY
SEND \$6.95 TO
BYE GEORGE
14 DAWSON ROAD
KENDALL PARK
NEW JERSEY 08824


```

4240 RETURN
5000 '***** SAVE TO TAPE ****
5010 CLS:PRINTST$;
5020 PRINTTAB(7)"SAVE FILE ON TA
PE"
5030 PRINTST$
5040 AUDIOON:MOTORON
5050 PRINTTAB(9)"POSITION TAPE."
5060 PRINTTAB(3)"":LINEINPUT"PR
ESS [ENTER] WHEN DONE.":R$
5070 MOTOROFF
5080 PRINT:PRINT
5090 PRINTTAB(5)"PRESS PLAY AND
RECORD."
5100 PRINTTAB(3)"PRESS [ENTER] W
HEN READY.":;
5110 LINEINPUTR$
5120 PRINT
5130 PRINTTAB(3)"":LINEINPUT"IN
PUT FILE NAME... ":FF$
5140 OPEN "O",#-1,FF$
5150 FORX=1TO Y-1
5160 PRINT#-1,S$(X)
5170 NEXTX
5180 CLOSE#-1
5190 FOR DL=1 TO 50:PRINTTAB(8)"
FILE SAVED":NEXT
5200 RETURN
6000 '***** LOAD FROM TAPE ****
6010 CLS:PRINTST$;
6020 PRINTTAB(6)"LOAD FILE FROM
TAPE"
6030 PRINTST$
6040 MOTORON:AUDIOON
6050 PRINTTAB(9)"POSITION TAPE."
6060 PRINTTAB(3)"":LINEINPUT"PR
ESS [ENTER] WHEN DONE.":R$
6070 MOTOROFF
6080 PRINT:PRINT
6090 PRINTTAB(10)"PRESS PLAY."
6100 PRINTTAB(3)"PRESS [ENTER] W
HEN READY.":;
6110 LINEINPUT R$
6120 PRINT
6130 PRINTTAB(3)"":LINEINPUT"IN
PUT FILE NAME... ":FF$
6140 OPEN"I",#-1,FF$
6150 Y=1
6160 IF EOF(-1) THEN 6200
6170 INPUT#-1,S$(Y)
6180 Y=Y+1
6190 GOTO 6160
6200 CLOSE #-1
6210 FOR DL=1TO50:PRINTTAB(8)"FI
LE LOADED":NEXT
6220 RETURN
7000 '***** LABEL PRINT *****
7010 CLS:PRINTST$;
7020 PRINTTAB(10) "LABEL MAKER"
7030 PRINTST$

```

```

7040 U=2:Z=1'** U SETS DEVICE TO
** PRINT TO
7050 INPUT" FIRST RECORD TO P
RINT ":I1:IFI1=0 THEN I1=1:PRIN
T@156,I1
7060 PRINT@160,"":INPUT" LAS
T RECORD TO PRINT ":I2:IF I2=0
THEN I2=105 :PRINT@180,I2
7070 PRINT@230,"INSERT LABEL PAP
ER"
7080 PRINT@263,"":INPUT" 1 OR 2
UP ":CC
7090 IF CC<1 OR CC>2 THEN 7080
7100 '***** END OF HEADER ****
7110 FOR N=I1 TO I2
7120 IF S$(N)=" THEN RETURN
7130 CLS:GOSUB10020
7140 IF CC=1 THEN GOSUB 7190
7150 IF CC=2 THEN GOSUB 7280
7160 NEXTN
7170 A$=INKEY$:IF A$=""THEN 7170
7180 RETURN
7190 '***** 1 UP PRINT ****
7200 PRINT#-U,""
7210 PRINT#-U,TAB(1)SS$(2)+" ";
7220 PRINT#-U,TAB(1)SS$(1)
7230 PRINT#-U,TAB(1)SS$(3)
7240 PRINT#-U,TAB(1)SS$(4)+" ";
7250 PRINT#-U,TAB(1)SS$(5)

```

ATTENTION CANADIAN DEALERS!

Kelly Software Distributors Ltd. manufactures and distributes software to over 100 stores throughout Canada for the following firms: Aardvark, Bob Van Der Poole, Cheshire Cat, Chromassette, ColorQuest, The Computer House, Computerware, Double Density, Dr. Preble's Programs, DSL Products, Elite, Jarb, Mark Data Products, Michtron, Moreton Bay, Petrocci Freelance, Prickly-Pear, Rainbow Connection, Rainbow on Tape, Cer-Comp, Shooting Star, Silverware, Softlaw, Spectral Associates.

To provide complete dealer support, Kelly Software can guarantee fast delivery of over 500 products to anywhere in Canada. We also provide an excellent opportunity for software authors and publishers to have their products distributed to stores across Canada. Call or write immediately for further details and your free catalogue.

Kelly Software Distributors Ltd.
P.O. Box 11932
Edmonton, Alberta
T5J 3L1 (403) 421-8003


```

7260 PRINT#-U, "":PRINT#-U, ""
7270 RETURN
7280 '**** 2 UP PRINT ****
7290 IF Z=2 GOTO7340
7300 LS$(1)=SS$(2)+" "+SS$(1)
7310 LS$(2)=SS$(3)
7320 LS$(3)=SS$(4)+" "+SS$(5)
7330 Z=2:RETURN
7340 RS$(1)=SS$(2)+" "+SS$(1)
7350 RS$(2)=SS$(3)
7360 RS$(3)=SS$(4)+" "+SS$(5)
7370 PRINT#-U, ""
7380 PRINT#-U, TAB(1)LS$(1);TAB(4
1)RS$(1)
7390 PRINT#-U, TAB(1)LS$(2);TAB(4
1)RS$(2)
7400 PRINT#-U, TAB(1)LS$(3);TAB(4
1)RS$(3)
7410 PRINT#-U, "":PRINT#-U, ""
7420 Z=0:RETURN
8000 '***** SORT & SEARCH ****
8010 '***** MAIN MENU ****
8020 POKE65495,1 ' HI SPEED
8030 CLS:PRINTST$;
8040 PRINTTAB(09) "SORT & SEARCH
"
8050 PRINTST$
8060 PRINTTAB(5)"(1) SORT BY LA
ST NAME"
8070 PRINTTAB(5)"(2) SORT BY ST
ATE"
8080 PRINTTAB(5)"(3) SORT BY ZI
P CODE"
8090 PRINTTAB(5)"(4) SORT BY AR
EA CODE"
8100 PRINTTAB(5)"(5) SEARCH"
8110 PRINT:PRINT:PRINT" PRESS [
ENTER] FOR MAIN MENU"
8120 INPUT" ENTER CHOISE (1
-5) ";MM
8130 ON MM GOSUB 8200,8300,8500,
8700,8900
8140 IF MM<10RMM>5THENRETURN
8150 GOTO 8030
8200 '***** SORT BY NAME *****
8210 CLS:IF S$(1)=""THEN PRINT@2
01,"FILE IS EMPTY":FOR DL=1TO500
:NEXTDL:RETURN
8220 CLS:PRINT@204,"SORTING"
8230 GOSUB 13010
8240 PRINT@201,"SORT COMPLETE"
8250 FOR DL=1TO500:NEXTDL
8260 RETURN
8300 '***** SORT BY STATE *****
8310 CC=3:CLS:PRINT@205,"SORTING
"
8320 FOR N=1TOY-1
8330 GOSUB 10020
8335 IF LEN(SS$(5))<2 THEN SS$(5
)="ZZ"

```

```

8340 S$(N)=LEFT$(SS$(5),2)+S$(N)
8350 NEXTN
8360 GOSUB 13010
8370 FORN=1TOY-1
8380 S$(N)=RIGHT$(S$(N),LEN(S$(N
))-2)
8390 NEXTN
8400 GOTO 8620
8410 RETURN
8500 '***** SORT BY ZIP *****
8510 CC=3:CLS:PRINT@205,"SORTING
"
8520 GOSUB 13010
8530 FORN=1TOY-1
8540 GOSUB 10020
8545 IF LEN(SS$(5))<5 THEN SS$(5
)=SS$(5)+"99999"
8550 S$(N)=RIGHT$(SS$(5),5)+S$(N
)
8560 NEXTN
8570 GOSUB 13010
8580 FORN=1TOY-1
8590 IF LEN(S$(N))<5 THEN 8610
8600 S$(N)=RIGHT$(S$(N),LEN(S$(N
))-5)
8610 NEXT N
8620 PRINT@200,"SORT COMPLETE";F
ORDL=1TO400:NEXTDL
8630 RETURN
8700 '***** SORT BY A/C *****
8710 CC=3:CLS:PRINT@205,"SORTING
"
8720 GOSUB 13010
8730 FOR N=1TOY-1
8740 GOSUB 10020
8745 IF LEN(SS$(6))<3 THEN SS$(6
)="999"
8750 S$(N)=LEFT$(SS$(6),3)+S$(N)
8760 NEXTN
8770 GOSUB 13010
8780 FORN=1TOY-1
8790 S$(N)=RIGHT$(S$(N),LEN(S$(N
))-3)
8800 NEXT N
8810 GOTO 8620
8820 RETURN
8900 '***** SEARCH *****
8910 CLS:PRINTST$;
8920 PRINTTAB(12)"SEARCH"
8930 PRINTST$
8940 IF Y<1 THEN PRINT@260,">>>N
O RECORDS IN FILE<<<":FOR DL=1TO
500:NEXTDL:RETURN
8950 INPUT"INPUT SEARCH WORD";SW
$
8960 FOR N=1TO Y-1
8970 IF S$(N)=""THEN 9090
8980 TG=INSTR(1,S$(N),SW$)
8990 IF TG>0 THEN 9020
9000 NEXTN

```



```

9010 GOTO9090
9020 CLS:GOSUB 11030
9030 PRINT@7,"**** SEARCH ****"
9040 PRINT@69,"THIS IS RECORD #
";N
9050 PRINT@419,"PRESS [ENTER] TO
CONTINUE."
9060 GOSUB 10000
9070 A*=INKEY*:IF A*=CHR*(10) TH
EN RETURN ELSE IF A*=""THEN 9070
9080 NEXTN
9090 CLS:PRINT@201,"END OF FILE"
9100 FOR DL=1TO500:NEXTDL:GOTO89
00
10000 '*** PRINTS STRING TO ***
*** FORMATED SCREEN ***
10010 CC=0
10020 C=1:O=1:P=173:L=0:LN=0:L1=
0:L(0)=1
10030 L=INSTR(O,S*(N),","):L(C)=
L:IF L=0 THEN RETURN
10040 SS*(C)=MID*(S*(N),O,L-LN-
1):IF CC THEN 10060
10050 PRINT@P,SS*(C)
10060 C=C+1:O=L+1:P=P+32:LN=L
10070 IF C=5 THEN 10090
10080 GOTO10030
10090 L1=INSTR(L,S*(N),"*"):L(C)
=L1
10100 SS*(C)=MID*(S*(N),O,L1-L-1
):IF CC THEN 10120
10110 PRINT@P,SS*(C)
10120 SS*(C+1)=RIGHT*(S*(N),LEN(
S*(N))-L1)
10130 IF CC THEN 10150
10140 PRINT@P+32,SS*(C+1)
10150 RETURN
11000 '***** SCREEN FROMAT *****
11010 L=0
11020 CLS:PRINT@34,"HIT [ENTER]
AFTER EACH ITEM ";
11030 PRINT@(96),ST*
11040 PRINT@160,"LAST NAME : ";
:PRINTCHR*(62);:PRINTSTRING*(13,
".")
11050 PRINT@192,"FIRST NAME : ";
:PRINTSTRING*(14, ".")
11060 PRINT@224,"STREET : ";
:PRINTSTRING*(14, ".")
11070 PRINT@256,"CITY : ";
:PRINTSTRING*(14, ".")
11080 PRINT@288,"STATE ZIP : ";
:PRINTSTRING*(14, ".")
11090 PRINT@320,"AC/PHONE : ";
:PRINTSTRING*(14, ".")
11100 PRINT:PRINTTAB(2)"PRESS [D
OWN ARROW] WHEN DONE"
11110 RETURN
12000 '**** ML SORT DATA ****
12010 DATA 190,127,011,52,16,238

```

```

,228,174,94,48,31,79,52,18,166,1
96,39,42,166,196,230,69,160,69,3
6,2,230,196,52,1,174,66,16,174,7
1
12020 DATA 109,69,38,4,50,97,32,
41,166,128,160,160,39,4,50,97,32
,5,90,38,243,53,1,35,24,174,66,1
6,174,71,175,71,16,175,66,166
12030 DATA 196,230,69,231,196,16
7,69,234,69,234,228,231,228,51,6
9,174,97,48,31,175,97,38,176,166
,228,50,99,38,161,50,98,57
12040 FOR I=&H7E70 TO &H7ED6
12050 READ A:POKE I,A
12060 NEXTI
12070 DEFUSR0=&H7E70
12080 RETURN
13000 '***** SORT ROUTINE *****
13010 NO=VARPTR(S*(0))
13020 POKE &H7F0B,INT(NO/256)
13030 POKE &H7F0C,NO-INT(NO/256)
*256
13040 A=USR0(0)
13050 '*** Y POINTER RESET ***
13060 FORN=Y TO 1STEP-1
13070 IF S*(N)<>""THEN13090
13080 NEXT N
13090 Y=N+1
13100 RETURN

```

Hint...

Data Finder

Have you ever gone through your tapes or disks and found a data file that you couldn't identify? Well, I have, and it's a pain when you can't load it without the program and you can't find out what program it came from. Here is a program to solve your problems. Simply type in and run the program, and when it finds the file it will put it on the screen or on paper if you have a printer.

```

20 CLS:INPUT"WHAT IS THE NAME OF THE
DATA FILE";DFS
30 OPEN "I",#1,DFS
40 INPUT#1,D$
50 PRINT D$
60 IF D$="EOF" OR D$="" THEN 80
70 GOTO 40
80 CLOSE #1

```

If you want to load a data file from tape, change #1 to #-1 in lines 30, 40 and 80. If you want to print out the data, change line 50 to *PRINT#-2, D\$*.

Chris Stevenson
Crocker, Mo.

DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES

PRICE BREAKTHROUGH

Super Sale on New Disk Drives

Starting at ~~\$169.00!~~ **NEW LOW PRICE**

Tandon — Siemens — Remex — MPI — Teac — Shugart — Tabor

40 or 80 Tracks — Single or Dual Head — New 3 1/2" Drivette™
Our Disk Drives are Capable of Single and Dual Density Operation

The NEWEST Technology Capable of Operating on Most Popular Computers

Drive a Hard Bargain!!™ For your TRS/80, Color Computer, IBM, Apple, Franklin 5 M.B.-20 M.B. Complete Systems.....from \$999.95

Diskette Breakthrough — 10 Pack in Library Case — ~~\$18.95~~ **NEW LOW PRICE**

SAVE!! PLEASE CALL FOR OUR MOST CURRENT PRICE REDUCTIONS.

TOLL FREE ORDERING

GENERAL AND TECHNICAL

1-800-343-8841

1-617-872-9090

- Disk Drives (0123) TRS/80-IBM-Apple - TI Franklin-Max/80-LNW ▲
- Model I/III/IV Upgrade (Disk Drives - Memory) ▲
- Printers** — Daisywheel/Dot Matrix ▲
- Percom Double Density Controller (Model I) ▲
- Color** Computer Printer Interfaces ▲
- Disk Drive Operating Systems ▲
- Repair Services** Now Offered — **FAST Turn-a-Round** ▲
- Apple/Franklin Compatible Add-On Drives with Case & Cable** ▲
- Diskettes in Library Cases ▲
- DISK DRIVE CASES AND POWER SUPPLIES** starting at \$59.95
- Printer **Buffers** 8K to 512K starting at \$143.95
- Holmes Model I/III Speed-up Mod starting at \$90.00
- Cables — Printer/Disk Drive starting at \$23.00

CALL TOLL FREE FOR NEW PRICES

Warranty on Disk Drives — 6 Months to 1 Year

SOFTWARE SUPPORT, INC.

One Edgell Road, Framingham, MA 01701 (617) 872-9090
Hours: Mon. thru Fri. 9:30 am to 5:30 (E.S.T.) Sat. 10 am to 4:30 pm

DEALER INQUIRIES INVITED.

TERMS:
M.C./Visa/Amex and personal checks accepted at no extra charge.
C.O.D., please add \$3.00.
Shipping: Please call for amount.
Not responsible for typographical errors.

CANADA
MICRO R.G.S. INC.
751, CARRE VICTORIA, SUITE 403
MONTREAL, QUEBEC, CANADA, H2Y 2J3
Regular Tel. (514) 845-1534
Canadian Toll Free 800-361-5155

Service! Service!
All in stock products are shipped within 24 hours of order. Repair/Warranty service is performed within 24 hours of receipt unless otherwise noted. We accept C.O.D., foreign and APO orders. School and D&B corporate P.O.s accepted.

TRS/80 Registered Trademark Tandy Corp. IBM-PC Registered IBM Corp. Apple Registered Trademark Apple Computer Corp.
Franklin Registered Trademark Franklin Corp. Max/80 Registered Trademark Lobo Int.

DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES

When we last saw Fred, he had just finished a face-saving program for addressing his wife's envelopes. This month he's at it again . . .

Fred's Postcard Whacker

By Don Hughes and Jessie James



Fred slipped past the screen door and waltzed into the kitchen, where his wife was giving the poodle a permanent.

"It's late," she said. "Why have you been out so late?"

(Don Hughes, a writer and consultant, holds two master's degrees, one in education and the other in counseling. Jessie James has been engaged for the past 10 years in the electronic repair field. He is a bio-medical equipment technician at Kaiser Foundation Hospital in Fortana, Calif.)

Macrotron** Proudly Introduces Our New "Premium" Keyboard— The Best For Your Color Computer



"Have Josie ship yours today!"

The Best Keyboard

All the features of our popular PROFESSIONAL KEYBOARD:
No gluing, soldering, or cutting—plugs right in.
High quality construction assures years of trouble-free operation.

PLUS

Attractive low profile
Extended Radio Shack layout
Silk-Smooth feel

The Best Software

Our Versakey Software enhances the keyboard's utility:

- * Auto-repeat, n-key rollover and type-ahead
- * F-1 becomes DEFINE,
F-4 becomes CTRL
- * May define up to 128 keys
(including SHIFT, CTRL, and
SHIFT-CTRL combinations) as
strings of up to 80 characters each.
- * Supplied on cassette, may be copied to disk.

The Best Manual

- * Very complete documentation (including
plenty of figures to illustrate the keyboard's
installation and versatility).

The Best Prices

The "Premium" Keyboard (including software).....	\$79.95
The "Professional" Keyboard (including software).....	\$59.95
The "Versakey Software".....	\$ 9.95

Please specify your computer's PC board type if known. Otherwise, specify the complete catalog number and serial number.

**Micronix Systems is a subdivision of Macrotron Systems Corporation.

MACROTRON SYSTEMS CORP.

8147 Delmar Blvd.
St. Louis, MO 63130
(314) 721-3356

Telex 704523 Answer Back-MACANITA STL UD

Terms: Prepaid check or money order, Mastercard or Visa.
Shipping Charges: U.S. \$3.00, Canada \$6.00, COD \$5.00 (No COD's to Canada).

"The most fantastic thing happened to me," said Fred as he danced around the room.

His wife looked at him with a jaundiced eye. "What have you been up to Fred?" she demanded.

"I was just elected corresponding secretary of the Inland Empire Color Computer Club."

"Have you got into something that's going to make extra work for me?" she asked warily.

"No. Absolutely not! I have to write an occasional letter, but my main job is to send postcards to the members every month to remind them of the meetings."

"Then you expect me to write dozens of cards out in longhand every month?" Fred's wife cackled.

Fred scratched his beard. "I figured you could do my postcards along with the ones you send out to your bridge club."

Fred's wife reached for the curling iron, still hot from the dog's permanent. She waved it under his nose. "You and that fancy computer. You keep telling me it saves work, but as far as I can tell, it only makes work for me."

Fred retreated to his computer haven. As he sat down in front of the keyboard, his mind drifted to possible solutions to his dilemma. He loved his wife in spite of the poodle and everything, and he really did want to put his CoCo to work in useful ways.

Absentmindedly, Fred spun his chair around and began flipping through his back issues of *the Rainbow*. As he leafed through the well-worn pages, he could not remember seeing an article or ad which offered a program that addressed postcards, but . . . maybe he had overlooked

something.

When the clock struck midnight, Fred was suddenly awakened from the hypnotic concentration that had engulfed him. Knowing of no other avenue, he got up to make sure the door to his study was locked, pulled down the blinds, then removed his thinking cap from the special hiding place. He put it upon his head and suddenly the room was ablaze with creativity. In an instant he had the answer! He would write a program which would meet the need!

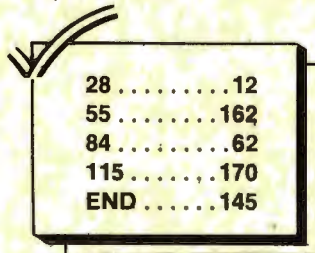
The program Fred created that night is listed below. It allows you to input a salutation and a closing line (40 characters each). At that point, a blue field appears on the screen. Both Fred and his wife, and you as well, can type your message within the confines of the field. There's no need to worry about formatting on the screen because the program takes care of this while the "One Moment Please . . ." prompt appears on the screen.

Once you answer the "print" prompt that appears on the screen, the program automatically prints your message, properly formatted, on a standard USPS postcard.

Need to print the same message to everyone in your group like Fred? Simply answer the prompt in a positive way, and the same message can be printed over and over.

This program is for a 16K Extended CoCo as listed. If you don't have an extended machine, just change the "Line Inputs" in lines 74 and 76 to "Inputs." A friction feed printer is recommended.

After Fred showed this program to his wife, she gave him a big hug. "You're my hero," she said.



28	.....	12
55	.....	162
84	.....	62
115	.....	170
END	.....	145

The listing:

```
1 * "POSTCARD WHACKER"
2 * BY JESSIE JAMES AND
3 * DON HUGHES
4 * P.O. BOX 6363
5 * SAN BERNARDINO, CA. 92412
6 * COPYRIGHT 1983, JESSIE
7 * JAMES AND DON HUGHES
8 CLEAR5000
9 CLS
10 GOSUB 72
12 A=0
13 A$=INKEY$
14 IF PEEK(341)=247 THEN A=4
15 IF PEEK(342)=247 THEN A=3
16 IF PEEK(343)=247 THEN A=2
17 IF PEEK(344)=247 THEN A=1
18 ON A GOTO 52,43,35,27
19 IF A$=CHR$(12) THEN 84
20 IF A$="" THEN 24 ELSE A=ASC(A
$):IF A=8 OR A=9 OR A=10 OR A=94
THEN 12
21 PRINT A$!
22 GOSUB 67
23 IF B>1503 THEN POKE 137,PEEK(
```

```
137)-1
24 GOSUB 60
25 GOTO 12
27 GOSUB 67
28 IF PEEK(B-32)=207 THEN 12
29 D=PEEK(137): IF D<32 THEN POK
E 136,PEEK(136)-1:POKE 137,(D-32
)+256 ELSE POKE 137,PEEK(137)-32
30 GOSUB 67
31 IF B<1024 THEN POKE 136,5
32 GOSUB 60
33 GOTO 12
35 GOSUB 67
36 IF PEEK(B+32)=207 THEN 12
37 D=PEEK(137):IF D>223 THEN POK
E 136,PEEK(136)+1:POKE 137,(D+32
)-256 ELSE POKE 137,PEEK(137)+32
38 GOSUB 67
39 IF B>1535 THEN POKE 136,4
40 GOSUB 60
41 GOTO 12
43 GOSUB 67
44 IF PEEK(B-1)=207 THEN 12
45 IF PEEK(137)=0 THEN POKE 137,
255:POKE 136,PEEK(136)-1 ELSE PO
KE 137,PEEK(137)-1
46 GOSUB 67
47 IF PEEK(B-1)=207 THEN 12
48 IF B<1024 THEN POKE 136,5:POK
E 137,255
49 GOSUB 60
50 GOTO 12
```




NEW for your COLOR COMPUTER

Switchable Expansion Is Here

CoCo HAS A COMPANION!!

GOOD NEWS Switch over to more versatility with the new **BT-2000 COMPANION**. Save CoCo's connector with the best **COMPANION** it will ever have.


- Load 5 cartridges into the **COMPANION** and avoid the hassles while enjoying the benefits of push-button selection.
- Push a **Button** or select from your keyboard to turn on one of your 5 selections. Handy indicator lights let you know at a glance which cartridge is connected.
- **No More Turn-Offs**. Just switch to the next cartridge in your **COMPANION**. Push a button to **Restart** without turning off the power.
- **Plug-in**. Fill one to five slots for flexible programming, game playing or both. Choose ROM Packs, serial ports, parallel ports, or disk drives. Then do what you like to do best. The most powerful and cost effective expansion you will find for just \$225.00

FOR THE ADVANCED USER OR EXPERIMENTER

- The utmost in expansion power and versatility is the **BT-1000 Expansion Interface Unit**. \$250.00
- **Large Built-in power supply** to power your peripherals and experimenter circuits.
- Space for your **ML utilities** with optional **8K of RAM**. \$275.00



ALSO NEW FROM BASIC TECHNOLOGY!!

- **BT-1010 PPI Parallel Printer Interface**. Free-up CoCo's serial port. Run your printer at top speed. Five foot cable with Centronics compatible connector and machine language printer driver are included. \$79.95.
- **BT-1020 Real Time Clock/Calendar**. Let CoCo keep the time and date for your programs and files. Day-light savings time and leap year keep you on time. Save data or program memory even when power is off with 50 bytes of battery backed memory. Alarm capability to turn on the coffee pot. All for only \$109.00. 
- **BT-1030 VIP Versatile Interface Port**. Connect CoCo to the outside world with two 8-bit parallel ports, two 16-bit timer/counters and a serial shift register. All user programmable. \$69.95.
- **WRITE FOR FREE BROCHURE.**

For years of trouble-free enjoyment all Basic Technology products use top quality components and are backed by a full 180 day parts and labor warranty. We service what we sell!!!

Add \$5 shipping & handling for BT-1000, \$2.50 for BT-1020. Michigan residents add 4% sales tax. Shipping & handling for residents of Canada, Hawaii, Alaska is \$10. Overseas orders add 15%. Check, money order, VISA, MC (give account no., expiration date, phone no.). Personal checks allow 2-3 weeks to clear. COD charge \$2 (requires certified check or money order).

"Watch for more peripherals from Basic Technology."


```

52 GOSUB 67
53 IF PEEK(B+1)=207 THEN 12
54 IF PEEK(137)=255 THEN POKE 13
7,0:POKE 136,PEEK(136)+1 ELSE PO
KE 137,PEEK(137)+1
55 GOSUB 67
56 IF B>1535 THEN POKE 136,4:POK
E 137,0
57 GOSUB 60
58 GOTO 12
60 GOSUB 67
61 T=PEEK(B)
62 POKE B,159
63 FOR Y=1 TO 5:NEXT Y
64 POKE B,T
65 RETURN
67 B=PEEK(136):C=PEEK(137)
68 POKE 136,B:POKE 137,C
69 B=B*256+C
70 RETURN
72 CLS
73 PRINT"PLEASE INPUT YOUR
    SALUTATION ";
74 LINE INPUT S$
75 PRINT"PLEASE INPUT YOUR
    CLOSING ";
76 LINE INPUT C$
77 CLS
78 PRINT @ 0,"INPUT MESSAGE, HIT

```

```

CLEAR TO END ";
79 PRINT @ 64,STRING$(255,175);
80 PRINT STRING$(161,175);
81 POKE 136,4:POKE 137,64
82 RETURN
84 SOUND 200,1:PRINT@0,"ONE MOME
NT PLEASE..."
85 FOR X=1088 TO 1300
86 A=PEEK(X)
87 GOSUB 97
88 A$(1)=A$(1)+CHR$(A)
89 NEXT X
90 FOR X= 1301 TO 1503
91 A=PEEK(X)
92 GOSUB 97
93 A$(2)=A$(2)+CHR$(A)
94 NEXT X
95 A$=A$(1):B$=A$(2)
96 GOTO 102
97 IF A>127 THEN A=32:RETURN
98 IF A<32 THEN A=A+96:RETURN
99 IF A>90 AND A<128 THEN A=A-64
100 IF A=18 OR A=30 OR A=31 THEN
    A=32
101 RETURN
102 CLS
103 INPUT"PREPARE PRINTER
    PRESS <ENTER> WHEN REA
DY";Q$
104 P=40:FLAG=0
105 PRINT#-2,S$:PRINT#-2
106 S=1:E=S+P
107 L=LEN(A$)
108 FOR X=E TO S STEP -1
109 IF MID$(A$,X-1,1)=CHR$(32)
THEN 111
110 NEXT X
111 PRINT #-2, MID$(A$,S,X-S)
112 S=X:E=S+P
113 IF E<L THEN 108
114 IF FLAG=1 THEN PRINT #-2, RI
GHT$(A$,L-S+1);GOTO 119
115 A$=RIGHT$(A$,L-S+1)+" "+B$
116 FLAG=1:L=LEN(A$)
117 S=1:E=S+P
118 GOTO 108
119 PRINT#-2
120 L=LEN(C$)
121 PRINT#-2, TAB(40-L);C$
122 CLS
123 INPUT "DO YOU WISH TO PRINT
    THE SAME CARD AGAIN (
Y/N)";Q$
124 IF Q$="Y" THEN 95
125 PRINT:PRINT
126 INPUT "DO YOU WISH TO PRINT
    A DIFFERENT MESSAGE (
Y/N)";Q$
127 IF Q$="Y" THEN RUN ELSE END

```



COMPUTER CASSETTE DUPLICATING

**ALL COMPUTERS
INCLUDING EPSON
MICRO CASSETTES**

100% GUARANTEED

CALL: 213/882-5210



**Abbey
Tape Duplicators**

**9525 Vassar Ave. #R1,
Chatsworth, CA 91311**

The First CoCo Rockfest

By Fred B. Scerbo
Rainbow Contributing Editor



Editor's Note: The "Rainbow Wishing Well" is a new regular feature of the Rainbow in which contributing editor Fred B. Scerbo will share with our readers various programs he has developed for the CoCo.

If you would like to submit a suggestion for a program you would like for your CoCo, submit it to Fred, c/o the Rainbow. We aren't promising any specific wish will be granted, but if the challenge looks good, Fred may list a program to accomplish your task. Please remember that any programs resulting from these suggestions become the property of the author.

Here we are with our third installment of our "Rainbow Wishing Well" and already the wishes are starting to roll in. It will still take several months before some of these wishes are granted due to the delay time in publishing, so don't get discouraged. Keep your ideas coming, but please, keep your requests reasonable. (Remember, this is BASIC!) While I have received nothing but positive feedback so far, I have a feeling that this month's article and programs will generate more suggestions and requests from middle school and high school-aged programmers than any to date. Read ahead and you'll see why.

The Initial Inspiration

By now, most of you are aware that I am a high school teacher of special needs students. While most of my day is spent with the handicapped, many times I will welcome students from the "mainstream" into my resource room to work with my students or to give them a chance to try our Color Computers. Even students who have not had much

background in programming like to type in short programs which give instant results or feedback, and every day, I find that more and more of these students have CoCos at home.

One such visitor is a freshman named Aaron. Aaron has had his 64K CoCo for several months now and stops by my resource room at least once each day to get new ideas or get some new insights into what his CoCo can do.

Unfortunately, Aaron still has a bit of an inferiority complex regarding his CoCo. If someone he knows with a Commodore 64 or an Apple computer shows him a "commercially available" program on his or her machine, he goes into a tailspin worrying about whether or not his CoCo can do the same. (Oh, ye of little faith!) Consequently, I often have to show him that many programs that can be written in our CoCo's Extended Color BASIC can sometimes match or even surpass what others have to buy for their computers.

One day recently, he came in upset over the fact that he saw a rival computer's program which would draw a piano and play "The Entertainer" while the player's hands danced around the screen. Could the Color Computer do the same was what he wanted to know.

My reaction, naturally, was, "Of course . . . but who cares! All the programs I've been writing and showing you have been practical. They do something!"

(Fred Scerbo is a special needs instructor for the North Adams Public Schools. He holds a master's in education and published some of the first software available for the Color Computer through his software firm, Illustrated Memory Banks.)

From Sesame Street to Outer Space...

Radio Shack Has and Entertainment

The CTW Software Group, a division of Children's Television Workshop, brings you ten game-style educational programs. Each one encourages children to experiment, explore and solve problems while having fun.

For TRS-80® Color Computers with Extended BASIC

1995
Each

Taxi.*** Kids earn fares and tips as they drive through six cities from New York to Shanghai.

A Cooperative Strategy Game for ages 7 and up.
#26-2509.



Peanut Butter Panic.*** The sky's the limit as players cooperate to catch stars, make sandwiches, and win. A Cooperative Strategy Game for ages 7 and up.
#26-2523.



Star Trap.*** Players must race through a maze to trap a slippery star before time runs out!

A Cooperative Strategy Game for ages 7 and up.
#26-2510.



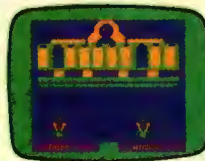
Cookie Monster's Letter Crunch.****

It's Cookie Time! Help Cookie Monster match words and letters to bake and eat cookies! A Basic Skills Game for ages 3-6.
#26-2526.



Grover's Number Rover.****

Grover's rover is ready to blast off! Hop aboard and help him play with Twiddlebugs and numbers! A Basic Skills Game for ages 3-6.
#26-2522.



Ernie's Magic Shapes.**** Ernie wears the top hat, but you're the magician.

Help Ernie match shapes and colors in six different ways. A Basic Skills Game for ages 3-6.
#26-2524.



Big Bird's Special Delivery.**** Help Big Bird deliver the mail! Match the pictures and bring each package to the right store. A Basic Skills Game for ages 3-6.
#26-2525.



Grobot.*** How well will your astro-garden grow? Plant, protect and harvest—it's up to you and Grobot. A Creative Exploration Game for ages 10 and up.
#26-2527.



Time Bound.*** Race through time and learn about history, in hot pursuit of your hapless assistant, Anacron.

Creative Exploration Game for ages 10 and up.
#26-2528.



Flip Side.*** Stake your claim, surround the squares, and watch the screen flip colors!

Planning is the key. A Creative Exploration Game for ages 10 and up.
#26-2529.



the Educational Software You Want.

Why feed quarters into video game machines when you can bring arcade-style thrills into your own living room with Radio Shack's exciting Color Computer games. They can provide hours of fun for the whole family.

Low As **1995**

Double Back.* As you "double back" to catch your own tail, try to encircle the "safe" screen objects to gain points in this tricky game. Challenges mount as you play. #26-3091. **\$19.95**



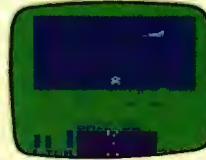
Dungeons of Daggorath.* You're pitted against a succession of awesome beasts. Each victory brings you closer to your ultimate opponent—the evil wizard! #26-3093. **\$29.95**



Gomoku and Renju. The classic oriental game of strategy! Block your opponent while attempting to place five of your own men in a row. Hours of fun. #26-3069. **\$19.95**



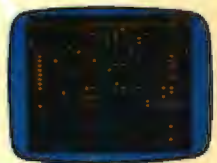
Star Blaze.* Protect the Milky Way! Radar shows menacing vessels nearby. Seek, destroy and check radar again. Red alert! There's no let up in the excitement. #26-3094. **\$19.95**



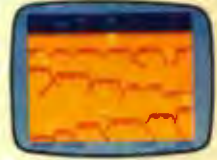
Baseball. Nine innings of fun! You're in full control of this realistic simulation of America's Number One sport, both behind the plate and on the field. #26-3095. **\$24.95**



Slay the Nerius.* Defend your submarines against deadly starfish and the ancient seaworm—the fearsome Nerius, a creepy nemesis from the Deep. #26-3086. **\$24.95**



Canyon Climber.* An action game with a difference. As a cliff hanger, you're challenged by one test after another—kicking goats, zinging arrows and falling objects! #26-3089. **\$34.95**



ZAXXON.*** The official home version of the great arcade favorite by Sega! Match wits with the deadly ZAXXON Robot! Challenges escalate as you progress. 32K required. #26-3062. **\$34.95**



Available at over 1100
Radio Shack Computer Centers and at
participating Radio Shack stores and dealers

Radio Shack
COMPUTER CENTERS
A DIVISION OF TANDY CORPORATION

NEW 1984 TRS-80 CATALOG RSC-11.
Send me a free copy today.

Mail To: Radio Shack
Dept. 84-A-827
300 One Tandy Center
Fort Worth, Texas 76102

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
TELEPHONE _____

Prices apply at participating Radio Shack stores and dealers. Muppet characters are trademarks of Muppets, Inc. All rights reserved. ZAXXON is a registered trademark of Sega licensed to Datasoft, Inc.



Still Aaron was not convinced about the superiority of his computer. It was time to pull another gem out of the wishing well. If he wanted "impressive" programming that did absolutely nothing productive, then that's what I would give him! (Do you see where the rock 'n' roll fits in yet?)

THE ROLLING STONES



Inspiration Number Two

Aaron isn't the only one who comes knocking on my door asking for ideas or help. Quite often, students will come and ask me to help them sketch out the symbol for one of their favorite rock groups. (Usually the request is for AC-DC or Van Halen, while just a few short years ago, everyone

wanted KISS.) These students will sometimes want these symbols to use in their graphic arts class where they can make note pads, letterheads or even silk screened T-shirts. After having been AC-DCed to death, I figured that there must be a way I could do this with my CoCo.

As I have mentioned, some of the students I have fall into the "mildly mentally handicapped" category. Believe it or not, they actually do enjoy coloring, much like one would in a coloring book, but they are too old for such things. Many times, I would help them draw rock posters which they would carefully decorate. Maybe this effort on the CoCo could also help me keep on top of this demand for coloring materials for some of my students.

One Final Inspiration

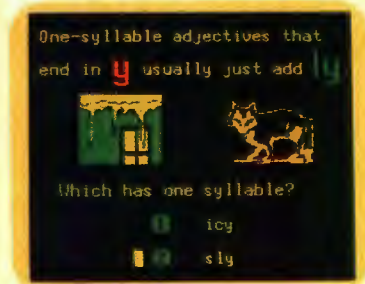
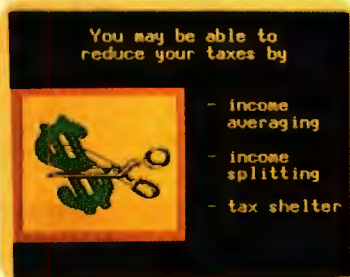
Several weeks ago I had the chance to view a video broadcast of the US Festival, which was put together by Apple wizard Steve Wozniak. If the Apple computer could have a rock festival, why not have one for the Color Computer? Since we couldn't have a real one right away, I figured we could hold one inside the guts of the CoCo.

The Wish

With all of this input, what kind of wish would I be granting? To put it simply, I would have to come up with the *first* real rock 'n' roll Color Computer program. The wish would be granted in two parts. The first would display some of the most colorful graphics I could generate on the CoCo which would be the logo or symbol for some of the most popular rock groups around today. This program could be used simply to impress your friends as to what your CoCo

NEW!

For Your TRS-80 Color Computer 128 Full-time Audio Talk/Tutor Programs!



We're Your Educational Software Source

LANGUAGE ARTS

- Spelling (16 programs)
- Level 3-4 (16 programs)
(words in context with definitions and synonyms)
- Phonics (16 programs)

- English as a Second Language (32 programs)

MATHEMATICS

- Levels 1-6 Numbers (16 programs)
- Basic Algebra (16 programs)

SCIENCE & TECHNOLOGY

- Physics (16 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). **\$59.00** for 16 programs (8 cassettes) in an album. Send for a catalog of over 1000 programs for Atari, TRS-80, Apple, etc.

For more information, or to order call:



TOLL FREE 1-800-654-3871

DORSETT

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



can do. (Okay, Aaron. Ask your friends if their computers can do that!) The program could also have a "party value" which we will discuss later.

The second part of the wish would be a program that would take these same graphics and generate a black and white graphic, which could be dumped to a line printer when used in conjunction with a graphic screen dump program (not included here). Thus, by using my Okidata 82A printer, I could generate the pages of a rock 'n' roll coloring book and have coloring sheets for my students at the flip of a switch.

So, here they are!

As I promised, the first program does nothing productive. It just draws some very impressive rock 'n' roll graphics and sits there. The second listing, *the Rockfest Coloring Book*, is slightly more productive, if you consider coloring productive.

If nothing else, the programs are *fun!*

Inside The CoCo Rockfest

Imagine a rock festival with some the biggest names in the business. Who would you include? For the First CoCo Rockfest (you mean there will be others?) I selected eight rock acts with attractive symbols that would not drive me crazy as they were drawn out in BASIC. The groups suggested by the high school students I spoke with included the Rolling Stones, Asia, Quiet Riot, ZZ Top, Van Halen, Yes, 38 Special, and, of course, AC-DC. While Listing 1 is for 32K, fear not. I have designed this program so it can be broken into smaller programs for each group. Therefore, those of you with 16K Extended can go to the part of the listing and just type in the line for the group you wish to draw. The main program has a menu and a title card which actually lowers the curtain on our stage which is fun to watch in and of itself.

A WORD OF WARNING!

If you do try typing in just parts of the listing, be sure to include: 5 *PCLEAR8* or the program may crash. Those of you who have typed in some of my other programs will be familiar with the fact that I like to *DRAW* on a graphic page out of view and then *PCOPY* the results to the screen you are viewing. *Rockfest* incorporates this technique although I have kept the screen turned on part of the time so you can see how the images are formed. Since *PCLEAR* reserves extra graphic pages, you can take advantage of this hidden drawing technique. If you were to leave out the *PCLEAR8*, normally, you would just get an ?FC Error. However, some parts of the program use *PCOPY* to pages not yet displayed, so if you were to leave out the *PCLEAR* statement by mistake, the *PCOPY* command would try to write the graphics *on top* of your BASIC program, causing it to crash in a non-retrievable way.

Therefore, if you are going to try to use parts of these graphics, be sure to include 5 *PCLEAR8* as your first line. I have included it at the end of the listing accessed by a *GOTO* to keep you from running the program before it is all keyed in. (Now would be a good time for *Rainbow On Tape!*)

If you just use parts, you will also have to include: 6 *R=3:R\$="C3"*, so as to insure the use of red in *PMODE 4*. You may have to press [RESET] to get the right color. (For example: On the Rolling Stones, who wants a blue tongue?) You could also change both threes to twos in this new line 6 to get the same result.

The completed program actually solves this problem for you by printing a row of A's and B's at the bottom of the screen. You may activate the program from the title card by

pressing the red-colored letter (A or B). Lines 80 and 82 solve the color shift problem without having to press the [RESET]. This helps get around your color TV's inability to control the display of red and blue.

In the 32K version of *Rockfest* as listed, after pressing the A or B key, a menu will appear. You need only press the letter which corresponds to the group you wish to display. The graphic will then be drawn before your eyes in a fashion which will convince even the most obstinate doubting Aarons, I mean Thomases about the powerful graphics onboard your CoCo.

Want to really blow their minds? Add this line: 7 *AUDIO ON:MOTOR ON* and then *RUN* the program with a prerecorded cassette tape of one of the groups listed. Press [PLAY], and the music should come ripping out of your TV speaker with these rock 'n' roll graphics. (Van Halen's "Jump" will beat "The Entertainer" any day.) You can even have these graphics displayed on your TV while playing your stereo at a party with friends. Sure, it's not MTV, but it's the next best thing.

You may be wondering why I haven't suggested that you simply use the *Rockfest* for graphic output to your line printer.

There are several reasons for this. First, some machine language drivers might crash with the *PCLEAR* graphic pages. You will have to try them to see if they will work for you. There are many screen dumps available in ads here in *the Rainbow*, and some have even been listed. The one I use usually crashes with the extra pages.

Secondly, I wanted a graphic screen dump which would not be solid print as these displays would. Don't get me wrong. These images will look great even with a line/dot matrix display of the colors. Since I was looking for graphics which could be colored in with felt tipped markers, I decided to make a second version called *The Rockfest Coloring Book* (Listing 2).

The Coloring Book

This program recreates the same graphics, but in a strict black and white representation suitable for screen dumping. The program should fit in your 16K machine, but if you have trouble with memory, delete some of the few remaining (!) remarks.

This listing does not have the stage title card, but it does have a menu. When you select a graphic, you may return to the menu by pressing [ENTER], just like on *Rockfest*. If you wish to screen dump the contents with a machine language program, then press [BREAK] and load in your screen dump program. Don't worry! Your graphic will remain intact.

The screen dump I use creates an image on a full 8½ by 11 sheet of paper which makes it ideal for coloring. The screen dump you use may allow different sizes so you can be the judge of its uses (pasting on book covers, lockers, framing, etc.). I think you will find youngsters of all ages enjoying the results, regardless of what they do with the paper graphics.

Other Uses?

Remember last month's screen quiz programs. I mentioned that the Extended BASIC version could include a graphic reward starting in line 900. If you wish to use any of these graphics as a reward, then simply delete all lines before and after each labeled section for a given group. If you use the *Rockfest* versions, be sure to *PCLEAR* as I warned earlier.

Once you have the lines you want to use isolated (that is, all the lines before and after are gone from memory), type: *RENUM 900,10,1* and press [ENTER]. The program lines will now correspond to the required location in the screen quiz program. You may now *MERGE* the two programs as one, either using the disk command *MERGE*, or a cassette merge program such as those listed in previous *Rainbow* issues. The *INKEY\$* line at the end of each graphic should be changed so that the line number after the word *THEN* is changed to *RETURN*. Voila!

You may even use the *Coloring Book* versions for merging, which do not require a *PCLEAR*. This would be advisable if you only have 16K.

Feedback

So far, judging from the reactions of the middle and high school students who got a sneak preview of *Rockfest* and the *Coloring Book*, both are a smashing success. (The word *awesome* is usually used!)

Already, plans are underway for *Rockfest II*. A few of the graphics are already half done. (My younger cousin David and his best friend Eric have been hinting at using groups like *Ozzy Osbourne*, *Motley Crue*, *Iron Maiden*, *Black Sabbath* and a host of other "heavy metal" groups. My own personal choices would include the *Beach Boys* or *Elvis Costello*, while my dear friend *Zelda* will probably force me to include her friends, *Village People*, under threat of never giving me any more of her famous lasagna.) I'm sure many of our high school-aged readers will also have some suggestions.

In the meantime, keep those ideas coming and enjoy your rock 'n' rolling Color Computer.

52..... 57	524..... 182
96..... 24	606..... 173
212..... 7	642..... 43
246..... 105	720..... 186
280..... 200	776..... 244
338..... 189	828..... 95
420..... 112	856..... 41
458..... 224	880..... 50
	END 230

Listing 1:

```

10 * *****
12 * *   THE COCO ROCK-FEST #1 *
14 * *   BY FRED B. SCERBO *
16 * *   COPYRIGHT (C) 1984 *
18 * *****
20 GOTO950
22 PMODE4,1:PCLS0:SCREEN1,1
24 LINE(0,170)-(255,174),PSET,B
26 LINE(0,174)-(255,192),PSET,BF
28 PMODE3,1
30 POKE178,50:PAINT(128,2),,4
32 FORI=1T040STEP4:IK=RND(3)+1:C
OLOR K,K::LINE(I,0)-(I,170),PSET
:LINE(254-I,0)-(254-I,170),PSET:
NEXT

```

```

34 FORI=2T0120STEP2:K=RND(3)+1:C
IRCLE(0,0),I,K,.4,0,.25:CIRCLE(2
55,0),I,K,.4,.25,.5:NEXT
36 LINE(70,48)-(182,100),PSET,BF
38 DRAW"BM108,52C3R4ND6R4BR6D6U3
R6D3U6BR6NR6D3NR6D3NR6"
40 PMODE4,1
42 FORI=96T0140STEP44
44 FOR Y=6T010
46 CIRCLE(I,70),Y,0,.9,.15,.9
48 CIRCLE(I+11,78),Y,0,.9,.6,.8
50 NEXT Y
52 FOR Y=6T010
54 IF I=96 THEN 56 ELSE 58
56 CIRCLE(I+33,78),Y,0,.9,.6,.8
58 CIRCLE(I+20,70),Y,0,.9
60 NEXT Y
62 NEXT I
64 PMODE3,1
66 DRAW"BM76,94C2U12R4F2D2G2L4R4
F2D4BR8H2U8E2R4F2D8G2L4BR14R4NE2
L4H2U8E2R4NF2BR8D12U6R2E4NU2G4F4
D2BR4BU6R6BD6BR6U6NR4U6R6BR6"
68 DRAW"NR6D6NR4D6R6BR6R8U6L8U6R
8BR4R4ND12R4"
70 FORI=6T0120STEP16:I$=STR$(I):
Y$=STR$(256-I)
72 DRAW"BM"+I$+"",188C3U4NR4U4R4D
8"

```

CPP Color Picture Plotter

Capture that PMODE 3 picture on paper using the CGP-115 Color Graphic Printer. Easy to use • High speed machine language • Auto start from cassette • Works with Micro Painter • Prints pictures from cassette or memory • Includes sample picture (American Flag).



"CPP is a great utility..." *RAINBOW* July 83

still just **14.95** + postage & handling

Banners Banners Banners

This program makes them on the CGP-115 Color Graphic Printer. Up to 250 letters per Banner with variable sized letters in any of the 4 colors on the CGP. Change colors and size within the Banner. Great for parties, advertising or greeting cards.



NEW NEW NEW only **9.95** + postage & handling

ALL-AMERICAN ULTRALIGHT IND. (AUI)

1144 Kingston Ln.
Ventura, CA 93001

Please include \$1.50 for postage and handling


```

74 DRAW"BM"+Y$+" ,188C2NL6U4NL4U4
L6R2D8"
76 NEXT I
78 X$=INKEY$: IF X$="A" THEN 80 ELSE I
FX$="B" THEN 82 ELSE 78
80 R=3:R$="C3":GOTO 84
82 R=2:R$="C2":GOTO 84
84 CLS3:PRINT@132," A) THE ROLLI
NG STONES ";
86 PRINT@164," B) ASIA"+STRING$(
15,32);
88 PRINT@196," C) QUIET RIOT"+ST
RING$(9,32);
90 PRINT@228," D) Z Z TOP"+STRIN
G$(12,32);
92 PRINT@260," E) VAN HALEN"+STR
ING$(10,32);
94 PRINT@292," F) YES"+STRING$(1
6,32);
96 PRINT@324," G) 38 SPECIAL"+ST
RING$(9,32);
98 PRINT@356," H) AC-DC"+STRING$(
14,32);
100 X$=INKEY$: IF X$="" THEN 100
102 X=ASC(X$)-64: IF X<1 THEN 100
ELSE IF X>8 THEN 100
104 ON X GOTO 200,300,400,500,60
0,700,800,900
106 GOTO 106


```

```

200 PMODE4,1:PCLS1:SCREEN1,1:PMO
DE3,1
202 CIRCLE(110,110),66,1,1.2,.07
,.45
204 CIRCLE(122,140),72,1,1.1,.5,
.73
206 CIRCLE(152,150),60,1,1.5,.53
,.7
208 CIRCLE(154,152),58,1,1.4,.53
,.76
210 DRAW"84C1BM96,148DLDLU6BM154
,70R4E4R2F2R4F2R10E4M200,74"
212 FOR I=0 TO 2:CIRCLE(238+I,150),
72,1,1.3,.5,.67:NEXT I
214 DRAW"BM130,68L4HLHLHLUHUL602
BD10BL6022D202D0D0DLDL2LD4L2D16
F2R2FR2E2U2E2U16EUEUEU2EU2M106,7
4"
216 DRAW"BM164,82NL4020"
218 CIRCLE(198,180),88,1,1.3,.57
,.68
220 DRAW"BM118,138D6F2R8E2U4E2U4
E2U4E2U6E2U6E2U4E4"
222 DRAW"BM86,74H10L2H4L2U6E4R2E
4R2E2R2E2R2E2R2E4"
224 CIRCLE(134,72),44,1,1.8,.58,
.86
226 CIRCLE(180,20),24,1,.9,.6,.9

```

WORKBASE



SALES OR CLIENT PROFILE

INVENTORIES

MAILING LISTS

LEDGERS

APPOINTMENT SCHEDULES

ORDER ENTRY

REAL ESTATE LISTINGS

PROPERTY RENTALS

STUDENT OR PERSONNEL RECORDS

THE DATABASE SYSTEM DESIGNED FOR BUSINESS

CAN YOUR DATA BASE REMEMBER HOW YOU DID IT LAST TIME?

IS YOUR DATABASE ALL-IN-ONE INTEGRATED PACKAGE?

CAN YOUR SECRETARY RUN REPORTS AND POST TRANSACTIONS USING YOUR DATABASE?

CAN YOU PRINT INVOICES AND STATEMENTS?

CAN YOU DEFINE AND SAVE REPORTS AND CALCULATIONS WITH RECORD SELECTION & SORT PARAMETERS?

CAN YOU PRINT TRANSACTION SUMMARIES BY ACCOUNT?

CAN YOU SELECT, SORT, & PRINT FORM LETTERS & LABELS IN ONE OPERATION?

NEW!! FROM THE CREATORS OF HOMEBASE!!

ALL-IN-ONE INTEGRATED PACKAGE: DATABASE, SPREADSHEET, WORD PROCESSING & MAILMERGE

INTRODUCTORY PRICES: WORKBASE I \$64.95 400 RECORDS — WORKBASE II \$79.95 1200 RECORDS

CALL TOLL FREE: 1-800-334-0854 (EXT 887) WORKBASE DATA SYSTEMS

OR SEND CHECK OR MONEY ORDER TO: P.O. BOX 3448, DURHAM, NC 27702


```

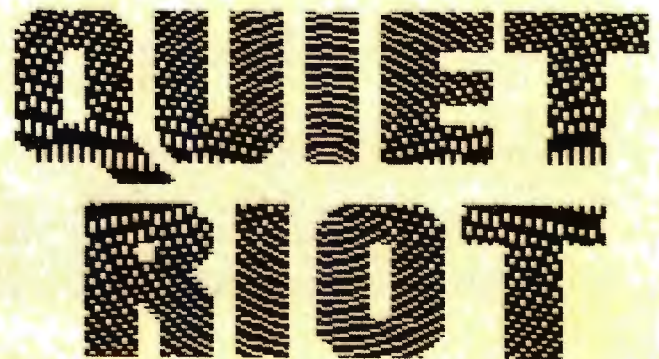
6
228 CIRCLE(240,0),40,1,1.1,.3,.4
4
230 CIRCLE(230,56),22,1,.7,.75,.
2
232 CIRCLE(255,152),60,1.1.5,.55
,.72
234 CIRCLE(170,104),34,1,1.4,.1,
.25
236 CIRCLE(130,60),32,1,.7,.6,.9
238 CIRCLE(182,58),24,1,.7,.65,.
95
240 DRAW"BM166,46G3L4H2BL50GBL2G
2L2G2L2F0BR122BH16F2R2F2R2F2R2F2
D2F204L2G2L2G2L2G6"
242 CIRCLE(180,20),16,1,.6,.4,.1
244 CIRCLE(134,18),19,1,.6,.4,.1
246 DRAW"BM124,24R4E2R2E2R4F2R2F
2R2BR24BD2R2E2R2E2R6F2R6"
248 CIRCLE(170,44),24,1,.9,.12,.
4
250 CIRCLE(132,44),25,1,.9,.12,.
4
252 CIRCLE(104,54),10,1,.9,.1,.4
5
254 CIRCLE(200,44),20,1,1.3,.13,
.4
256 PAINT(130,66),1,1
258 PAINT(140,4),R,1
260 PAINT(118,76),R,1
262 PMODE4,1:DRAW"C0BM101,152NL3
NR3D6BR0U6F4E4D6":PMODE3,1
264 DRAW"BM22,2C1R4ND0R4BR4D0U4R
6U4ND0BR6NR6D4NR4D4R6BL0BD6"
266 DRAW"ND0R6D4L6R2F4BR6U0R6D0N
L6BR6NU0R6BR6NU0R6BR6NU0BR6U0F0N
U0BR6U0R0ND2L0D0R0U4L4"
268 DRAW"BD10BL66R6U4L6U4R6BR4R4
ND0R4BR4D0R6U0NL6BR6ND0F0U0BR6NR
6D4NR4D4R6BR6R6U4L6U4R6"
270 X*=INKEY*:IFX*=CHR*(13)THEN
04 ELSE 270

```

```

300 PMODE4,1:PCLS1:PMODE4,3:PCLS
1:SCREEN1,1:PMODE3,1
302 FOR I=1 TO 255
304 DRAW"S4C3BM30,70E48F48L16H12
L30G12L16M24,72E54ND4F54L2UL3UDR
3DR2L24ER2EGL2GH12NE2L34NH2G12NH
2L24BR46NR40E12F3R11F2L14H207R20
"
306 DRAW"BF2BR10R15H0NR14H2R12H4
4R34E4F14L22F44NL30L2UL2UL2NL26H
44FR2FNR2HL2HR22FR2FHL2H9NU402L3
0HLRF45LHLHL14E6D4NG2U4BE10E0D4N
05ND11U22E10F10D52H4U40NR2H6NU40
6NL2D30"
308 DRAW"U22BE16E3D4NG3U4F55L22H
12L24U2R26NG2F12NG2R13NH40RFR"
310 POKE170,I
312 PAINT(46,65),,3
314 PAINT(120,24),,3
316 PAINT(156,24),,3
318 PAINT(176,40),,3
320 PAINT(83,60),,3
322 PCOPY1T04:PCOPY2T05
324 Y=RND(4):IF Y=3 THEN 324
326 PMODE1,1:PCLS(Y):PMODE3,1
328 IF Y<4 THEN 332
330 LINE(0,0)-(256,92),PRESET,B
332 X*=INKEY*:IFX*=CHR*(13)THEN
04 ELSE NEXT I
334 GOTO300

```





```

400 J=0
402 PMODE4,1:PCLS(J):SCREEN1,1:P
MODE3,1
404 DRAW R*
406 DRAW"S4BM20,10G0D40F0R22F0R2
0H16U40H0NL26BL0BD14D20L10U20R10
BU14BR26"
408 DRAW"D40F0R30E0U40L10D40L10U
40L10BR56D56R10U56NL10BR10D56R40
U14L20U0R20U12L20U0R20U14L40"
410 DRAW"BR46D14R16D42R20U42R16U

```


CoCo HEADQUARTERS

Looking to unlock the capacity of your Color Computer?
Search no more.....



FEATURING. . . .

Discounted Hardware
Accessories for your every need
Quality software by MSI

HARDWARE SPECIALS



Extended Basic w/bk	\$ 39.95	26-3026e 16k Extended CoCo2	\$ 189.95
64k (DEI) Memory Upg	\$ 59.95	26-3026e64 64k Extended CoCo 2	\$ 249.95
Amdak Disk Drives	\$ 499.95	26-1261 TP-10 Thermal Printer	\$ 89.95
26-3029 CoCo Drive 0	\$ 349.95	26-1192 CGP-115 Printer/Plotter	\$ 179.95
26-3023 CoCo Drive 1	\$ 239.95	C. Itoh Banana Serial 50 cps	\$ 249.95
HJL Keyboard (D,E,F)	\$ 79.95	26-3024 RS Multi-Pac Interface	\$ 149.95
Super Pro Keybd. (D,E)	\$ 64.95	Botek Ser/Par Interface	\$ 69.95

ACCESSORIES

RS D.C. Modem IB	\$ 89.95	26-3030 OS-9 (64k)	\$ 64.95 (disk)
Novation J-Cat Modem	\$ 129.95	Basic-09 (req. OS-9)	\$ 87.95 (disk)
RS D.C. Modem II	\$ 179.95	FHL O-Pak (req. OS-9)	\$ 34.95 (disk)
Hayes SM 300 Modem	\$ 239.95	Elite Word	\$ 59.95 (d&c)
CoCo Switcher	\$ 39.95	Elite Calc	\$ 59.95 (d&c)
Elephant Disks ssdd	\$ 22.95	Color Term Plus	\$ 29.95 (cass)

MSI SOFTWARE (Dealer inquiries invited)

"Software that works when you've finished playing games."

MSI DISKUTIL	COLOR FINANCE I	COLOR FINANCE II	MSI NAMEFILE	MSI CALENDAR
Display or change data in any record. Maintain extra copy of disk directory for easy error recovery plus more.	Let your CoCo manage your financial records. Handles multiple checking accounts, loans, expenses, budgets, etc. Print monthly and year to date reports. More...	Same as COLOR FINANCE I plus checkwriter, auto reconciliation and MSI CALENDAR. Perfect for Home or Business.	Maintain over 600 name and addresses with direct access to each name. Up to 15 user defined fields. Print name list or labels.	Print or display any month for years 1900-1999. Maintain special dates, appointments, recurring payments and more...
A must for every disk owner.				
NEW \$ 19.95	 \$ 49.95	NEW \$ 69.95	 \$ 24.95	NEW \$ 19.95

All MSI Software Requires 32k Disk/Extended Basic (Printer Recommended for Finance Programs)

TOLL FREE TENNESSEE 1-800-545-2502

Call for prices and availability of your other favorite software
All advertised items subject to availability
Prices do not include shipping & handling

TOLL FREE 1-800-251-5008

FACTORY DIRECT
PURE RADIO SHACK EQUIPMENT
"THE COCO PROFESSIONALS"

DELKER ELECTRONICS, INC.
P.O. BOX 897 DEPT D
SMYRNA, TN 37167
800-251-5008
800-545-2502 (TENNESSEE)
615-459-2636 (TENNESSEE)
615-254-0088 (NASHVILLE)

All of the above units covered by our 120 day carry in warranty.

TRS-80 Trademark Tandy Corporation. Prices subject to change without notice.

Write for our FREE newsletter!



HARDWARE & PROGRAMS

MONITORS

BMC MEDIUM-RES COLOR

13" BMC w/ sound \$303.95
 14" USI w/ sound 324.95
 12" Taxon Composite & RGB... 335.95

COMREX HI-RES MONOCHROME

12" Amber or Green..... 140.95
 9" Amber or Green..... 125.95

Sorry, no C.O.D. on monitors.

COMPOSITE MONITOR INTERFACES

Double Driver..... 24.95
 Video Plus..... 24.95
 Both work great with color or monochrome on CoCo II.

Coco Double Driver..... 28.95
 Video Plus II M..... 26.95
 Video Plus II C..... 39.95
 For CoCo II Only

JARB DISK DOUBLER

Why spend twice as much as you need to for double sided diskettes? With our doubler, you can make your own and pay for it with the first box you double. A must for disk drive users.
 5 1/4" size only 12.95

BASF DATA CASSETTES

	C-05	C-10
1-10	.60 ea.	.65 ea.
11-20	.55 ea.	.60 ea.

Soft Poly Cases Ea. \$20
 Hard Shelled Cases..... Ea. \$22
 Cassette Labels (12)..... Sh. \$36
 Cassette Labels Tractor (1000)..... \$21.95

MEMORY UPGRADE KITS

16K RAM CHIPS 1.50 ea.
 5V, CoCo II 16K 1.95 ea.

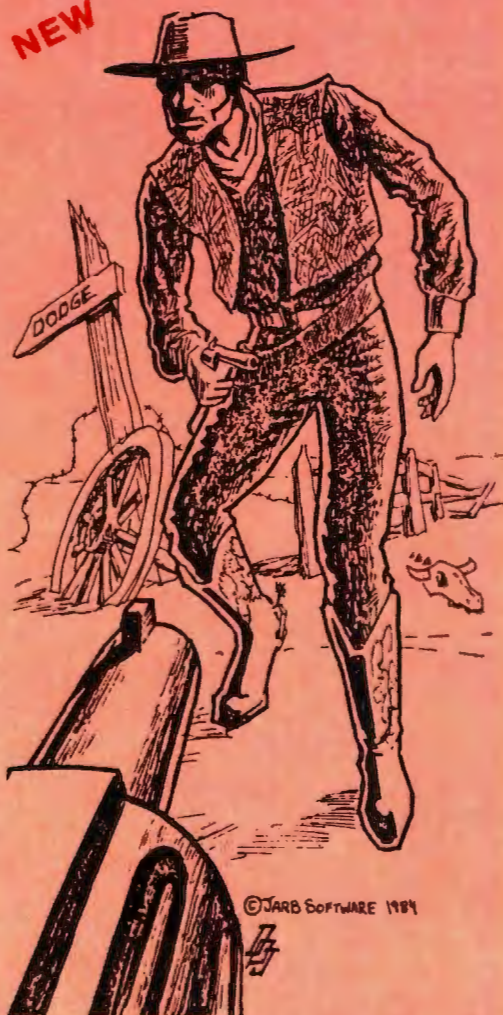
*64K RAM CHIPS

Eight 200 NS Factory Prime 64K RAM Chips. Allows you to upgrade 'all' board easily. No soldering needed. \$52.50

*16K/32K

Eight 200 NS Factory Prime Chips with Piggy Backed Sockets, Sam Socket, Bus Wire. Comprehensive Instructions. Recommended for "D" or earlier, but may be used on "E". Only 9 simple solder connections to kit. None to computer. \$25.95
 NOT FOR CoCo 2

NEW



THE GUNFIGHTER

BY Terry A. Steen

An excellent hi-res, arcade quality game program for two players. Joysticks and 32K are required in this all machine language program.
 Cassette \$19.95 Disk/Amdisk \$24.95

JUNGLE TREK

Lost in a jungle with wild animals lurking; your only survival is to find a safe compound before you are lunch for lions; high resolution; multi-color.
 16K EXT \$14.95

BIORHYTHM/PSYCHIC APT.

1) Prints biorhythm charts of nearly unlimited length; attractively formatted for use on most printers. 16K
 2) Your psychic ability is determined through questions evaluating your psychic experiences
 16K Ext Both for \$15.95

PROGRAMS FOR THE SPECTRUM PROJECTS VOICE-PAK OR SPEECH SYSTEMS VOICE

TALKING FINAL COUNTDOWN (by Bill Cook)

For 32K EXT \$19.95
 Standard cassette
 FINAL COUNTDOWN \$14.95

TALKING SPELL-A-TRON

The program allows the user to build a dictionary of words. During testing, the words are spoken. If an incorrect response is given, the word is spoken again and spelled. Tape (32K EXT) \$22.95

TALKING SCORE E-Z

A yahtzee type program. Up to six players can compete. All scoring and record keeping is done by the computer. Tape (32K EXT) \$19.95
 Standard SCORE E-Z \$15.95

TALKING COLOR MATH

The perfect educational game to aid the student in learning addition, subtraction, multiplication and division. Allows one to specify difficulty level.
 Tape (32K EXT) \$22.95

TALKING SHIP HUNT

by Cobra Software

Play Battleship against your computer. 32K w/ joystick needed. Graphics and sound. Can be played without voice.
 Cassette \$10.95

SCHEMATIC DRAFTING PROCESSOR (disk) can draw large scale schematics in hi-res (has six overlapping screens) and then print them out to any of several popular printers, fast!! A must for serious hardware computerist.
 Now only..... \$49.95

CoCo Chips

Sam, Pia, CPU, Ext, Basic

We carry products from many manufacturers. If you don't see it, ask.

JARB

SOFTWARE
 HARDWARE

1636 D Avenue, Suite C
 National City, CA 92050

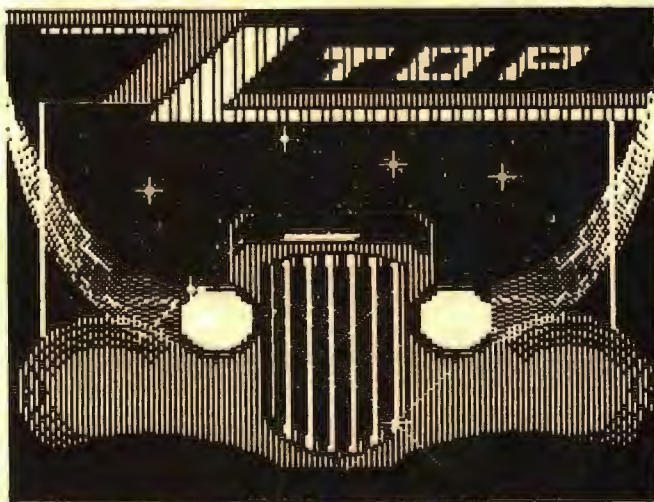
COD orders accepted, no charge cards please.
 Shipping and handling \$3.00
 California residents please add 8% sales tax

Order Line
 (619) 474-8982
 After Hours BBS
 (619) 474-8981


```

14L52"
412 DRAW"BD72BL156D56R18U22F10D1
2R18U22H8E8U10H8L38R18BD14D8R8U8
L8BU14BR38D56R18U56NL18BR20G8D40
F8R30E8U40H8L30R10BD42R10U28L10D
28BU42"
414 DRAW"BR36D14R16D42R20U42R16U
14L52"
416 PAINT(20,14),R,R:PAINT(70,14
),R,R:PAINT(130,14),R,R:PAINT(15
2,14),R,R:PAINT(200,14),R,R
418 PAINT(40,86),R,R:PAINT(100,8
6),R,R:PAINT(140,86),R,R:PAINT(2
00,86),R,R
420 PMODE4,1
422 FORI=2T020STEP4:CIRCLE(128,
72),I,J,.9:NEXT
424 PMODE4,1:SCREEN1,1:PMODE3,1
426 DRAW"BM26,170C2U13F8E8ND13BR
8NR10DNR10D5NR8DNR8D5NR10DR10BU1
3BR6R14DL7ND12L7"
428 DRAW"BD12BR20U13R10DNL10D5NL
10DNL10D6BR8NU13UNR10DR10"
430 DRAW"BR16U13D6NR8DR10U7D13BR
8U13NR10DNR10D5NR8DNR8D5NR10DR10
"
432 DRAW"BR8U13NR8DNR8D5NR10DR10
U7D13BR8NU13UNR10DR10BR2BU13R14D
L7ND12L7BR20UD13U7NR10DR10U7D13"
434 DRAW"BM26,152R200DL200BD22R2
00DL200"
436 IF J=1 THEN 440
438 FOR U=1 TO 4:PCOPY U TO U+4:
NEXT U:J=1:GOTO402
440 PMODE4,1:SCREEN1,1:FORI=1T02
00:NEXT I
442 PMODE4,5:SCREEN1,1:FORI=1 TO
200:NEXT I
444 X$=INKEY$:IF X$=CHR$(13) THE
N 84 ELSE 440

```



```

500 PMODE4,1:PCLS1:SCREEN1,1:PMO
DE3,1

```

```

502 DRAW"S4C1BM0,0R100036L22E300
4L50NU4R50E4L90U10R100044R200U6N
L166U6L160NG6E26L24"
504 DRAW"BR30BD8G6R10G8R10E8R8E6
NL26BR8R28G14L28E14R10BG4R8G6L8E
6BH4BR34R28010L1604L10E14BF4R802
L8E2GR8"
506 PAINT(168,20),1,1
508 FORI=0T020STEP4:LINE(128-I,1
00)-(128-I,170-I/2),PSET:LINE(12
8+I,100)-(128+I,170-I/2),PSET:NE
XT
510 CIRCLE(128,102),30,1,.3,.57,
.92
512 CIRCLE(128,140),32,1,1.1,.1,
.42
514 DRAW"BM102,100D56BR52U58
516 POKE178,43:PAINT(128,98),,1
518 PMODE3,1:FORY=0T088STEP88:FO
RI=0T02:CIRCLE(84+Y,120),18-I,1,
.9:NEXTI,Y
520 PMODE3,1
522 DRAW"C1BM88,106U22E6R66F6D22
BL4BU12U8H6L58G6D8E4R60F4H4L20E4
L30G4"
524 CIRCLE(44,148),36,1,.9,.4,.9
:CIRCLE(212,148),36,1,.9,.62,1.1
526 CIRCLE(60,192),54,1,.5,.67,.
9
528 CIRCLE(194,192),54,1,.5,.62,
.87
530 DRAW"BM20,168F2R6BD4BR74F4R4
4E4BU4BR70R12E4"
532 PAINT(128,176),R,1
534 PAINT(128,79),R,1
536 PAINT(128,82),1,1
538 PAINT(128,190),1,1
540 PAINT(250,2),1,1
542 POKE178,30:PAINT(40,8),,1:PA
INT(90,30),,1
544 PAINT(130,18),,1:PAINT(160,1
8),,1:PAINT(200,18),,1
546 POKE178,0:PAINT(20,4),R,1
548 PAINT(250,34),R,1
550 DRAW"BM20,126C4U90R40BR170BD
8D80"
552 PMODE4,1:FORI=1T012:CIRCLE(7
0,0),56+I,1,1.9,.25,((38+I)/100)
:CIRCLE(186,0),56+I,1,1.9,((50-(
38+I))/100),.25:NEXT
554 FORI=22T031STEP3:CIRCLE(44,1
48),I,0,.9,.2,.9:CIRCLE(214,148)
,I,0,.9,.62,.35:NEXTI
556 PMODE4,1:SR$="C1NE20NH20NU5N
R5NL5ND5NG20NF20"
558 DRAW"BM150,160"+SR$
560 DRAW"BM75,108"+SR$
562 FORI=1T0350:W=RND(190)+30:U=
RND(110)+45:PMODE3,1
564 IF PPOINT(W+1,U)=R+4 THEN 56

```



```

8
566 PMODE4,1:PSET(W,U)
568 NEXT I:PMODE4,1
570 SR*="C1NU5ND5NL5NR5NE2NF2NG2
NH2"
572 DRAW"BM110,50"+SR*
574 DRAW"BM150,60"+SR*
576 DRAW"BM60,70"+SR*
578 DRAW"BM190,65"+SR*
580 DRAW"BM128,130C1NH22NE22BD16
NH20NE20"
582 X*=INKEY*:IF X*=CHR*(13) THE
N 84 ELSE 582

```



```

600 PMODE4,1:PCLS0:SCREEN1,1:PMO
DE3,1:PCLS2
602 DRAW"C1BM112,66M90,32M8,32M1
4,40M78,40M82,46M20,46M26,54M86,
54M90,60M32,60M38,68M94,68M112,9
4M150,32M104,32M110,40M128,40M11
2,66"
604 DRAW"BM230,60M182,60M186,54M
236,54M242,46M190,46M194,40M248,
40M254,32M184,32M166,60M154,60M1
66,40M172,40M177,32M158,32M116,1
00M124,110M150,68M162,68M132,118
M140,128M176,68M224,68M230,60"
606 DRAW"BM14,40M30,46BM26,54M42
,60BM38,68M54,74M96,74BM112,93M1
16,96BM90,32M104,40M116,58BM150,
32M154,35"
608 DRAW"BM177,32M182,36BM172,40
M177,44BM166,40M172,44NR4M161,60
BM236,54M220,60BM248,40M232,46BM
224,68M208,74M184,74M176,68M184,
74M150,132M140,128"
610 DRAW"BM124,110M130,112M154,7
4NR4M149,68BM186,54M194,60BM194,
40M202,46BM110,40M120,44R4"
612 PAINT(30,38),3,1
614 PAINT(220,38),3,1
616 PAINT(128,118),2,1
618 PAINT(172,50),4,1

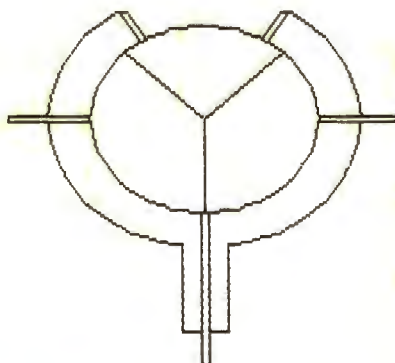
```

```

620 PAINT(168,52),4,1
622 PAINT(2,22),4,1
624 FOR U=1TO4:PCOPY U TO U+4:NE
XT U
626 PMODE3,5
628 PAINT(172,50),1,1
630 PAINT(168,52),1,1
632 PAINT(2,22),1,1
634 PMODE3,5:SCREEN1,0:FORI=1TO9
00:NEXTI
636 X*=INKEY*:IF X*=CHR*(13) THEN
84
638 PMODE4,1:SCREEN1,1:FORI=1TO9
00:NEXTI
640 X*=INKEY*:IF X*=CHR*(13) THEN
84
642 PMODE3,5:SCREEN1,1:FORI=1TO9
00:NEXTI
644 X*=INKEY*:IF X*=CHR*(13) THEN
84
646 GOTO634

```

YES




```

700 IF R=3 THEN RC=2 ELSE IF R=2
THEN RC=3
702 PMODE4,1:PCLS1:SCREEN1,1
704 DRAW"BM86,30C0U10H10R8F6E6R8
G10D10L8BR30U20R20D4L14D4R14D4L1
4D4R14D4NL20BR18R20U12L16U4R16U4
L20D12R16D4L16D4"
706 PAINT(90,27),0,0
708 PAINT(120,27),0,0
710 PAINT(160,27),0,0
712 CIRCLE(128,96),60,0,.6
714 DRAW"BM128,96C0ND34M169,71BM
128,96M87,71"
716 CIRCLE(128,96),82,0,.6,.85,.
67
718 DRAW"BM128,96BH30H10L4F10BM1
28,96BE30E10R4010"
720 LINE(116,144)-(140,176),PSET
,B
722 COLOR 1,0
724 LINE(117,143)-(139,146),PSET

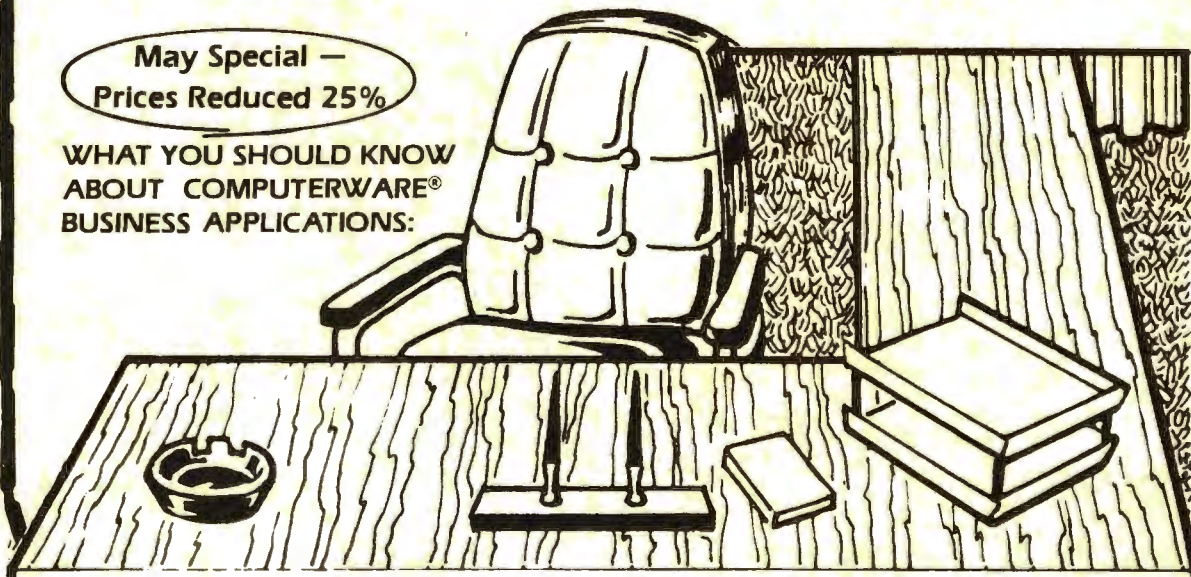
```


COMPUTERIZE YOUR BUSINESS

Save Time in Tax Preparation with  **COMPUTERWARE®**
Business Software for OS-9 and FLEX

May Special —
Prices Reduced 25%

WHAT YOU SHOULD KNOW
ABOUT COMPUTERWARE®
BUSINESS APPLICATIONS:



- They have been in use for over 4 years on many 6809 systems. This means they are well tested.
- Complete manuals accompany the systems.
- User-friendly menus make them easy to use.
- They are not accounting tutorials. They assume you know and use sound accounting principles.

System Requirements

- FLEX or OS-9 operating system
- 64K memory
- Computerware® Random BASIC
- Dual Disk Drives (Payroll requires double-sided drives)
- O-PAK for OS-9 systems

GENERAL LEDGER

~~\$295~~ \$185

This is a comprehensive double entry accounting system with complete audit trails, closing procedures, and full reporting. The chart of accounts is flexible and the system easy to use. Reports include the General Ledger, Trial Balance, Balance Sheet, Income Statement, and Transaction Register. Your financial information is at your fingertips!

CHECK LEDGER

~~\$295~~ \$150

This is a single entry bookkeeping system which allows the users to define a chart of income and expense accounts. Year-to-date totals are maintained for each account as well as complete checking account history. By just entering your checking account information, you can have always-current visibility over your income and expense ledgers. Financial statements and taxes are a snap!

CORRESPONDENCE SYSTEM

~~\$295~~ \$115

We call this the People Manager. It is a very sophisticated people data base system. The system collects name and address information, provides mailing labels or reports of the entire list or any subset upon request. The power of the system lies in the 17 character special code field that is used to identify special characteristics of each person and then can be used to select subgroups for reports and labels used in special marketing or contracts. Tested with data bases of 15 to 9,000 entries this system has been in use with retailers, clubs, churches and professionals for years.

(Sale prices good through May 31, 1984)



P.O. Box 668 • Encinitas, CA 92024 • (619) 436-3512

Computerware is a federally registered trademark of Computerware.

PAYROLL

~~\$295~~ \$225

This is the most comprehensive payroll you'll find on a micro-computer. Besides collecting key employee information, it allows entry of pay rates for standard hours, overtime, and salary. Hourly, salary, and commissioned employees may be paid weekly, bi-weekly, semi-monthly, and monthly. Two types of special monthly deductions are also accommodated. Year-to-date, quarterly, monthly and current totals are maintained. All federal reporting is done automatically and your state computations are also included.

INVENTORY CONTROL

~~\$295~~ \$150

This system is designed to help the retailer, distributor, or businessman to keep control of this important factor. It stores your cost and quantity information, updates it immediately, and offers you key management reports with useful summaries at any time. With four costs, four locations, selling history, and vendor information for each item, you will always have the facts!

ACCOUNTS PAYABLE

~~\$295~~ \$150

This system can give you the tools to plan your business growth by controlling expenditures and forecasting cash requirements. It helps a small business manage and track its cash liabilities by collecting vendor invoice information and reporting the business' cash commitments and payment history. Along with standard payables reports it also includes a check writer and payment forecast reports.

ACCOUNTS RECEIVABLE

~~\$295~~ \$115

All businesses need to know who owes them money! This system provides reliable and timely information regarding the status of all customer accounts. You can know instantly which accounts are past due, forecast how much money to expect to receive for cash flow planning, and keep on top of your customers' credit positions. Customer name, address, credit limit, invoice, and payment information is recorded and reports of all information including customer statements are available upon your request.

Dealer Inquiries Invited

,BF
 726 PAINT(140,140),0,0
 728 LINE(126,131)-(130,188),PRES
 ET,B
 730 LINE(127,132)-(129,187),PSET
 ,BF
 732 LINE(26,95)-(68,97),PRESET,B
 734 LINE(28,96)-(66,96),PSET
 736 LINE(230,95)-(188,97),PRESET
 ,B
 738 LINE(228,96)-(190,96),PSET
 740 PMODE3,1
 742 PAINT(140,140),RC,4
 744 PMODE4,1
 746 CIRCLE(128,96),60,0,.6
 748 PMODE3,1
 750 CIRCLE(128,96),60,1,.6
 752 DRAW"C1BM128,96ND34M169,71BM
 128,96M87,71"
 754 PCOPY2T07:PCOPY3T08
 756 FOR I=1 TO 240
 758 PCOPY7T05:PCOPY8T06:PMODE3,4
 760 PAINT(128,92),1,1
 762 POKE178,I
 764 PAINT(84,78),,1
 766 POKE178,I+2
 768 PAINT(172,78),,1
 770 PCOPY5T02:PCOPY6T03
 772 X\$=INKEY\$:IF X\$=CHR\$(13) THE

N 84 ELSE NEXT I
 774 GOTQ756



800 PMODE4,1:PCLS0:SCREEN1,1
 802 CIRCLE(128,96),94,1,.85
 804 CIRCLE(128,96),90,1,.85
 806 PAINT(128,18),1,1
 808 DRAW"C0BM40,120NF14DNF14DNF1
 4DNF14DNF14C1BU10F14U10F4D16H14"
 810 PAINT(50,126),1,1
 812 FORI=64TO140:LINE(200,I)-(23
 0,I+12),PRESET:NEXT

Cosmos[®]
 COMPUTER SERVICES, INC.

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

STOCK ITEMS SHIPPED SAME DAY!

THE COMPLETE TRS-80® LINE

- COLOR COMPUTER
- MODEL 100
- MODEL 4
- MODEL 16
- MODEL 12
- ACCESSORIES

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



THE
 GEMINI—10X
 PRINTER
 AND
 THE
 COSMOS
 CONNECTION,
 IT'S A
 WINNING
 PRINTING
 COMBINATION.

WARNING:
 Make sure the
 interface you buy
 does not void
 any factory
 warranties or
 after the standard
 operation of your printer!
 The Cosmos Connection
 meets these requirements.

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

\$69.00

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

\$339.00

GEMINI—10X
 PACKAGE

stair
 MICRONICS-INC

THE POWER BEHIND THE PRINTED WORD.

CALL FOR THE BEST DISCOUNT PRICE
 ON TRS-80® FULLY WARRANTEED
 MICROCOMPUTER EQUIPMENT.

*plus \$10.00 Shipping and Handling

PRICES AND SPECIFICATIONS SUBJECT TO CHANGE.

TRS-80 IS A TRADEMARK OF TANDY CORP.




```

814 LINE (10,24)-(110,80),PRESET,
BF
816 PMODE3,1:FORI=0TO3:CIRCLE (12
8,96-I),94+I,3,.85,.6,.67:NEXT
818 DRAW"C4BM50,50E16LE10D2N010D
N010DNG10DNG10U4NR8DNR8DNR8DNR8D
R0NE8UNE8UNE8BM50,50NDBL2D8BD4BR
4E6D6LNU6LNU4LNU2D2"
820 DRAW"BR8BU4E4RNG4RD3R4NE6RE6
U3"
822 FORI=1TO5:PMODE4,1:CIRCLE (12
8,96),66+I,1,.85,.53,.6:CIRCLE (1
28,96),76+I,1,.85,.54,.55:NEXT
824 M$="R4DNL6R6DDNL4R12UR6UR4
826 DRAW"BM90,30"+M$+"BM90,31"+M
$
828 DRAW"BM96,40"+M$+"BM96,41"+M
$
830 DRAW"BM110,50"+M$+"BM110,51"
+M$
832 DRAW"BM114,60"+M$+"BM114,61"
+M$
834 DRAW"BM112,70"+M$+"BM112,71"
+M$
836 DRAW"BM106,82U4RD4RU4ED4EU4"
838 DRAW"BM72,40E2RG2RE2D2"
840 DRAW"BM48,94NF16RNF16RNF16RN
F16RF16NL4DNL3R4DNL5R2NU6RNU6RNU
6"

```

```

842 FORI=93TO95:CIRCLE (106,I),40
,1,.5,.2,.4:NEXTI
844 FORI=103TO106:CIRCLE (148,I),
20,1,1.1,.2,.48:NEXTI
846 FORI=128TO131:CIRCLE (170,I),
20,1,.4,.6,.95:NEXTI
848 FORI=122TO124:CIRCLE (199,I),
20,1,.4,.1,.38:NEXTI
850 DRAW"BM204,134NF10RNF10RNF10
RF10NR10UNR10UR10NH0RNH0RNH0RH0B
L6BU4NR8UNR8UNR6UR0NH5UNH5UNH5"
852 FORI=92TO94:CIRCLE (127,I),30
,1,.4,.6,.9:CIRCLE (164,I+8),26,1
,.8,.65,.85:CIRCLE (190,I+4),28,1
,.6,.67,.85
854 CIRCLE (190,I+14),30,1,.6,.7,
.9:CIRCLE (178,I+50),30,1,1.8,.75
,.9:CIRCLE (180,I+53),30,1,1.8,.7
5,.9:NEXTI
856 DRAW"BM204,110NR6DR6DL4R6DL4
R6BM204,84NE5RNE5RNE5RNE5BR4BD2N
E5RNE5RNE5RNE5BD2BL4F4R4E4DG4L4H
4DF4R4E4"
858 FORI=1TO3:CIRCLE (170,72+I),1
7,1,.6,.5,.99:CIRCLE (150,48+I),1
7,1,.6,.6,1.1:CIRCLE (177,58+I),1
7,1,.6,.7,.99:NEXT
860 PMODE4,1
862 FORY=0TO176STEP176:FORI=0TO1

```



SOUTHERN SOFTWARE SYSTEMS

THE SPREADSHEET ZAPPER

NEW POWER FOR YOUR COCO

- **THE SPREADSHEET ZAPPER** bridges the gap between the great computational power of Radio Shack's Spectaculator and high quality graphical displays. A picture is worth more than 1000 numbers!
- Imagine being able to easily display all your carefully created Spectaculator data in the form of outstanding bar graphs, pie charts, and line graphs.
- The **SPREADSHEET ZAPPER** converts those nasty Spectaculator data files (ROM.PAK or Disk) to data files that are 100% compatible with Southern Software Systems' graphical display programs—The **BAR ZAPPER**, the **PIE ZAPPER**, and the **GRAPH ZAPPER**.
- Now you can have the best of both - The complete flexibility of a spreadsheet program to do your computations and the use of high resolution graphing for display of your data.
- Compute your income and expenses; perform statistical computations; analyze the stock market; all using Spectaculator, then display the results using a bar graph, pie chart, or a line graph - *very impressive!!*
- Don't limit yourself to endless rows and columns of confusing numbers—forget special purpose plotting programs, get **total** flexibility.
- *"Authors of commercially oriented programs should beg, borrow, or steal one of the instruction manuals to see THE RIGHT WAY TO DO IT."*
The Rainbow, Oct. 1983.

Features of The DISPLAY ZAPPERS (The Bar Zapper, The Pie Zapper, The Graph Zapper)

- **BAR ZAPPER** allows for 26 bars.
- **THE GRAPH ZAPPER** plots line graphs of data and equations.
- High resolution graphics with on screen numbers and labels, with or without grids.
- Save data for later graphing or editing.
- Hard copies with readily available screen print programs for nearly any brand of printer.
- 14 day money back guarantee
- **PIE ZAPPER** has up 18 sectors.
- Thorough error prevention.
- User friendly, easy backup procedures.
- Detailed user's guide for all features.
- Low cost upgrade from tape to disk.
- Low res, building block graphs can't compare.
- Read the outstanding reviews in the Rainbow (Dec. 82, Apr 83, Oct. 83)

The Display ZAPPERS—Bar, Pie, Graph

Spectaculator is a registered trademark of TANDY Corp.

- 16-64K tape: \$15.95 + \$1.00 shipping each—\$44.95 + \$3.00 shipping for all 3
- 32-64K disk: \$19.95 + \$1.00 shipping each—\$56.95 + \$3.00 shipping for all 3

The SPREADSHEET ZAPPER

- 32-64K tape: \$17.95 + \$1.00 shipping—with all 3 tape Display Zappers: \$59.95 + \$3.00 shipping
- 32-64K disk: \$25.95 + \$1.00 shipping—with all 3 disk Display Zappers: \$79.95 + \$3.00 shipping

Send Check, Money Order or VISA / MasterCard number and expiration date.
All programs require Extended Basic and are compatible with 64K memory.

Florida residents add 5% sales tax.

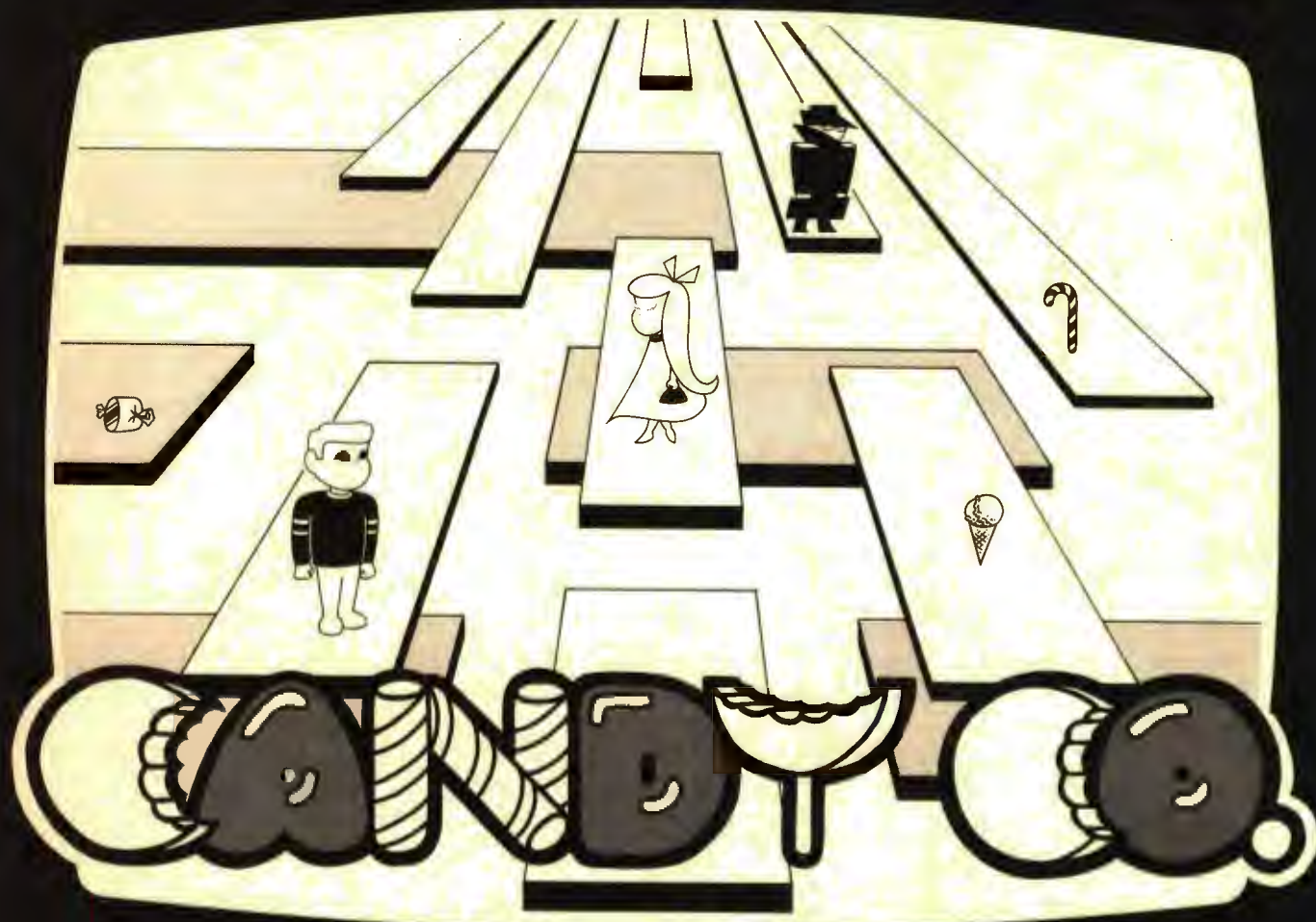


SOUTHERN SOFTWARE SYSTEMS



485 South Tropical Trail, Suite 109 • Merritt Island, Florida 32952 • (305) 452-2217

Setting The Standards



Graphics and sound effects like never before on the Color Computer. An exciting original arcade action game. Control your hero through a maze of moving conveyor belts. Outsmart bad guys and save Q.P. Doll. Over 1,000 frames of increasing difficulty.

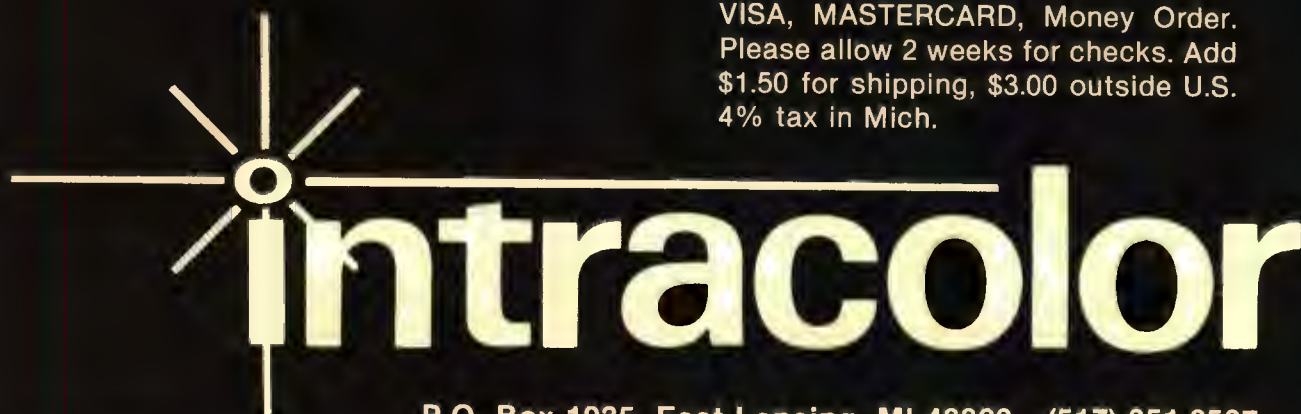
100% ML, original title screen music, 1 or 2 players, colorful high resolution graphics, exciting sound effects, joystick or keyboard input, pause feature, eight digit scores and high score name entry. For **32 K** Color Computer and TDP-100.

Cassette-\$34.95

Disk-\$34.95

TO ORDER:

VISA, MASTERCARD, Money Order. Please allow 2 weeks for checks. Add \$1.50 for shipping, \$3.00 outside U.S. 4% tax in Mich.

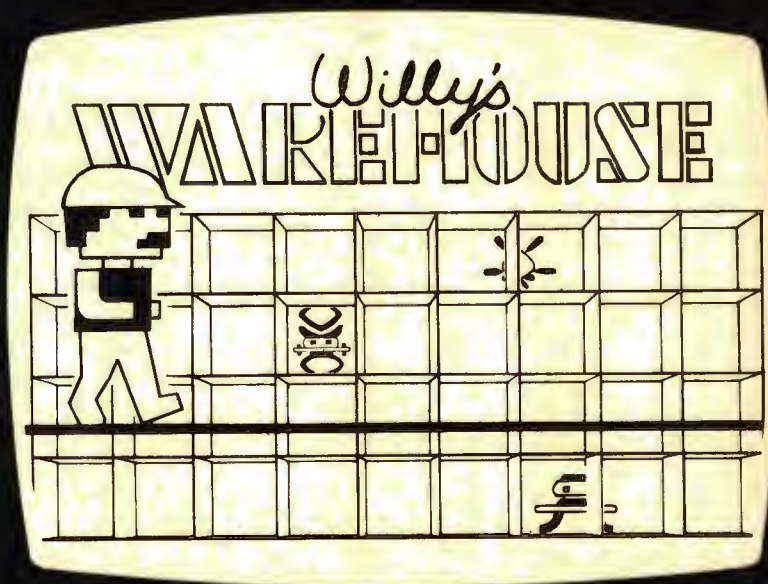
**intracolor**

P.O. Box 1035, East Lansing, MI 48823 (517) 351-8537

DEALER INQUIRIES INVITED

QUALITY PROGRAMS SOLICITED

Setting The Standards



Willy's WAREHOUSE

© 1984

Another exciting original arcade action game. Help Willy stock the warehouse while keeping up with incoming orders. Watch out for the antagonists who intend to make your day long.

Excellent graphics and sound effects. 100% ML, 1 or 2 players, demonstration mode, selectable difficulty, joystick or keyboard input, pause feature and high score list with name entry. For 32K CoCo and TDP-100.

Cassette - 34.95

Disk - 34.95

At your Dealers now.

From **INTRACOLOR**: VISA, MASTERCARD, Money Order. Please allow two weeks for checks. Add \$1.50 for shipping, \$3.00 outside U.S. 4% tax in MI.

intracolor

P.O. Box 1035, East Lansing, MI 48823 (517) 351-8537

DEALER INQUIRIES INVITED

QUALITY PROGRAMS SOLICITED


```

0STEP10:LINE(I+I,Y+7-I/10)-(245
-I,Y+7+I/10),PSET,BF:NEXTI,Y
064 FORI=1TO256STEP2:LINE(I,0)-(
I,192),PRESET:NEXT
066 FORI=04TO87:I*=STR$(I)
068 DRAW"BM"+I*+",14695U4H3U3BR6
BDU3H2BD16BR10U4H2U4E4BR6BD6F2D8
BU12U4E3BU2BR4F4D202BD2BR404D2BD
4BR3ND4E7U4BR6NE3D3BR0ND6BR6E4U2
BR4BD6D402D4BL18BD4U6S4"
070 NEXTI
072 FORI=00TO177STEP2:LINE(I,128
)-(I,158),PRESET:NEXT
074 LINE(10,96)-(28,96),PSET:LIN
E(20,95)-(28,97),PSET,BF
076 LINE(245,96)-(225,96),PSET:L
INE(225,95)-(235,97),PSET,BF
078 LINE(68,18)-(185,0),PRESET,B
F
080 PMODE3,1
082 DRAW"BM74,12C4R6U4NL4U4NL6BR
6D8R6U4NL6U4NL6BR14NR6D4R6D4NL6B
R6UBR6D4L6D4BR12NR6U4NR6U4R6BR6N
R6D8R6BR6NU8BR6U8R6D4NL6D4BR6NU8
R6"
084 PMODE4,1:FORI=68TO184STEP2:L
INE(I,0)-(I,18),PRESET:NEXT
086 FORI=0TO308STEP2:LINE(I,93)-(
I,97),PRESET:LINE(I+224,93)-(I+2
24,97),PRESET:NEXT
088 X*=INKEY$:IFX*=CHR$(13) THEN
04 ELSE 088

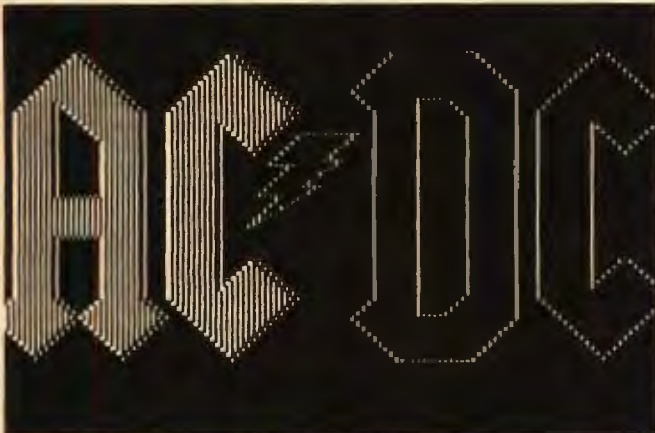
```

```

BU9BR4U42R5F4D3404L5"
916 DRAW "C2"
918 DRAW"88BM42,90"+A*
920 DRAW"BM90,138"+C*
922 DRAW"BM150,138"+D*
924 DRAW"BM226,138"+C*
926 DRAW"BM136,50L10G6R40G6R40G6M1
22,70L3M130,60L3M136,50S4"
928 POKE178,Y
930 PAINT(30,30),,2
932 PAINT(90,24),,2
934 PAINT(120,54),,2
936 PAINT(150,24),,2
938 PAINT(230,24),,2
940 FOR U=1 TO 4:PCOPY U+4 TO U:
NEXT U
942 PMODE 3,1:SCREEN1,0
944 X*=INKEY$:IF X*=CHR$(13) THE
N 04
946 NEXT Y
948 GOTO900
950 PCLEAR0:GOTO22

```

46.....	170	506.....	134
126.....	109	618.....	190
162.....	178	720.....	136
306.....	249	754.....	122
330.....	188	776.....	30
428.....	50	END	23



```

900 PMODE3,1
902 PCLS1:SCREEN1,0
904 FOR Y=1 TO 255
906 W=RND(2)+2:Q=RND(2)-1
908 PMODE3,5:PCLS1
910 A*="L8D12F408H8E4U36E12F12D3
6F408H8E4U12BU8U10H8D18R8"
912 C*="H12U36E12F1208H6D32E6F80
12"
914 D*="H8E4U36H4E8R14F8D4408L14

```

Listing 2:

```

10 *****
12 * THE ROCK-FEST COLORING *
14 * BOOK VERSION 1.0 *
16 * BY FRED B. SCERBO *
18 * COPYRIGHT (C) 1984 *
20 *****
22 CLS3
24 PRINT@68,"ROCK-FEST COLORING
BOOK";
26 PRINT@132," A) THE ROLLING ST
ONES ";
28 PRINT@164," B) ASIA"+STRING$(
15,32);
30 PRINT@196," C) QUIET RIOT"+ST
RING$(9,32);
32 PRINT@228," D) Z Z TOP"+STRIN
G$(12,32);
34 PRINT@260," E) VAN HALEN"+STR
ING$(10,32);
36 PRINT@292," F) YES"+STRING$(1
6,32);
38 PRINT@324," G) 38 SPECIAL"+ST
RING$(9,32);
40 PRINT@356," H) AC-DC"+STRING$(
14,32);

```


★ COLOR COMPUTER WORD PROCESSOR ★

Elite·Word™

Also Available On OS-9

THE SECOND GENERATION WORD PROCESSOR IS NOW ... ELITE·WORD has many new features not found in other word processors for the Color Computer. ELITE·WORD is an all machine language, high performance, Full Screen Editor

which offers an ease of use that is simply incredible. ELITE·WORD also offers a printed output flexibility that can handle your sophisticated home and business applications. ELITE·WORD is waiting to work for you.

MAJOR Features include:

- ALL Machine Language for speed
- Handsome Vinyl Binder
- Comprehensive Manual Included
- User Friendly (really)
- Top screen line reserved for command prompts, HELP messages, and status information
- Two text entry modes: Insert and Exchange
 - Edit 2 files simultaneously (OS-9 Only)
 - Delete character under cursor
 - Backspace and delete one character
 - Delete entire screen line
 - Rewrite entire screen
 - Page Forward through text
 - Page Backward through text
 - Mark present line for automatic centering on output
 - Insert new text (Insert mode)
 - Type over old text (Exchange mode)
 - Screen Display is 32x19 in normal text editing modes
 - Screen Display is High-Res 64x19 when used to display final text; including page breaks and justification
 - Screen Display in all modes is true Upper/Lower case characters with descenders
- Over 13.5K file size in 32K machines
- Continuous memory display
- Save text file (disk or tape)
- Load text file (disk or tape)
- All I/O errors trapped and recoverable
- Jump to beginning or end of text
- Find any string of characters in text
- Global replacement of one string in text for another

- True block-text Move command
- Smooth cursor movement over text in any direction (including vertical)
- Smooth screen scroll for easier proof reading
- Auto Key-Repeat will automatically repeat any key that is held down
- Easy generation of ASCII files
- VIEW function permits high-res screen display of final text before it's printed; including right-side justification and page breaks
- VARIABLE TEXT MERGE allows for generation of standard form type letters that appear to be personally prepared for each reader
- INCLUDE feature (disk only) permits the inclusion of many other files within one large document. Total document will have sequential page numbering
- EXCELLENT FOR PROGRAM EDITING AND WORD PROCESSING.

- Type ahead keyboard buffer NEVER misses a character
- Optional screen display of all carriage returns <cr>
- Fast Disk I/O ... No loading of overlay files to slow program operation
- User HELP display available
- Automatic screen Word-Wrap; even while inserting new text
 - Block-text move, copy or delete
 - Display/Change default disk drive number (disk only)
 - Display disk directory (disk only)
 - Display-Free disk space available
 - Software remembers last file name Saved or Loaded and will write to that file by default if desired
 - Dynamic margin changes within text
 - Select Top margin, Bottom margin, and Page length
 - Choose number of duplicate copies
 - Page Pause, for single sheet users, if desired
 - Optional page numbering begins with any selected page number
 - Printer Font codes are user definable
 - All printer format options may be changed dynamically within text
 - Any string of HEX characters may be imbedded within text to send any special control codes to your printer
 - An Eject (top of form) command may be inserted within text
 - Variable Text Merge symbols may be inserted anywhere within text
 - All machine language; 32K and Extended Basic required for ROM-call routines

THE BEST FOR ONLY

Specify

Tape	\$59.95
RS Disk	\$59.95
OS-9 Disk	\$79.95
OS-9 & RS Disk	\$109.95

— Shipping from stock NOW

— Dealer Inquiries Invited.

Add \$2 Postage & Handling

PA residents add 6% sales tax



Elite Software

OS-9 is a trademark of Microware and Motorola.

Box 11224 • Pittsburgh, PA 15238 • (412) 795-8492

"I was more than satisfied with Elite·Word. Before I started the review, I thought that it would be just another program that would copy most of what others had done and add a few whistles and bells. After the review, I would not hesitate to compare it with the two best selling CoCo word processors. And my comparison places it at the top of the list."

- A. Buddy Hogan, Rainbow


```

42 X*=INKEY*:IFX*=""THEN42
44 X=ASC(X*)-64:IF X<1 THEN 42 E
LSE IF X>8 THEN42
46 ON X GOTO 98,200,300,398,500,
598,700,800
48 '
50 '
68 ' THE ROLLING STONES
98 PMODE4,1:PCLS1:SCREEN1,1:PMOD
E3,1
100 CIRCLE(110,110),66,1,1.2,.07
,.45
102 CIRCLE(122,140),72,1,1.1,.5,
.73
104 CIRCLE(152,150),60,1,1.5,.53
,.7
106 CIRCLE(154,152),58,1,1.4,.53
,.76
108 DRAW"84C1BM96,148DLDLU6BM154
,70R4E4R2F2R4F2R10E4M200,74"
110 FORI=0TO2:CIRCLE(238+I,150),
72,1,1.3,.5,.67:NEXT I
112 DRAW"BM130,68L4HLHLHLUHUL6G2
BD10BL6G22D2G2DGDGDLDL2LD4L2D16
F2R2FR2E2U2E2U16EUEUEU2EU2M106,7
4"
114 DRAW"BM164,82NL4G20"
116 CIRCLE(198,180),88,1,1.3,.57
,.68
118 DRAW"BM118,138D6F2R8E2U4E2U4
E2U4E2U6E2U6E2U4E4"
120 DRAW"BM86,74H10L2H4L2U6E4R2E
4R2E2R2E2R2E2R2E4"
122 CIRCLE(134,72),44,1,1.8,.58,
.86
124 CIRCLE(180,20),24,1,.9,.6,.9
6
126 CIRCLE(240,0),40,1,1.1,.3,.4
4
128 CIRCLE(230,56),22,1,.7,.75,.
2
130 CIRCLE(255,152),60,1,1.5,.55
,.72
132 CIRCLE(170,104),34,1,1.4,.1,
.25
134 CIRCLE(130,60),32,1,.7,.6,.9
136 CIRCLE(182,58),24,1,.7,.65,.
95
138 DRAW"BM166,46G3L4H2BL50G8L2G
2L2G2L2F8BR122BH16F2R2F2R2F2R2F2
D2F2G4L2G2L2G2L2G6"
140 CIRCLE(180,20),16,1,.6,.4,.1
142 CIRCLE(134,18),19,1,.6,.4,.1
144 DRAW"BM124,24R4E2R2E2R4F2R2F
2R2BR24BD2R2E2R2E2R6F2R6
146 CIRCLE(170,44),24,1,.9,.12,.
4
148 CIRCLE(132,44),25,1,.9,.12,.
4
150 CIRCLE(104,54),10,1,.9,.1,.4

```

```

5
152 CIRCLE(200,44),20,1,1.3,.13,
.4
154 PAINT(130,66),1,1
156 PMODE4,1:DRAW"C0BM181,152NL3
NR3D6BR8U6F4E4D6":PMODE3,1
158 DRAW"BM22,2C1R4ND8R4BR4D8U4R
6U4ND8BR6NR6D4NR4D4R6BL80BD6"
160 DRAW"ND8R6D4L6R2F4BR6U8R6D8N
L6BR6NU8R6BR6NU8R6BR6NU8R6U8F8N
U8BR6U8R8ND2L8D8R8U4L4"
162 DRAW"BD18BL66R6U4L6U4R6BR4R4
ND8R4BR4D8R6U8NL6BR6ND8F8U8BR6NR
6D4NR4D4R6BR6R6U4L6U4R6"
164 X*=INKEY*:IFX*=CHR*(13)THEN
26 ELSE 164
166 '
168 '
198 'ASIA
200 PMODE4,1:PCLS1:SCREEN1,1:PMO
DE3,1
202 DRAW"84C1BM30,120E48F48L16H1
2L38G12L16M24,122E54ND4F54L2UL3U
DR3DR2L24ER2EGL2GH12NE2L34NH2G12
NH2L24BR46NR40E12F3R11F2L14H2G7R
28" 204 DRAW"BF2BR10R15H8NR14H2R
12H44R34E4F14L22F44NL30L2UL2UL2N
L26H44FR2FNR2HL2HR22FR2FHL2H9NU4
G2L30HLRF45LHLHL14E6D4NG2U4BE10E
8D4NG5ND11U22E10F10D52H4U48NR2H6
NU4G6NL2D38"
206 DRAW"U22BE16E3D4NG3U4F55L22H
12L24U2R26NG2F12NG2R13NH48RFR"
208 LINE(0,46)-(256,148),PRESET,
B
210 X*=INKEY*:IFX*=CHR*(13)THEN
26 ELSE 210
212 '
214 '
300 ' QUIET RIOT
302 PMODE4,1:PCLS1:SCREEN1,1:PMO
DE3,1
304 DRAW "C1"
306 DRAW"94BM20,10G8D40F8R22F8R2
0H16U40H8NL26BL8BD14D28L10U28R10
BU14BR26"
308 DRAW"D48F8R30E8U48L18D40L10U
40L18BR56D56R18U56NL18BR10D56R40
U14L20U8R20U12L20U8R20U14L40"
310 DRAW"BR46D14R16D42R20U42R16U
14L52"
312 DRAW"BD72BL156D56R18U22F10D1
2R18U22H8E8U10HBL38R18BD14D8R8UB
L8BU14BR38D56R18U56NL18BR20G8D40
F8R30E8U40HBL30R10BD42R10U28L10D
28BU42"
314 DRAW"BR36D14R16D42R20U42R16U
14L52"
316 PMODE4,1:SCREEN1,1:PMODE3,1
318 DRAW"BM26,170C1U13F8E8ND13BR

```


Elite·Calc™

NOW ... The worksheet calculator program you've been waiting for is waiting to work for you. ELITE·CALC is a powerful, full featured worksheet calculator designed especially for the Color Computer. Answer "what if" questions, prepare reports,

maintain records and perform other tasks that, until now, required sophisticated business computers. ELITE·CALC™ is a serious tool for those who want to do more than play games with their Color Computer.

Features include:

- Single character commands
- Help Displays
- Enter text or formulas to 255 characters long
- Repeat text entries
- 255 maximum rows
- 255 maximum columns
- Available memory always displayed
- Rapid Entry modes for text and data
- Selectable Automatic Cursor movement
- Insert, Delete, Move entire rows of columns
- Replicate one cell to fill a row or column with selectable formula adjustment
- All machine language for speed
- Extended BASIC required for ROM routine calls
- Automatic memory size detection for 16K, 32K or 64K
- > 20K bytes, storage available in 32K systems
- BASIC style formulas
- Math Operators: +, -, X, /, (,), =
- Relation Operators: =, >, <, <=, >=, <>
- Logic Operations: AND, OR, NOT
- Conditional Formula: IF ... THEN ... ELSE
- Trig Functions: SIN, COS, TAN, ATN

- EASY TO USE
- INDIVIDUAL CELL FORMULAS
- COPY BLOCKS OF CELLS
- FULL CELL-EDIT CAPABILITY
- COMPATIBLE WITH ALL PRINTERS
- EASY 132 COLUMN PAGE WIDTH
- CHANGEABLE BAUD RATES
- GRAPH FORMAT FOR BAR CHARTS
- SORT IN ASCENDING OR DESCENDING ORDER
- COMPREHENSIVE MANUAL INCLUDED
- NATIONWIDE USER GROUP
- HANDSOME VINYL BINDER

- Log Functions: LOG, EXP, SQRT.
 - Misc. Functions: INT, FX, ABS, SGN.
 - Range Functions: SUM, AVERAGE, COUNT, MIN, MAX, LOOKUP
 - Nine digit precision
 - Definable constant table
 - User definable printer set-up commands
 - Individual column width settings
 - Adjustable row height to insert blank lines without wasting memory
 - Hide columns or rows
 - Alternate print font selectable on cell by cell basis
 - Display/Print formats set by cell, row, or column
 - Dollar format, comma grouping; prefix or postfix sign
 - Scientific notation, fixed point and integer formats
 - Left and Right cell contents justification
 - Full page formatting
 - All formats stored with worksheet on disk(tape)
 - Save & Load Disk(tape) files in compact memory form
 - Scan disk directories
 - Output ASCII file for word processor input compatibility
 - Memory resident code ... no repeated disk calls
- Sample worksheets included

THE BEST FOR ONLY

\$59.95

Specify: **Disk or Tape**
 - Shipping from stock NOW
 - Dealer Inquiries Invited.
 Add \$2 Postage & Handling
 PA residents add 6% sales tax

Elite Software

Box 11224 • Pittsburgh, PA 15238 • (412) 795-8492



"Elite·Calc is a great spreadsheet program! This professional quality program has the performance required for serious home applications as well as small businesses."

Stuart Hawkinson, Rainbow

"Truly one of the best programs I have seen."

John Steiner, Micro

"Elite·Calc is an extremely powerful worksheet ..."

Jack Lane, Color Micro Journal

"Bruce Cook's Elite·Calc is a very fine program indeed; potentially one of the great Color Computer Programs." "... a very impressive product."

Scott L. Norman, Hot CoCo


```

8NR10DNR10D5NR8DNR8D5NR10DR10BU1
3BR6R14DL7ND12L7"
320 DRAW"BD12BR20U13R10DNL10D5NL
10DNL10D6BR8NU13UNR10DR10
322 DRAW"BR16U13D6NR8DR10U7D13BR
8U13NR10DNR10D5NR8DNR8D5NR10DR10
"
324 DRAW"BR8U13NR8DNR8D5NR10DR10
U7D13BR8NU13UNR10DR10BR2BU13R14D
L7ND12L7BR20UD13U7NR10DR10U7D13
326 DRAW"BM26,152R200DL200BD22R2
00DL200"
328 X$=INKEY$:IF X$=CHR$(13) THE
N 26 ELSE 328
330 '
332 '
398 'ZZTOP
400 PMODE4,1:PCLS1:SCREEN1,1:PMO
DE3,1
402 DRAW"S4C1BM0,0R100G36L22E30G
4L50NU4R50E4L90U10R100G44R200U6N
L166U6L160NB6E26L24"
404 DRAW"BR30BD8G6R10G8R10E8R8E6
NL26BR8R28G14L28E14R10BG4R8G6L8E
6BH4BR34R28G10L16G4L10E14BF4R8G2
L8E2"
406 FORI=0TO20STEP4:LINE(128-I,1
00)-(128-I,170-I/2),PSET:LINE(12
8+I,100)-(128+I,170-I/2),PSET:NE
XT
408 CIRCLE(128,102),30,1,.3,.57,
.92
410 CIRCLE(128,140),32,1,1.1,.1,
.42
412 DRAW"BM102,100D56BR52U58
414 POKE178,43:PAINT(128,98),,1
416 PMODE3,1:FORY=0TO88STEP88:FO
RI=0TO2:CIRCLE(84+Y,120),18-I,1,
.9:NEXTI,Y
418 PMODE3,1
420 DRAW"C1BM88,106U22E6R66F6D22
BL4BU12UBH6L58G6D8E4R60F4H4L20E4
L30G4
422 CIRCLE(44,148),36,1,.9,.4,.9
:CIRCLE(212,148),36,1,.9,.62,1.1
424 CIRCLE(60,192),54,1,.5,.67,.
9
426 CIRCLE(194,192),54,1,.5,.62,
.87
428 DRAW"BM20,168F2R6BD4BR74F4R4
4E4BU4BR70R12E4"
430 DRAW"BM20,126C1U90R40BR170BD
8D80"
432 PMODE4,1:FORI=1TO12:CIRCLE(7
0,0),56+I,0,1.9,.25,((38+I)/100)
:CIRCLE(186,0),56+I,0,1.9,((50-(
38+I))/100),.25:NEXT
434 SR$="C0NE20NH20NU5NR5NL5ND5N
G20NF20"
436 DRAW"BM150,160"+SR$

```

```

438 DRAW"BM75,108"+SR$
440 LINE(0,0)-(255,192),PSET,B
442 DRAW"BM128,130C1NH22NE22BD16
NH20NE20"
444 X$=INKEY$:IF X$=CHR$(13) THE
N 26 ELSE 444
446 '
448 '
498 'VAN HALEN
500 PMODE4,1:PCLS1:SCREEN1,1
502 DRAW"C0BM112,66M90,32M8,32M1
4,40M78,40M82,46M20,46M26,54M86,
54M90,60M32,60M38,68M94,68M112,9
4M150,32M104,32M110,40M128,40M11
2,66"
504 DRAW"BM230,60M182,60M186,54M
236,54M242,46M190,46M194,40M248,
40M254,32M184,32M166,60M154,60M1
66,40M172,40M177,32M158,32M116,1
00M124,110M150,68M162,68M132,118
M140,128M176,68M224,68M230,60"
506 DRAW"BM14,40M30,46BM26,54M42
,60BM38,68M54,74M96,74BM112,93M1
16,96BM90,32M104,40M116,58BM150,
32M154,35"
508 DRAW"BM177,32M182,36BM172,40
M177,44BM166,40M172,44NR4M161,60
BM236,54M220,60BM248,40M232,46BM
224,68M208,74M184,74M176,68M184,
74M150,132M140,128"
510 DRAW"BM124,110M130,112M154,7
4NR4M149,68BM186,54M194,60BM194,
40M202,46BM110,40M120,44R4"
512 X$=INKEY$:IF X$=CHR$(13) THEN
26 ELSE 512
514 '
516 '
598 'YES
600 PMODE4,1:PCLS1:SCREEN1,1
602 DRAW"S4BM86,30C0U10H10R8F6E6
R8G10D10L8BR30U20R20D4L14D4R14D4
L14D4R14D4NL20BR18R20U12L16U4R16
U4L20D12R16D4L16D4"
604 CIRCLE(128,96),60,0,.6
606 DRAW"BM128,96C0ND34M169,71BM
128,96M87,71"
608 CIRCLE(128,96),82,0,.6,.85,.
67
610 DRAW"BM128,96BH30H10L4F10BM1
28,96BE30E10R4010"
612 LINE(116,144)-(140,176),PSET
,B
614 COLOR 1,0
616 LINE(117,143)-(139,146),PSET
,BF
618 LINE(126,131)-(130,188),PRES
ET,B
620 LINE(127,132)-(129,187),PSET
,BF
622 LINE(26,95)-(68,97),PRESET,B

```


Elite-File™

THIS IS IT! ELITE•FILE is the full-featured, all machine language, Data Base Manager, that Color Computer users have been waiting for. From the same author that brought you ELITE•CALC, ELITE•FILE is for everyone who needs to store and recall information. You specify what to store, and what to retrieve. ELITE•FILE gives you total flexibility. ELITE•FILE is a relational Data Base Manager

with all the editing and repeat formatting features that are typically found only on much larger computer systems, but priced for Color Computer users. It's "user friendly" command structure makes it simple to use even for those who don't write computer programs. ELITE•FILE is waiting to work for you.

Features include:

- Compatible with ELITE•CALC and ELITE•WORD ASCII files
- User friendly combination of Menu driven input and single key commands
- Up to 255 named fields per record
- Up to 255 characters per field
- Up to 2000 characters per record
- Up to 4000 records per file
- Supports multiple drives
- Nested subfield definitions
- Up to eight fields in primary key
- Copy record definition from file to file
- View record definition
- Input records with easy to use field name format display
- Edit records with full screen "type over" editor
- Copy records to repeat identical data
- Scan mode for quick data retrieval
- Locate any record by field contents
- Load ELITE•CALC spread sheets into random access data files
- User setable print formats
- TAB, VTAB, CR, PAGE, text, hex print controls
- Join up to four subfile records to extend data record for print
- Create "Variable Text Insert" files for ELITE•WORD
- Produce repetitive reports with Retrieval Programs written on ELITE•WORD
- Refile data into new record structures

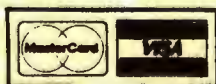
- ★ ALL MACHINE LANGUAGE
- ★ FLEXIBLE, USER DEFINED DATA RECORD STRUCTURES
- ★ 16 FILES CAN BE HANDLED AT THE SAME TIME FOR 64K RECORD CAPACITY!
- ★ EDIT, SCAN, SORT, SELECT RECORDS
- ★ OUTPUT REPORTS TO SCREEN, PRINTER, OR ASCII DISK FILE
- ★ PLACE DATA BY FIELD NAME, WITH CUSTOM TEXT, ANYWHERE ON THE PRINTED PAGE
- ★ COMPATIBLE WITH ALL PRINTERS
- ★ COMPREHENSIVE MANUAL
- ★ HANDSOME VINYL BINDER

- Thousands of applications:
 - Mailing List
 - Inventory
 - Record Collection Index
 - Phone Number Reference
 - Order Entry/Invoice
 - Expense Records
 - Recipe Files
 - Study Note Retrieval
 - Customer Files
 - Check Book Register
 - Library Catalog
 - Appointment Calendar
 - Yours
- Data, field definitions, indices stored on a single file
- List disk directories, change default drive and "kill" files without leaving ELITE•FILE
- Memory resident, no program overlays from disk
- Minimum 32K, Disk Basic required
- Single program performs all features
- Data files accessible from BASIC programs
- Project any subset of fields in any order for the printed output
- Select specific records by field content with full logic combination capabilities
- Sort records in ascending or descending order by any field
- Calculate values from combinations of field contents
- Math operators: +, -, *, /, (,)
- Display or print column totals

THE BEST FOR ONLY

\$74.50

- Disk Only
- Shipping NOW
- Add \$2.50 Shipping
- PA residents add 6% sales tax
- Dealer inquiries invited



Elite Software

Box 11224 • Pittsburgh, PA 15238 • (412) 795-8492

From the creators of: ZAKSUND • COLOR TEXTSET I • COLOR TEXTSET II • INTER GALACTIC FORCE • TEXT EDITOR • PARTY PAK • COLOR MONITOR • TREK-16 • WARNINGS • DISK & TAPE COPY • ANIMALS • BODY PARTS • TAPE COPY and many other fine programs


```

624 LINE (28, 96) - (66, 96), PSET
626 LINE (230, 95) - (188, 97), PRESET
, B
628 LINE (228, 96) - (190, 96), PSET
630 X$=INKEY$: IF X$=CHR$(13) THE
N 26 ELSE 630
632 '
634 '
698 '38 SPECIAL
700 PMODE4, 1: PCLS1: SCREEN1, 1
702 CIRCLE (128, 96), 94, 0, .85
704 CIRCLE (128, 96), 90, 0, .85
706 PAINT (128, 18), 0, 0
708 DRAW "C1BM40, 120NF14DNF14DNF1
4DNF14DNF14C0BU10F14U10F4D16H14"
710 PAINT (50, 126), 0, 0
712 COLOR0, 1: FORI=64TO140: LINE (2
00, I) - (230, I+12), PRESET: NEXT
714 LINE (10, 24) - (110, 80), PRESET,
BF
716 PMODE3, 1: FORI=0TO3: CIRCLE (12
8, 96-I), 94+I, 1, .85, .6, .67: NEXT
718 DRAW "C1BM50, 50E16LE10D2NG10D
NG10DNG10DNG10U4NR8DNR8DNR8DNR8D
R8NE8UNE8UNE8BM50, 50ND8L2D8BD4BR
4E6D6LNU6LNU4LNU2D2"
720 DRAW "BR8BU4E4RNG4RD3R4NE6RE6
U3"
722 FORI=1TO5: PMODE3, 1: CIRCLE (12
8, 96), 66+I, 1, .85, .53, .6: CIRCLE (1
28, 96), 76+I, 1, .85, .54, .55: NEXT
724 M$="C1R4DNL6R6DDNL4R12UR6UR4
726 DRAW "BM90, 30"+M$+"BM90, 31"+M
$
728 DRAW "BM96, 40"+M$+"BM96, 41"+M
$
730 DRAW "BM110, 50"+M$+"BM110, 51"
+M$
732 DRAW "BM114, 60"+M$+"BM114, 61"
+M$
734 DRAW "BM112, 70"+M$+"BM112, 71"
+M$
736 DRAW "BM106, 82U4RD4RU4ED4EU4"
738 DRAW "BM72, 40E2RG2RE2D2"
740 DRAW "BM48, 94NF16RNF16RNF16RN
F16RF16NL4DNL3R4DNL5R2NU6RNU6RNU
6"
742 FORI=93TO95: CIRCLE (106, I), 40
, 1, .5, .2, .4: NEXTI
744 FORI=103TO106: CIRCLE (148, I),
20, 1, 1.1, .2, .48: NEXTI
746 FORI=128TO131: CIRCLE (170, I),
20, 1, .4, .6, .95: NEXTI
748 FORI=122TO124: CIRCLE (199, I),
20, 1, .4, .1, .38: NEXTI
750 DRAW "BM204, 134NF10RNF10RNF10
RF10NR10UNR10UR10NH8RNH8RNH8RH8B
L6BU4NR8UNR8UNR8UR8NH5UNH5UNH5"
752 FORI=92TO94: CIRCLE (127, I), 30
, 1, .4, .6, .9: CIRCLE (164, I+8), 26, 1

```

```

, .8, .65, .85: CIRCLE (190, I+4), 28, 1
, .6, .67, .85
754 CIRCLE (190, I+14), 30, 1, .6, .7,
.9: CIRCLE (178, I+50), 30, 1, 1.8, .75
, .9: CIRCLE (180, I+53), 30, 1, 1.8, .7
5, .9: NEXTI
756 DRAW "BM204, 118NR6DR6DL4R6DL4
R6BM204, 84NE5RNE5RNE5RNE5BR4BD2N
E5RNE5RNE5RNE5BD2BL4F4R4E4DG4L4H
4DF4R4E4"
758 FORI=1TO3: CIRCLE (170, 72+I), 1
7, 1, .6, .5, .99: CIRCLE (150, 48+I), 1
7, 1, .6, .6, 1.1: CIRCLE (177, 58+I), 1
7, 1, .6, .7, .99: NEXT
760 PMODE3, 1
762 FORY=0TO176STEP176: FORI=0TO1
0STEP10: LINE (10+I, Y+7-I/10) - (245
-I, Y+7+I/10), PRESET, BF: NEXTI, Y
764 FORI=84TO87: I$=STR$(I)
766 DRAW "BM"+I$+", 146S5C1U4H3U3B
R6BDU3H2BD16BR10U4H2U4E4BR6BD6F2
D8BU12U4E3BU2BR4F4D2G2BD2BR4G4D2
BD4BR3ND4E7U4BR6NE3D3BR8ND6BR6E4
U2BR4BD6D4G2D4BL18BD4U6S4"
768 NEXTI
770 PMODE4, 1: COLOR0, 1
772 LINE (10, 96) - (28, 96), PSET: LIN
E (20, 95) - (28, 97), PSET, BF
774 LINE (245, 96) - (225, 96), PSET: L
INE (225, 95) - (235, 97), PSET, BF
776 LINE (68, 18) - (185, 0), PRESET, B
F
778 PMODE3, 1
780 DRAW "BM74, 12C1R6U4NL4U4NL6BR
6D8R6U4NL6U4NL6BR14NR6D4R6D4NL6B
R6U8R6D4L6D4BR12NR6U4NR6U4R6BR6N
R6D8R6BR6NU8BR6UBR6D4NL6D4BR6NU8
R6"
782 X$=INKEY$: IF X$=CHR$(13) THEN
26 ELSE 782
784 '
786 '
798 ' AC-DC
800 PMODE4, 1: PCLS1: SCREEN1, 1
802 PMODE3, 1
804 A$="L8D12F4G8H8E4U36E12F12D3
6F4G8H8E4U12BU8U10H8D18R8"
806 C$="H12U36E12F12G8H6D32E6F8G
12"
808 D$="H8E4U36H4E8R14F8D44G8L14
BU9BR4U42R5F4D34G4L5"
810 DRAW "C1S8BM42, 90"+A$
812 DRAW "BM90, 138"+C$
814 DRAW "BM150, 138"+D$
816 DRAW "BM226, 138"+C$
818 DRAW "BM136, 50L10G6R4G6R4G6M1
22, 70L3M130, 60L3M136, 50S4"
820 X$=INKEY$: IF X$=CHR$(13) THE
N 26 ELSE 820

```


Creating Random Name Files

By Bob Albrecht & George Firedrake
Rainbow Contributing Editors

This time, we present a program you can use to make a file of random names, using any consonant-vowel structure you choose. When you run the program, first you see briefly:

NAMES TO TAPE

This is on-screen momentarily while the CoCo is opening a cassette file for output. Of course, you first position a cassette in the tape recorder and press the [PLAY] and [RECORD] buttons — before typing *RUN*. Next you see:

NAME STRUCTURE? ■

Type a C-V (consonant-vowel) structure and press [ENTER]. Here is what happened when we did it.

NAME STRUCTURE? CVCVC
GODAK

Consonant-vowel-
consonant-vowel-
consonant

TO SAVE NAME, PRESS "S"
FOR ANOTHER NAME, PRESS SPACE
FOR NEW STRUCTURE, PRESS "N"
TO CLOSE FILE, PRESS "C"

You now have four options. Do you want to save the name GODAK on tape? If so, press the "S" key. Want another name using the same C-V structure? Press the [SPACE BAR]. Want to try a new name structure such as

(Bob Albrecht and George Firedrake are two of the most prolific authors in the microcomputer world today. Specialists in writing for beginners, they are authors of numerous books, including TRS-80 Color BASIC.)

CVCV or VCCVCV? Press the "N" key, then enter the new name structure. When you have all the names you want to save, press the "C" key and the CoCo will close the file.



1500..... 241
END..... 4

The listing:

```
1000 REM**NAMES TO TAPE GMA 17-1
1010 CLS: PRINT "NAMES TO TAPE"
1020 OPEN "O", -1, "NAMES"
1100 REM**GET NAME STRUCTURE NS#
1110 CLS
1120 INPUT "NAME STRUCTURE"; NS#
1200 REM**MAKE # PRINT NAME#
1210 GOSUB 1710
1220 PRINT @64, NAME#
1300 REM**REM**TELL OPTIONS
1310 PRINT @384, "TO SAVE NAME,
PRESS 'S'"
1320 PRINT "FOR ANOTHER NAME, PR
ESS SPACE"
1330 PRINT "FOR NEW STRUCTURE, P
RESS 'N'"
1340 PRINT "TO CLOSE FILE, PRESS
'C'";
1400 REM*GET RESPONSE & DO IT
1410 KY#=INKEY#:IF KY#="" THEN 1
410
1420 IF KY#="S" THEN 1510
1430 IF KY#=" " THEN 1210
1440 IF KY#="N" THEN 1110
1450 IF KY#="C" THEN 1610 ELSE 1
310
1500 REM**PUT IN CASSETTE BUFFER
1510 PRINT #-1, NAME#
```



```

1520 PRINT @128, "SAVING " NAME$
1530 FOR KK=1 TO 2000: NEXT KK
1540 PRINT @128, CHR$(30)
1550 GOTO 1310
1600 REM**CLOSE THE FILE
1610 CLOSE -1
1620 CLS
1630 PRINT "THE FILE IS CLOSED"
1640 STOP
1700 REM**MAKE A NAME SUBR.
1710 NAME$ = ""
1720 FOR KK=1 TO LEN(NS$)
1730 : CV$ = MID$(NS$, KK, 1)
1740 : IF CV$="C" THEN GOSUB 1810
1750 : IF CV$="V" THEN GOSUB 1910
1760 NEXT KK
1770 RETURN
1800 REM**ADD A CONSONANT SUBR.
1810 C$="BCDFGHJKLMNPQRSTVWXYZ"
1820 RC = RND(21)
1830 RC$ = MID$(C$, RC, 1)
1840 NAME$ = NAME$ + RC$
1850 RETURN
1900 REM**ADD A VOWEL SUBR.
1910 V$="AEIOUY"
1920 RV = RND(6)
1930 RV$ = MID$(V$, RV, 1)

```

```

1940 NAME$ = NAME$ + RV$
1950 RETURN
1999 END

```

Here is a block-by-block description of the program.

Block 1000 briefly prints NAMES TO TAPE on the screen and opens a cassette file for output. The file is called NAMES. If you are using Color BASIC, change line 1020 to:

```
1020 OPEN "O", #-1, "NAMES"
```

You may wish to rewrite block 1000 to include directions telling the user to position a cassette and press the [RECORD] and [PLAY] buttons on the tape recorder. See our SCAN CHARACTER FILE program in the March 1984 issue of *the Rainbow*.

Block 1100 asks for the NAME STRUCTURE (consonant-vowel structure) and assigns it to the variable NSS.

Block 1200 calls a subroutine to make one name and prints the name at screen position 64.

Block 1300 prints the four options on the bottom four lines of the screen. Remember to include the semicolon at the end of line 1340. Without it, the screen will scroll.

Block 1400 looks for a single key response (S, space, N or C). All other keys are ignored. If you press one of the four keys, the CoCo moves on to the appropriate block; if you press any other key (except [BREAK]), it simply repeats its request because of the *ELSE 1310* in line 1450.

Block 1500 writes the value of NAMES\$ to the cassette buffer. It also puts a message on the screen at screen

speed reading \$17.95

Here's a program to help you increase your reading speed dramatically. Reading material appears on the TV screen at the speed you select, training you to read faster than you normally would. You can even vary the speed while reading. Complete with six different text selections. Plus a drill to improve visual span and perception. Instructions describe speed improvement techniques.

Speeding your reading takes dedicated effort. With this unique program, your effort will be more efficient, convenient and productive.

wild party \$35.00 \$27.95

A naughty, sexy computer game for 2 to 6 couples. RAINBOW: "would definitely liven up most parties."

29 monsters \$14.95

A text-adventure game that does not require you to guess words from its hidden collection. To escape the evil wizard's castle, you must pass through 29 rooms, each guarded by a hideous monster who will only let you pass if you can devise the correct password based on the clues it gives you.

All programs on cassette tape for 16K Color Computer. Extended BASIC not required. Send SASE for instructions for any program. Prices include postage (PA resid. add 6%). Send check to P.O. Box 210, Jenkintown, PA 19046.

b & b software



The Perfect Companion For Your New Portable Computer

There's a new and exciting computer companion for your TRS-80® Model 100 Portable Computer. It's the most significant advances in personal computing.

And, now, there's a new and just as exciting companion devoted to your Portable Computer. It's the most popular Color Computer magazine, *Computing Magazine*, and it is publishing you the most popular Color Computer programs.

PCM—The Portable Computing Magazine—\$28 a year by subscription. If, after seeing it, you think it's not for you, just let us know. We'll happily refund your entire subscription payment. We're that confident you'll love PCM. After all, it is *The Portable Computing Magazine*.

PCM

THE PORTABLE COMPUTING MAGAZINE

9529 U.S. Highway 42
P.O. Box 209
Prospect, KY 40059
(502) 228-4492

YES! Sign me up for a year (12 issues) of PCM—The Portable Computing Magazine

Name _____

Address _____

City _____ State _____ Zip _____

Payment Enclosed VISA MasterCard American Express

Account # _____ Interbank # (MC only) _____

Signature _____ Card Expiration Date _____

Subscriptions to PCM—The Portable Computing Magazine are \$28 a year in the United States. Canadian and Mexican rate is \$35 U.S. Surface rate elsewhere \$64 U.S. Air mail \$85 U.S. All subscriptions begin with the current issue. Please allow 5-6 weeks for first copy.



position 128 telling you it is saving the name. Line 1540 clears this message from the screen. CHR\$(30) means "Clear to the end of this line." After saving the name, block 1500 sends the CoCo back to block 1300 to get another user response.

Block 1600 closes the cassette file. If you are using Color BASIC, change line 1610 to: 1610 CLOSE #-1.

Block 1700 is a subroutine to make a name and assign it as the value of NAMES\$. First, NAMES\$ is set equal to the empty string (""). Then, the FOR . . . NEXT loop scans the name structure (NSS) letter by letter, looking for the letters C or V. Each time it finds the letter C, it calls the ADD A CONSONANT subroutine. Whenever it finds the letter V, it calls the ADD A VOWEL subroutine. Letters other than C or V are ignored.

Block 1800 is a subroutine to add a consonant to NAMES\$. Lines 1820 and 1830 select a random consonant from the string C\$. Line 1840 appends the new consonant to the right end of NAMES\$.

Block 1900 is a subroutine to add a vowel to NAMES\$. Lines 1920 and 1930 select a random vowel from the string V\$. Line 1940 appends the new vowel to the right end of NAMES\$. Note that we include the letter Y as a vowel. Thus, names such as KOMYN or DYMAX are possible.

We leave to you the task of writing a program to read and display names from the cassette file of random names — well, "selected" random names — selected by you. You can do this in many ways.

- Read one name and display it. Press [SPACE BAR] to get another name.
- Read and display several names. Press [SPACE BAR] to get another bunch of names.
- Read only names having a specified name structure. For example, read only names with the structure CVCVC.

Since we have no reader response to our cassette file tutorials and programs, we assume you people out there are not much interested in cassette files. So, next time we will move on and begin a slow tutorial sequence on disk files.

TAIPAN: Your Own Contextual Computer Game

In the early days of the TRS-80 Model I, we were privileged to play a simulation game called *Taipan*, written by Art Canfil. *Taipan* easily makes the top ten of all computer games we have played in the last 29 years.

So, a few months ago, we begged, implored, and downright coerced Art to write a book showing people how to write contextual computer games, using *Taipan* as the model. Art agreed and began writing the book, with the help of two high school students, Jim McClenahan (*Dragon-Kong*) and Karl Albrecht (*DragonNewt*). As Art puts it, "To the Dragon, who dragged us and dragooned us until we wrote this book. And to Elder Brother Wu, as a representative of financial realities. If the Dragon was the carrot, Wu was the stick . . ."

What is a contextual computer game? The authors say, "Home computers make possible a type of electronic game which is less based on exercising the reflexive speed of a person's brain stem than upon exercising the wonderful gray matter with which humans think. Some of the best of such games are those in which a complex environment is simulated by the program, and the player interacts in a 'lifelike'

manner with that game environment. We call these complex environmental computer simulation games contextual computer games."

The first book will be our favorite computer, the CoCo. It will then be paraphrased for other computers: Commodore 64, IBM PCjr, possibly the Apple. *TAIPAN: Your Own Contextual Computer Game* is intended to give the CoCo user three things:

- 1) an understanding of some fundamental principles of game design;
- 2) an historical understanding of a particular game context (in this case, the turbulent China trade of the 1800s);
- 3) a step-by-step approach to actually writing a game in BASIC using points 1 and 2 above, including the actual program lines needed to provide a complete contextual computer game.

The authors hope that this book will provide the reader, not only with an enjoyable game providing many hours of entertainment, but that the reader will become interested in the game's historical background as well. And hopefully, the reader will be inspired to design original games based upon other historical or fantasy contexts.

Next time, Art Canfil will join "GameMaster's Apprentice" and we will include excerpts from his book-in-progress. May you live in interesting times.



FANTASY ROLE PLAYING GAMES

Millions of young people, and many not-so-young, are playing fantasy role playing games. A role playing game is a game in which one or more players create and control characters (adventurers) who live their imaginary lives in a specially made game world. The game world is created, managed, and operated by a GameMaster (GM), also called a referee, adventure master, or dungeon master (DM).

Most people who play role playing games use a formal rule system. Some of the best known are shown below.

Champions. From Hero Games, 92A 21st Avenue, San Mateo, CA 94402.

Dungeons & Dragons (D&D). From TSR, P.O. Box 756, Lake Geneva, WI 53147.

RuneQuest (RQ). From Chaosium, P.O. Box 6302, Albany, CA 94706.

Tunnels & Trolls (T&T). From Blade, Box 1467, Scottsdale, AZ 85252.

Worlds of Wonder (WOW). From Chaosium, P.O. Box 6302, Albany, CA 94706.

Most programs in "Game Master's Apprentice" are based on the game system used in *RuneQuest*, *Worlds of Wonder*, and *Adventurer's Handbook*. If you are a beginner, we suggest you try the following books.

Adventurer's Handbook: A Guide to Role Playing Games by Bob Albrecht & Greg Stafford.

Through Dungeons Deep by Robert Plamondon.

Both are available from Reston Publishing Company, 11480 Sunset Hills Road, Reston, VA 22090.

Copyright © 1984 by DragonQuest, P.O. Box 310, Menlo Park, CA 94026.

This One's A Piece Of Cake

By Joseph Kolar
Rainbow Contributing Editor

The family that computes together, stays together. Let this be the thought for today.

Two months ago, my daughter joined the ranks of CoCo owners. To create her very first program, she used the theme of her husband's upcoming birthday. Curious to see how she was progressing and eager to see her creation, I suggested that she mail me a copy. I would critique it.

Copy *LISTING1* exactly. Look it over. Then, without elaborating or expanding it, correct any errors. Center it to give it a pleasing appearance. Alter and adjust the program to enhance it. This is your chance to show off your own progress in programming.

Do this before you read any further or before you key in *LISTING2*. See if you can find all the things that could stand a little modification.

Before keying in *LISTING2*, follow along with me and see one way to approach the problem. After making each change in *LISTING1*, you may *RUN* the program to see what you have done.

CLOAD "*LISTING1*" and *RUN*. The first thing that comes to mind is that the first panel needs to be pushed down for vertical centering. Since *PRINT@* was used in lines 2, 3, and 4, it does no good to add *:PRINT:PRINT* to line 1.

Without disturbing the contents of the three line heading, it was simpler to add +64 to the line locations in each of the three lines.

It looks neater if the space after *WA* in line 4 was changed to a period.

":PRINT" was added to line 5 to insert another blank row.

You may have made the change differently. You may have dropped the heading down another row; pushed up line 8 to center it tightly in the middle of the screen. The important thing is to make the display visually attractive.

A sentence or paragraph looks neater if it is indented.

(Joseph Kolar is a free-lance writer and programmer dedicated to proselytizing for computers in general, and the CoCo specifically.)

Two spaces were inserted after the first quote mark of line 6 to move the line to the right. Two spaces were deleted after the word "*BY*" to realign the sentence. If this step wasn't taken, a word would split and carry over to the next row.

A space was inserted after "*PRESS*" in line 8. The line of text was centered by inserting nine spaces after the first quote mark.

The next panel required a little work. The text is all bunched up in the upper-left corner. All that blank area is crying out to be utilized.

Either after *CLS* in line 9 or at the very beginning of line 10, add *PRINT:PRINT:PRINT:PRINT*. Use a beginning *":*" if using line 9 or an ending *":*" if inserting it in line 10.

It is not good practice to begin a line of text at the left margin. Allowing for a long name to be input, indent one space after the opening quote mark of line 10.

The *INPUT* statement will print a question mark. Thus, *"?"* at the end of the sentence is redundant. Delete it. Insert your first name and press [ENTER].

Indent line 20 about nine spaces by inserting them after the first quote mark. This line must be left of center to allow for the possibility of a long name. Since this is a surprise theme, add *!"* at the end of line 20.

Indent line 30 one space as you did in line 10. Delete the redundant question mark at the end of the sentence. Enter your age and press [ENTER].

Looking over the resultant panel, we see that the text could be pushed down one more row for better vertical centering. Being lazy, rather than relocating each of the three lines, I decided to add a line of text. What suggested itself was "Well, I have news for you." This leads more smoothly into the following panel.

At this point, common sense would say *RENUM 40,31,10*, but to keep the same line numbers in both listings, common sense will not prevail. Don't renumber!

Instead, open up line 31. *DEL31* and insert "*CLS*" at the beginning of line 32. Insert a new line 31 — *31 PRINT:PRINT "WELL, I HAVE NEWS FOR YOU!"* Did you remember to leave blank space after the first quote mark? Three spaces were used so that the line would be horizontally centered.

Rather than jumping to the next panel, we will catch our breath and use a time wasting routine to give us time to read and digest the text. Add :FOR Z=1 TO 2000: NEXT to the end of line 31.

The next panel looks very good. It must be oriented to left of center to allow for a possible long name.

Change the comma to a space in line 36. Add an exclamation mark at the end of the line so that it will appear after the name. I think a comma would be appropriate following HAPPY BIRTHDAY, but to save an extra space for a long name, leave it out.

The song flops right into the "cake" panel. Insert 40 FOR Z=1 TO 1000: NEXT for a less abrupt transition.

It bothered me that we called for an input in line 30, but failed to use it. What use could we have for the variable A that indicated the age? Determined to use that variable, it was envisioned to label the cake with the age neatly centered under the candle.

Studying the cake panel, the candle might look better if it were on top of the cake instead of being embedded in it. It also appeared to be a wee bit off-center.

A little trial and error was used to alter the cake and candle. Changing the 47 to 48 in line 50 made the cake wider. Changing 15 to 16 made it lower. The candle, line 70, was moved to the left and pulled out of the cake by changing (31 TO 34) to (30 TO 33):

Now, the age variable, A, could be moved under the candle. More trial and error work was involved until the correct PRINT@ location was found. Insert 60 PRINT@ 302,A:

The location 302 was a compromise. A one-digit age made it slightly off-center. A two-digit age was properly centered. You can't have everything. Working on the assumption the kids, nine and under, would not be critical, I opted for the two-digit location.

The cake is well-centered and nicely proportioned. The candle flame could use a little work. It could be lengthened to become more prominent.

To lengthen the flame, add :SET(32,8,8) to line 220. Add :RESET(32,8) to line 230. That isn't bad! To give it even more realism (as if a slight draft was causing the candle to flicker), add :SET(31,9,8) to line 220 and :RESET(31,9) to line 230.

Finally, inserting a time-wasting pause, 235 FOR Z=1 TO 100: NEXT slows down the flicker.

If you haven't done so, key in LISTING2 and RUN. It is substantially a carbon copy of LISTING1. The integrity of the program wasn't altered; only the presentation.

The next time somebody in your family, or a friend, has a birthday, just CLOAD "LISTING2", sit the birthday boy/girl at the keyboard and let him/her RUN it. I am sure they will get the message. Anyway, you have a little program, with the permission of newcomer, Betty Ann White, to add to your repertoire.

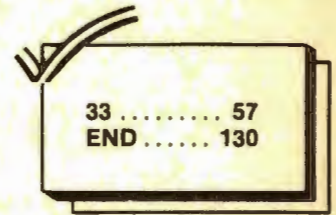
You may have gotten a few ideas of your own from following this half-baked debugging session. Work your will on LISTING2 and alter it to your heart's content. Jazz up the cake. Put more pizzazz into the text. Add color. Modify or add sound. You are the boss!

If you come up with something interesting (I am sure you will), and are inclined to share it, send me a listing of your creation.

You saw one way to finalize a program. You did a little debugging. You saw the creative process in action. It is hoped that you got some ideas of your own as you systemat-

ically worked over LISTING1. It should have been a fun time. You need not be afraid to fool around with a program. Make sure you keep a backup copy of your listing so that, in case it gets zapped, you can start again.

What was the thought for today again? Oh, yes! The family that computes together stays together . . . and has more fun.

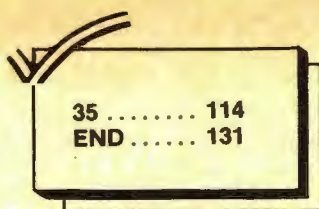


Listing 1:

```
0 * <LISTING1>
1 CLS
2 PRINT @ 8, "BETTY ANN WHITE"
3 PRINT @42, "1303 3RD ST"
4 PRINT @ 70, "KIRKLAND, WA 980
33"
5 PRINT
6 PRINT "HAPPY BIRTHDAY WAS CREA
TED BY BETTY ANN WHITE ON JANU
ARY 2, 1984 AND REVISED ON JAN
UARY 6."
7 PRINT
8 INPUT "PRESS<ENTER>"; E#
9 CLS
10 INPUT "WHAT IS YOUR NAME?"; N#
15 PRINT
20 PRINT "HELLO, "N#
25 PRINT
30 INPUT "HOW OLD ARE YOU?"; A
31 CLS
32 PRINT@ 131, "HAPPY BIRTHDAY TO
YOU!"
33 PLAY "01;G;G;A;G;02;C;01;B"
34 PRINT@ 195, "HAPPY BIRTHDAY T
O YOU!"
35 PLAY "01;G;G;A;G;02;D;C"
36 PRINT@259, "HAPPY BIRTHDAY DEA
R," N#
37 PLAY "01;G;G;02;G;E;C;02;B;A"

38 PRINT@323, "HAPPY BIRTHDAY TO
YOU!"
39 PLAY "02;F;F;E;C;D;C"
45 CLS(0)
50 FOR H=15 TO 47:FOR V=15 TO 23
:SET(H,V,7):NEXT V,H
70 FOR H=31 TO 34:FOR V= 10 TO 15
:SET(H,V,2):NEXT V,H
120 FOR H=10 TO 53
130 SET(H,23,1)
140 NEXT H
217 PLAY "02;F;F;E;C;D;C"
220 SET (32,7,8)
230 RESET(32,7)
240 GOTO 220
```


Listing 2:



```

0 '<LISTING2>
1 CLS
2 PRINT @72, "BETTY ANN WHITE"
3 PRINT @106, "1303 3RD ST"
4 PRINT @134, "KIRKLAND, WA. 980
33"
5 PRINT:PRINT
6 PRINT " HAPPY BIRTHDAY WAS CR
EATED BY BETTY ANN WHITE ON JANU
ARY 2, 1984 AND REVISED ON JAN
UARY 6."
7 PRINT
8 PRINT:INPUT " PRESS <E
NTER>"; E$
9 CLS
10 PRINT:PRINT:PRINT:PRINT:INPUT
" WHAT IS YOUR NAME";N$
15 PRINT
20 PRINT " HELLO "N$"! "
25 PRINT
30 INPUT " HOW OLD ARE YOU";A
31 PRINT:PRINT" WELL, I HAVE N
EWS FOR YOU!":FOR Z=1 TO 2000:NE
XT
32 CLS:PRINT@ 131,"HAPPY BIRTHDA
Y TO YOU!
    
```

```

33 PLAY"01;0;0;A;0;02;C;01;B"
34 PRINT@ 195, "HAPPY BIRTHDAY T
O YOU!"
35 PLAY "01;0;0;A;0;02;D;C"
36 PRINT@259,"HAPPY BIRTHDAY DEA
R " N$"! "
37 PLAY "01;0;0;02;0;E;C;02;B;A"

38 PRINT@323, "HAPPY BIRTHDAY TO
YOU!"
39 PLAY "02;F;F;E;C;D;C"
40 FOR Z=1 TO 1000:NEXT
45 CLS(0)
50 FOR H=15 TO 48:FOR V=16 TO 23
:SET(H,V,7):NEXT V,H
60 PRINT@302,A;
70 FOR H=30 TO 33:FOR V= 10TO 15
:SET(H,V,2):NEXT V,H
120 FOR H=10 TO 53
130 SET(H,23,1)
140 NEXT H
217 PLAY"02;F;F;E;C;D;C"
220 SET (32,7,8):SET(32,8,8):SET
(31,9,8)
230 RESET(32,7):RESET(32,8):RESE
T(31,9)
235 FOR Z=1 TO 100:NEXT
240 GOTO 220
    
```

Marymas INDUSTRIES, INC.

In Texas, Orders,
Questions & Answers
1-713-392-0747

22511 Katy Freeway
Katy (Houston), Texas 77450

To Order
1-800-231-3680
800-231-3681

SAVE BIG DOLLARS ON ALL TRS-80® HARDWARE & SOFTWARE

TRS-80® by Radio Shack. Brand new in cartons delivered. Save state sales tax. Texas residents, add only 5% sales tax. Open Mon. - Fri., 9 - 6, Sat., 9 - 1. We pay freight and insurance. Come by and see us. Call us for a reference in or near your city. Ref: Farmers State Bank, Brookshire, Texas.

WE OFFER ON REQUEST

Federal Express (overnight delivery)

Houston Intercontinental Airport
Delivery, Same Day Service

U.P.S. BLUE—Every Day

References from people who have
bought computers from us probably
in your city. We have thousands
of satisfied customers. WE WILL
NOT BE UNDERSOLD!

ED McMANUS



MasterCard
Cards
Welcome



No Tax on Out of Texas Shipments!

Save
10% 15%
OR MORE

WE ALWAYS OFFER

- We accept MasterCard, Visa and American Express cards
- We use Direct Freight lines. No long waits
- We always pay the freight and insurance
- Toll free order number
- Our capability to go to the giant TRS-80® Computer warehouse 5 hours away, in Ft. Worth, Texas, to keep you in stock.

® TRS-80 is a Registered Trademark of Tandy Corp.

JOE McMANUS



TELEX: 77-4132 (FLEXS HOU)



This is the second of a five part series

CoCo Widows

By Susan P. Davis

A new term has cropped up: "CoCo Widow." We all know about football widows and golf widows. Now, it seems, countless women are sitting alone due to the amount of time their men are spending with the Color Computer. One *Rainbow* advertiser has very cleverly capitalized on this pathetic situation by offering "CoCo Widow" needlework.

My favorite anecdote comes from a member of the Columbus and Central Ohio Color Computer Users Group. This man was working relentlessly on a program. He designed it, wrote it and debugged endlessly. Finally, at 2 a.m., it worked. Eureka! He dashed upstairs to share the sweetness of this victory with his wife. He shook her awake and babbled excitedly and proudly. She opened one eye, gave him an icy stare, grumbled "Who cares?" and indignantly turned over and went back to sleep. He was crushed. When I spoke with her later about the incident, she told me that she bitterly resented the computer and that it takes her husband's time away from her and the children. When I asked her if her husband couldn't show her what the computer could do and how it could help her, she retorted, "Unless it can run the sweeper, there is no way it could help me at all."

Another fellow bought a Color Computer and set it up in his bedroom because that's where the television was. To do this, he shoved all of his wife's knickknacks off the double dresser and replaced them with the computer, tape recorder, a few cassettes and some note pads. After a while, the tape collection grew. It no longer fit on the dresser and it looked just awful. So, this guy emptied all of his wife's clothes out of one drawer and filled the drawer with tapes. He then stuffed

her clothes into other drawers and almost succeeded in closing them. The next day, that couple bought a new television for the bedroom, allocated the old set for computer use and gave the husband his own space — the former sewing room!

No wonder there's resentment! Even from women who are gradually learning to use the CoCo for word processing or to help the kids in school. They told me that the difference is that football, baseball, golf, etc., all have a season that is eventually over. The Color Computer can be turned on any hour of the day or night — and frequently is.

Another reason for the resentment is that many women feel that they don't "understand" the computer. It makes them feel dumb and uncomfortable. A simple analogy might help here. Just as one does not need to understand how electricity works in order to flick on a light switch, one does not need to understand the Color Computer's circuitry in order to have a good time with it. Just view the CoCo as another household appliance, as a tool which makes a task easier to perform. That task could be producing mailing labels, finally organizing that record or stamp collection, printing off 10 originals of the same resume or keeping the children occupied. Really, all you have to understand is how to turn the computer (and other hardware devices) on and off, how to insert the appropriate tape or disk and how to load the software. This is not as complicated as pressing all the appropriate buttons on the latest model Lady Kenmore washing machine just to do a load of laundry.

Lots of the women I speak with seem to be turned off by "games." They use "games" as an excuse not to use the computer. They do recognize the educational value of the Color Computer, and we'll discuss this next month.

I have asked some women if they would consider using the CoCo to perform a small, practical task; balancing their checkbook, for example. Some told me that they prefer to balance the checkbook with a calculator. Another simple task is paying the monthly bills. Several of these women use their push button phones to use the pay-by-phone feature offered by their banks. They said they might be interested in having me show them how to use the Color Computer to pay

(Susan Davis has a master's degree in linguistics and has taught Spanish on the high school and college levels. She is also a C. L. U. with seven years experience in the life and health insurance fields. In addition, she designs educational programs for Sugar Software, which she own with her husband, Gary.)



ENDICOTT

COMPUTER SOFTWARE AND ACCESSORIES



NEW

PRINTERS

PRICES

(SEE PRINTER INTERFACE BELOW)

SPIRIT (SAME AS MX80).....	\$339.00
OKIDATA 8 2A.....	\$329.00
GORILLA/BANANA.....	\$235.00
- (SERIAL WITH CABLE).....	\$255.00
- (PARALLEL WITH INTERFACE).....	\$299.00

NEW

MONITORS

PRICES

BY AMDEK

(SEE MONITOR INTERFACE BELOW)
ALL WITH NONGLARE SCREEN.

COLOR 1+	\$315.00
VIDEO 300(G)	\$150.00
VIDEO 300(A)	\$185.00

ENDICOTT JOYSTICK

\$19.95.....EACH \$37.95.....FOR TWO

"In use, we found the ENDICOTT JOYSTICK to be smooth and responsive. ...built to last, the Endicott model is a solid buy". *the RAINBOW, October 1982*

"...provided the best feel of all the joysticks tested. ... (a) rugged unit at an affordable price."
-80 micro, March 1983

PRINTER INTERFACE

for SERIAL/PARALLEL

SWITCHABLE: 300 TO 9600 BAUD.
PRINTER AND MODEM CONNECTIONS.
NOTHING ELSE REQUIRED.

~~\$99.95~~ \$79.95
PURCHASED WITH PRINTER.....\$64.00

MONITOR INTERFACE

VIDEO PLUS.....	\$24.95
(COLOR OR MONOCHROME)	
PURCHASED WITH MONITOR.....	\$20.95
VIDEO PLUS IIM.....	\$28.95
(MONOCHROME FOR COLOR II	
COMPUTER)	
PURCHASED WITH MONITOR.....	\$22.95
VIDEO PLUS IIC (AVAILABLE SOON)	
(COLOR FOR COLOR II COMPUTER)	

BLANK MEDIA

ELEPHANT SSSD.....	\$20.95
ELEPHANT SSSD.....	\$23.95
ELEPHANT DSSD.....	\$28.95
C-10 CASSETTES (10 FOR).....	\$ 7.50

MEDIA STORAGE TAPE

TAPE CAROUSEL (HOLDS 25).....\$13.00

DISKETT

FLIPN'FILE 10.....	\$ 5.45
FLIPN'FILE 25.....	\$24.95
FLIPN'FILE 50.....	\$33.95

SUPER-PRO KEYBOARD

BY: MARK DATA

ADAPTER REQUIRED ON
COMPUTER BOUGHT AFTER 10/82.
KEYBOARD.....~~\$99.95~~ \$59.95 ADPT. \$4.95

VOLKSMODEM

BY: ANCHOR AUTOMATION
300 BAUD, DIRECT CONNECT
MANUAL ANSWER,
MANUAL DIAL
INCLUDES CABLE \$74.95

SURGE/SPIKE SUPPRESSOR & EMI/RFI FILTER

BY: KALGLO

DELUX: 8 SWITCHED SOCKETS, FUSE, LIGHT, 8' CORD.....~~\$99.95~~ \$79.95
MINI: 2 SOCKETS, LIGHT, PLUG IN.....~~\$44.95~~ \$40.95

Look at These Discounts and Compare...Remember WE PAY SHIPPING!

SOFTWARE PRICES SHOWN ARE **20% OFF** LIST PRICE!**CUSTOM SOFTWARE ENGINEERING**

DISK DATA HANDLER (Data Base).....\$43.95
(Supplied On Tape)

SPECTRAL ASSOCIATES

	T	D
▷ CUBIX.....	\$19.95	\$23.15
▷ LANCER.....	\$19.95	\$23.15
▷ MS GOBBLER.....	\$19.95	\$23.15
WHIRLYBIRD RUN.....	\$19.95	\$23.15
STORM ARROWS.....	\$19.95	\$23.15
LUNAR ROVER PATROL.....	\$19.95	\$23.15
SPACE RACE.....	\$19.95	\$23.15
SPACE SENTRY.....	\$15.15	\$18.35
PLANET INVASION.....	\$19.95	\$23.15
ALPHA SEARCH.....	\$19.95	\$23.15

COMPUTERWARE

	T	D
▷ JUNIOR'S REVENGE.....	\$23.15	\$25.55
▷ TIME PATROL.....	\$19.95	\$22.35
▷ HYPER ZONE.....	\$21.55	\$23.95
▷ COLOR BASIC COMPILER.....	\$31.95	
64K SCREEN EXPANDER (64K).....	\$19.95	\$22.35
* THE SOURCERER.....	\$27.95	\$31.95
▷ DISK MACRO ASSEMBLER & XREF.....	\$39.95	
▷ COLOR EDITOR.....	\$19.95	\$23.95
▷ COLOR MONITOR.....	\$19.95	\$22.35
▷ MOON HOPPER.....	\$19.95	\$22.35
BLOC HEAD.....	\$21.55	\$23.95
DOODLE BUG.....	\$19.95	\$22.35
SHARK TREASURE.....	\$19.95	\$22.35

SOFT LAW

	T & D INCLUDED	
□ VIP WRITER.....	\$47.95	---
□ VIP SPELLER.....	\$31.95	---
□ VIP CALC.....	\$47.95	---
□ VIP TERMINAL.....	\$39.95	---
□ VIP DATA BASE.....	\$47.95 (DISK)	---
□ VIP DISK-ZAP.....	\$31.95 (DISK)	---

ELITE SOFTWARE

	T	D
□ ELITE-WALD.....	\$47.95	\$47.95
□ ELITE-CALC.....	\$47.95	\$47.95
□ ELITE-FILE.....	\$59.90	

PROGRAMMERS INSTITUTE

	T	D
▷ COMPLETE PERSONAL		
ACCOUNTANT - (1,2,&3).....	\$59.95	\$63.95

COGNITEC

	T	D
□ TELEWRITER 64.....	\$39.95	\$47.95

PRICKLY-PEAR SOFTWARE

	T	D
ADVENTURE IN WONDERLAND.....	\$19.95	\$23.95
THE DISK MANAGER.....		\$23.95
THE DISK MASTER.....		\$19.95
* VIKING.....	\$15.95	\$19.95
* GANGBUSTERS.....	\$15.95	\$19.95
COLORKIT.....	\$27.95	\$31.95
SHAFT.....	\$19.95	\$23.95
JUNGLE.....	\$15.95	\$19.95
FLIGHT.....	\$15.95	\$19.95

TOM MIX

	T	D
▷ SR-71.....	\$23.15	\$25.55
▷ CU*BER.....	\$22.35	\$24.75
▷ BUZZARD BAIT.....	\$22.35	\$24.75
▷ AIR TRAFFIC CONTROLLER.....	\$23.15	\$25.55
THE FROG.....	\$22.35	\$24.75
▷ SPACE SHUTTLE.....	\$23.15	\$25.55
▷ THE KING.....	\$21.55	\$23.95
▷ COLOR GOLF.....	\$14.35	---
TRAP FALL.....	\$22.35	\$24.75
TAPE TO DISK.....	\$14.35	---
DISK TO TAPE.....	\$14.35	---

ANTECO SOFTWARE

	T	FROM PK
8-BALL (POOL).....		\$23.95
PINBALL.....	\$19.95	\$23.95

DATASOFT

	T	D
ZAXXON.....		\$31.95

ADVENTURE INTERNATIONAL

	T	D
* FIRE COPTER.....	\$19.95	---
* SAIGON: THE FINAL DAYS.....	\$19.95	---
* EARTHQUAKE.....	\$19.95	---
* AIRLINE.....	\$19.95	---
▷ SEA DRAGON.....	\$27.95	---
▷ TRIAD.....	\$27.95	---
▷ DISKEY (Disk Access & Repair Kit and		
Computer Diagnostics).....		\$39.95

ARCADE ANIMATION

	T	D
FOOD WAR.....	\$20.75	\$22.35
ICEMASTER.....	\$19.95	\$21.55

MARK DATA

	T	D
GLAXXONS.....	\$19.95	\$23.95
EL BANDITO.....	\$19.95	\$23.95
COSMIC CLONES.....	\$19.95	\$23.95
HAYWIRE.....	\$19.95	\$23.95

B5 SOFTWARE

	T	D
MONEY.....	\$15.95	---
BORROW.....	\$15.95	---
CARRY.....	\$15.95	---
MATH FACT.....	\$13.55	---
ABC'S.....	\$ 7.95	---

NOTE: ALL SALES FINAL. NO RETURNS UNLESS DEFECTIVE. ADDITIONAL LISTINGS IN OUR FREE CATALOG - CALL OR WRITE.

*Requires 18K Ext. Basic Minimum. ▷ Requires 32K Ext. Basic Minimum. □ We Recommend 32K or 64K. Others 16K Ext. Std. Basic Minimum.

WE PAY SHIPPING TO U.S.A., CANADA, AND MEXICO.
C.O.D. ADD \$2.00 (U.S.A. ONLY). ALLOW 2 WEEKS FOR
CHECKS TO CLEAR. NO P.O. BOXES! MUST HAVE STREET
ADDRESS. SHIPPING - OTHER COUNTRIES: ADD \$2.00
EACH SOFTWARE ITEM AND EACH JOYSTICK. ADD
\$5.00 EACH ALL OTHER ITEMS (NO MONITORS OR
PRINTERS SHIPPED OUTSIDE U.S.A.). ITEMS TO BE
SHIPPED AIR MAIL. PRICES SUBJECT TO CHANGE
WITHOUT NOTICE.

ENDICOTT

Computer Software And Accessories

2806-A S. MEMORIAL PARKWAY
HUNTSVILLE, ALABAMA 35801

VISIT OUR STORE

PRICES IN AD ARE MAIL ORDER ONLY.

PHONE ORDERS

205/536-4400

(PHONE OPEN 7 DAYS A WEEK)



WE PAY SHIPPING!



their bills for them. So the program listing at the end of this article shows how you can use the Color Computer to help you bank at home.

We got the idea for this program from CompuServe. They had a similar program for use with another computer and modem.

Our *BANKER* program requires a 16K ECB Color Computer, Hayes SmartModem and a Huntington Bank Pay-By-Phone account. The program is easily modified for other modems and other banks with the pay-by-phone feature. It allows easy and convenient use of the Pay-By-Phone service. The computer transmits your account and code information using touch tones. A menu of accounts is displayed to allow you to choose who to pay, how much and the desired payment date. This is a very practical use of the Color Computer. I hope that some of your CoCo widows will give it a try.

Load and run *BANKER*. The SmartModem must be powered on. At the first prompt, enter your secret password. To practice, just hit [ENTER]. The primary menu will be displayed.

The up and down arrow keys are used to position the cursor block to the desired menu item. Generally, the cursor will be positioned for you following the execution of a menu item.

Hit [ENTER] when the cursor is on the menu item you want to select.

If the [CLEAR] key is hit, "*" is sent to the bank's computer to cancel the previously completed message.

If the [?] key is hit, "#" is sent to have the bank's computer repeat the last message.

300.....	5
530.....	246
800.....	27
1000.....	108
1300.....	191
1540.....	176
END.....	224

```

10  '      Banker
20  '
30  ' Bank-by-phone
40  '
50  ' (C) 1984 By Sugar Software
60  '   Written by Gary Davis
70  '       2153 Leah Lane
80  ' Reynoldsburg, Ohio  43068
90  '       (614) 861-0565
100 '
110 'Banker is set up for the
120 'Huntington Banks (Columbus)
130 'Pay-By-Phone system. It
140 'requires a Hayes Smartmodem
150 'but may be modified for
160 'other banks and other auto
170 'dial (tone) modems.
180 '
190 POKE150,180:' 300 BAUD
200 DV=-2:' TO MODEM
210 'Allow output to serial line

```

RAINBOWfest Women's Seminar

At the RAINBOWfest in Long Beach, I had the privilege to participate in a panel discussion on Women and Computers. Linda Nielsen, a partner in Moreton Bay Software, chaired and organized the discussion. She brought together women with a variety of computer knowledge and expertise.

The panel members represented different phases and uses of the computer. I think that overall we had a very balanced panel. The members were as follows: Cindy Shackelford, *Rainbow's* West Coast advertising and marketing director; Caroline Webster, owner of Software Plus, a computer store in Citrus Heights, Calif.; Mary Nielsen, Linda Nielsen's daughter, with a teenager's viewpoint; Sherry Zuehlke, a local teacher and president of the South Bay Color Computer Club; Nancy Davis, a computer programmer; and myself, Sara Nolan, a partner in Prickly-Pear Software. I personally use the computer as a tool, but do not program very much.

The atmosphere was informal, and after a short synopsis by each panel

member on how they came into the computer field, an open discussion was held with the audience.

Out of the discussion came some very important points. More women are interested in computers today but few belong to a club. A woman whose husband has a computer feels foolish asking about programming techniques from him. Also, women get little time to gain the same knowledge their spouse has, as he is always using the computer. It was strongly recommended that women get their own computers and learn for themselves that they can't break or hurt a computer by touching the wrong key.

There was a fraction who were definitely afraid of the computer. They thought they might break it by typing the wrong key, that you had to know math to use it, and they weren't sure they could learn to program. Computerization threatens them in their jobs, they said, because if they didn't learn about computers they would be left out. At home, their husbands or children are spending all their time with the computer.

It was pointed out that the great thing about computers is that you don't need to know anything about them to use them. They are a tool, like the microwave in the kitchen or the TV in the living room. As with any new tool, you need to learn a few things. You need to learn to turn them on and load a program.

Software companies around the country are producing quality, user-friendly programs for many applications. Probably the one most used by everyone is a good word processor. It can be used for letters or bulletins or writing articles or children's term papers... the list can go on forever.

My feeling from the input of the panel and audience was that women can bring much to the computer revolution, but they will need to get involved and learn to use their computer just like any other tool.

— Sara Nolan


```

220 'without waiting for READY.
230 A=65314:POKE A+1,48:POKE A,2
49:POKE A+1,52:POKE A,0
240 '
250 RET#=CHR$(13):BKSP#=CHR$(8)
260 UP#=CHR$(94):DN#=CHR$(10)
270 '
280 DIM VENDORNUM$(15),SEL$(15)
290 '
300 'Commands to init modem
310 BUFFER$="S11=50E0M2TQ1"
320 GOSUB 1340 ' Init modem
330 PHONENUM$="TD 555-3291;" '
Insert your bank's number here!
340 SEL=1
350 GOTO 530
360 '
370 SEL$(1)="DIAL BANK COMPUTER"
380 SEL$(2)="TRANSMIT ACCOUNT NU
MBER"
390 SEL$(3)="TRANSMIT SECURITY N
UMBER"
400 SEL$(4)="PAY BILLS"
410 SEL$(5)="REPEAT"
420 SEL$(6)="REQUEST OPERATOR AS
SISTANCE"
430 SEL$(7)="HANG UP PHONE"
440 SEL$(8)="SETUP FOR PRACTICE
SESSION"

```


```

450 IF PRACTICE=1 THEN SEL$(8)="
SETUP FOR REAL SESSION"
460 SEL$(9)="RETURN TO BASIC"
470 NUMSEL=9:GOSUB 1390 ' GET S
ELECTION
480 ON SEL GOTO 620,700,760,820,
1110,1170,1230,530,1290
490 GOTO 470
500 '
510 'Setup session
520 '
530 CL8:PRINT "ENTER SECURITY CO
DE, OR enter FOR PRACTICE SESS
ION ";
540 PRINT "( )";
550 BL=1:MAXDG=4:GOSUB 1600:BL=0
560 IF LEN(FLD#)>0 GOTO 580
570 PRACTICE=1:ACCT$="D111111111
#";:PIN$="D2222#";:GOTO 370
580 PRACTICE=0:ACCT$="D028932067
21#";:PIN$="D"+FLD#+"#";:GOTO 37
0
590 '
600 'Dial bank
610 '
620 PRINT @484,"DIALING BANK COM
PUTER";
630 BUFFER$=PHONENUM$
640 GOSUB 1340
650 FOR X=1 TO 2000:NEXT X
660 SEL=SEL+1:GOTO 470
670 '
680 'Send acct#
690 '
700 BUFFER$=ACCT$
710 GOSUB 1340
720 GOTO 660
730 '
740 'Send ID#
750 '
760 BUFFER$=PIN$
770 GOSUB 1340
780 GOTO 660
790 '
800 'Select
810 '
820 SEL$(1)="0900 TRNSFR SVNGS T
O CHKNG":VENDORNUM$(1)="0900"
830 SEL$(2)="1000 TRNSFR CHKNG T
O SVNGS":VENDORNUM$(2)="1000"
840 SEL$(3)="1033 TRNSFR TO CHKN
G RESERV":VENDORNUM$(3)="1033"
850 SEL$(4)="1600 VISA":VENDORNU
M$(4)="1600"
860 SEL$(5)="3000 OHIO BELL":VEN
DORNUM$(5)="3000"
870 SEL$(6)="3010 C&SOE (ELECTRI
C)":VENDORNUM$(6)="3010"
880 SEL$(7)="4000 PENNYS":VENDOR
NUM$(7)="4000"


```

C.C. DIALER II

AUTOMATIC TELEPHONE DIALER PROGRAM




Access MCI and Sprint!



Keep phone lists organized
126 names & numbers in each Directory
Store directories on tape or disk


NO HOOKUP REQUIRED!



Only \$21.95 on cassette
or \$25.95 for Disk version

Send check or money order to:

Chris Computers
6299 Alderwood Lane,
Delta, B.C. Canada V4E 3E7



16K Ext. Basic & Touch Tone phone service reqd
(B.C. residents include 7% sales tax)


```

890 SEL$(8)="4100 SEARS":VENDORN
UM$(8)="4100"
900 SEL$(9)="4300 LAZARUS":VENDO
RNUM$(9)="4300"
910 SEL$(10)="      NO MORE BILLS
  TO PAY":VENDORNUM$(10)="02"
920 SEL=1
930 NUMSEL=10
940 GOSUB 1390
950 BUFFER$="D"+VENDORNUM$(SEL)+
"#;"
960 GOSUB 1340
970 IF VENDORNUM$(SEL)="02" THEN
  SEL=7:GOTO 370
980 PRINT @480,"ENTER AMT (EX: 5
0.00)";
990 PRINT "(      )";
1000 MAXDG=6:GOSUB 1600
1010 BUFFER$="D"+FLD$
1020 PRINT @480,"DATE TO PAY (EX
: 22=22ND)";
1030 PRINT "(      )";
1040 MAXDG=2:GOSUB 1600
1050 IF FLD$="" THEN BUFFER$=BUF
FER$+"#;" ELSE BUFFER$=BUFFER$+"
*"+FLD$+"#;"
1060 GOSUB 1340
1070 GOTO 930
1080 '
1090 'Repeat
1100 '
1110 BUFFER$="D#;"
1120 GOSUB 1340
1130 GOTO 470
1140 '
1150 'Rqst operator
1160 '
1170 BUFFER$="D0#;"
1180 GOSUB 1340
1190 GOTO 470
1200 '
1210 'Hang up
1220 '
1230 BUFFER$="H"
1240 GOSUB 1340
1250 SEL=9:GOTO470
1260 '
1270 'Return
1280 '
1290 CLS
1300 END
1310 '
1320 'Send buffer
1330 '
1340 BUFFER$="AT"+BUFFER$+RET$
1350 PRINT#DV,BUFFER$
1360 RETURN
1370 '
1380 'Menu display
1390 CLS

```

```

1400 PRINT "      PAY-BY-MICRO TE
RMINAL"
1410 PRINT "MAKE YOUR SELECTION
BY USING THEUP AND DOWN ARROW KE
YS AND THEN HIT THE enter KEY."
1420 PRINT STRING$(32,243);
1430 FOR X=1 TO NUMSEL
1440 PRINT "{ } ";SEL$(X)
1450 NEXT X
1460 IF SEL=0 THEN SEL=NUMSEL
1470 IF SEL>NUMSEL THEN SEL=1
1480 PRINT @(SEL-1)*32+1+5*32,CH
R$(182);
1490 C$=INKEY$:IF C$="" GOTO 149
0
1500 IF C$=CHR$(12) THEN BUFFER$
="D*#;":GOSUB 1340
1510 IF C$="?" THEN BUFFER$="D#;
":GOSUB 1340
1520 IF C$=RET$ AND SEL>0 THEN R
ETURN
1530 IF C$<>UP$ AND C$<>DN$ GOTO
  1490
1540 PRINT @(SEL-1)*32+1+5*32,"
";
1550 IF C$=UP$ THEN SEL=SEL-1 EL
SE SEL=SEL+1
1560 GOTO 1460
1570 '
1580 'Enter field
1590 '
1600 FLD$="":DG=1
1610 A=PEEK(&H88)*256+PEEK(&H89)
-&H400
1620 A=A-2-MAXDG
1630 PRINT@A,;
1640 PRINTCHR$(175);:D$=INKEY$:P
RINTBKSP$;:IF D$="" GOTO 1640
1650 IF D$=BKSP$ AND DG>1 THEN D
G=DG-1:FLD$=LEFT$(FLD$,DG):PRINT
  D$;:GOTO 1640
1660 IF DG>MAXDG AND D$<>RET$ GO
TO 1640
1670 IF D$=RET$ THEN RETURN
1680 IF D$="." OR D$="*" GOTO 17
10
1690 IF D$<"0" OR D$>"9" GOTO 16
40
1700 IF BL=1 THEN PRINTCHR$(214)
;:GOTO1720
1710 PRINT D$;
1720 IF D$="." THEN D$="*"
1730 FLD$=FLD$+D$:DG=DG+1
1740 GOTO 1640

```




NEW GOOD STUFF FOR EVERY COLOR COMPUTER

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 lots of special features:

- A full set of logical and pixel manipulation functions simplifies the development of complex figures.
- An editor lets you zoom in and work on every detail of your design. Toggle between the "macro" and "micro" screens for perspective on your creations.
- Nine animation buffers allow you to preview each sequence to ensure continuity and smooth flow.
- Versatile I/O routines store a graphic screen on cassette or floppy disk; recall it later for use by another program or revise it with **MagiGraph**.

If you're looking for the finest graphic development utility available for your Color Computer, THIS IS IT. Maximize your machine's potential, while you push your imagination to the limit — with **MagiGraph**!

By Kevin Dooley. Cassette **\$34.95** (16K required); Disk **\$39.95** (32K Extended Color BASIC required); Amdisk cartridge **\$44.95**.

CSPPOOL Color Computer Print Spooler

Stop Waiting Around for the Printer! **CSPPOOL** 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, **CSPPOOL** allows you to run other programs while your printer is doing its job. **CSPPOOL** 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 **CSPPOOL**: **\$64.95**.

SYSTEMS SOFTWARE

MACRO-80C: DISK-BASED EDITOR, ASSEMBLER AND MONITOR—With all the features the serious programmer wants, this package includes a powerful 2-pass macro assembler with conditional assembly, local labels, include files and cross referenced symbol tables. **MACRO-80C** supports the complete Motorola 6809 instruction set 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. **DCBUG** is a machine language monitor which allows examining and altering of memory, setting break points, etc.

Editor, assembler and monitor—along with sample programs—come on one Radio Shack compatible disk. Extensive documentation included. By Andy Phelps. **\$99.95**

SDS-80C: SOFTWARE DEVELOPMENT SYSTEM—Our famous editor, assembler and monitor in Rompack. Like **MACRO-80C**, it allows the user to write, assemble and debug assembly language programs with no reloading, object patching or other hassles. Supports full 6809 instruction set. Complete manual included. **\$89.95**

MICROTEXT: COMMUNICATIONS VIA YOUR MODEM! Now you can use your printer with your modem! Your computer can be an intelligent printing terminal. Talk to timeshare services or to other personal computers; print simultaneously through a second printer port; and re-display text stored in memory. Download text to Basic programs; dump to a cassette tape, or printer, or both. **Microtext** can be used with any printer or no printer at all. It features user-configurable duplex/parity for special applications, and can send any ASCII character. You'll find many uses for this general purpose module! **ROMPACK** includes additional serial port for printer. **\$59.95**

MICRO WORKS COLOR FORTH

- Faster to program in than Basic
- Easier to learn than Assembly Language
- Executes in less time than Basic

The **MICRO WORKS COLOR FORTH** is a Rompack containing everything you need to run Forth on your Color Computer. **COLOR FORTH** consists of the standard Forth Interest Group (FIG) implementation of the language plus most of **FORTH-79**. It has a super screen editor with split screen display. Mass storage is on cassette. **COLOR FORTH** also contains a decompiler and other aids for learning the inner workings of this fascinating language. It will run on 4K, 16K, and 32K computers. And **COLOR FORTH** contains 10K of ROM, leaving your RAM for your programs! There are simple words to effectively use the Hi-Res Color Computer graphics, joysticks, and sound.

Includes a 112-page manual with a glossary of the system-specific words, a full standard FIG glossary and complete source listing.

MICRO WORKS COLOR FORTH ... THE BEST! From the leader in **FORTH**, Talbot Microsystems. **\$109.95**

MACHINE LANGUAGE

MONITOR TAPE: A cassette tape which allows you to directly access memory, I/O and registers with a formatted hex display. Great for machine language programming, debugging and learning. It can also send/receive RS232 at up to 9600 baud, including host system download/upload. 19 commands in all. Relocatable and reentrant. **CBUG TAPE:** **\$29.95**

MONITOR ROM: The same program as above, supplied in 2716 EPROM. This allows you to use the entire RAM space. And you don't need to reload the monitor each time you use it. The EPROM plugs into the Extended Basic ROM Socket or the Romless Pack I. **CBUG ROM:** **\$39.95**

SOURCE GENERATOR: This package is a disassembler which runs on the Color Computer and generates your own source listing of the BASIC interpreter ROM. Also included is a documentation package which gives useful ROM entry points, complete memory map, I/O hardware details and more. A 16K system is required for the use of this cassette. **80C Disassembler:** **\$49.95**

HARDWARE

PARALLEL PRINTER INTERFACE—Serial to parallel converter allows use of all standard parallel printers. **PI80C** plugs into the serial output port, leaving your Rompack slot free. You supply the printer cable. **PI80C:** **\$59.95**

SUPER-PRO KEYBOARD—**\$69.95** (For computers manufactured after Oct. 1982, add \$4.95)

ROMLESS PACKS for your custom EPROMS — call or write for information.

BOOKS

6809 ASSEMBLY LANGUAGE PROGRAMMING, by Lance Leventhal, **\$16.95**

TRS-80 COLOR COMPUTER GRAPHICS, by Don Inman, **\$14.95**

ASSEMBLY LANGUAGE GRAPHICS FOR THE TRS-80 COLOR COMPUTER, by Don Inman, **\$14.95**

STARTING FORTH, by L. Brodie, **\$17.95**

GAMES

ZAXXON—The real thing. Excellent. What more can we say? Cassette requires 32K. **\$39.95**

STAR BLASTER—Blast your way through an asteroid field in this action-packed Hi-Res graphics game. Available in **ROMPACK**; requires 16K. **\$39.95**

PAC ATTACK—Try your hand at this challenging game by Computerware, with fantastic graphics, sound and action! Cassette requires 16K. **\$24.95**

HAYWIRE—Have fun zapping robots with this Hi-Res game by Mark Data Products. Cassette requires 16K. **\$24.95**

ADVENTURE—*Black Sanctum* and *Calixto Island* by Mark Data Products. Each cassette requires 16K. **\$19.95** each.

CAVE HUNTER—Experience vivid colors, bizarre sounds and eerie creatures as you wind your way through a cave maze in search of gold treasures. This exciting Hi-Res game by Mark Data Products requires 16K for cassette version. **\$24.95**

THE **MICRO WORKS**

California Residents
add 6% Tax

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

Master Charge/VISA and
COD Accepted

Looking At LOGO From BASIC

By Don Inman
Rainbow Contributing Editor

You may have noticed that the title of this department has changed from Using Graphics to CoCo Graphics. All previous articles in the series have been concerned with creating graphics through Extended Color BASIC. In the next few issues, I will be presenting some material on Color LOGO, a language that may be new to you. Due to the change in content, I felt a change of title would be appropriate.

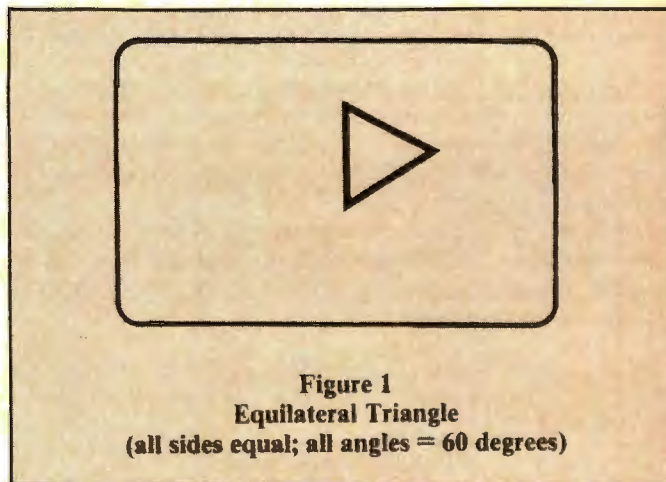
Dale Peterson's friend, Uncle Bert, has been greeting you for several past issues of *the Rainbow* with his discoveries of Color LOGO. Many of you may have attended one of the LOGO seminars at the Fort Worth or Long Beach RAINBOWfests. Whatever your degree of interest in LOGO may be, I hope you enjoy this series containing a look at Color LOGO through the eyes of BASIC.

There are many differences between creating graphics through Color LOGO and through BASIC. There are also many similarities. Color LOGO programs are made up of one or more blocks (or modules) called procedures. The first examples will consist of only one procedure. LOGO programs can be made very readable through indentation and grouping of lines into logical functions. There is no need for line numbers as the lines are executed in the order of appearance. Hence, the dreaded, much-abused, and often confusing *GOTO* statement is unneeded and non-existent in the language.

Graphics in BASIC are created by drawing between specific X, Y coordinates on the screen. Color LOGO differs in this respect by creating graphics by movements that are relative with respect to the current position and heading of the image of a "turtle" on the screen. The turtle is moved by the commands FORWARD and BACK. Its heading is changed by turning to the RIGHT or LEFT. The following examples demonstrate and explain some of the differences between Color LOGO and BASIC.

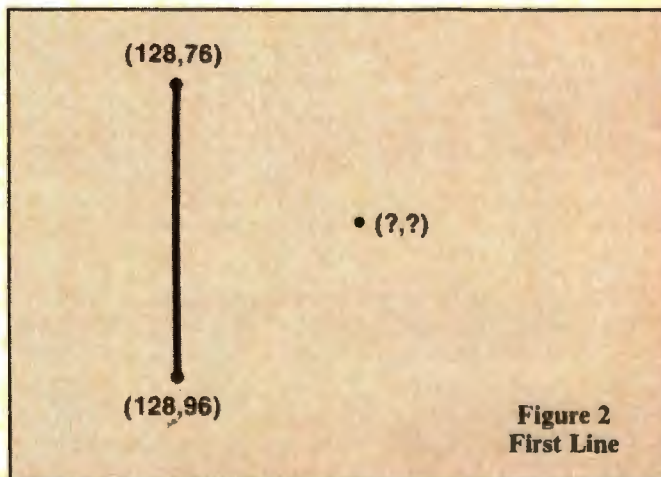
Suppose you wish to draw an equilateral triangle (all sides equal) at the center of the screen. Equilateral triangles have interior angles of 60 degrees.

(Don Inman is the acknowledged master of micro-computer graphics and the author of a large number of books. He has been working with Color LOGO since it was introduced. With this issue, his column now becomes a blend of graphics produced by both Color LOGO and Extended Color BASIC.)



Let's look at BASIC first. Suppose we wish the sides of the triangles to be 20 units in length. The center of the screen, for both languages, has an X coordinate of 128 and a Y coordinate of 96. Since BASIC's *DRAW* command is limited to drawing lines at multiples of 45 degrees, we must turn to the *LINE* command and draw from one end-point of a line to a second end-point. The vertical line is easily calculated by subtracting 20 from the original Y coordinate. This gives:

`LINE(128,96)-(128,76),PSET`



The second line is harder. Some geometry or trigonometry must be used. If you look at Figure 3, you can see that a 30-60 degree right triangle can be formed to aid the calculations.

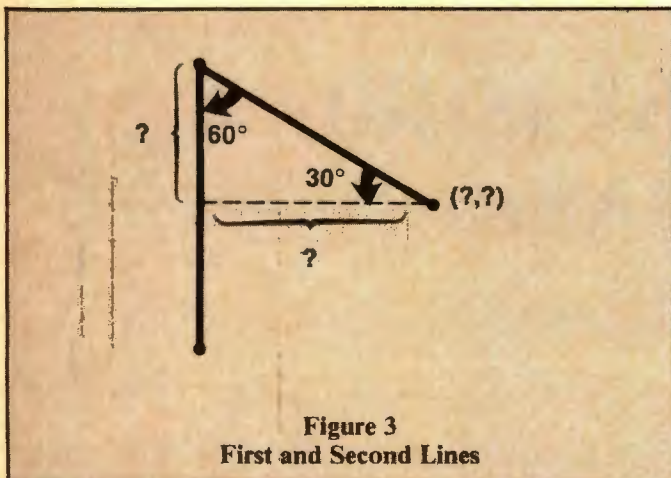


Figure 3
First and Second Lines

The side opposite the 30 degree angle (the change in Y coordinate) is equal to one-half the hypotenuse (one-half of 20 = 10). Therefore, the Y coordinate must change by 10 units. The side opposite the 60 degree angle (the change in X coordinate) is equal to three times the change in the Y coordinate. This equals approximately 1.732 times 10, or approximately 17.32. Therefore, you must add 10 to the Y coordinate and 17 to the X coordinate of the point forming the end of the first line:

56 + 10 for Y and 128 + 17 for X

The BASIC statement is:

```
LINE -(145,86),PSET
```

The final line goes back to the original point (128,96) by the BASIC statement:

```
LINE -(128,96),PSET
```

You can see that drawing the triangle with BASIC is quite a mathematical chore because the end points of the lines must be specifically defined. Color LOGO avoids this point-to-point construction by using its relative commands FORWARD 20 and RIGHT 120, repeated three times. These commands can be abbreviated FD 20 and RT 120. Let's now take a look at comparable programs in Color LOGO and BASIC.

```
Color LOGO
TO TRIANGLE
COLORSET 1
CLEAR
REPEAT 3(FD 20 RT 120)
END
```

```
BASIC
10 PMODE 3
20 PCLS
30 SCREEN 1,1
40 LINE(128,96)-(128,76),PSET
50 LINE -(145,86),PSET
60 LINE -(128,96),PSET
70 GOTO 70
80 END
```

The LOGO procedure must have a name (ours is TRIANGLE). The LOGO statements COLORSET 1 and CLEAR perform similar functions to the BASIC statements PMODE 3; PCLS; and SCREEN 1,1. The REPEAT statement of Color LOGO performs a similar function as a FOR . . . NEXT loop in BASIC. All statements in parentheses following REPEAT 3 are performed, in order, three times. This

line performs the same function as lines 40, 50 and 60 in the BASIC program. There is no need to calculate where the end points of the sides lie in Color LOGO since the lines are drawn by relative movements shown in Figure 4.

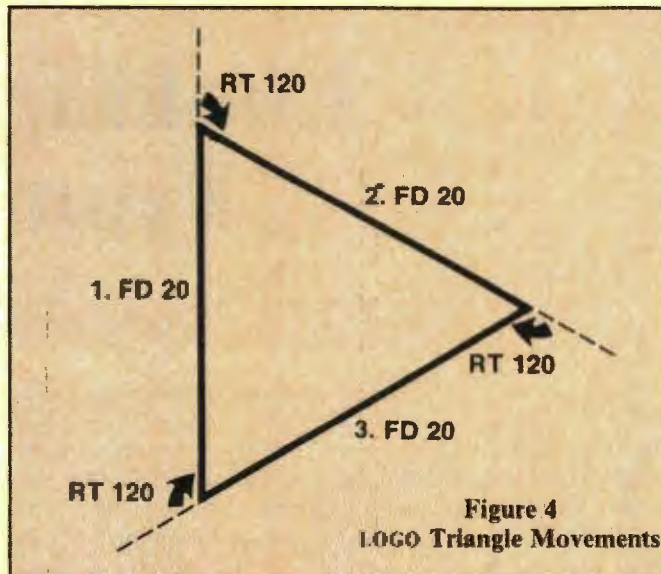


Figure 4
LOGO Triangle Movements

Now let's move on to a regular polygon with more sides. Take a regular pentagon (five equal sides). Once again, BASIC requires some detailed calculations. Since there are five sides, the exterior angles of the pentagon are found by dividing 360 by five. This equals 72 degrees. The interior angles of the regular pentagon are 180-72 or 108 degrees.

FORMAKER

CREATES THESE FORMS

Invoice	Overdue Notice
Letter	Receipt
Purchase Order	Job Quote
Mail Order	Order Confirmation
Payment Record	

and stores all the information on disk or tape for easy retrieval later. Figure list, net, discount, subtotals, freight, tax, etc.
Extremely user friendly.

32K Disk

\$29.00

(Freight Included)

Easily customize it with your name, address, credit card #, tax rate & number and more.

Challenger Software

3703 131st Ave. N.
Clearwater, FL 33520
or call (813) 577-3998



Call between 9 a.m.-5 p.m. EST

We'll mail you more information and a sample invoice.

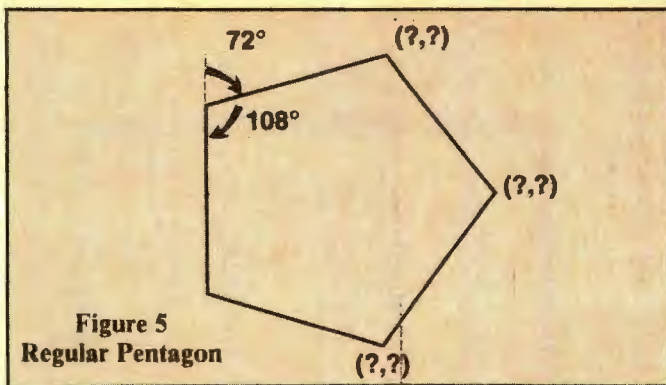


Figure 5
Regular Pentagon

I won't go into the calculations necessary to find the end points of the sides for the BASIC program. I'll leave that to you. You can use some of the trigonometry shown in earlier Using Graphics articles. However, let's take a look at the comparison of Color LOGO and BASIC programs.

Color LOGO

```
TO PENTAGON
COLORSET 1
CLEAR
REPEAT 5(FD 20 RT 72)
END
```

BASIC

```
10 PMODE 3
20 PCLS:
30 SCREEN 1,1
40 LINE(128,96)-(128,76),PSET
50 LINE -(?,?),PSET
60 LINE -(?,?),PSET
70 LINE -(?,?),PSET
80 LINE -(128,96),PSET
90 GOTO 90
100 END
```

Notice that the Color LOGO program for PENTAGON is the same size as the TRIANGLE program, but the BASIC program has grown.

Now suppose that you want to draw a regular polygon with 12 sides. Take a look at this:

Color LOGO

```
TO TWELVE
COLORSET 1
CLEAR
REPEAT 12(FD 20 RT 30)
END
```

BASIC

I leave the BASIC program to you. Remember, there are twelve sides — lots of points.

Notice that the change in the Color LOGO procedures merely reflect a change in the number of sides:

REPEAT N(FD 20 RT M)

N = number of sides

M = 360 number of sides

This means that you can very easily write one general procedure that will draw a regular polygon of any desired number of sides. This will be demonstrated in the next issue.

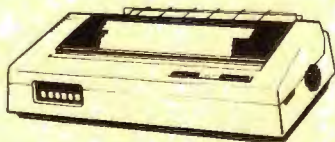
Many people call Color LOGO a children's programming language. I would rather think of it in other ways. It could be considered a non-mathematician's programming language as you have seen from the examples in this article. It could also be thought of as a beginner's language since it is so straightforward and easy to use. I like to think of it as a fun-language because I have fun whenever I use it.

* Color LOGO is available at your Radio Shack stores in either cartridge or diskette formats.

* Also available:

Color LOGO Guide For Parents by Zamora and Albrecht
Color LOGO Guide For Teachers by Inman and Albrecht

TRS-80 COMPUTER DISCOUNTS



COLOR COMPUTERS

26-3026 16k color II	139.95
26-3027 16k ext color II	189.95
26-3127 64k color comp	210.00
26-3022 1st disk drive	329.95
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
26-1257DWP-210	629.95

MODEL 4 and 100's

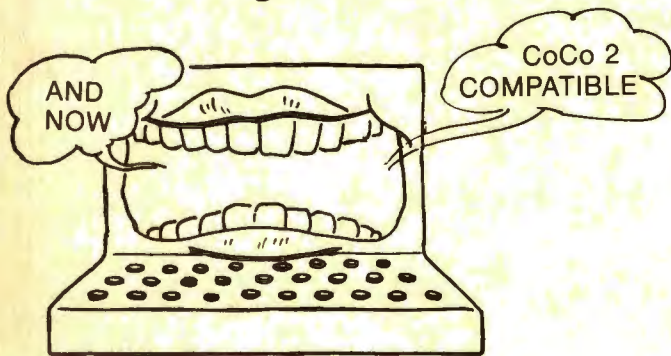
26-1067 mod 4 16k	829.95
26-1069 mod 4 64k 2 dr.	1695.00
26-3801 mod 100 8 k	699.95
26-3802 mod 100 24k	839.95

**We Carry the Complete Line of TRS-80
Computer Products at Discount Prices**
CALL FOR A FREE PRICE LIST 800-257-5556
IN N.J. CALL 609-769-0551

WOODSTOWN ELECTRONICS

Rt. 40 E. WOODSTOWN, N.J. 08098

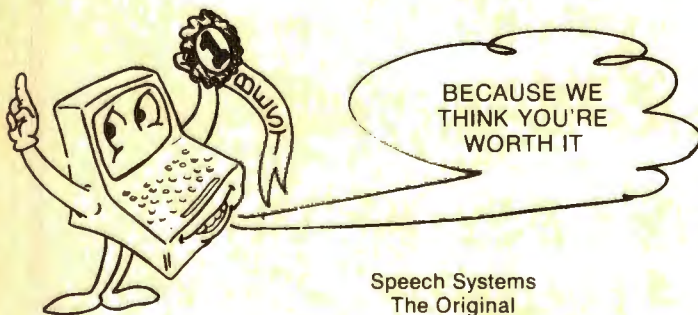
Nobody Does It Better In Speech or Music



THE VOICE

- You get CoCo's best hardware speech synthesizer using the VOTRAX SC-01, THE VOICE (was \$119.95).
- Included is a text to speech ML program FREE to allow any BASIC program to speak in minutes (was \$29.95).
- You also get 6 education and fun programs FREE (a \$34.95 value).
- You will have access to an ever growing library of software.
- Disk owners don't despair, THE VOICE works in all multi-pac units including our own Y-CABLE.
- You can find speech units for less and a lot for more, but you won't find any better.

All hardware and software (tape or disk) **\$79.95**



Speech Systems

The Original VOICE

Speech thru TV speaker	Yes
Speech thru external speaker	Yes
Volume control	Yes
Pitch control adjustment	Outside
Demo Programs	5
Phoneme Editor	Yes
Text-to-Speech program	Yes
Documentation	30 pages
Software	2 tapes
IC count	6
Case material	Aluminum
Case size	15/16 x 5 1/2 x 4 1/4
CoCo 2 version	Yes

Expansion Unit Compatibility

RS Multi-pak	Yes
BT-1000	Yes
Spectrum Switcher	Yes
Y-Pak	Yes
Y-Cable	Yes

NOTE: All software (except Termtalk) will work on either unit, so you can buy our software and their hardware or vice versa.



MUSICA

- 4 Notes produced simultaneously.
- Input notes from keyboard or joystick.
- Develop your own unique sounding instruments.
- Vary tempo as music plays.
- Save or load music from tape or disk.
- Call music from your own BASIC program.
- Music produced in stereo when used with the STEREO COMPOSER.

All features are fast because it's all machine language. It doesn't get any better than this.
Tape **\$34.95** (16K) (32K) Disk **\$39.95**

MUSIC LIBRARY

Play these 4 part music selections without any additional software, or use as source for Musica. Over 100 tunes. Comes on tape, may be copied to disk. Ten or more tunes on each tape.

32K Ext **Each \$9.95**

- Music from Stage, Screen and Television
- Pop Songs of the 70's
- Pop Songs of the 60's
- Pop Songs of the 50's
- Old Time Favorites
- Classical
- Christmas Music (Sacred)
- Christmas Music (Popular)
- Patriotic

STEREO COMPOSER

CoCo's one and only stereo music synthesizer. Plug it into the cartridge slot, connect to external speakers or your home stereo and you're ready for music realism. Comes with the COMPOSER 4 voice software. Separate left and right channel volume controls. Two 8 bit D to A's — for perfect reproduction. May be used with our best software "MUSICA." Disk owners may use any expansion unit or our Y-CABLE.

Tape or Disk **\$69.95**

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\$2.00
Shipping and handling outside the US and Canada\$5.00
COD charge\$2.00
Illinois residents add 6 1/4% sales tax for the STEREO COMPOSER or THE VOICE.

Speech Systems

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

\$100 awarded for the best talking program for education, the handicapped, home security or other serious application.

Another \$100 for the best entertainment talking program.

Contest winners and other program authors will be offered a contract with generous royalties. Contest ends 5/31/84.



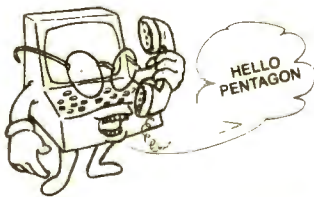
SPECIAL INVITATION

To our friends who purchased the Spectrum Projects Voice-Pak, please be advised that your programs will work with our speech synthesizer and we will gladly accept your contest entry.

*All Programs for the original Speech Systems Voice or Spectrum Projects Voice-Pak**

TERMTALK (Smart)

The first smart talking terminal program. All the features of an intelligent telecommunications program plus what appears on the TV is spoken just like in the movie WAR GAMES.



Features

- Upload and Download programs
- Full or Split Screen
- Normal or Reverse Video
- Control Xmit Protocols
- Buffer Editing
- When used with VOICE it talks (The Voice is only necessary if you want talking capability).

Tape **\$39.95**

Disk **\$49.95**

Speech Systems believes Termtalk can be of particular use to those with a sighting impairment. We are currently trying to develop a nationwide network to allow such handicapped persons to telecommunicate. Anyone purchasing Termtalk for this application will receive a \$5.00 discount.

COLOR MATH

The perfect educational game to aid the student in learning addition, subtraction, multiplication and division. Allows one to specify difficulty level.

Tape (32K Ext) **\$28.95**

SPELL-A-TRON

The program allows the user to build a dictionary of words. During testing, the words are spoken. If an incorrect response is given, the word is spoken again and spelled.

Tape (32K Ext) **\$28.95**

SCORE E-Z

A yahtzee type program. Up to six players can compete. All scoring and record-keeping is done by the computer.

Tape (32K Ext) **\$24.95**



ESTHER

Meet Esther the talking psychoanalyst. An excellent example of artificial intelligence. She may not solve all your problems, but her insight will amaze you.

(32K) Tape **\$24.95**

Disk **\$28.95**

FINAL COUNTDOWN

You must stop the mad general from launching a missile at Moscow and causing WW III. Has multiple voices for added realism.

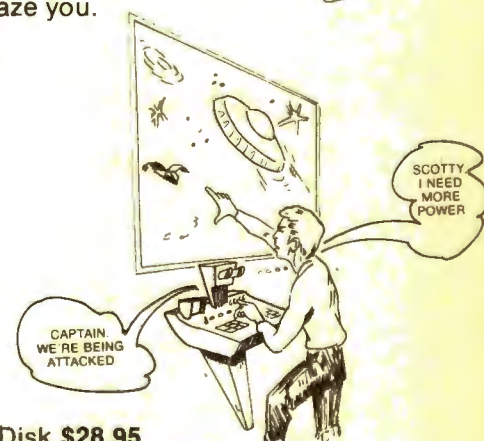
Tape (32K Ext) **\$24.95**



STAR TALK

You're the Star Fleet Captain. Your mission . . . destroy the enemies' Dragon Star Ships. All status reports are spoken!

(32K) Tape **\$24.95** Disk **\$28.95**



More Talking Software

- PRESIDENTS** (32K Ext Know your U.S. Presidents) . . . \$9.95
 - CAPITALS** (32K Ext What's the capital of New Hampshire) . . . \$9.95
 - STATES** (32K Ext Makes learning the states fun) . . . \$9.95
 - HANGMAN** (32K Ext Guess the word before you hang) . . . \$9.95
 - MATH DRILL** (16K Ext Arithmetic was never so much fun) . . . \$9.95
 - SPELLING TESTER** (16K Ext Win your next spelling bee) . . . \$9.95
 - FOREIGN LANGUAGES** (16K Ext Learn a foreign language) . . \$9.95
 - POETRY CREATOR** (16K Ext Robert Frost was never like this) \$9.95
 - SHORT STORY MAKER** (16K Ext You've got to hear this one) \$9.95
- And much more to come. Don't forget the contest.

THE Y-CABLE

Disk owners why pay \$100 to \$300 for a multi-pac unit. With our Y-CABLE you can connect your disk in one connector and the VOICE or STEREO COMPOSER in the other. All gold connectors. **\$29.95**

*Termtalk requires the Speech Systems Voice

MORETON BAY SOFTWARE

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



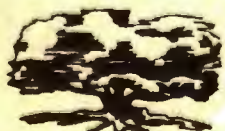
GRAPHICOM

The Ultimate Graphic Utility

You must see this program to believe it! Create pictures and text on the same screen. Now you can create pictures as good as any graphic you have seen on the color computer. Write graphic adventures or educational programs. Requires 64K EXB, Disk Drive and Joy Sticks \$29.95

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.

BUSINESS UTILITIES

MORE BUSINESS -Ver 3.12 The *preferred* business package. Completely interactive. General Ledger. Accounts Receivable. Accounts Payable. Customer Statements. Mailing Labels. Profit/Loss. Balance Sheet Statements. Our most powerful business package. Buy the best!

32K Disk R/S DOS \$99.95

UTILITIES FOR EVERYONE

MORE INVENTORY - Maintain an inventory of more than 1000 items. Know when to order, what has been ordered, quantity and value of any item. Calculate inventory value with single keystroke.

32K Disk R/S DOS \$44.95

COCOWRITER II — Powerful and full featured. An excellent word processor at an affordable price. 32, 51, 64 or 85 characters per line, justify right, left, center, insert, delete, move blocks. Menu driven printing and formatting. Tabs, etc. One of the best values in word processing today!

16 K EXB Cassette \$34.95, 16K EXB Disk \$44.95

FILE CABINET — Data base, alphabetizes, sorts numeric entries, searches for key words or numbers, computes totals & averages by categories, saves records, changes or deletes them. Up to 20 entries for each record, up to 256 characters for each entry. Mailing list included. Output to screen printer or tape. Print all or selected records, +, -, x, ÷ Numeric entries.

16K EXB Cassette \$29.95

THINKING GAMES

TRIVIA — THE EINSTEIN EDITION - A one to four player trivia game. More than 1900 challenging questions. Great for parties or family fun.

16K Non Extended \$19.95 Cassette, \$21.95 Disk

ADVENTURE IN TOWER CASTLE - Accept the challenge of Tower Castle! A classical word adventure with a graphic introduction and added features. Not just words on a green screen. Color and music stimulate your imagination.

32K EXB \$17.95

SCIENCE

PLANETARIUM — See the Heavens from the Earth. See the Earth from the Heavens. You command a computerized Planetarium. Five celestial programs on one cassette. A star chart to delight you. Accent 33 constellations and/or 21 first magnitude stars. Read the phases of the moon at a glance. View the stars in the Northern and Southern Hemispheres. Select any day or night from A.D. 101 to thousands of years in the future. See the location of the Sun, Moon, Mars, Venus, Jupiter and Saturn as they appear in your sky. A planet chart which locates the positions of the nine major planets. See the locations of the planets for any date A.D. 0 to thousands of years in the future. Watch the planets revolve around the Sun by days, months or years. Find the Zodiac sign of your birth and the location of every planet at that time. Includes charts of the Zodiac constellations.

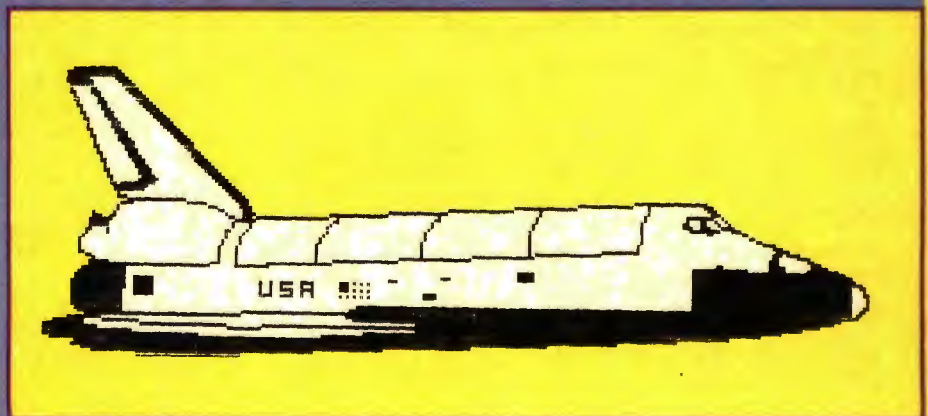
16K Extended Basic Required, \$19.95 cassette

Shuttle Graphic

By Jeff Kawa

A realistic illustration of the space shuttle Columbia

For all you amateur astronauts, here is the picture you have been waiting for. Picture the space shuttle Columbia after blasting off the launch pad and rising to the highest extent. This computer picture will add excitement and drama to your space dreams. Before your very eyes you will be able to see the space shuttle unfold. The detailed illustrations are authentic and realistic.



Lines 5 through 20 use the highest graphics mode available. Clearing the screen in a buff color, the space shuttle will unfold in the following lines:

Line 25 draws the nose and front of the space shuttle.

Line 30 draws the top of the shuttle.

Lines 35 through 70 draw the tail using a *FOR . . . NEXT* loop (Example: *FOR n=1 to 10:NEXT n*)

Lines 75 and 80 draw the rudder.

Line 85 draws the orbital maneuvering engines and fuel tanks.

Lines 90 and 95 draw one of the main engines, the wing, and the underbody of the shuttle.

Lines 100 through 115 draw the shuttle's cargo bay doors.

Lines 120 through 155 draw and paint the heat resistant tiles.

(Jeff Kawa, a 13-year-old eighth grade student, works with computers primarily as a hobby. He has taken summer computer courses where he studied BASIC programming and is presently in a computer science class. His career plans include becoming a computer engineer.)



PRICKLY-PEAR SOFTWARE

QUALITY PROGRAMS FOR YOUR COCO & TDP-100

PROGRAMS REQUIRE 16K EXTENDED BASIC FOR TAPE, AND 32K DISK UNLESS OTHERWISE NOTED.

COLOR DISK TRIVIA

WITH DEVELOPMENT SYSTEM FOR EDUCATIONAL USE

Here it is! The first new program offered by the author of the famed **VIKING!** in nearly two years, and worth the wait.

Color Disk Trivia

is simply a very good, and very fun to play game. It has everything going for it: The challenge of trivia, ease of use, a good social game encouraging conversation, and you may even learn something! The development system (included) even lets you easily create your own custom question disks.

The play of the game is easy to understand, because the computer does all the work for you. It even looks up and presents the proper question!

On each question disk there are five categories, and there are an amazing 1100 questions on each disk. No, that's not a misprint, we said 1100 questions per question disk! Yes, that is a pretty full disk. Because the questions are stored on the disk, instead of in memory, you can play **COLOR DISK TRIVIA** on any size Color Computer system with one disk drive — 16K, 32K, or 64K.

There are already five question disks available, and you get the **GENERAL** disk when you purchase the game. That's correct, there are already **FIVE** question disks with a total of 5500 questions available for shipment **RIGHT NOW**, with more on the way shortly.

All question disks have five categories and 1100 questions. The disks available now are:

GENERAL: (Included with the game) The categories for this disk are history, the written word, movies & television, science & the world, and sports.

ENTERTAINMENT: These categories are movies, the stage, television, music, and literature.

BIBLE: 1100 questions in five categories on the Old and New Testaments.

SPORTS: This disk will challenge even the very knowledgeable sports fan. All major sports (and some minor ones) are represented.

CHILDREN: No, this isn't questions **ABOUT** children, it's questions **FOR** children. 1100 fun questions just for the younger set.

The game of **COLOR DISK TRIVIA** can be played by from 1 to 4 people (or teams), and you set the length of the game at the start when you decide how many questions must be answered in each category to win. The computer chooses the categories randomly, though sometimes it will let you choose the category for yourself (or let your opponents choose for you). Because of this category selection by the computer, a single category can often hold you up while one of your opponents slips by to win. The outcome is always in doubt, and no player is ever eliminated.

Trivia lovers will enjoy the fact that you can play without other people if you desire, because the computer will provide plenty of challenge. We want to emphasize that this is, first and foremost, a fun game.

Your Personal check is welcome - no delay. Include \$1.50 shipping for each program ordered. (Shipping free on \$50.00 or larger orders). AZ residents add 7% sales tax. Orders shipped within two days.

The Development System

Naturally, in order for our programmers to type in thousands of questions easily and accurately, a good development program to create the question disks had to be written, and we include this program with the game at no additional charge!

The program is all menu-driven and very user-friendly. That means that no knowledge of programming is needed to use it. If you can turn on your computer and type, you're all set! Now sit back and imagine the educational possibilities.

Yes, our question disks have 1100 questions, but the game program will handle question disks having any number of questions from 5 up to a full disk of 1100, so a teacher can type in 50 or 100 questions and answers (the questions are multiple choice), and then the students can play the "game" and have a great time, while accidentally picking up the lesson. Let the natural spirit of competition fuel the learning process.

The development program is very easy to use, and gives you options to add questions, change or delete a question, and print the questions and answers on the screen (or a printer, if you have one). You can develop a question disk and easily add questions to it any time you wish.

This program finally gives parents and teachers the opportunity to easily create a custom learning program for any level student, and if we keep it a secret, no-one need know it's more than a game.

TECHNICAL INFORMATION: **COLOR DISK TRIVIA** is a mixture of Machine Language and BASIC. It uses Fielded Direct Access Disk Files. **COLOR DISK TRIVIA** requires 16K and at least one disk drive.

ORDERING INFORMATION:

COLOR DISK TRIVIA GAME with **QUESTION DEVELOPMENT SYSTEM** and **GENERAL** question disk containing 1100 QUESTIONS: **\$29.95**

ADDITIONAL QUESTION DISKS:

THE BIBLE: 1100 questions on the Bible. **\$19.95**

ENTERTAINMENT: 1100 questions on movies, TV, stage, music, and literature. **\$19.95**

SPORTS: 1100 questions for the sports fan. **\$19.95**

CHILDREN: 1100 questions for the younger set. **\$19.95**

FOR A LIMITED TIME, buy the game for **\$29.95** and select an additional disk of your choice for 1/2 price! That's a **\$49.90 value for just \$39.95**. You save \$10, and we will pay the shipping.

Dealer and author inquiries are always welcome. Canadian dealers should contact Kelly Software Distributors, Ltd., P. O. Box 11932, Edmonton, Alberta T5J-3L1 (403) 421-8003

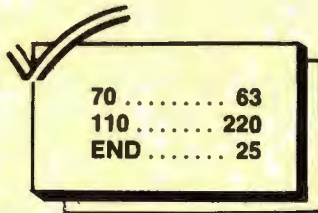
Stocked by Quality Dealers, or

Send Order To: **PRICKLY-PEAR SOFTWARE**

8532 E. 24th Street
Tucson, Arizona 85710
(602) 886-1505



Line 160 draws the USA insignia.
 Lines 165 through 185 draw the American flag.



The listing:

```

1 REM /SPACE SHUTTLE/
5 PMODE 4,1
10 PCLS 5
15 SCREEN 1,1
20 COLOR 0,5
25 DRAW"BM244,125;U3L1U2L1U1L3R1
U1L1U1L2U1L2U1L3U1L2U1L2D2L1D1L7
U2L2U4R1U1R2D1R3D1R3D1R1D1U1L1U1
L3U1L3U1L3R1U1L2U1L3U1C5L1C0L1U1
C5L1C0L1U1C5L1C0L1U1C5L1C0L2U2C5
L1C0U1C5L1C0U1C5L1C0U1C5L1C0;
30 DRAW"L2D1L7D2L1D1R2D1R5D1R1U1
L3U3R1D2R1D1R3U1C5R1C0R2L2U1C5L1
C0U1C5L1C0U1C5L1C0U2R1L2U1R1L2U1
L20D1C5L1C0L15D1C5L1C0L17D1C5L1C
0L18D1C5L1C0L16D1C5L1C0L16D1C5L1
C0L20U1C5L1C0L2D2R2L5R2U4R1D4R1U
4L3U1R2U1;
35 A*="L3U1L1R3L1U1"
40 FOR A = 1 TO 7
45 DRAW A*+";"
50 NEXT A
55 DRAW"L2U1R1L2U1R1L2U1L1R3L1U1
;
60 FOR A = 1 TO 10
65 DRAW A*+";"
70 NEXT A
75 DRAW"BM29,58;L1U1L12D1L2R13D1
L13D1R6D1R1L7R1D1R6D2R1D1R1D2R1D
2R1D2R1D1R1D2R1D2R1D2R1D1R1D2R1D
2R1D1R1D2R1D2R1D2L1D1L5D1L2U1L1U
2L1U2L1U3L1U2L1U2L1U3L1U2L1U3L1U
2L1U2L1U2L1U2L1U2R6D1R1;
80 DRAW"D1R1D2R1D1R1D2R1D1R1D2R1
D1R1D2R1D1R1D1L1R1D1R1D5U4R1D5U3
R1D2R1D2U1R1D3U1R1D1R1D2R1D1R1L1
D1L2D1L1D1U2R1U3D2R1D1L2D2L8U1R7
D1L6D2R3C5D1C0R17C5D1C0R6C5D1C0R
3C5D1C0R2C5D1C0R1C5D1C0R2C5D1C0D
1C5L1C0;
85 DRAW"D2C5L1C0L1D3C5L1C0D2C5L1
C0D5L3C5D1C0L29U1L5R1U2C5L1C0L2C
5U1C0L1U5C5R1C0R1C5U1C0U1R1U3R1U
2D1R2D1R2D4U2L5U1R5U1L5R2U1R1D1R
3U1R1U2C5R1C0U2C5R1C0R3U1"
90 DRAW"BM20,131;R10U8R1U6L5U1L5
D1L2D1L1D1L1D2L1D7R1D1R1D1R2D2L5

```

```

D1L4D1L3D1L2D1L2R2D1R4D1R7D2L1R3
D1R3D1R13D1R29U1R21U1R20U1R25U1R
22U1R20U1R17U1R15U1R9U1R6U1R6U1R
5U1R4U1R2U1R3U12D12R2U1R1U1R1U1R
1U1"
95 DRAW"BM218,110;L1D2L1D4L7U1L7
U1L1D1L7D13L97C5D1C0L2C5D1C0L30R
30D1R2D1R18D2L45C5D1C0L10C5U1C0L
25C5U1C0L11C5U1C0L4U1R44L44D1L1D
3R4D1R10D1R19D1R36U1R12U1R15U4"
100 DRAW"BM181,96;D3C5L1C0D2C5L1
C0D7C5L1C0D2L11C5D1C0L19C5D1C0L1
7R16U9C5R1C0U2C5R1C0U2C5R1C0U1"
105 DRAW"BM130,113;L20R6U6C5R1C0
U3C5R1C0U1C5R1C0U2C5R1C0R1U1"
110 DRAW"BM109,114;L19C5D1C0L18R
14U7C5R1C0U2C5R1C0U1C5R1C0U2C5R1
C0U1C5R1C0R1U1"
115 DRAW"BM72,116;L9U7C5R1C0U3C5
R1C0U1C5R1C0U1C5R1C0U1"
120 DRAW"BM144,117;D2R4U1L4U1R4"
125 DRAW"BM122,119;R2"
130 DRAW"BM120,124;D1L3U1R3"
135 DRAW"BM107,120R2"
140 DRAW"BM34,120;R5D5L5U5R5"
145 PAINT(210,125),0,0
150 PAINT(36,122),0,0
155 PAINT(24,121),0,0
160 DRAW"BM70,121;D4R3U4R1C5R2C0
R3L3D2R3D2L3R4C5R2C0U4R3D4U2L3"
165 PMODE 3,1:COLOR 7,8:LINE(96,
121)-(100,121),PSET
170 LINE(93,123)-(100,123),PSET
175 LINE(93,125)-(100,125),PSET
180 PMODE 4,1
185 COLOR 0,5:DRAW"BM93,121;D2R2
U2L2D1R2"
190 GOTO 190

```

**PLAY
COMPUTER MONOPOLY**
ON YOUR COCO

**EXTRA!
EXTRA!**

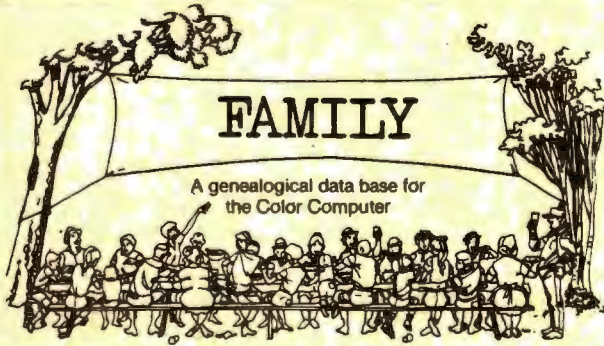


Full color playing board and cards display. 32K extended Basic. \$21.00 cassette postage paid in U.S.

Key Programs
6728 Mackey
Overland Park, KS 66204



PETROCCI FREELANCE ASSOCIATES



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

ALPHABET SONG

An excellent companion to preschool package.



What better way to teach the alphabet than with a familiar tune accompanied by full size screen display of the letters. This one has been kid tested and loved!

Level 1 - sequences through entire alphabet with song.
 Level 2 - steps at random letters, child must press next letter in sequence
 Level 3 - Child must enter each letter in order.
 All levels accompanied by Alphabet Song.

16K EXT 11.95

See Special
Prices Below

SPRING SPECIAL ALL GAMES REDUCED 30%

Good Through
May 30, 1984

- **INSPECTOR CLUESEAU**
The No. 1 Murder Mystery for the CoCo!
(Every game is different.) 32K EXT 13.95
- **PATTI-PAK**
"The Best" - Highest Quality Graphics
16K 15.95
- **STAGECOACH**
Wild West Adventure! 16K EXT 13.95

- **FLASHER**
Can Your Memory Save You From The Sharks?
32K EXT 13.95
- **TYCOON**
CoCo Monopoly. 32K Tape Only 13.95
- **BOWLER**
Sports Action Fun! 16K EXT 13.95
- **DUNKA DUCK**
Arcade Action For All Ages. 16K EXT 13.95

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

LITTLE LEAGUER



Does all the record keeping for you. Excellent printout. Allows mid season entry. Keeps 19 different statistics and individual as well as team statistics.

Easy screen editing features - allows editing of single player data. Saves to tape or disk.

32K EXT 24.95

Statistical Analysis

- 32K EXT 2 Programs for 34.95
- Stress Evaluator**
- 16K EXT 24.95
- Medical Terminology**
- 32K EXT 19.95
- Heart Lung Circulatory**
- 32K EXT 34.95
- Weather Forecaster**
- 32K EXT DISK 19.95
- Weather Watch**
- 16K EXT 24.95
- Hurricane Tracker**
- 16K EXT 15.95
- Print Spooler**
- 64K 11.95

Master Graphics Tool Kit

32K EXT 39.95

Text Master Graphics

32K EXT 19.95

Super Disk Utility

- 32K EXT DISK 44.95
- Real Estate Investment**
- 16K EXT 24.95
- Homeowner Selling Analysis**
- 16K EXT 24.95
- Owner Financed Real Estate**
- 16K EXT 24.95

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



KIDS KORNER

- Preschool Package, ABCs, 123s, Shapes, Big-Bigger
- All Four 24.95
- Guillotine Spelling
- Game 16K EXT 9.95
- Alphabet Song
- 16K EXT 11.95

Color labels from your CGP-115

Special Delivery

By Thomas Szlucha

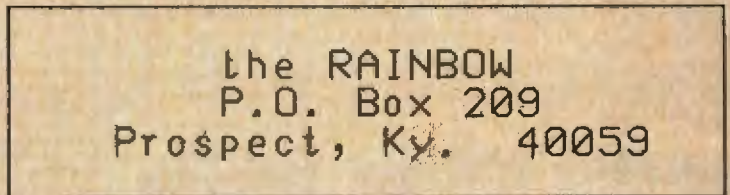
Do you want to really impress someone receiving mail correspondence from you? Try using a custom label drawn in colors with the CGP-115 printer/plotter. *CGPLABEL* is a program designed to draw such a label allowing the selection of one color for the text and another for a neat border drawn around the address. Figure 1 shows an example of such a label addressed to our favorite Color Computer magazine.

In developing this simple program I discovered a couple of interesting things about the CGP-115 printer that are worth passing on to other users. In the instruction manual, the "S" command used to set the text scale in the graphics

The other interesting discovery worth noting is that, although the documentation states that text mode character sizes are limited to 40 and 80 cpl, there is a technique that allows any of the graphics mode character sizes to be available in the normal text mode. When the printer is turned on, it cycles up in the text mode with the character size determined by the position of dip switch 2 on the back panel. To change the character size, simply enter the graphics mode, *PRINT#-2,CHR\$(18)* and [ENTER] the scale desired, *PRINT#-2,"Sx"*. Then switch back to the text mode, *PRINT#-2,CHR\$(17)*. The printer will stay at that character size until switched off or a new size is selected.

TABLE I

S	cpl	S	cpl
0	80	8-9	8
1	40	10	7
2	26	11-12	6
3	20	13-15	5
4	16	16-19	4
5	13	20-25	3
6	11	26-39	2
7	10	40-63	1



mode allows values of zero through 63 to produce character sizes between 80 and one characters per line (cpl). This could obviously be interpreted as providing 64 unique character sizes. Unfortunately, this is not true. There are only 16 different character sizes because the formula to calculate cpl, shown below, is rounded off by the computer to the next lowest whole number.

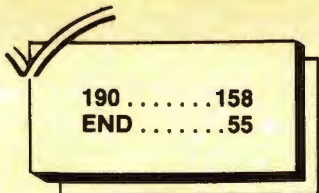
$$cpl = 80 / (1+S) \text{ where } S \text{ is the scale parameter}$$

Table I shows the relationship between values of S and the resulting characters per line.

(Thomas Szlucha, a frequent contributor to the Rainbow, enjoys free-lance writing. Home computing is a hobby enjoyed by his whole family.)

CGPLABEL is designed to work with the MC-10, as well as the 4K Color Computer. It produces labels that are center-justified, using the largest character size that will fit the width of the paper. The label will fit in the sending address area of a business envelope and is large enough for packages. Being written for MC-10 and Color BASIC, commas are not allowed in the address. If you have Extended Color BASIC, change lines 20, 30 and 40 from *INPUT* to *LINEINPUT* to accept this punctuation. If you would like the address left instead of center-justified, change variables L1, L2, and L3 in lines 190, 210 and 230 to LM.

Unfortunately, real label stock is not available for the CGP-115. I find a glue stick handy for attaching the finished labels. The program provides dashed lines above and below the label to aid in trimming.



The listing:

```

1 'CGP-115 LABEL PRINTER
2 'BY T.SZLUCHA
3 'TO LEFT JUSTIFY CHANGE L1,L2
AND L3 IN LINES 190,210 AND 230
TO LM
4 '
5 '
10 CLS:PRINT"GGP-115 LABEL PRINT
ER
15 PRINT"CHECK YOUR PLOTTER PENS
!":FOR T=1 TO1500:NEXT:CLS
20 INPUT"NAME ";N$:L1=LEN(N$)
30 INPUT"STR ADDRESS ";SA$:L2=LE
N(SA$)
40 INPUT "CITY & STATE ";CS$:L3=
LEN(CS$)
50 CLS:PRINTN$:PRINTSA$:PRINTCS$
:PRINT
60 INPUT "CORRECT <Y>/<N>";R$:IF
R$="Y" THEN 80
70 IF R$="N" THEN CLS:GOTO 20

```

```

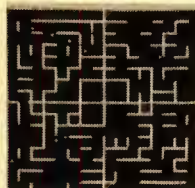
75 GOTO 60
80 IF L1>=L2 THEN LM=L1 :GOTO90
85 LM=L2
90 IF LM<L3 THEN LM=L3
100 CC$="0=BLACK 1=BLUE 2=GREEN
3=RED"
110 CLS:PRINT"COLOR OF LETTERS":
PRINTCC$:INPUT C1:IF C1<0 OR C1>
3 THEN 110
120 CLS:PRINT"COLOR OF BORDER":P
RINTCC$:INPUT C2:IF C2<0 OR C2>3
THEN 120
130 PRINT#-2,CHR$(18)
140 PRINT#-2,"C"C1
150 PRINT#-2,"M 0,-100"
160 PRINT#-2,"I"
170 S=INT(80/(LM+4))-1
180 CL=INT(80/(S+1))
190 B=INT(CL-L1)/2:GOSUB 500
200 T1$=BL$+N$
210 B=INT(CL-L2)/2:GOSUB 500
220 T2$=BL$+SA$
230 B=INT(CL-L3)/2:GOSUB 500
240 T3$=BL$+CS$
250 PRINT#-2,"S";S
260 PRINT#-2,"P";T1$
270 PRINT#-2,"M"0","480/CL*7/5*(
-1)
280 PRINT#-2,"P";T2$
290 PRINT#-2,"M"0","480/CL*7/5*(
-2)
300 PRINT#-2,"P";T3$
310 PRINT#-2,"H"
320 PRINT#-2,"C"C2
330 PRINT#-2,"L0"
340 YI=480/CL*7/5
350 X=0:Y=YI*2:GOSUB480
360 X=480 :GOSUB 480
370 X=480 :Y=(-3)*YI:GOSUB 480
380 X=0:GOSUB 480
390 X=0 :Y=(2)*YI:GOSUB 480
400 PRINT#-2,"L7"
410 PRINT#-2,"R"0","YI*1.5
420 PRINT#-2,"J480,0"
430 PRINT#-2,"R"0","YI*(-8)
440 PRINT#-2,"J -480,0"
450 PRINT#-2,"A"
460 CLS:INPUT"ANOTHER OF SAME LA
BEL <Y>/<N>";R$:IF R$="Y" THEN C
LS:GOTO130
470 INPUT"A DIFFERENT LABEL <Y>/
<N>";R$:IF R$="Y" THEN 10
475 CLS:END
480 PRINT#-2,"D"X","Y
490 RETURN
500 BL$=""
510 FOR I=0 TO B
520 BL$=BL$+" "
530 NEXT I
540 RETURN

```

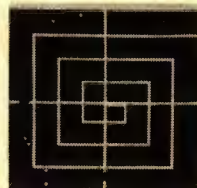
AT WITS END

(C) 1984 by Derringer Software, Inc.

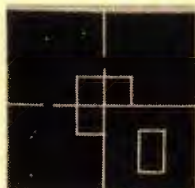
You may lose your sanity while playing this new game from Derringer Software! As the resident caretaker at the local "Home for burned-out programmers", your job is to keep the public safe by keeping the patients within the confines of the central compound. But, every now and then the somewhat erratic patients start running about and you find yourself having to open and close doors to get them to safety. Of course as one gets in, another may jump out! Three separate display screens with nine levels of play for each. Play against the clock for the best time. Score kept for each game and level.



CRAZY MAZE



SPIRALMANIA



BEGINNER'S BOX

The CRAZY MAZE is completely different each time you play, SPIRALMANIA will be a true test of mental strength. The BEGINNER'S BOX is for those short on patience!

\$24.95

Requires joysticks and can be played on 16K Extended tape or disk systems! Please indicate tape or disk when you order. Send check or money order to: Derringer Software, Inc. P. O. Box 5300, Florence, S.C. 29502-2300. Visa or Master Card customers can call (803) 665-5676 9:00am to 5:00pm Mon-Fri. Please include \$2.00 for shipping and handling — No COD's.

★ See the ad for Double Buster also ★

A colorful program to make your work look as...



Pretty As A Picture With CGP-115

By Thomas Szlucha

I would like to share this program with the many CoCo artists who like to have a permanent copy of their work. The program entitled *GPDUMP* is designed to take a picture drawn on the screen and reproduce it with the CGP-115 printer/plotter. If you have not seen one of these printers — or have ignored it thinking because of its small size that it must be a toy — it is really worth examining. Although it is small, it packs a lot of capability in a miniature scale, but this is not meant to be a Radio Shack advertisement, so on with the discussion of a very practical application for this printer.

The concept employed to create a screen dump is quite simple. The "screen" is scanned, interrogating each pixel encountered with Extended BASIC's *PPOINT* command. Depending on whether the pixel is "on" or "off," the instruction to write to the equivalent area on the plotter paper with either a space or a line is given. In actual practice, to speed up the plotting routine, the length of a continuous string of on or off pixels are accumulated in variables A and B, and a string variable PSS is built containing the appropriate print commands needed to recreate the scanned line. After the complete line is scanned on the screen, the command to draw the line is sent to the plotter. Speed was an important consideration in developing this program. Several techniques were employed to achieve maximum efficiency. These include placing the main scanning routine in a tight loop at the front of the program, and utilizing the famed CPU speed-up poke. Plotting a screen dump is still time consuming, influenced by the inherent speed of the printer and the large number of lines needed to recreate the screen, as well as the use of BASIC instead of machine language. A

machine language version of this program is under development.

The screen dump was designed to produce either a 1 or 2x scale enlargement with the 2x mode drawing a line twice as long for each pixel encountered on the screen. To take maximum advantage of the width of the printer, the scanning takes place vertically on the screen and is transposed horizontally to the plotter. This allows 384 (2 x 192) of the 480 possible plotting positions to be utilized in the 2x mode. *GPDUMP* works in either *PMODE3* or 4. You are allowed to choose the color to be "sensed" by the *PPOINT* command, as well as the color to draw with. In addition, you can overlay several colors (one per pass) but be prepared to spend some time at it — a single color pass in the 1x mode takes about 15 minutes. Since the program takes considerable time to complete a pass, a "finished" buzzer has been incorporated so that the computer can be left unattended. Perhaps you can spend the time catching up on your *Rainbow* reading. If you are like me, *Rainbow* has gotten so large it is hard to find time to finish one issue before the next arrives.

In order to test the plotting routine, a simple argyle-like mosaic is drawn as a "test pattern." Selecting the test pattern option draws the picture to the screen, then dumps it to the plotter. There are two different ways to plot a picture of your own choice. You can append a picture drawing routine of your own, taking the place of the "test pattern" which starts on line 500 in the program. An alternate technique requires that you draw your own picture on the screen and in memory using another program or graphics drawing utility. Then load in *GPDUMP* and set the *PMODE* and *SCREEN* parameters in lines 120 and 300 to the appropriate value.

If your CoCo can't handle the higher speed from the speed-up poke, delete lines 13, 240 and 250. If you do use the speed-up poke, exercise some caution — remember that if you exit the program with the [BREAK] key you should hit

(Thomas Szlucha, a technical specialist/project manager of Xerox Corporation, is a frequent contributor to the Rainbow. He enjoys writing software as a hobby.)

THE TOP 4 COCO GAMES...

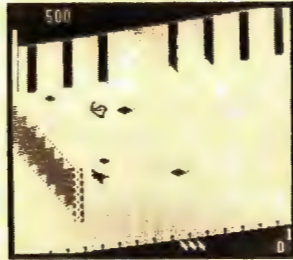


CUBIX

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

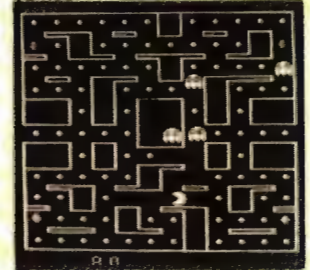


THE KING

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 GOBLER

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

WITH
RAPID
FIRE!



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

COLORWARE



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

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

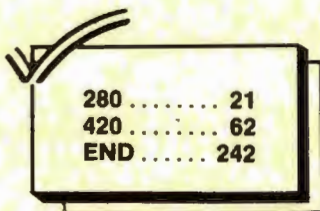


★★★ ORDERING INFORMATION ★★★

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.

[RESET] to slow down to normal speed. Note in line 250 the computer is instructed to set the printer output to 300 Baud. In actuality, this is 600 Baud in the speed-up mode. This is a factor to keep track of if you exit the program by other than normal means.

After keying in the program, be sure that fresh pens are installed on the CGP-115. Dumps with this program will stress them. Try the test pattern or load your favorite graphics picture for a demo. A four-color dump is well worth the time spent. There is something exciting about a "hard" copy that cannot be achieved on the CRT. You should see all the miniature screen dumps that I have framed and are hanging in my office.



The listing:

```

0 CLEAR 500:AR=0:GOTO260
5 AR=1:PI=INT(PS/S+.5):FORX=255T
00 STEP-PS:P=-S*(256-X):A=0:B=0:
PS*="":FORY=191TO0STEP-1
20 IFPPOINT(X,Y)<>CL THEN IF A=0
THEN B=B+S:GOTO100:ELSE PS*=PS*
+"J"+STR$(A)+", "+CHR$(13):A=0:B=
S:GOTO100
30 IFB=0 THEN A=A+S:GOTO100:ELSE
PS*=PS*+"R"+STR$(B)+", "+CHR$(13
):B=0:A=S
100 NEXTY
110 IF B>0 THEN PS*=PS*+"R"+STR$(
B)+", "+CHR$(13)
120 IF B=192*S THEN PS*="":GOTO1
40
130 IF A>0 THEN PS*=PS*+"J"+STR$(
A)+", "+CHR$(13)
140 FOR I=1 TO PI:PRINT#-2,"M"BD
", "P:PRINT#-2,PS*:P=P-1:NEXTI,X
200 CLS:PRINT"ANOTHER PASS WITH
OTHER COLORS Y/N ":R*
= INKEY*:IF R*="Y" THEN GOTO 300
ELSE SOUND 10,10
210 IF R*="N" THEN 220 ELSE 200
220 PRINT#-2,"M0,-100":PRINT#-2,
"A"
230 POKE 150,87:POKE65494,0
240 CLS:PRINT"FINISHED":END
260 CLS:PRINT"CGP-115 SCREEN DUM
P":PRINT:INPUT"DRAW TEST PATTERN
Y/N":R*
270 IF R*="Y" THEN GOSUB 480
280 PS=5-PEEK(&HB6)
290 CLS:INPUT"PLOTTING SCALE 1X
OR 2X":S:IF S<1 OR S>2 THEN 290
295 S=INT(S)
300 CLS

```

```

310 IF PS=2 THEN PRINT"PMODE 3 C
OLORS 0=BLACK
1=GREEN
2=YELLOW
3=BLUE
4=RED
5=BUFF
6=CYAN
7=MAGENTA
8=ORANGE"
320 IF PS=1 THEN PRINT"PMODE 4 C
OLORS 0=BLACK
1=GREEN"
330 PRINT:INPUT"COLOR TO SENSE";
CL:IF CL<0 OR CL>8 THEN 330
340 CLS:PRINT"0=BLACK
1=BLUE 2=GREEN
3=RED"
350 PRINT:INPUT"DRAW WITH WHICH
COLOR PEN";CP:IF CP<0 OR CP>3 TH
EN 350
360 IF AR=1 THEN PRINT#-2,"H":GO
TO440
370 BD=(480-192*S)/2
390 POKE 65495,1
400 POKE 150,180
410 PRINT#-2,CHR$(18)
420 PRINT#-2,"M0,-300*S"
430 PRINT#-2,"I"
440 PRINT#-2,"C"CP
445 SCREEN1,1:PMODE3,1
450 GOTO5
470 'ARBYLE TEST PATTERN
475 'PLACE GRAPHICS HERE
476 'OR LOAD PICTURE INTO MEMORY
480 PMODE 3,1:PCLS: SCREEN1,1
490 COLOR 8,5
500 LINE(0,0)-(255,192),PSET
510 LINE(128,0)-(255,96),PSET
520 LINE(0,96)-(128,192),PSET
530 LINE(128,0)-(0,96),PSET
540 LINE(255,0)-(0,192),PSET
550 LINE(255,96)-(128,192),PSET
560 PAINT(32,48),6,8:PAINT(128,4
8),6,8:PAINT(224,48),6,8:PAINT(3
2,144),6,8:PAINT(128,144),6,8:PA
INT(224,144),6,8
570 PAINT(64,96),5,8:PAINT(192,9
6),5,8
580 PAINT(64,20),7,8:PAINT(192,2
0),7,8:PAINT(64,164),7,8:PAINT(1
92,164),7,8
590 LINE(64,0)-(255,144),PSET
600 LINE(192,0)-(255,48),PSET
610 LINE(0,48)-(192,192),PSET
620 LINE(0,144)-(64,192),PSET
630 LINE(192,0)-(0,144),PSET
640 LINE(64,0)-(0,48),PSET
650 LINE(255,48)-(64,192),PSET
660 LINE(255,144)-(192,192),PSET
665 FORT=1TO750:NEXTT
670 RETURN

```




Making & Saving Money with your Home Computer Monthly

MAKING AND SAVING MONEY . . . is a monthly publication that turns your computer into a tool you can use to make and save money NOW! Besides interesting "people-oriented" SUCCESS STORIES and thought-provoking articles about how you can MAKE MONEY with your home computer, we devote columns to reviewing the FINANCIAL DATABASES and STOCK ANALYSIS SERVICES. We tell you WHERE and HOW to SHOP VIA YOUR COMPUTER for the best buys in the country.

MAKING AND SAVING MONEY . . . is written in PLAIN ENGLISH, not "computerese." After reading a few issues you'll understand why we say that YOUR EXPERTISE AND ENTHUSIASM is more important than sophisticated, esoteric computer knowledge in today's market. YOUR COMPUTER IS A TOOL. USE IT NOW TO MAKE AND SAVE YOURSELF MONEY!

I wish to subscribe to MAKING AND SAVING MONEY WITH YOUR HOME COMPUTER MONTHLY. Enclosed is my check (or money order) for \$19.95 (a savings of \$4.05 off the cover price) for 12 issues.

Make check payable to: Lotus Computer Publishing, Inc.

Send to: 1577 Barry Ave. Suite 201,
Los Angeles, CA 90025 (213) 207-2939

OR CHARGE MY: MASTERCARD VISA



Phone Orders:
1-800-421-5300 Ext.R271
24 Hours a day
7 Days a week

Card No. _____ Expiration Date _____

Signature _____

Name (print) _____

Street Address _____

City _____ State _____ Zip _____

WORD PROCESSOR for your Color Computer

**only
\$14.95**

Yes! That's right, because we want to create some excitement with an offer you can't pass up — a professional quality full screen oriented word processor that would be a bargain at \$50. It's a good one too. Take a look at what you get.

MASTER WRITER's FULLSCREEN-ORIENTED EDITOR allows you to move the cursor anywhere in your text using the up, down, right and left arrows. Do this one character at a time or by line or page. Insert, delete or replace text at the cursor watching your changes as you make them. Delete or move blocks of text from one place to another. Merge in text from other files.

AUTOMATIC CARRIAGE RETURN after last complete word on each line, with this and **AUTOMATIC PAGE FEED** you don't have to worry about where a line or page ends — just type!

MASTER WRITER runs on a **16K, 32K, or 64K COLOR COMPUTER**, taking advantage of all available memory. Use it with **DISK OR CASSETTE** based systems. **EXTENDED BASIC IS NOT REQUIRED.**

EASY TO UNDERSTAND MANUAL has you comfortably using **MASTER WRITER** in minutes. It is a **USER-FRIENDLY MENU-DRIVEN SYSTEM** with single letter commands. Check any command without having to refer to the manual with the **HELP SCREEN.**

10 PROGRAMMABLE FUNCTION KEYS allow easy insertion of frequently used words or phrases.

WORKS WITH ANY PRINTER. Take full advantage of your printer's special functions such as variable character size and emphasized characters with **EASY EMBEDDING OF PRINTER CONTROL CODES.**

GLOBAL SEARCH function lets you quickly locate specific strings for replacement or deletion.

Customize form letters or standard text with **MASTER WRITER'S EMBEDDED PAUSE** feature. Just "fill in the blanks" when your printer pauses for a personalized appearance.

LIMITED MULTI-TASKING feature lets you print one file while editing another.

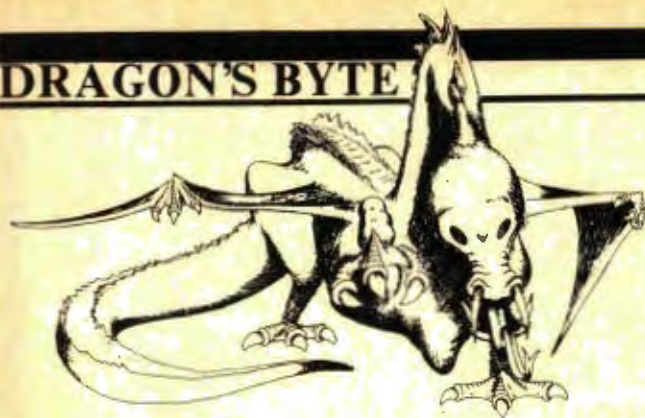
In addition to regular text you can use **MASTER WRITER** to **CREATE BASIC PROGRAMS** with the convenience of full-screen editing.

OTHER FEATURES include easy setting of left, right, top and bottom margin, printer line width, and lines per page. Also auto repeat keys, auto line centering, auto page numbering and choice of display color formats.

And, perhaps one of the best features, is **MASTER WRITER's SUPER LOW PRICE OF \$14.95.** At this price you can't go wrong. Buy it today!

TO ORDER send \$14.95 for cassette version or \$19.95 for disk version plus \$2.50 shipping (Calif. residents add 6% sales tax) to: **PYRAMID DISTRIBUTORS, 527 HILL ST., SANTA MONICA, CA 90405 (213) 399-2222.**

MASTER WRITER \$14.95 Cassette \$19.95 Disk



A Database Manager For Dragons

By Bill Nolan
Rainbow Contributing Editor

This column is written for people who play fantasy role playing games like *Dungeons & Dragons*, *Runequest*, *Tunnels & Trolls*, and *Superheroes*. In this column we explore ways for players of these extremely complex games to use their computers to aid them in their enjoyment of the game. The programs we present here are not games, but rather game aids, and the games we consider are not computer games, although computers have many uses to the players and referees.

Previously, we have looked at ways to use the computer to keep some of the records which are necessary in these games, and this month we will look at that concept again, taking a more "direct" approach.

This column is aimed at users of disk systems, but some of the programming methods used are applicable regardless of the size of your system. The program below will run on any size disk system, because it uses direct access disk files.

In a sequential access filing system, the computer must start at the beginning of the file and look until it finds the desired item. Also, it is not easy to change one item in this type of file. Direct access is called that because you can go directly to any point in the file, but before we get into that, let's look at a few terms we will be using.

The three basic terms of any record-keeping system on the computer are file, record, and field. I will be using all three words repeatedly, so let's get the definitions agreed upon now. The analogy is usually made to a standard record system kept in a filing cabinet. The entire cabinet, or the whole group of file folders taken as a whole, is called the file. Each individual file folder is called a record, and each piece of information inside that folder is called a field.

(Bill Nolan is a principal in Prickly-Pear Software, DMs a weekly game of *Dungeons & Dragons*, and teaches Programming In BASIC at a local college.)

In a mailing list, then, the name, address, city, state, ZIP code, and phone number are each fields, while all of the information about one person is a record, and the entire mailing list is called a file. What we are going to learn to do is create a direct access file to store information about fantasy role playing characters.

With any filing system, whether or not it is on a computer, you must decide what kind of information you will need to store, how much of it there is, and how it is to be accessed. Only when these things are decided can the organization of the filing system proceed. By the way, a bunch of information like this is called a "database" by computer people, and a program like the one we are about to write is called a *Database Manager*.

As anyone who has played fantasy games will testify, the information on a single character will often occupy many pages. For the purpose of this program we want to keep things simple, so we are going to consider only the really basic information about a character. The items I have chosen to use are Name, Race, Sex, Class or Classes, Strength, Intelligence, Wisdom, Dexterity, Constitution, Charisma, Hit Points, Armor Class, and Level. Each of these items of information is called a field, and all of them together are referred to as a record.

When you are dealing with direct access disk files it is necessary for each record to be the same length as every other record, because the computer will be pulling them out of and inserting them into the middle of the file. Because of this, you must first decide on the length of the record, and to do this, you must decide on the length of each individual field inside the record.

Deciding how long each field will be is simply a matter of deciding how many characters you expect the longest item of that type will have, including spaces between words. For the purpose of this program I decided to allow 20 characters for the name; 10 for the race; one for the sex; 20 for the class

(allowing for multi-classed); five for strength (allowing for exceptional strength); two each for intelligence, wisdom, dexterity, constitution, and charisma; three each for hit points and armor class; and five for level. If you add all these up, you will find that they total 77, and this is the number of characters in each record. All of the records created by this program will be 77 characters long, and if any field is too short, it will be filled out with blank spaces to make it the right length. As you will see, this is done easily by the computer, using a special command just for the purpose.

Before we get into the actual program, we need to decide where we are going to do what. To make that a little more clear, any program breaks down into sections, and it's a good idea to decide ahead of time what sections you will need and what line numbers you want to allocate for each section. Then, instead of working on the entire program at once, you can work on each section, and you will find the task to be much easier. This is called block programming, and in addition to making the program easier to write, it also makes it easier to change later if you need to do that.

In this program I decided that I would use lines from 10 to 999 to do any initial setup needed. You will notice that I actually needed only a few of those lines, but it was nice to know the others were there if I had to use them. Besides, you can use line numbers as high as into the 60,000s, so why cram everything together?

I used the lines from 1000 to 1100 to print out the menu and get the user's response. There are four items on the menu — print characters, add characters, change characters, and end the program — so I knew I would need four additional sections, or blocks, to handle the four choices. I put the print characters section in line 1500, the add characters section in line 4000, the change characters section in 6000, and the end program section at the end of the program, line 12000. The line numbers from 10000 to 11000 I reserved for subroutines that would be called from other places in the program. Now that we have a map of what we are going to do, we can proceed to examine the program.

In lines 10 to 25, I *DIMension* the two arrays I will use, print the title screen, and read the names of the fields into one of the arrays, *NF\$*. The *NF* stands for Name of Fields, and whenever possible you should use variable names that mean something to you. The array *D\$* will be used to hold the *DATA* about each character. The reason for the periods in the *DATA* is to make each field name the same length, so the printout will line up.

Line 1000 simply prints the menu, 1005 gets the user's choice and checks it to make sure it is a valid entry, and 1010 branches to the four main sections of the program. Line 12000 is easy, as it clears the screen, does an unload (which closes all open files), and *ENDs* the program.

I will look at the routine located at 4000 first, as this is the add a character section, and you can't do anything else until you have put a few characters on the disk. Line 4000 is a *GOSUB* to 10200, where we remind the user that there must be a *DATA* disk in the drive (the subroutine at 11000), and then open our file. Line 10210 tells the computer to open buffer 1 for direct access to a disk file name "CHAR/DAT," with a record length of 77 characters. Line 10220 tells the computer how long each field will be, and which variable name will refer to which field. Line 10230 *RETURNS* to 4020, where the screen is cleared. Line 4030 finds out how many characters are presently in the file, and adds one to that number, so that we will create the next record number. Line 4040 tells the user which record number he is inputting, and line 4050 gets 13 *INPUTs*, one for each field, storing this

information in the array *D\$*. Line 4060 prints the information out so the user can check it, and if they approve, line 4150 does a *GOSUB* to 10100. This subroutine is a group of *LSET* statements. These not only transfer the information in the array *D\$* to the variables specified by the *FIELD*

"Any program breaks down into sections, and it's a good idea to decide ahead of time what sections you will need and what line numbers you want to allocate for each section . . . [so,] work on each section, and you will find the task to be much easier. This is called block programming."

command, they also make everything the right length. If it is too short, it will have spaces added to the end of it, and if it is too long, it will be chopped off to fit. This command also transfers the information into buffer 1, and then the program *RETURNS* to 4160, where the contents of buffer 1 are put on the disk as record #N. Lines 4179 and 4180 find out if the user has more characters to add. If they do, it returns them to 4020, and if not, it sends them back to 1000, which is the menu.

Once you have a few records in the file, you may want to print them out. The program allows you to print on the screen or printer, and to print all records or to search for and print only those records that meet certain search criteria. You can search on any field in the record. The printout routine is located starting at line 1500.

The first things the program does in this section is to set *SF* (the search flag) to zero, and ask the user whether they want to print all records or only specific records. If the person chooses to print all records, the variable *SF* stays at zero, and in line 1520 the program jumps to line 2000, skipping the search setup lines. If the person wants a search, then the program continues on line 1530 by setting the variable *SF* to one, indicating that a search is in progress, and printing a numbered list of the field names on the screen, so the user can choose which field is to be searched. Once the search field is entered, it is checked to be sure it is an integer from one to 13, and then the search target is prompted for. The target is the word, number, or phrase that the computer will try to match, and it must be character for character the same as what you typed in when you were adding the character. Once the target is obtained, the program goes to 2000, where the actual printout routine is located.

At line 2000, the first thing asked is whether the user wants the output printed on the screen or printer. Most of you are aware that the printer is device #-2, and that to print to it you use the form *PRINT #-2, "message"*. Less known is the fact that the screen is device #0, and that you can print to it with the command *PRINT #0, "message"*. Since you can use a variable instead of the 0 and -2, it is only necessary to assign a variable as the device number, and then set its value to be either 0 or -2. I use the variable *DN* for this purpose.

If the person chooses to print on the printer they are given a choice of printing continuously, or of having to press a key after each record is printed. If you have a tractor feed printer, you will want to choose continuous, but if you have a single sheet printer, you will want to choose to have the printing pause after each record so you can change the paper.

The actual printing routine starts in 2050, with the *GOSUB* to 10200 to open the buffer to the file. After finding out how many records there are in the file in line 2070, the program establishes a *FOR . . . NEXT* loop to look at each record in turn. Line 2090 *GETs* record #X, and then the program *GOSUBs* to 10000, where the *FIELDed* variables are stored in an array. This not only makes them easier to access, it is also necessary because of something which is never explained in the disk manual. You must do something with the *FIELDed* variables, which you *GET* before you close the file, because if you don't, they will go away when the file buffer is closed. By transferring them into an array, we make them less ephemeral.

Line 2097 first checks the value of SF to see if a search is in progress, and if it is, then the remainder of the line checks for a match between the target and the field previously indicated by the user. If a search is in progress, but no match is found, the line directs the program to jump past the print line, so only those records fitting the search are printed. The reason for the *LEFTs* command in line 2097 is to eliminate the spaces which may have been added to the field by the *LSET* command. If you would prefer that the program find partial matches within the field, instead of requiring an exact letter by letter match, line 2097 can be changed to read:

```
2097 IF SF=1 THEN IF INSTR(1,DS(X),TG$)<1
THEN 2120
```

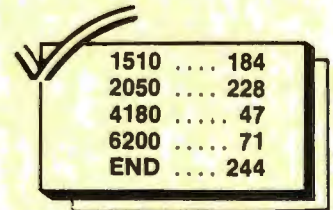
The disadvantage of this is that you can get some odd matches. For instance, if you are searching for an eight in intelligence, it will also find 18, because it has an eight in it.

Line 2100 prints out the record, including the record number, which you will need to have in order to change the record, and when all of the records have been examined, the file is closed in line 2140 and the program returns to the menu at 1000.

The last section remaining is the change a character section at line 6000. First, the file buffer is opened, and the fields are specified. Then, in 6030, the user is asked which record number they want to change, and in 6045 this record is obtained from the disk and the program *GOSUBs* to 10000 to transfer the information into the array DS. In 6050 a numbered list of all the field names and their current contents is printed on the screen, and the user is asked which field they want to change. Then in 6060, the new information for the field specified is input, and in 6070 the list of field names and contents is printed on the screen again, so the user can check it. If the change was not made correctly, or if there are more fields to change, the user can indicate "not correct" in lines 6140 and 6150, and they will get a chance to make additional changes.

Once the user indicates that all is well, the program in line 6160 *GOSUBs* to 10100, where the *LSET* commands get the buffer set, and then in 6170 the new record is put back into its proper place in the disk file. In lines 6180 and 6190 you can specify more changes, and you will be returned to 6020 to pick a record number. If you say you have no more changes, the file buffer will be closed in line 6200, and line 6210 returns you to the menu.

That's about it for the line by line commentary on the program. If you do any programming at all, you will be able to fairly easily modify this filing system to be a pretty good mailing list. I did it in less than one hour. Also, if you are curious, you will be able to store about 2000 character records on a disk before it will be full. I hope you find this very basic *Database Manager* to be useful, and I hope it inspires some of you to expand it into a really complete character filing system. If you do that, be sure to send me a copy so I can see it. So, until next time, keep your swords sharp and your maces heavy, or do what I do — practice the 100-yard dash. Remember my immortal battle cry, "Run Away! Run Away!"



1510	....	184
2050	....	228
4180	....	47
6200	....	71
END	....	244

The listing:

```
10 CLEAR1000:CLS
15 DIM D$(13),NF$(13)
17 PRINT"CHARACTER DISK FILING S
YSTEM":PRINT"FOR USE WITH FANTAS
Y GAMES":PRINT"COPYRIGHT 1984 BY
":PRINT"BILL NOLAN":PRINT"TUCSON
, ARIZONA":PRINT"ALL RIGHTS RESE
RVED"
20 FOR X=1 TO 13:READ NF$(X):NEX
T X
25 DATA NAME.,RACE.,SEX.,CLA
SS.,STR.,INT.,WIS.,DEX.,
CON.,CHA.,HP.,AC.,LEVE
L.
35 PRINT:PRINT:GOSUB 11000
1000 CLS:PRINT:PRINT"1. PRINT CH
ARACTERS":PRINT"2. ADD CHARACTER
S":PRINT"3. CHANGE CHARACTERS":P
RINT"4. END PROGRAM":K$=INKEY$
1005 K$=INKEY$:K=VAL(K$):IF K<1
OR K>4 THEN 1005 ELSE SOUND 150,
1
1010 ON K GOTO 1500,4000,6000,12
000
1500 CLS:PRINT:PRINT"DO YOU WANT
":SF=0
1510 PRINT:PRINT" 1. ALL RECORD
S PRINTED":PRINT:PRINT" 2. PRIN
T SPECIFIC RECORDS":PRINT:PRINT"
KEY YOUR CHOICE (1-2)":K$=INKEY$
1520 K$=INKEY$:K=VAL(K$):IF K<1
OR K>2 THEN 1520 ELSE SOUND 150,
1:IF K=1 THEN 2000
1530 SF=1:CLS:FOR X=1 TO 13:PRIN
TX;" ";NF$(X):NEXT X:INPUT"SEAR
CH FIELD # (1 TO 13)";TF:SOUND 1
50,1
1540 IF TF<1 OR TF>13 OR TF<>INT
(TF) THEN 1530
```


CHOOSE FROM 11 PACKAGES

ANY PACKAGE \$18.95

(\$21.95 on Disk)

1. EDUCATIONAL #1

These even run on Non-Extended CoCos - **Words** (unscramble the words), **Spell-It** (spelling helper), **Learn Notes** (with graphic piano keys), **Sorts** (explained and demonstrated), **Base Guess** (game to learn other number bases), **Morse Quiz** (learn Morse Code), and **Equations** (solves systems of equations).

2. EDUCATIONAL #2

Only for Extended Basic - **Mathvaders** (shoot the right answer), **Scrambler** (put lists in order), **Language Drill** (help with foreign word lists), **Factors** (factoring game), **Typing Tutor**, **Manybody** (demonstrates gravitational forces), **Maximum** (pick the largest number game), **Chemlab** (simulated experiments), and **How Far** (places and distances).

3. UTILITIES #1

Programming is simpler when you use **Lister**, **Listmod**, **Newtrace** (a better TRON), **Lazkey** (define keys as phrases), **Append** (easily combine two BASIC programs), **BASIC Map**, **Varmap**, **Deleter**, and **CK Monitor** (look at and modify memory).

4. DISK UTILITIES #1

Harness the hidden powers of your disk system with **Disk Edit** (change things on disk directly), **Disk Aid**, **Offset** (EXECS most tape-only programs), **Track Lock**, **DIR Save/Get** (foil I/O errors), **Cataloger**, **Master Catalog** (keep track of your program library), and **File Copy** (a better BACKUP).

5. GAMES #1

Action-packed, logical, and colorful ones! **Flyby** (shoot ducks, planes, and faces), **Blackjack**, **Motorcycle**, **Germ** (stop the waves of nasties), **Blockade**, **Life**, **Diggem**, **Robot Run**, **Stellar Empire** (control the heavens - 1 to 4 players), and **Zero G** for your fun and pleasure!

6. ADVENTURES #1

Trips to far-off and dangerous places. On the agenda are **Jerusalem Adventure**, **Ultimate Adventure**, **Williamsburg Adventure**, **House Adventure**, **Andrea Doria Adventure**, **Blackard's Castle** (1500 rooms), and **Realm of Nauga** (in real-time)!

7. PRACTICALS #1

Our most popular package with programs for text editing, maillists, budgeting, filing, etc. including **Keptext** (simple text editor), **Keep Address**, **Keeplist** (shopping list database), **Keepcheck** (checkbook balancer), **Keep Budget** (reports from Keepcheck), **Files** (disk-based database), and **Tape Inventory**.

8. GRAPHS & CHARTS #1

For data manipulation and display! Do it with **Pie Chart**, **Bar Chart**, **XY Graph**, **Curve Fit** (predict trends), and **Two Dates** (see monthly calendars for any two dates).

9. GRAPHICS #1

Displays and text delightfully manipulated! Watch and use **First Cover**, **Drawer** (often called the best), **Graphtext** (puts text on the graphics screen), **Smalltext**, **Rotate** (create and spin 3D objects in real time), **World Map**, **3D World**, **Star Map**, **String Art**, **Kaleidoscope**, and **Display Demo** (text screen wizardry)!

10. NON-EXTENDED #1

Five Standard BASIC programs including **House Adventure** (find twenty objects or die), **Stellar Empire** (a 2 to 4 person strategy game), **Tape Inventory** (keep track of your tapes), **Space Ace** (shoot'em up), and **Lazkey** (define keys as words or phrases).

11. NON-EXTENDED #2

Five more Standard BASIC programs including **Williamsburg Adventure** (a humorous one), **Two Dates** (show monthly calendars), **Box Shoot** (two-player face-off), **Flyby** (shoot ducks, faces, and planes), and **Deleter** (delete needless REM's and spaces from programs).

Requires BASIC (required unless noted)

SILVERWARE

- a lot of software for a little silver

P.O. Box 21101
Santa Barbara, CA 93101

See your dealer or
order direct **1-800-621-6240** or in Calif. 1-805-966-1449.

Overseas add \$2 to orders. Calif. add 6% tax to orders. Money Orders, checks in U.S. Funds, MasterCard/Visa accepted. C.O.D. add \$2.50.


```

1550 PRINT"SEARCH TARGET?":INPUT
TG$
2000 CLS:PRINT:PRINT"DO YOU WANT
THIS PRINTED TO THE":PRINT"SCRE
EN, OR THE PRINTER? (S/P)":K$=IN
KEY$
2010 K$=INKEY$:IF K$<>"S" AND K$
<>"P" THEN 2010 ELSE SOUND 150,1
:IF K$="P" THEN DN=-2 ELSE DN=0
2015 IF DN=0 THEN PP=1
2020 IF DN=-2 THEN PRINT:PRINT"D
O YOU WANT THE ACTION TO BE":PRI
NT"CONTINUOUS, OR DO YOU WANT A"
:PRINT"PAUSE AFTER EACH QUESTION
? (C/P)":K$=INKEY$
2030 IF DN=-2 THEN K$=INKEY$:IF
K$<>"C"AND K$<>"P" THEN 2030 ELS
E SOUND 150,1:IF K$="P" THEN PP=
1 ELSE PP=0
2040 IF DN=-2 THEN CLS:PRINT"YOU
SELECTED THE PRINTER.":PRINT"MA
KE SURE IT'S ON LINE NOW.":GOSUB
10500
2050 GOSUB 10200
2070 N=LOF(1)
2080 FOR X=1 TO N
2090 GET #1,X
2095 GOSUB 10000
2097 IF SF=1 THEN IF TG$<> LEFT$
(D$(TF),LEN(TG$)) THEN 2120
2100 CLS:PRINT#DN,"RECORD #";X:F
OR Y=1 TO 13:PRINT#DN,NF$(Y);D$(
Y):NEXT Y
2110 IF PP>0 THEN GOSUB 10500:CL
S
2120 NEXT
2130 CLOSE#1
2140 GOTO 1000
4000 GOSUB 10200
4020 CLS
4030 N=LOF(1)+1
4040 PRINT"YOU ARE ON RECORD #";
N
4050 FOR X=1 TO 13:PRINTNF$(X);:
INPUT D$(X):SOUND 150,1:NEXT X
4060 CLS:FOR X=1 TO 13:PRINTNF$(
X);:PRINT D$(X):NEXT X:PRINT"IS
THIS CORRECT? (Y/N)":K$=INKEY$
4140 K$=INKEY$:IF K$<>"Y"AND K$<
>"N" THEN 4140 ELSE SOUND 150,1:
IF K$="N" THEN 4020
4150 GOSUB 10100
4160 PUT #1,N:CLS
4170 PRINT"DO YOU HAVE MORE? (Y/
N)":K$=INKEY$
4180 K$=INKEY$:IF K$<>"Y" AND K$
<>"N" THEN 4180 ELSE SOUND 150,1
:IF K$="Y" THEN 4020
4190 CLOSE #1
4200 GOTO 1000

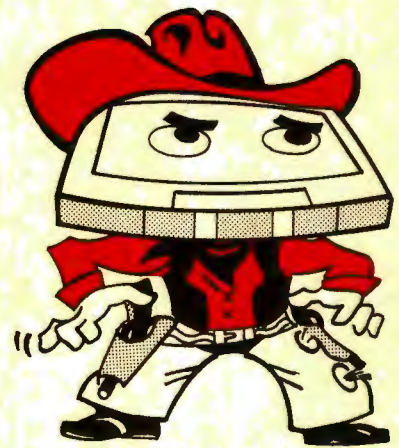
```

```

6000 GOSUB 10200
6020 CLS
6030 INPUT"CHANGE WHAT RECORD #"
IN
6040 IF N<1 OR N>LOF(1) THEN PRI
NT"INVALID NUMBER":FOR X=1 TO 20
00:NEXT:GOTO 6020
6045 GET#1,N:GOSUB 10000
6050 CLS:FOR X=1 TO 13:PRINT X;"
. ";:PRINTNF$(X);:PRINT D$(X):NE
XT X:INPUT"FIELD # TO CHANGE (1-
13)":TF:SOUND 150,1
6060 IF TF<1 OR TF>13 OR TF<>INT
(TF) THEN 6050 ELSE PRINT"NEW IN
FORMATION?":INPUT D$(TF)
6070 CLS:FOR X=1 TO 13:PRINT X;"
. ";:PRINTNF$(X);:PRINT D$(X):NE
XT X
6140 PRINT"IS THIS CORRECT (Y/N)
":K$=INKEY$
6150 K$=INKEY$:IF K$<>"Y"AND K$<
>"N" THEN 6150 ELSE SOUND 150,1:
IF K$="N" THEN 6050
6160 GOSUB 10100
6170 PUT #1,N:CLS
6180 PRINT"DO YOU HAVE MORE? (Y/
N)":K$=INKEY$
6190 K$=INKEY$:IF K$<>"Y" AND K$
<>"N" THEN 6190 ELSE IF K$="Y" T
HEN 6020
6200 CLOSE #1
6210 GOTO 1000
10000 D$(1)=N$:D$(2)=R$:D$(3)=S$
:D$(4)=C$:D$(5)=ST$:D$(6)=IN$:D$
(7)=WI$:D$(8)=DE$:D$(9)=CO$:D$(
10)=CH$:D$(11)=HP$:D$(12)=AC$:D$(
13)=L$:RETURN
10100 LSET N$=D$(1):LSET R$=D$(2
):LSET S$=D$(3):LSET C$=D$(4):LS
ET ST$=D$(5):LSET IN$=D$(6):LSET
WI$=D$(7):LSET DE$=D$(8):LSET C
O$=D$(9):LSET CH$=D$(10):LSET HP
$=D$(11):LSET AC$=D$(12):LSET L$
=D$(13):RETURN
10200 CLS:GOSUB 11000
10210 OPEN"D",#1,"CHAR/DAT",77
10220 FIELD #1,20 AS N$,10 AS R$
,1 AS S$,20 AS C$,5 AS ST$,2 AS
IN$,2 AS WI$,2 AS DE$,2 AS CO$,2
AS CH$,3 AS HP$,3 AS AC$,5 AS L
$
10230 RETURN
10500 PRINT"PRESS ANY KEY TO CON
TINUE"
10510 IF INKEY$="" THEN 10510 EL
SE SOUND 150,1:RETURN
11000 PRINT"MAKE SURE THE DATA D
ISK IS IN":PRINT"THE DRIVE.":GOS
UB 10500:RETURN
12000 CLS:UNLOAD:END

```


Chromasette VS. the other guy



We were the **first** people to offer you and your Color Computer a tape or disk full of quality software on a subscription basis, and we are still the **best!** And to prove it, we make the following offers:

Free trial - Buy a subscription to **Chromasette**. If you are not satisfied with the software on first tape or disk you receive, just return it for a FULL refund.

With your new subscription to **Chromasette** (tape or disk), we'll send you a **free** copy of '**the other guy**' (on tape - he does not offer his on disk). Compare us to him. Even if you decide to cancel your subscription, keep his as a consolation prize.

Chromasette delivers 6 to 8 educational, fun, practical, and utilitarian programs to your mailbox every month by First Class Mail. We have supplied over 700 programs for the Radio Shack* computers, so our editors know how to select and groom programs to teach, entertain, and help you. And these programs can cost **less than a dollar each!** Such a deal!

*Trademark of Tandy Corp.

	Tape	Disk
Single issues	9.95	12.95
4 month subscription	29.95	38.95
8 month subscription	53.95	69.95
1 year subscription	74.95	96.95 (Save \$58!)

Some of our past programs include (Practical) Keep Address, Keep Budget, Files, (Educational) Spell It, Language Drill, Factors, (Games) Stellar Empire, Radiation Run, Blockade, (Utilities) Disk to Disk, Deleter, and Lazkey.

FREE
FREE

For brochures or
orders call **1-800-621-6240** or in Calif. 1-805-963-1066

Extended BASIC and occasionally Disk BASIC required. Overseas add \$2 to single issues and \$15 dollars to subscriptions. Calif. add 6% to single issue orders. Money Orders, checks in U.S. Funds. MasterCard/Visa accepted. C.O.D. add \$2.50. Back issues available from July 1981 on.



PO Box 1087
Santa Barbara, CA 93102

THE UN-DISK

Now . . .
VDUMP
A utility to
load and save all
your memory!
\$14.95



UN-BELIEVABLE

But true! There *is* a disk drive in your Color Computer . . . and it is faster and more efficient than any "hardware" drive you can buy, for any price. This new "disk drive" is called VDOS—for Virtual Disk Operating System—and it will absolutely revolutionize the way you operate your CoCo.

VDOS lets you use the "extra" memory inside your CoCo as a virtual disk, with programs (any programs) stored out of the way. You can "save" and "load" programs from your in-memory

disk into working memory, and then run them. When you're done, you can simply access your in-memory disk again . . . and save or load another, and another.

And VDOS is fast. Because you are using memory rather than a mechanical device (like a disk drive or cassette player), programs load instantly. Yes, VDOS is faster than a disk!

VDOS works with all Color Computers—from 16K non-extended to 64K extended. Obviously, the

more memory you have, the greater number (and length) of programs you can store. For a 64K system, VDOS also uses the "unused" part of memory, providing up to 50,000 bytes of storage! Now, that's some disk!

We call it VDOS because in the future there will be utilities for your VDOS UNDISK that will give even greater capabilities—such as a full one-pass memory dump to cassette. Other utilities are planned, too.

We believe VDOS is the

greatest advancement for CoCo since the introduction of the disk drive itself. And, at less than \$100, it is so inexpensive you can't afford to be without it. If you have the "cassette blues," VDOS *is* the answer!

Finally, VDOS is simple to operate. It is entirely self-prompting and comes with a complete manual. But you almost don't even need the instructions—it requires absolutely no technical expertise.

VDOS. The answer to your prayers.

Cassette: \$49.95 Add \$1.50 shipping and handling; Canadians add \$5 for shipping; Foreign points add \$9. VISA and Master Card accepted. All Kentucky residents add 5% sales tax. Payments accepted in United States currency only.



Dr. Preble's Programs
6540 Outer Loop
Louisville, KY 40228
(502) 241-6474
Dealer Inquiries Invited



Synchronous Output Can Be Useful

By James Provost

Here is a very useful program for Adventures and other text programs where a hard copy of what is on the screen is needed. *SYNC* is designed to produce a synchronous output to both screen and printer.

The user should make sure that his/her printer is on-line before *RUNNING* the program or else the computer will "hang." The synchronous output will be in effect until the computer is powered down.

For users with 64K — while in the 64K mode, *POKE &H1A5,&H12* to achieve a solid cursor. This places a NOP into the address which formerly held the instruction for the cursor to change to another color.

Description

3E8	34 54	PSHS U,X,B	save registers
3EA	BD A2BF	JSR \$A2BF	output character in A register to printer
3ED	35 54	PULS B,X,U	restore registers
3EF	39	RTS	return

The following memory locations must also be true:

\$0168 = \$03

\$0169 = \$E8

The listing:

```

1 REM SYNC
2 REM BY JAMES PROVOST
10 FOR X=1000 TO 1007
20 READ A:POKE X,A
30 NEXT
40 POKE 360,3:POKE 361,232
50 DATA 52, 84, 189, 162, 191
60 DATA 53, 84, 57

```

(James Provost holds an associate's degree in computer electronic technology and free-lances in educational software programming. He resides in Stoneham, MA.)



QUALITY SOFTWARE AND PERIPHERALS FOR YOUR COMPUTER

SUPER STATS — The most powerful statistics program available for the CoCo/TDP. Multiple linear regression, forecasting, mean, standard deviation, correlation coefficients, covariance, F and t tests. Powerful data editing and manipulation abilities. Data plotting, Student t tail areas, Gaussian cumulative probability distributions, and more. Flexible I/O (screen or printer, tape or disk). Very good documentation. 16K extended BASIC. Cassette \$29.95.

STRUCTURED MACROS — An assembly language programming tool for users of the Macro-80C assembler, by the Micro Works. Structured macros come close to transforming your assembler into a high-level language. Your programs become more understandable and debugging is simplified. Commands include IF, ELS, ENDIF, IFTST, IFCC, WHILE, ENDWH, REPEAT, and UNTIL. Disk \$19.95.

PAGE PLUS — Attention BASIC programmers! Up to 56K available from your BASIC programs. This utility, written by Chris Hawks, does the memory management necessary to utilize the two 32K banks of memory. Easy enough for any "intermediate" level BASIC programmer to use. Works with 64K systems. Cassette \$27.95. Disk \$29.95.

MYSTIC MANSION



MYSTIC MANSION — New!! You'll be hearing lots about this incredible **ALL GRAPHIC** adventure. Explore the mansion and escape from the island, if you can! This one is tough to solve, but you'll have fun trying. For 32K Disk only. Disk \$29.95.

C.C. Three

A powerful 'electronic spreadsheet', a full-featured word processor, and a flexible database - for an unheard of low price! This may be the **ONLY SOFTWARE PACKAGE YOU'LL EVER NEED TO BUY** for your computer.

BOTH DISK AND TAPE VERSIONS OF ALL THREE PROGRAMS ARE INCLUDED (on tape) for the bargain price of \$49.95! No need to pay for upgrades to disk later! Over 40 pages of documentation in an attractive vinyl binder. C. C. Writer and C. C. File require 16K, C. C. Calc needs 32K. All require Extended Color BASIC. Order yours **NOW!**

MDISK — Hal Snyder's latest breakthrough for the 64 Color Computer! MDISK lets you use the upper 32K of memory for rapid storage and retrieval of programs and data. Whether you own an actual disk drive or not, MDISK puts the "hidden" 32K to work for you as a "virtual disk," with capability to save and load up to 15 programs, view a directory of files stored in "page 1," kill unwanted page 1 files, execute BASIC or machine language directly from MDISK, chain to a BASIC program while preserving data already created, and more. MDISK is written in position independent code, and will work on disk or tape based 64K systems. Cassette \$27.95. Disk \$29.95.

ROMBACK — Why pay more? The easiest to use ROM-pak dumping utility available! At the best price, too! Comes with full documentation, including detailed patching instructions to allow several popular "problem" cartridges to run from tape or disk. 64K Extended BASIC. Cassette \$16.95.

QUICKSORT — A machine language sort routine specifically designed to be used by BASIC programmers. Written in position independent code, works on tape or disk systems. 16K required. Cassette \$12.95.

64K BOOT/PAGER — The 64K Boot allows you to modify BASIC by moving it from ROM to RAM. The PAGER is a menu-driven utility allowing you to manually page between the 32K banks of memory. Source code for both programs is included. Both run on 64K tape or disk systems. Cassette \$19.95.

WIZARD 64 — If you've got 64K, then this one's for you! Uses both 32K pages of memory for graphics and action. Challenging enough for adults, yet entertaining for younger players too. 64K Extended BASIC. Cassette \$21.95. Disk \$23.95.

SIMPLEX — Linear programming by the "simplex" method now available for the Color Computer. This powerful decision making tool finds the optimum "mix" for a given set of constraints. Disk compatible. 16 page manual included. 16K Extended BASIC. Cassette \$29.95.

ORDERING INFORMATION

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

**We Love Canadian Orders!
Inquire For Foreign Shipping**

Dealer Inquiries Invited

**Skyline Marketing Corp.
4510 W. Irving Park Rd.
Chicago, IL 60641
(312) 286-0762**

QUALITY SOFTWARE AND PERIPHERALS FOR YOUR COMPUTER

**AN ASTRONOMICAL ARRAY
OF FEATURES
FOR A DOWN-TO-EARTH PRICE**

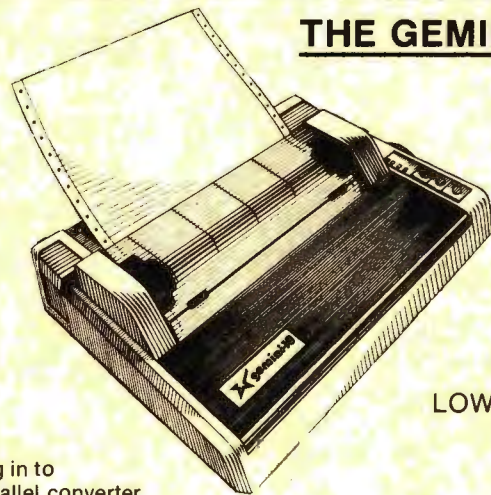
MORE QUALITY: 120 cps • thrupt time of 58 lpm • high resolution (120x144) bit image & block (6x6) graphics • extra fast forms feed
MORE FLEXIBILITY: super/sub script • underlining • backspacing
 • double strike mode • emphasized print mode • 816 character buffer • compatible with most software supporting leading printers
 • 10" carriage • 15" carriage Gemini-15 available
MORE RELIABILITY: 180 day warranty (90 days for head & ribbon)
 • mtf rate of more than 5 million lines • print head life of more than 100 million characters

SAVE \$100.00!!!

Our incredible Gemini-10 package—a **PRINTING SYSTEM** ready to plug in to your Color Computer. **NOTHING MORE TO BUY.** Includes serial to parallel converter, graphic screen print software, deluxe user manual, and 5 minute setup instructions! A \$479.00 value. Complete package

Wide carriage Gemini—15 also available:

Package ONLY \$579*
 Printer only \$499*

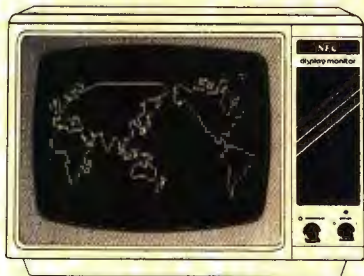


THE GEMINI-10 X

**NEW
LOW PRICES!**

ONLY \$379*

Order yours today!
 Parallel printer only, \$299



GET THE MOST FROM YOUR SYSTEM WITH AN NEC MONITOR PACKAGE!

Without a monitor, you'll never know just how good your graphics are. Word processing becomes less fatiguing, programming more enjoyable. NEC is famous for excellent color reproduction and tack-sharp resolution. We take the work out of adding the monitor to your system by including a custom plug-in monitor driver (with color, monochrome, and audio outputs), any required cables, and easy setup instructions. Buy with confidence—we've done the "homework" for you!

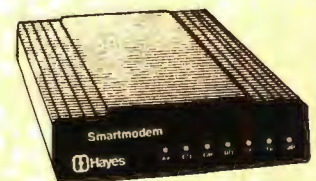
NEC 12" Color monitor (JC1212M) package ONLY \$389*
 NEC 12" Green-screen (JB1260M) package ONLY \$169*
 NEC 12" Amber screen (JB1205MA) package ONLY \$219*

True lower-case and inverse video—just plug in the LCA-47. Special price with monitor purchase \$66.
 (not available for Color Computer 2)

GET SMART!! GREAT DEAL ON HAYES SMARTMODEMS

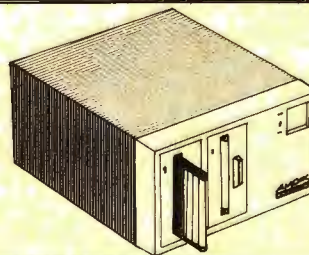
Hayes 300 baud Smartmodem—the amazing programmable auto-dial, auto-answer modem, now in a special package deal for your Color Computer. Buy the Hayes for list price, and at **NO EXTRA CHARGE** receive the Colorcom/E smart terminal program (cartridge or disk), an RS232 cable, and setup instructions! Act now!

Hayes 300 baud Smartmodem package ONLY \$289*
 Hayes modem with CC cable only, \$249*
 Signalman Mark I modem, 300 baud direct connect, list \$98, our price \$86*



The revolutionary 3" disk system! Two compatible 156K drives in a compact enclosure. Uses the rigid, protected 2-sided cartridge that has made others obsolete. Our package includes the Amdisk III, cable, disk controller, Disk BASIC manual, 12 cartridges, setup instructions, and a ML tape to disk program to help transfer your software! Everything you need, plus you save \$50!

Package price ONLY \$689* Amdisk III plus cable only \$479*
 Order Now!! (available for Color Computer 2, please specify)



**SALE ON
AMDISK III
DISK SYSTEM!!**



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

SKYLINE 64K Memory Upgrade Kits

8 guaranteed 200 n.s. 64K memory chips, solderless installation instructions, Skyline's 64K BOOT and PAGER programs (a \$19.95 value). All for the super low price of \$59.00! Order yours today!
 (soldering required on Color Computer 2)

PIPELINE

RADIO SHACK has released several new products this month. Among the best is the C-Compiler, a versatile and efficient programming language for the 64K Color Computer and the OS-9 disk operating system. The C-Compiler can easily handle tasks that previously would have required complex assembly language programming. Programs written in C are more portable between radically different computer systems than other standardized languages such as BASIC, COBOL, and PASCAL, and it works particularly well with the 64K CoCo because the 6809 microprocessor was designed specifically to run high-level languages. (For more information, see Dale Puckett's "KISSable OS-9" column on Page 297.) The C-Compiler is available for \$99.95 at Radio Shack stores nationwide.

Also introduced for the 16K or greater CoCo is *Personal Finance II*, a program that aids the user in setting up a budget, tracking bank accounts, and evaluating expenditures. It can keep track of nine bank accounts and 25 budget categories, store 1,818 checks on tape, and is available on cassette for \$34.95.

For the MC-10, Radio Shack has introduced *Math Design* and *Lost World Pinball*. The *Math Design* package contains two packages: *MiniCalc*, which functions as a hand-held calculator, and *Spirals*, a fun geometric exercise that makes it possible to design and plot a large variety of polygonal spirals in four colors. Both are available on cassette for \$9.95 each at all participating Radio Shack stores.

A \$10,000 SCHOLARSHIP has been announced by Ray Jacobs, president of Software City. It will be awarded to the student who produces the most marketable computer program. In addition, four \$1,000 scholarships are offered to the runners-up.

Applicants must have been graduated from high school after Jan. 1, 1984, and entries must be submitted by Dec. 31, 1984.

Categories in which entries will be judged are: Business Applications, Education, Home Applications, Recreation and Systems Software.

Requests for complete information and scholarship applications should be directed to: Software City Corporate Headquarters, 1415 Queen Anne Road, Teaneck, NJ 07666, Attention: Scholarship Director.

THE PRICE OF SECURITY. ADM Concepts has announced the introduction of a new low-cost data system security link called the COMMLOCK Model-96A. It has been designed to be compatible with all standard asynchronous data communication systems.

COMMLOCK's design provides for a virtual secured communication link to corporate, military and private computer data banks. The COMMLOCK link must, however, be installed between the computer and modem at both the transmission and reception sites.

Using this dual encryption method, though, is far more secure than the more common single encryption. Also, COMMLOCK is programmable by the user for creation of up to 1,024 unique encryption codes. It is programmable for data rates (300 to 9600 bits per second), word length (5 to 8 bits), and parity and number of stop bits — which makes it compatible with all asynchronous communications.

At \$600 in single-piece quantities, COMMLOCK provides a low cost solution to the data security needs of large corporations and the military, but for personal computer networks, putting your trust in the gods for security is, let's face it, a heck-of-a-lot cheaper.

COCO CELEBRITY Bob Rosen says that he liked California so well when he attended the RAINBOWfest in Long Beach, he has decided to pack his bags and go west. And that means that Spectrum Projects will be expanding. In April, Bob will be opening the West Coast Division of Spectrum Projects and, in conjunction with that, he will be warming up four more of his popular Rainbow Connection bulletin board systems. The new West Coast address is #9866, 4285 Payne Ave., San Jose, CA 95117.

Not to worry, Easterners — Bob's

brother, Paul, will continue to operate their East Coast offices in Woodhaven, NY.

KEEPIN' AN EYE ON COCO. Micron Technology, Inc., a western memory chip manufacturer, has introduced two new products that give the gift of sight to your favorite computer. Both the MicronEye Bullet and the MicronEye Camera make use of a revolutionary image-sensing chip — the IS32 OpticRAM. This chip is composed of 65,536 individual pixels and is capable of sending remarkably high resolution images to the screen of most computers.

Uses for the MicronEye are virtually unlimited and include: character recognition, signature verification, graphics input, automated monitoring, surveillance and motion detection, barcode reading, robot vision, and the list goes on. What does seem somewhat limited, however, are the MicronEye's capabilities with the CoCo in comparison to other computers. These seem to include the inability to store and recall pictures from disk and the inability to dump to a printer — two pretty important features.

The entire package for the Bullet, including camera, lens, tripod, interface card and software, is priced at \$295 — it might have cost \$30,000 two years ago. You can write to Micron Technology at 2805 East Columbia Rd., Boise, ID 83706.

AT LAST, VIP CALC has arrived at the *Rainbow's* editorial offices and this long-awaited spreadsheet program appears to be powerful. It is completely compatible with all the other programs in the VIP Library and features memory sense-bank switching, true lowercase, 16 video display windows, 15-digit precision, and other features of the VIP Library. We understand that Softlaw has been shipping *VIP Calc* for several weeks now.

VIP Calc comes packaged in a handsome, 5½ x 8½ inch, three-ring binder; somewhat smaller than the old Super "Color" binders, but just as attractive and functional. The package contains both disk and cassette versions of the program and 178 pages of documentation. Both the disk and tape contain separate 32K and 64K versions of the program; the 32K version does not have Hi-Res displays or the sort and edit functions featured on the 64K version.

VIP Calc is available for \$59.95 from Softlaw, 9072 Lyndale Avenue So., Minneapolis, MN 55420.

To better service the CoCo community
SPECTRUM PROJECTS
EXPANDS WEST!

**NEW
YORK**



**SAN
JOSE**

SPECTRUM PROJECTS

WEST DIVISION

4285 PAYNE AVE/#9866

SAN JOSE, CA 95117



SPECTRUM PROJECTS

SOFT AND HARD WARES FOR COLORFUL COMPUTING



COMMUNICATION

COLORCOM/E - A complete smart terminal package! Upload, Download, Hi-Res (51X24) screen, 300/1200 Baud, Dffline Printing and much more. Rompak or Disk - \$49.95

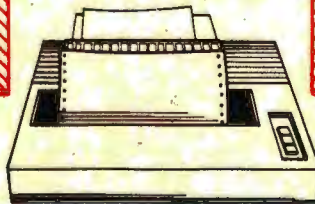


WORD PROCESSING

TELEWRITER-64 - Top CoCo Word Processor for 2 years! Three Hi-Res screens, true lowercase characters, right justification, full screen editor. Tape \$49.95 Disk \$59.95

MODEMS

MINI-MODEM - 300 Baud, Originate/Answer, Full Duplex, Direct Connect - \$79.95
 J-Cat Modem - Lowest priced auto/answer modem - \$129.95
 HAYES Auto Dial/Answer \$239.95
 Prices include Modem cable.



PRINTERS

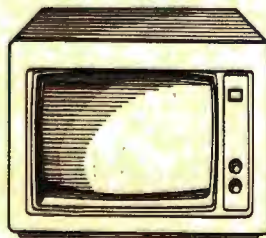
GEMINI 10X* - 120 cps, 9X9 dot tractor/friction feed \$299.95
 EPSON RX-80* - Faster than the MX-80 plus Graftrax! - \$349.95
 * Parallel interface required. PBH Parallel Interface - Save \$40 if ordered with above printers! - \$49.95

KEYBOARDS

PREMIUM (Micronix) \$69.95*
 SUPER-PRO (Mark Data) \$69.95
 HJL57 Keyboard - \$79.95*
 * - Includes free software for 4 function keys. Specify Model /Revision Board.

MONITORS

GORILLA - Hi-Res (22mhz), 80X24 screen monitors :
 Green- \$99.95 Amber- \$119.95
 AMDEK Color Monitor - \$299.95
 VIDEO PLUS - video interface for above monitors - \$24.95
 V/P CoCo II Version - \$29.95



Buy any Modem and
 Save \$10 off Colorcom/E

Order Line
 212-441-2807

Buy any Printer,
 Keyboard or Monitor and
 Save \$10 off Telewriter-64



SPECTRUM PROJECTS

SOFT AND HARD WARES FOR COLORFUL COMPUTING



SPREADSHEET

ELITE CALC - 255 Rows, 255 Columns, Help Displays, Repeat Text Entries, Insert, Delete, Move Entire Rows, Selectable Auto Cursor Movement, Formulas 255 chars. Disk/Tape \$59.95



Buy 'em
both for
\$99.95

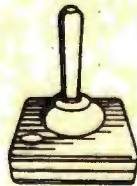
Save \$40!

DATA BASE MANAGER

PRO-COLOR FILE - 60 Data Fields, 8 Report Formats, 1020 bytes/record, Sorts 3 Fields, Screen and Summary Reports, Duplicate Records and Fields, Page Titles - Disk \$79.95

DISK DRIVES

DRIVE 0 System - 40 trks, Gold Platted Connectors - \$349.95
AMDEK System - 624K Bytes with 3" Disk Cartridge - \$599.00
DISK CONTROLLER - \$139.95
(Systems include controller)



GAME CONTROLLERS

WICO Command Adaptor - Hookup 2 Atari type joysticks- \$19.95
With 2 Atari joysticks- \$39.95
WICO Analog Joystick - Self Centering and Free Floating !!
Red arcade size handle- \$39.95

UTILITIES (DISK)

1. FHL D-PAK	\$34.95
2. Disk Doctor	\$39.95
3. Super Forth	\$39.95
4. Super Screen Machine.	\$49.95
5. DS-9	\$69.95
6. FHL Flex	\$69.95
7. MicroWorks EDTASM ..	\$99.95

Buy	Save
2	10%
3	15%
4	20%



GAMES (TAPE)

1. Cubix	\$24.95
2. Calixto Island	\$24.95
3. The King	\$26.95
4. Guardian	\$27.95
5. Junior's Revenge	\$28.95
6. Colorpede	\$29.95
7. Zaxxon	\$39.95

WEST DIVISION

Spectrum Projects

4285 Payne Ave/#9866
San Jose, CA 95117

EAST DIVISION

Spectrum Projects

PO Box 21272
Woodhaven, NY 11421

Add \$3.00 S/H
NY Res Add Tax

The Most Professional Garage Sale In The Neighborhood

By Edward R. Carson



Here is a garage sale program that will do it all for you. No more scribbling on a scratch pad, trying to keep track of everyone's money. Just *CLOAD Garage Sale* and you have a cash register that will ask for: Sellers, Price Of Item, and Quantity. It will give you the Total Amount Of Sale, then ask for the Amount Tendered and tell you the Amount Of Change.

As an added attraction you can put any message you want on the screen. Do you have a special item you want to advertise? Well, just put it on the screen where everyone can see it. This is sure to be an eye-catcher.

You can change the message any time. All instructions are documented on the screen except while the message is there. You must hit [CLEAR] to return to the sellers list.

At the end of the day just ask and you will receive the total amount sold for the day and the amount each person should receive.

If you don't have enough memory for the entire program you can delete the message portion as follows:

Delete lines 5-775
Delete lines 885-895
Delete lines 1535-1555
Change line 1575 to — "GOTO 935"

(Edward Carson is a senior majoring in finance at Ohio State University.)

105	.....	117
255	.....	132
405	.....	149
555	.....	90
705	.....	217
985	.....	207
1215	.....	78
1465	.....	21
END	.....	173

The listing:

```

1 PRINT"-----GARAGE SALE-----"
2 PRINT:PRINT:PRINT"COPYRIGHT (C
) SEPT.20,1983          BY EDWARD
R CARSON"
3 PRINT"    CENTERBURG,OHIO"
4 FOR T=1 TO 900:NEXT T
5 CLS:DIM A$(95):GOSUB 145:GOSUB
785
15 CLS:PRINT "DO YOU WANT (1)SMA
LL (2)MEDIUM (3)LARGE":INPUT CH
25 IF CH =1 THEN Y=-16:YY=16:XX=
12:S=1 ELSE IF CH=2 THEN Y=-32:Y
Y=32:XX=24:S=2 ELSE IF CH=3 THEN
Y=-64:YY=64:XX=48:S=4 ELSE 15
35 IF CH=1 THEN CLS:PRINT "ENTER
NEXT LINE(21 CHARACTERS)" ELSE
  
```


THE SPECTRUM VOICE PAK

**\$49.95
SPECIAL**

Price good with purchase of
any Talking Software below !
Offer expires May 25, 1984

**\$69.95
CoCo I**

New Features ! Single key
echo and phoneme printouts !
Works w/\$29.95 Disk"Y" cable!

**\$79.95
CoCo II**

Includes adapter to work on
16K-64K CoCo II's. Same
features as CoCo I. In stock!

TALKING SOFTWARE

Talking Final Countdown - You must stop the mad general from launching a missile at the Russians and causing WW III ! Has multiple voices for added realism. 32K EXT **\$24.95**

Educational Software - Computer Island's educational programs turn your CoCo into a true teaching machine. Reinforce basic lessons with the aid of voice. Three/pak special includes Math Drill, Spelling Tester and Foreign Languages. 16K EXT **\$24.95**

Talking Score E-Z - An excellent adaptation of a Yahtzee type program with added speech. Up to 6 players can compete at a time, and all scoring and record keeping is done by the computer. 32K EXT **\$24.95**

Term Talk - A speaking smart terminal program for your CoCo. It contains all the features of an intelligent communications package, plus it talks! (Shades of War Games) 16K EXT Tape **\$39.95** Disk **\$49.95**

All orders plus \$3.00 S/H - NY Residents add sales tax

SPECTRUM PROJECTS

WEST DIVISION :

4285 PAYNE AVE/#9866
SAN JOSE, CA 95117

EAST DIVISION :

PO BOX 21272
WOODHAVEN, NY 11421

(212) 441-2807

COLORFUL UTILITIES

DOUBLE DOS - Now access 10 more granules from your 40 track drive and still be compatible with RS DOS! Also works with double-sided and 80 track drives! DISK \$24.95

MULTI-PAK CRAK - Save ROMPAKs to your 64K Disk system using the RS Multi-Pak Interface. Eliminate constant plugging in of ROMPAKs now by keeping all your PAK software on disk. DISK \$24.95

TAPE OMNI CLONE - Easily handles programs with auto loaders, no headers, no EOF markers, unusual size blocks and more! Now is the time to get your tape software collection protected against loss. TAPE \$24.95

DISK OMNI CLONE - Back everything up! This amazing program handles "non standard" disks with ease. We haven't found any disk yet that it can't handle. Lowest price too! 32K DISK \$29.95

DISK MANAGER - Rescue crashed disks, date files on the disk directory, print a Super directory with ML addresses, maintain and sort a catalog of up to 300 files from a collection of disks! 16K DISK \$29.95

BASIC AID - Speed program entry by single key input of 43 common BASIC commands. Redefine any or all keys. Merge, move and renumber any part of your program. SPECTRUM SUPER SPECIAL! ROMPAK ~~\$34.95~~ \$29.95/DISK ~~\$49.95~~ \$39.95

MASTER DESIGN - Attention Telewriter 64 owners. Now you can create stunning block letter heads while text processing with Master Design. Full range of character sizes and graphic commands! DISK \$34.95

BASIC COMPILER - Convert your BASIC programs into fast efficient machine language. Produces code more compact and up to 50Xs faster than original BASIC. Integer compiler with no Extended BASIC needed. 16K-64K versions included. TAPE \$39.95

SCHEMATIC DRAFTING - Save hours of work and design professional looking electronic diagrams using a 480X540 pixel worksheet with 6 viewing windows. Over 30 electronic symbols with 10 user definable symbols are provided. Dump hard copy to the printer and save the created schematics to disk. 64K DISK \$49.95

PRITTY PRINTER - An excellent utility... The breakdown of lines is much neater and easier to read than an LLIST printout... Allows for notes, comments and corrections to be easily and prominently placed. TAPE/DISK \$19.95 March'84 Rainbow

MASTER MAIL - Quite easy to use... Capable of handling 1000 addresses on a single disk... FORM LETTER allows you to produce multiple letters from the address database... A program for serious applications. 32K DISK \$49.95 Jan'84 Rainbow



COLORFUL UTILITIES

FAST DUPE - The fastest Disk copier ever! Will format and backup a diskette in only one pass and can make up to 4 Disk copies at once! The must utility for every Disk owner. 64K DISK \$19.95

HIDDEN BASIC - A protection feature for your BASIC programs. Modify your code so CLOAD, CSAVE, LIST, EDIT, DEL and UNLIST will not function. TAPE \$19.95

64 COLUMN MOD I/III EMULATOR - Give your CoCo a 64X16 screen. Run Model I/III BASIC graphic routines without retyping the graphics statements. 64K DISK \$19.95

64K DISK UTILITY PACKAGE - Take advantage of an expanded 64K machine. Make an additional 8K of RAM available. Copy ROM cartridges to disk and create a 32K SPOOL buffer for printing. DISK \$21.95

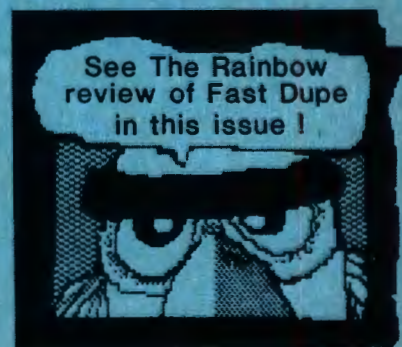
TAPE UTILITY - A powerful package that transfers tape to disk and disk to tape automatically. Does an automatic copy of an entire disk of programs and data to tape. TAPE/DISK \$24.95

E-X-T-E-N-D-E-D DISK BASIC - Add new powerful commands to your 64K Disk system. Inverse Video (GREAT for monitors!), Wild Card Directory, Double POKE and PEEK, NSAVE, NLOAD, LDIR, OLD and TYPE. DISK \$24.95

GRAPHICOM - The ultimate CoCo graphics development system with sophisticated graphics editing, preview animation, telecommunications and printer support. Hi-resolution graphics for only \$24.95. W/Spectrum's Menu Foot Switch \$34.95. 64K DISK

COLORFUL UTILITY CHECK LIST:

- | | |
|---|---|
| <input type="checkbox"/> DOUBLE DOS | <input type="checkbox"/> PRITTY PRINTER |
| <input type="checkbox"/> MULTI-PAK CRAK | <input type="checkbox"/> MASTER MAIL |
| <input type="checkbox"/> TAPE OMNI CLONE | <input type="checkbox"/> FAST DUPE |
| <input type="checkbox"/> DISK OMNI CLONE | <input type="checkbox"/> HIDDEN BASIC |
| <input type="checkbox"/> DISK MANAGER | <input type="checkbox"/> 64 COL MOD I/III EMULATOR |
| <input type="checkbox"/> BASIC AID | <input type="checkbox"/> 64K DISK UTILITY PACKAGE |
| <input type="checkbox"/> MASTER DESIGN | <input type="checkbox"/> TAPE UTILITY |
| <input type="checkbox"/> BASIC COMPILER | <input type="checkbox"/> E-X-T-E-N-D-E-D DISK BASIC |
| <input type="checkbox"/> SCHEMATIC DRAFTING | <input type="checkbox"/> GRAPHICOM |



SHIPPING \$3.00 - NY RESIDENTS ADD SALES TAX

SPECTRUM PROJECTS

WEST DIVISION
4285 PAYNE AVE / #9866
SAN JOSE, CA 95117

EAST DIVISION
PO BOX 21272
WOODHAVEN, NY 11421

212-441-2807


```

IF CH=2 THEN CLS:PRINT "ENTER NE
XT LINE (10 CHARACTERS)" ELSE IF
CH=3 THEN CLS:PRINT "ENTER NEXT
LINE (5 CHARACTERS)"

```

```

45 A$="":LINE INPUT A$:CLS
55 IF A$="" GOTO 35
65 PMODE 4,1:SCREEN 1,0
75 COLOR 0,1:IF Y=-YY THEN PCLS
85 Y=Y+YY:P=0:FOR X=0 TO (LEN(A$
)-1)*XX STEP XX
95 XY$="S"+STR$(S)+"BM"+STR$(X)+
", "+STR$(Y)
105 P=P+1:N=ASC(MID$(A$,P,1))
115 DRAW XY$+A$(N)
125 NEXT
135 A$=INKEY$:IF A$=CHR$(13) THE
N 35 ELSE IF A$=CHR$(12) THEN 93
5 ELSE 135
145 A$(33)="BR16R8D40L8U40BD48R8
D8L8U8"
155 A$(34)="BR8R8D24L8U24BR16R8D
24L8U24
165 A$(35)="BR8R8D16R8U16R8D16R8
D8L8D8R8D8L8D16L8U16L8D16L8U16L8
U8R8U8L8U8R8U16BD24BR8R8D8L8U8"
175 A$(36)="BR16R8D8R16D8L16D8R8
F8D8G8L8D8L8U8L16U8R16U8L8H8U8E8
R8U8BD16D8H4E4BD16BR8F4G4U8"
185 A$(37)="R16D16L16U16BD4BR40G

```

```

49D8E49U8BD36BL16R16D16L16U16"
195 A$(38)="BR8R8F8D16G4F8E4R8D8
G4F4D8L8H4G4L16H8U16E4H4U16E8BD8
BR4F4D8G4H4U8E4BD24F12G4L8H4U8E4
"
205 A$(39)="BR16R8D24L8U24"
215 A$(40)="BR16R8G16D24F16L8H16
U24E16"
225 A$(41)="BR16R8F16D24G16L8E16
U24H16"
235 A$(42)="BR16R8D16E8R8D8G12F1
2D8L8H8D16L8U16G8L8U8E12H12U8R8F
8U16"
245 A$(43)="BD24R16U16R8D16R16D8
L16D16L8U16L16U8"
255 A$(44)="BD32BR16R8D16G8L8E8U
16"
265 A$(45)="BD24R40D8L40U8"
275 A$(46)="BD48BR16R8D8L8U8"
285 A$(47)="BD4BR40D8G40U8E40"
295 A$(48)="BR8R24F8D40G8L24H8U4
0E8BD8BR4R16F4G24U24E4BD12BR20D2
4G4L16H4E24"
305 A$(49)="BR16R8D48R8D8L24U8R8
U32L8U8E8"
315 A$(50)="BR8R24F8D8G32R32D8L4
0U8E32U4H4L16G4D4L8U8E8"
325 A$(51)="BR8R24F8D16G4F4D16G8
L24H8U8R8D4F4R16E4U8H4L8U8R8E4U8
H4L16G4D4L8U8E8"
335 A$(52)="BR24R8D32R8D8L8D16L8
U16L24U16E24BD8D24L16U8E16"
345 A$(53)="R40D8L32D8R24F8D24G8
L24H8U8R8D4F4R16E4U16H4L28U24"
355 A$(54)="BR8R24F8D8L8U4H4L16G
4D12R24F8D16G8L24H8U40E8BD32R20F
4D8G4L16H4U12"
365 A$(55)="R40D8G32D16L8U16E32L
32U8"
375 A$(56)="BR8R24F8D16G4F4D16G8
L24H8U16E4H4U16E8BD8BR4R16F4D8G4
L16H4U8E4BD24R16F4D8G4L16H4U8E4"
385 A$(57)="BR8R24F8D40G8L24H8U8
R8D4F4R16E4U12L24H8U16E8BD8BER4R
16F4D12L20H4U8E4"
395 A$(58)="BD16BR16R8D8L8U8BD16
R8D8L8U8"
405 A$(59)="BD16BR16R8D8L8U8BD16
R8D16G8L8E8U16"
415 A$(60)="BR34D8G20F20D8H28E28
"
425 A$(61)="BD16R40D8L40U8BD16R4
0D8L40U8"
435 A$(62)="BR7F28G28U8E20H20U8"
445 A$(63)="BR8R24F8D8G16D8L8U8E
16U4H4L16G4D4L8U8E8BD48BR8R8D8L8
U8"
455 A$(64)="BR8R24F8D24G8L16U24R
8D8R8U12H4L16G4D32F4R28D8L32H8U4
0E8"

```

CMJ-IF

MULTI-FUNCTION PLUG-IN CARTRIDGE

FOR

TRS 80C & TDP 100 COMPUTERS

PROVIDES

* * *

AN EXTENDER
 2 PARALLEL PORTS
 2 COUNTER/TIMERS
 1 SERIAL COMM. LINE
 SPEECH SYNTHESIS
 4 OR 8K EPROM/ROM SPACE
 SPEECH FROM TEXT, BASIC, RTTY
 INTERFACE FOR *CMJ-TU
 *(CW,RTTY,SSTV,FAX)

MAGNUM DISTRIBUTORS INC.

1000 S. DIXIE HWY. W. #3
 POMPANO BEACH, FLORIDA 33060
 TLX. 514365 305-785-2002

..... A

..... SPECTRUM PROJECTS

..... SHOPPING LIST

.....

A Chip Off The Old...

- 6821 Standard PIA\$9.95
- 6822 Industrial Grade PIA\$14.95
- 6847 VDG Chip\$17.95
- 68764 (Fits Ext Basic Skt) Eprom ..\$24.95
- 64K RAM Checker (ROMPAK)\$24.95
- 16K-32K Upgrade Kit*\$25.95
- 6883 SAM Chip w/heat sink\$29.95
- 6809E CPU Chip\$29.95
- Basic ROM 1.2 Chip\$39.95
- Disk ROM 1.1 (New DOS Command) ..\$39.95
- 64K RAM Chips (Spectrum Special) ..\$49.95
- Extended Basic 1.1 ROM\$69.95
- CoCo First Aid Kit (Be Prepared)
(2 6821's, 6809E & 6883)\$69.95
- Intronics Eprom Programmer- 15 seconds
for a 68764! All popular EPROM's \$139.95
- * NOT compatible with CoCo II

CoCo Library...

- Color Computer Tech Manual\$7.95
- The World Connection - All about
Bulletin Boards, Modems and the World's
Most Famous Sysop (Bob Rosen)!.....\$9.95
- CoCo Memory Map\$12.00
- Your Color Computer (Mosher).....\$12.95
- Color Computer Graphics (Inman) ..\$12.95
- CoCo Secrets Revealed\$14.95
- Color Computer Interfacing\$14.95
- Basic 09 Tour Guide\$18.95

More Good Stuff...

- PBH Parallel Interface - Beats Botek!
300-9600 baud w/ptr-modem switch ..\$69.95
- The Spectrum Switcher - Have your Disk &
Cartridge too! Dual Slot System \$69.95
- Colorama - The BEST CoCo BBS!\$99.95
- Disk Interface (Spectrum Special)\$139.95
- PBJ 80X24 Video Board\$139.95
- 64 K CoCo II (NO DISCOUNTS).....\$239.95
- Banana Printer w/CoCo Interface ..\$259.95
- 5 Meg CoCo HARD Disk System\$1295.00

CoCo Cables And...

- Four Pin Male to Four Pin Female
Extension- 15 feet. Move your printer or
modem to another location.....\$14.95
- Tired of plugging and unplugging devices
from the RS232 port? Make your life
easier. Try our RS232 "Y" cable ..\$19.95
- OS-9 Null Modem Cable - Now timeshare
with another CoCo or MC-10\$19.95
- Spectrum Light Pen\$19.95
- Disk Interface/Rom Pak Extender - Move
your disks and ROM Paks where you want
them (3 feet)\$29.95
- Triple RS232 Switcher - Now select one
of any three RS232 peripherals ...\$29.95
- 40 Pin Dual "Y" Cable\$29.95

Other Good Stuff...

- C-10 tapes in any quantity49 cents
- 5 1/4 Diskettes in any quantity ...\$1.99
- Joystick plug\$3.99
- 64K RAM Button\$4.99
- GEMINI 10X Ribbon\$4.99
- Epson MX/RX 80 Cartridge\$6.99
- Rompak w/Blank PC Board\$9.95
- RS Disk Controller Case\$9.95
- The Disk Doubler - Doubleside your 5 1/4
diskettes\$14.95
- Video Clear - Cleanup TVI !!\$14.95
- Cassette Recorder Stand- Put your CTR80
CCR81 at a 45 degree angle\$19.95
- The Data Defender- Store 75 diskettes in
a hard plastic case w/key lock....\$29.95
- CoCo Cooler (D & E Rev. boards) ..\$49.95
- New! CoCo Cooler II (CoCo II)\$49.95
- CoCo Stereo Music Synthesizer\$69.95

SPECTRUM PROJECTS

EAST DIVISION :

PO BOX 21272
WOODHAVEN, NY 11421

WEST DIVISION :

4285 PAYNE AVE/+9866
SAN JOSE, CA 95117

All orders plus \$3.00 S/H
NY Residents add sales tax

(212) 441-2807

Five Easy Ways To Clean Up Your Finances.



- actual screen display *Indicates function being shown
- 1**

 - Chart of Accounts
 - *Checkbook Maintenance
 - Check Search
 - Prints Checks
 - 2**

 - *Detail Budget Analysis
 - Summary Budget Analysis
 - Income/Expense Statements
 - Net Worth Statement
 - 3**

 - Appointments Calendar
 - Payments Calendar
 - *Color Chart Package
 - Mailing List
 - 4**

 - *Spreadsheet Compatible with Finance 1, 2 and 5
 - 5**

 - *Income Tax Prints forms
 - Most schedules
 - Uses Finance 1, 2 and 4

the Complete Personal Accountant™



Whether you're cleaning up at home or around the office, there's NOW a COMPLETE line of money management software that will attend to all the details, while letting you see the whole financial picture. The Complete Personal Accountant's exclusive combination of easy to use programs give the wise investor a quick and dependable way to control finances and plan for the future.

FINANCE 1 gets you organized with a standard chart of accounts adaptable to any situation. The Checkbook Maintenance program with full screen editing and special 'Help' commands let you find any check by any field. You can flag tax deductibles, reconcile your bank statement, print checks and more.

FINANCE 2 tells you where your money is, where it's going and where it's coming from. The Detail and Summary Budget programs show exactly where you're spending your money. The Income/Expense and Net Worth programs provide professional-looking statements that can be printed with any 80 column printer.

FINANCE 3 separates the CPA from the competition. No other finance package for the home or small business gives you Appointments and Payments Calendars for scheduling your time and money. Few packages offer the ability to chart each account in color. And only the CPA includes a mailing list with 1200 name capacity*. All reports are printable with most 80 column printers.

FINANCE 4 lets you determine the "what if's" of your financial future. With this easy to learn spreadsheet you'll spend more time making decisions and less time crunching numbers.

FINANCE 5, The Tax Handler™, uses your files from Finance 1, 2 and 4 to complete your taxes in a fraction of the normal time.

The Complete Personal Accountant™ line of money management software is simply the most comprehensive, easy to use financial software available anywhere.

*Varies according to computer.



	Com 64	Atari*	Color*	VIC 20	Price
Finance 1	●	●	●	●	39.95
Finance 2	●	●	●	●	29.95
Finance 3	●	●	●	●	29.95
Finance 4	●	●	●	●	29.95
Finance 5	●	●	●	●	59.95
Complete Set (1-3)	●	●	●	●	79.95
Complete Set (1-5)	●	●	●	●	149.95

*Atari version disk only *Finance 5 on TRS-80 color requires 32K

Prices subject to change without notice. Add \$3.00 for postage and handling. Please specify computer, format, and memory capacity when ordering. See your local dealer or order direct 1-800 334-SOFT.



P.O. Box 3470 Department R, Chapel Hill, North Carolina 27514


```

465 A$(65)="BR16R8F16D40L8U24L24
D24L8U40E16BD8BR4F12D4L24U4E12
475 A$(66)="R32F8D16G4F4D16G8L32
U56BF8R20F4D8G4L20U16BD24R20F4D8
G4L20U16"
485 A$(67)="BR8R24F8D8L8U4H4L16G
4D32F4R16E4U4R8D8G8L24H8U40E8"
495 A$(68)="R32F8D40G8L32U56BF8R
20F4D32G4L20U40"
505 A$(69)="R40D8L32D16R24D8L24D
16R32D8L40U56"
515 A$(70)="R40D8L32D16R24D8L24D
24L8U56"
525 A$(71)="BR8R24F8D8L8U4H4L16G
4D32F4R16E4U4L8U8R16D16G8L24H8U4
0E8"
535 A$(72)="R8D24R24U24R8D56L8U2
4L24D24L8U56"
545 A$(73)="BR8R24D8L8D40R8D8L24
U8R8U40L8U8"
555 A$(74)="BR32R8D48G8L24H8U8R8
D4F4R16E4U44"
565 A$(75)="R8D24E24R8G28F28L8H2
4D24L8U56"
575 A$(76)="R8D48R32D8L40U56"
585 A$(77)="R8D12F12E12U12R8D56L
8U36G12H12D36L8U56"
595 A$(78)="R8D12F24U36R8D56L8U1
2H24D36L8U56"
605 A$(79)="BR8R24F8D40G8L24H8U4
0E8BD8BR4R16F4D32G4L16H4U32E4"
615 A$(80)="R32F8D16G8L24D24L8U5
6BF8R20F4D8G4L20U16"
625 A$(81)="BR8R24F8D36G4F4G4H4G
4L20H8U40E8BD8BR4R16F4D32H4G4F4L
16H4U32E4"
635 A$(82)="R32F8D16G8L16F24L8H2
4D24L8U56BF8R20F4D8G4L20U16"
645 A$(83)="BR8R24F8D8L8U4H4L16G
4D8F4R20F8D16G8L24H8U8R8D4F4R16E
4U8H4L20H8U16E8"
655 A$(84)="R40D8L16D48L8U48L16U
8"
665 A$(85)="R8D44F4R16E4U44R8D48
G8L24H8U48"
675 A$(86)="R8D36F12E12U36R8D40G
16L8H16U40"
685 A$(87)="R8D36E12F12U36R8D56L
8U12H12G12D12L8U56"
695 A$(88)="R8D12F12E12U12R8D16G
12F12D16L8U12H12G12D12L8U16E12H1
2U16"
705 A$(89)="R8D12F12E12U12R8D16G
16D24L8U24H16U16"
715 A$(90)="R40D12G32D4R32D8L40U
12E32U4L32U8"
725 A$(91)="R40D8L24D40R24D8L40U
56"
735 A$(92)="BD4F40D8H40U8"
745 A$(93)="R40D56L40U8R24U40L24

```

```

U8"
755 A$(94)="BD34E20F20D8H20G20U8
"
765 A$(95)="BD48R40D8L40U8"
775 RETURN
785 CLS
795 Z$=STRING$(32,"$")
805 PRINT Z$
815 PRINT@42,"GARAGE SALE"
825 PRINT Z$
835 PRINT "HOW MANY ARE SELLING"
845 INPUT S
855 FOR Y=1 TO S
865 PRINT"NAME OF SELLER #"(Y)
875 INPUT N$(Y)
885 IF (Y)=S THEN895 ELSE 925
895 CLS:PRINT"DO YOU HAVE A MESS
AGE? [Y/N]";
905 INPUT M$
915 IFM$="Y" THEN 15 ELSE 935
925 Y=Y+1:GOTO 865
935 Y=Y+1:CLS:PRINTZ$
945 FOR X=1 TO S-1 STEP 6
955 FOR Z=X TO X+6
965 PRINT Z;N$(Z)
975 NEXT Z
985 NEXT X
995 PRINT"      INPUT SELLERS NO."
1005 PRINT @417,"TYPE [99] TO TO

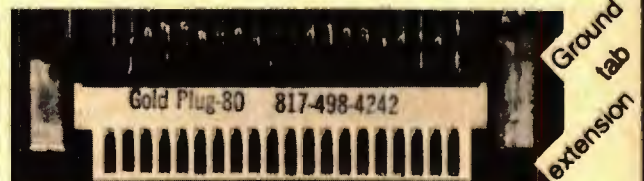
```

TRS-80+ MOD I, III, COCO, T199/4a
TIMEX 1000, OSBORNE, others



GOLD PLUG - 80

Eliminate disk reboots and data loss due to oxidized contacts at the card edge connectors. **GOLD PLUG 80** solders to the board edge connector. Use your existing cables. (if gold plated)



COCO Disk Module (2)	\$16.95
Ground tab extensions	INCL
Disk Drives (all R.S.)	\$7.95
Gold Disk Cable 2 Drive	29.95
Four Drive Cable	39.95
USA shipping \$1.45	Can/Mex \$4.
Foreign \$7	TEXAS 5% TAX

Don't wait any longer

new
SPECIAL PRICE

Available at your favorite dealer or order direct from



E.A.P. CO.
P.O. BOX 14
KELLER, TEXAS 76248



(817) 498-4242

MC/VISA

+ trademark Tandy Corp


```

TAL DAYS SALES  TYPE [91] TO RU
N MESSAGE "
1015 INPUT N
1025 IF N=99 THEN 1425 ELSEIF N=
91 THEN 65 ELSE1035
1035 CLS:PRINT Z$
1045 PRINT"SALES FOR " N$(N)
1055 PRINT Z$
1065 PRINT"PRICE OF ITEM";:INPUT
PR
1075 PRINT"QUANTITY";: INPUT Q
1085 PRINT
1095 ON N GOTO 1105,1115,1125,11
35,1145,1155,1165
1105 S1=S1+PR*Q:GOTO1175
1115 S2=S2+PR*Q:GOTO1175
1125 S3=S3+PR*Q:GOTO1175
1135 S4=S4+PR*Q:GOTO1175
1145 S5=S5+PR*Q:GOTO1175
1155 S6=S6+PR*Q:GOTO1175
1165 S7=S7+PR*Q:GOTO1175
1175 PRINT Z$
1185 PRINT"PRESS [ENTER] TO CONT
INUE";:INPUT C
1195 GOTO 1205
1205 CLS:TS=S1+S2+S3+S4+S5+S6+S7
1206 PRINT@10,"HIT [ENTER]"
1207 PRINT@37,"IF SALE IS NOT CO
MPLETE"

```

```

1215 PRINT:PRINT:PRINT"TOTAL THI
S SALE" TS
1225 PRINT"AMOUNT TENDERED";:INP
UT AT:IF AT=OTHEN935
1235 CLS
1245 PRINT@34,"TOTAL THIS SALE"
1255 PRINT@98,"AMOUNT TENDERED"
1265 AC=AT-TS
1275 PRINT@161,"AMOUNT OF CHANGE
"
1285 PRINT@52,USING"###.##";TS
1295 PRINT@116,USING"###.##";AT
1305 PRINT@149,STRING$(6,"-")
1315 PRINT@181,USING"###.##";AC
1316 GOTO 1355
1325 S1=0:S2=0:S3=0:S4=0:S5=0:S6
=0:S7=0
1335 PRINT:PRINT:PRINT"PRESS ENT
ER TO CONTINUE";:INPUT F
1345 GOTO 935
1355 L1=L1+S1
1365 L2=L2+S2
1375 L3=L3+S3
1385 L4=L4+S4
1395 L5=L5+S5
1405 L6=L6+S6
1415 L7=L7+S7:GOTO 1325
1425 CLS:PRINT"TOTALS FOR THE DA
Y"

```

```

1435 PRINT
1445 PRINTN$(1) " =";:PRINT@81,US
ING"###.##";L1
1455 PRINTN$(2) " =";:PRINT@113,U
SING"###.##";L2
1465 PRINTN$(3) " =";:PRINT@145,U
SING"###.##";L3
1475 PRINTN$(4) " =";:PRINT@177,U
SING"###.##";L4
1485 PRINTN$(5) " =";:PRINT@209,U
SING"###.##";L5
1495 PRINTN$(6) " =";:PRINT@241,U
SING"###.##";L6
1505 PRINTN$(7) " =";:PRINT@273,U
SING"###.##";L7
1514 TS=L1+L2+L3+L4+L5+L6+L7
1515 PRINT:PRINT"TODAYS TOTAL SA
LES =";:PRINTUSING"$###.##";TS
1525 PRINT"PRESS ENTER TO CONTIN
UE";:INPUT C
1535 CLS:PRINT"DO YOU WANT TO CH
ANGE MESSAGE? [Y/N]"
1545 PRINT:PRINT:PRINT"TYPE [ R
] TO RERUN OLD MESSAGE":INPUT MZ
$
1555 IF MZ$="Y"THEN 15ELSEIFMZ$=
"R"THEN65ELSE935
1565 S1=0:S2=0:S3=0:S4=0:S5=0:S6
=0:S7=0
1575 GOTO 45935

```



VALHALLA



VENTURE WITH YOUR LEGIONS INTO THE MYSTICAL LAND OF VALHALLA TO CONQUER ALL AND REIGN SUPREME IN THIS TOTALLY HI-RES, COMPLETELY JOYSTICK CONTROLLED, STRATEGY GAME. THE BEAUTIFULLY DETAILED TERRAIN MAP INCLUDES CASTLES, VILLAGES, ROADS, RIVERS, SWAMPS, LAKES, BAYS, AND MOUNTAINS. TWO TO FOUR PLAYERS CONTROL SIXTEEN ARMIES LED BY LORDS, GENERALS, OR CAPTAINS. EACH ARMY FEATURES HEAVY CALVARY, LIGHT CALVARY, FOOT SOLDIERS, AND ARCHERS.

A SUPERB GAME FOR ONLY \$24.95.

CHECK OR MONEY
ORDER ONLY

AVAILABLE ONLY FROM
HYCOMP

P.O. BOX 15331
TULSA, OK 74158
(918)268-6452

ALL ORDERS 1.50 SHIPPING. GAMES REQUIRE 32K, EXT. BASIC, AND DUE TO MEMORY REQUIREMENTS ARE AVAILABLE ONLY ON CASSETTE



COLONIAL TRILOGY



THE INCREDIBLE SAGA OF THE STRUGGLES
BETWEEN TWO RACES AT THE EDGE OF OUR GALAXY

COLONIAL WARS: ONE PLAYER COMMANDS THE COLONIAL HOMEWORLDS AND ALL THEIR FORCES WHILE THE OTHER PLAYER LEADS THE INVADING ZYRON EMPIRE. THE ULTIMATE IN TWO PLAYER STRATEGY GAMES WITH HYCOMP'S UNIQUE SPLIT SCREEN CONCEPT, GAME SAVE, AND 10 PAGE INSTRUCTION MANUAL (3-8hrs)

ZYRON: THE SIEGE OVER ONE OF THE COLONIAL HOMEWORLDS AND THE ATTEMPT TO BREAK IT IS THE SETTING FOR THIS TWO PLAYER GAME. FEATURES INCLUDE CUSTOM BUILT FIGHTERS AND FREIGHTERS, 300 LOCATION HI-RES PLAYING GRID, SEVEN PAGE MANUAL, TWO SCENARIOS, AND PLAYING AID (2-4hrs)

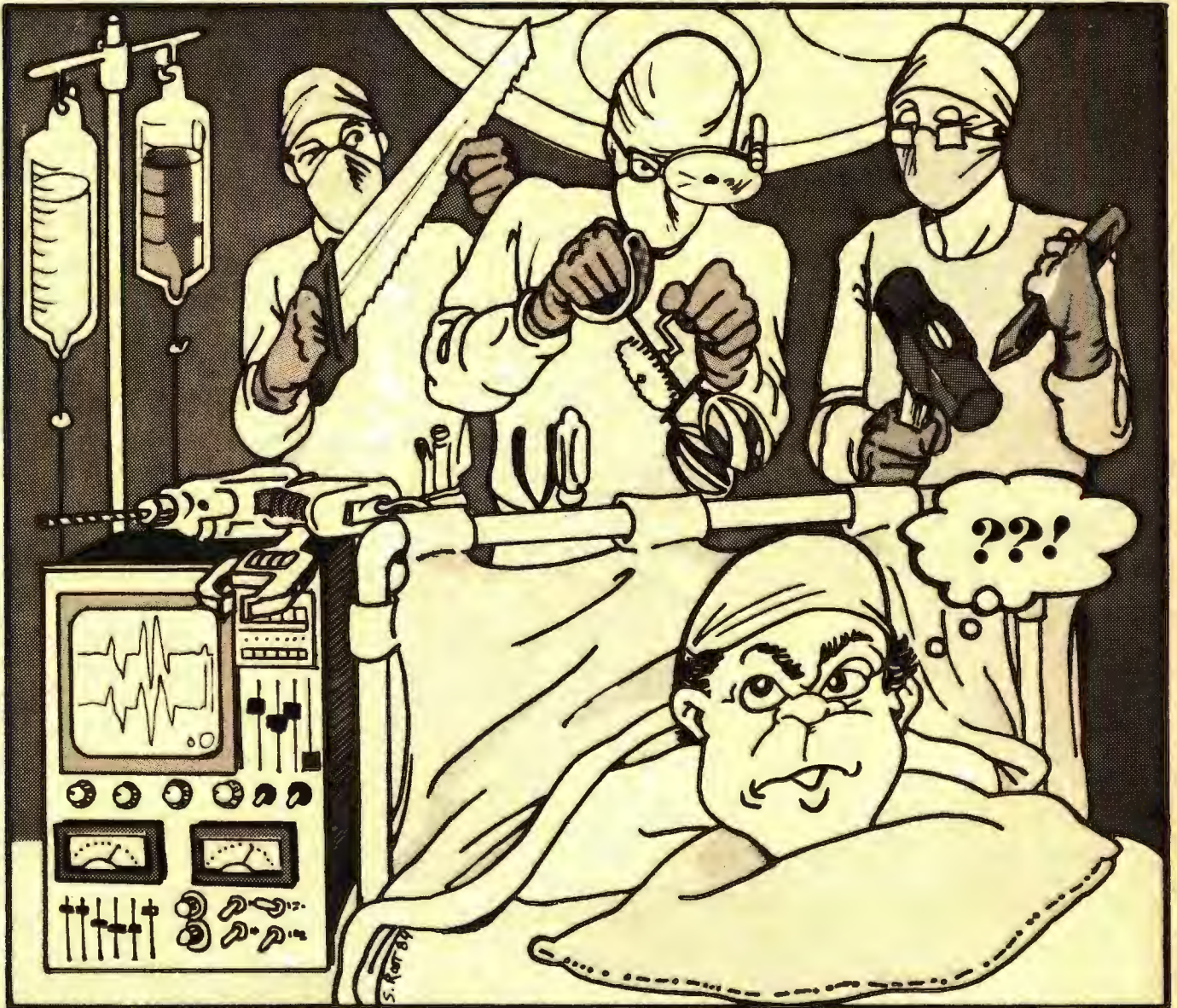
QUESTAR: ONE PLAYER EXPLORES OVER 30 PLANETS ON A DARING MISSION TO DESTROY A HIDDEN ZYRON BASE IN THIS EXCELLENT GRAPHICS ADVENTURE (60-90min)

ONLY \$19.95 EACH OR
ALL THREE FOR \$49.95!



1575 GOTO 45935

SAVE THE LIFE of YOUR PROJECT!



OPERATE with the PROPER TOOLS!

JBM's MIDWARE line of quality software, is available on either five and one-quarter or eight inch diskettes. All of JBM's software packages come complete with comprehensive user's manuals.



JBM'S MIDWARE
for OS9

OS9 is a registered trademark of Microware Corporation.

For more information, contact:

Department RB6
The JBM Group, Inc.
Continental Business Center
Front & Ford Sts.
Bridgeport, PA 19405
TEL: 215-337-3138
TWX: 510-660-3999

the **JBM**
group

VISA and MASTERCARD accepted.



You Can Bet On WAGER MASTER

By Leonard Hyre

Some things just go together: Love and marriage, milk and cookies, apple pie and mom, and of course, horse racing and CoCo! Horse racing and CoCo? Well, maybe you think this is a bit of an exaggeration. I will admit though, that from the day I brought home my CoCo, the pair were on my mind. I had to believe that my unrelenting love of racing and the unwavering logic of the CoCo were just intended to get together. The results were *Harness Handicapper* and *Thoroughbred Handicapper*. But the CoCo has other possibilities also. Thus *Wager Master* came about.

Competent handicapping is only one-half of the formula for successful wagering at the races. It has been my experience from really trying to win, this can be difficult. Several of the features of *Wager Master* are designed to assist in setting up prerace selections of these types of bets, using the probable winner as the key ingredient.

(Leonard Hyre, author of Thoroughbred Handicapper and Harness Handicapper, both marketed through Federal Hill Software, is also the author of several programs which have appeared previously in the Rainbow. As well as being a CoCo enthusiast, Mr. Hyre is a claims representative for the Social Security Administration.)

Upon running *Wager Master*, the user is prompted with a menu from which one of eight options can be selected. Seven of the eight offer printer options and six require user input. To maximize user audience, I have kept *Wager Master* to rience to know several incredibly knowledgeable handicappers who never seem to make a reasonable profit. The reason — money management! A little planning, especially before you even arrive at the track, is a big start on financial success to go with the handicapping.

Wager Master is a tool to aid in that money management need. By carefully weighing the probable odds on your selections and experimenting with them, you can better determine the chances of a reasonable return on an investment. It also satisfies that “tinkering” nature of racing fans who like to doodle around with odds and the like.

While I personally prefer win or win/place wagering, I will admit to that occasional weakness of a double, exacta or triple bet. Though not the soundest of ideas in even the best of conditions, the urge to drop a bit on these “exotic” bets is virtually impossible to resist. I believe the weakness of this type of wager is that the handicapper must pick not only the winner, but also is betting on who will lose and by how much! Since second- and third-place finishers are sometimes horses who got there simply by passing horses that were

within 16K parameters and all print routines are done using *TAB* and *PRINT USING* commands so as to be compatible with all printers. Also, the printouts are limited to a 40-column printer width. For those with no printer, all information is displayed on the screen first.

Lines 190-320:

Standard Payoffs (option 1) requires no user input and is simply a table of payoffs at various odds. The win table is, of course, easy to determine. The figures used for place and show columns are estimates based on average payoffs for the odds shown and should not be considered as necessarily accurate. The betting public can do strange things. The table may be printed out for handy reference at the track.

```
*****
*ESTIMATED PAYOFF ON A TWO DOLLAR WAGER*
ODDS    WIN    PLACE    SHOW
1-1     4.00    2.00    2.20
6-5     4.40    3.00    2.20
7-5     4.80    3.20    2.80
8-5     5.20    3.20    2.80
9-5     5.60    3.20    2.80
2-1     6.00    3.40    2.80
5-2     7.00    3.60    3.00
3-1     8.00    4.00    3.00
4-1    10.00    5.20    3.40
5-1    12.00    6.00    4.00
6-1    12.00    7.00    4.40
8-1    18.00    8.00    5.20
10-1   22.00    8.00    5.20
20-1   42.00   18.00   18.00
*****
```

Lines 330-600:

A Return Per Specific Wager (option 2) section is presented for the fun of the "what if" in us: Just input anticipated odds, the amounts to bet on win, place and show, and instantly be presented with the fortune you anticipate will come rolling in. Print it out if you wish.

Lines 610-810:

Option 3 is Wagering Record Keeper, a truly handy way of keeping your racing records. I find this infinitely better than a huge stack of accumulating Racing Forms and harness programs. With place, date, name and results for the entire day on a handy sheet, you can quickly see how you have done, now and in the past, and make adjustments accordingly to your style.

Lines 820-1050:

Play around with Return Per Specific Odds (option 4), requiring limited user input and returning the amount a variety of different size win wagers would return at given odds. Printer option available here also.

Lines 1060-1540:

Options 5, 6 and 7 offer the most likely combinations to win an "exotic" wager based on your best handicapping information. All three offer "hedge" bets as well and can be routed to the printer.

Lines 1550-1580:

A general statement is offered as an Overview (option 8). This is to remind would-be users of the fact that the program does not do the handicapping and that the place and show charts are strictly estimates!

```
*****
TRACK:CHURCHILL    DATE:MAY 5, 1984
ROGER MANNING
*****
```

```
-----
RACE NO. 1
WAGER:WIN.....PLACE.....SHOW.....
HORSE PLACED:.....PAYOFF.....
PROFIT OR LOSS ON RACE.....
-----
```

```
-----
RACE NO. 2
WAGER:WIN.....PLACE.....SHOW.....
HORSE PLACED:.....PAYOFF.....
PROFIT OR LOSS ON RACE.....
-----
```

```
-----
RACE NO. 3
WAGER:WIN.....PLACE.....SHOW.....
HORSE PLACED:.....PAYOFF.....
PROFIT OR LOSS ON RACE.....
-----
```

```
-----
RACE NO. 4
WAGER:WIN.....PLACE.....SHOW.....
HORSE PLACED:.....PAYOFF.....
PROFIT OR LOSS ON RACE.....
-----
```

```
-----
RACE NO. 5
WAGER:WIN.....PLACE.....SHOW.....
HORSE PLACED:.....PAYOFF.....
PROFIT OR LOSS ON RACE.....
-----
```

```
-----
RACE NO. 6
WAGER:WIN.....PLACE.....SHOW.....
HORSE PLACED:.....PAYOFF.....
PROFIT OR LOSS ON RACE.....
-----
```

```
-----
RACE NO. 7
WAGER:WIN.....PLACE.....SHOW.....
HORSE PLACED:.....PAYOFF.....
PROFIT OR LOSS ON RACE.....
-----
```

```
-----
RACE NO. 8
WAGER:WIN.....PLACE.....SHOW.....
HORSE PLACED:.....PAYOFF.....
PROFIT OR LOSS ON RACE.....
-----
```

```
-----
RACE NO. 9
WAGER:WIN.....PLACE.....SHOW.....
HORSE PLACED:.....PAYOFF.....
PROFIT OR LOSS ON RACE.....
-----
```

```
-----
RACE NO. 10
WAGER:WIN.....PLACE.....SHOW.....
HORSE PLACED:.....PAYOFF.....
PROFIT OR LOSS ON RACE.....
-----
```

Wager Master is both serious and fun for the casual or regular horse racing fan alike. I hope you will agree.

Programming structure is kept relatively simple. If you haven't been making much use of the powerful *PRINT USING* command, a review of the program might be useful. The program is broken down into eight distinct subroutines, one for each option, accessed by a single *ON-x-GOTO* line. *DATA* statements are read in as four strings representing odds, win payoff, place payoff and show payoff. These are then manipulated as needed by each of the subroutines to obtain desired results.

If you don't want to type in the program, I will be glad to send you a copy of tape for \$4.50. Just send check to: L. Hyre, P.O. Box 403, Cambridge, MD 21613.

140	.....	174	1020	.....	141
280	.....	237	1160	.....	25
440	.....	130	1260	.....	126
620	.....	6	1370	.....	136
760	.....	35	1470	.....	143
910	.....	223	END	.....	29

The listing:

```

10 *****
20 * WAGER MASTER *
30 * <C>L.HYRE *
40 * CAMBRIDGE MD *
50 * 1/84 *
60 *****
70 CLS: CLEAR1000
80 DIM O$(15), W$(15), P$(15), S$(15)
90 GOSUB 1600
100 DATA 1-1, 4.00, 2.80, 2.20, 6-5,
4.40, 3.00, 2.20, 7-5, 4.80, 3.20, 2.8
0, 8-5, 5.20, 3.20, 2.80, 9-5, 5.60, 3.
20, 2.80, 2-1, 6.00, 3.40, 2.80, 5-2, 7
.00, 3.60, 3.00, 3-1, 8.00, 4.00, 3.00
, 4-1, 10.00, 5.20, 3.40, 5-1, 12.00, 6
.00, 4.00, 6-1, 12.00, 7.00, 4.40, 8-1
, 18.00, 8.00, 5.20
110 DATA 10-1, 22.00, 8.00, 5.20, 20
-1, 42.00, 18.00, 10.00
120 Z=0: CLS: SOUND125, 1: PRINTSTRIN
G$(33, 159); PRINT@42, "WAGER MAS
TER": PRINT@63, STRING$(33, 159);
130 PRINT " THE MENU: ": PRINT " 1>
STANDARD PAYOFFS": PRINT " 2> RETU
RN PER SPECIFIC WAGER": PRINT " 3>
WAGERING RECORD KEEPER": PRINT "
4> RETURN PER SPECIFIC ODDS": PRI
NT " 5> DAILY DOUBLE WAGERS": PRIN
T " 6> PERFECTA, EXACTA TYPE WAGER
8"
140 PRINT " 7> TRIFECTA, TRIPLE TY
PE WAGERS": PRINT " 8> overview"
150 SOUND 100, 1: PRINTSTRING$(32,
159);
160 PRINT " < TYPE NO.OF SELEC
TION > ": PRINTSTRING$(32, 159);
170 AN$=INKEY$: IFAN$="" THEN 170
180 ON VAL(AN$) GOTO 190, 330, 610
, 820, 1080, 1210, 1360, 1550
190 CLS: SOUND 125, 1: IF Z=2 THEN
PRINT#-Z, STRING$(40, "$"): PRINT#-
Z, "*ESTIMATED PAYOFF ON A TWO DO
LLAR WAGER*
200 PRINT#-Z, "ODDS WIN PL
ACE SHOW"
210 FORX=1TO14: IF LEN(O$(X))=3 T
HEN O$(X)=" "+O$(X)
220 IF LEN(W$(X))=4 THEN W$(X)="
"+W$(X)
230 IF LEN(P$(X))=4 THEN P$(X)="

```

```

"+P$(X)
240 IF LEN(S$(X))=4 THEN S$(X)="
"+S$(X)
250 PLAY"T255V3104D": PRINT#-Z, TA
B(0); O$(X); TAB(8); W$(X); TAB(16);
P$(X); TAB(25); S$(X)
260 NEXT
270 IF Z=2 THEN PRINT#-Z, STRING$
(40, "$"): PRINT#-2: PRINT#-2: GOTO1
20
280 PRINT"<m>ENU <p>RINTER";
290 AN$=INKEY$: IFAN$="" THEN290
300 IF AN$="M" THEN 120
310 IF AN$="P" THEN Z=2: GOTO 190
320 SOUND1, 4: GOTO290
330 CLS: SOUND125, 1
340 PRINTSTRING$(32, 175); PRINTC
HR$(175)+" RETURN/SPECIFIC WA
GER "+CHR$(175); PRINTSTRING
$(32, 175);
350 IF Z=2 THEN PRINT#-2, STRING$
(40, "-"): PRINT#-2, TAB(10); "*RETU
RN/SPECIFIC WAGER*": GOTO 410
360 PRINT"SELECT ANTICIPATED ODD
S: ": PRINT"(1) 1-1 (2) 6-5 (3
) 7-5": PRINT"(4) 8-5 (5) 9-5
(6) 2-1": PRINT"(7) 5-2 (8) 3-
1 (9) 4-1
370 PRINT"(10)5-1 (11)6-1 (1
2)8-1": PRINT"(13)10-1 (14)20-1"
380 INPUT OD$: IF VAL(OD$)>14 THE
N 380 ELSE X=VAL(OD$)
390 PLAY"V31T10004E05E": PRINT "O
DDS="; O$(X)
400 INPUT"HOW MUCH TO WIN "; WM
: INPUT"HOW MUCH TO PLACE "; PM: IN
PUT"HOW MUCH TO SHOW "; SM
410 CLS: PRINT " RETURN FOR W
AGER"
420 IFZ=1THENPRINTSTRING$(32, 159
);
430 PRINT#-Z, "FOR A HORSE AT ";
O$(X); " ODDS"
440 PRINT#-Z, "TOTAL WAGER OF": P
RINT#-Z, USING"#####.##"; WM+PM+
SM
450 PRINT#-Z, "YOUR PAYOFF WOULD
BE:"
460 W=VAL(W$(X))/2: P=VAL(P$(X))/
2: S=VAL(S$(X))/2
470 PRINT#-Z, USING"WIN #####
.##"; WM*W: PLAY"V31T10004E05E"
480 PRINT#-Z, USING"PLACE #####
.##"; PM*P: PLAY"04E05E"
490 PRINT#-Z, USING"SHOW #####
.##"; SM*S: PLAY"04E05E"
500 PRINT#-Z, STRING$(16, "-")
510 PRINT#-Z, USING"TOTAL #####
.##"; (WM*W)+(PM*P)+(SM*S): PLAY"O
4E05E"

```


INVESTIGATE THE HIDDEN REALMS
OF THE HUMAN MIND!!

BIO-PSYCHOMETER™

- * Authentic Bio-feedback device and software
- * Machine Language, high speed graphics
- * Includes:
 - Bio-feedback graphing,
 - Stress Reduction, and
 - Memory Improvement modes
- * Very sensitive hardware for optimum results
- * Requires 32K & Ext. BASIC
- * With manual, only....\$ 39.95



IF YOU HAVE EVER HAD TROUBLE
MAKING UP YOUR MIND, THEN THIS
PROGRAM IS FOR YOU

DECISION MAKER™

- * A step by step interactive program to help you solve your problems
- * Designed to use standard analytic techniques
- * Works with any problem
- * A valuable tool for anyone
- * Requires 32K & Ext. BASIC
- * Now, only.....\$ 24.95

COLORFORTH™ V2.0

- * The original COLORFORTH Compiler is now even better
- * COLORFORTH V2.0 can access ALL available RAM - 16K through 64K
- * COLORFORTH is at least 10 to 25 times faster than BASIC
- * 50 words are included in addition to the standard figFORTH commands
- * This package includes BOTH cassette and R/S DOS versions PLUS a resident figEDITOR, and 82 page manual
- * Rated "BEST BUY" of Color Computer Forths reviewed by COLOR COMPUTER MAGAZINE, July 1983. (Version 2.0 is an even better buy)
- * All of the above, for only.....\$ 49.95

Add \$2.50 shipping & handling

Texas residents add 5%

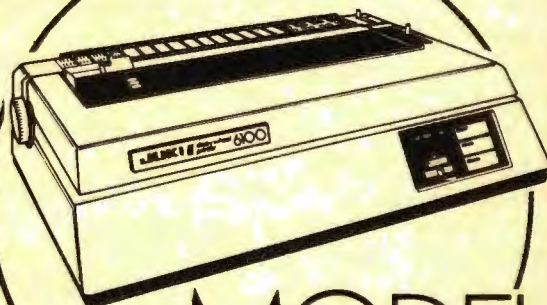
We accept U.S. funds on U.S. banks, VISA & MASTER CARD, & UPS C.O.D.s.

DEALERS INQUIRIES WELCOME

ARMADILLO INT'L SOFTWARE

P.O. BOX 7661
AUSTIN, TEXAS 78712

JUKI®



MODEL 6100

NOW
AVAILABLE
AT

\$539⁰⁰

WITH
SERIAL INTERFACE

LETTER QUALITY BI-DIRECTIONAL DAISYWHEEL PRINTER

PRINTING SPEED OF 18 cps
PROPORTIONAL SPACING MODE
UTILIZES IBM SELECTRIC RIBBONS
WORD PROCESSING AND GRAPHIC FUNCTIONS
100 CHARACTER DAISYWHEEL, 10/12/15 PITCH
CODE COMPATIBLE WITH DIABLO 620/630
COMPATIBLE TO TRS-80 COLOR COMPUTER,
IBM PC, APPLE, TRS-80 MODEL III & 4, ETC.
ALSO AVAILABLE WITH PARALLEL INTERFACE
REGULARLY \$599.00 NOW ONLY \$499.00



PHONE (512)835-1088


```

520 PRINT#-Z,USING"LESS #####
.##";WM+PM+SM:PLAY"04E05E"
530 PRINT#-Z,STRING$(16,"-"):PRI
NT#-Z,USING"PROFIT #####.##";((
WM*W)+(PM*P)+(SM*S))-(WM+PM+SM):
PLAY"T1005C0"
540 IFZ=2THENPRINT#-2,STRING$(40
,"-"):Z=0
550 PRINT#-Z::PRINT"<a>NOTHER <
m>ENU <p>RINTER";
560 AN#=INKEY#:IFAN#=""THEN 560
570 IFAN#="A"THEN 330
580 IFAN#="M"THEN 120
590 IFAN#="P"THEN Z=2:GOTO350
600 SOUND1,4:GOTO 560
610 CLS:PRINTSTRING$(33,159)::PR
INT@38,"WAGERING RECORD KEEPER":
PRINT@63,STRING$(33,159);
620 PRINT"IS PRINTER ON?":SOUND1
25,1:SOUND155,1
630 A#=INKEY#:IFA#=""THEN 630
640 IFA#<>"Y"THEN SOUND 1,1:GOTO
630
650 PLAY"V31T5003D04D05D"
660 PRINT"MAKE SURE PAPER IS ADV
ANCED TO PRINT HEAD!"
670 PRINT:INPUT"RACECOURSE NAME"
;RC#:PLAY"T100V3104E05E"
680 INPUT"TODAYS DATE: ";DT#:PLAY
"04E05E"
690 INPUT"YOUR NAME: ";NM#:PLAY"0
4E05E"
700 PRINT:PRINT:PRINT"*****
now"+CHR$(128)+"printing*****
**"
710 PRINT#-2,STRING$(40,"*"):PRI
NT#-2,"TRACK: ";RC#:TAB(20);"DATE
: "DT#:PRINT#-2,NM#:PRINT#-2,STR
ING$(40,"*")
720 FORR=1TO10
730 PRINT#-2,STRING$(40,"-"):PRI
NT#-2,"RACE NO. ";R
740 PRINT#-2,"WAGER:WIN.....PL
ACE.....SHOW....."
750 PRINT#-2,"HORSE PLACED:.....
..";TAB(21);"PAYOFF.....
"
760 PRINT#-2,"PROFIT OR LOSS ON
RACE....."
770 NEXT R
780 PRINT#-2,STRING$(40,"-"):PRI
NT"DONE-"
790 PRINT"PRESS <1>ANOTHER <2>M
ENU
800 A#=INKEY#:IFA#=""THEN 800
810 IF A#="1"THEN 610 ELSE IF A#
="2"THEN 120 ELSE SOUND1,1:GOTO
800
820 CLS:SOUND125,1
830 PRINTSTRING$(32,175)::PRINTC

```

```

HR$(175)+" RETURN / SPECIFIC
ODDS "+CHR$(175)::PRINTSTRING
$(32,175);STRING$(32,195);
840 PRINT"SELECT ODDS:":PRINT"(1
) 1-1 (2) 6-5 (3) 7-5":PRINT
"(4) 8-5 (5) 9-5 (6) 2-1":PR
INT"(7) 5-2 (8) 3-1 (9) 4-1"
850 PRINT"(10)5-1 (11)6-1 (1
2)8-1":PRINT"(13)10-1 (14)20-1
"
860 INPUTOD#:IFVAL(OD#)>14 THEN
860 ELSE X=VAL(OD#)
870 PLAY"V31T10004E05E":IFZ=0 TH
EN PRINT"ODDS= ";O$(X)
880 SOUND125,1:SOUND155,1:FORTI=
1TO500:NEXTTI
890 CLS:IF Z=2 THEN PRINT#-Z,STR
ING$(40,"-"):PRINT#-Z," *R
ETURN PER SPECIFIC ODDS*":GOTO 9
10
900 CLS:PRINTSTRING$(33,159)::PR
INT"***RETURN PER SPECIFIC ODDS*
**";PRINTSTRING$(33,159);STRING
$(32,195);
910 PRINT#-Z,"<ODDS=";O$(X);">
*WIN ONLY*
920 MU=VAL(W$(X))/2
930 PRINT#-Z:PLAY"T100V3104E05E"
:PRINT#-Z,"WAGER $ 2.00 PAYOFF
: ";PRINT#-Z,USING"#####.##";2*M
U
940 PLAY"04E05E":PRINT#-Z,"WAGER
$ 4.00 PAYOFF: ";PRINT#-Z,USI
NG"#####.##";4*MU
950 PLAY"04E05E":PRINT#-Z,"WAGER
$ 5.00 PAYOFF: ";PRINT#-Z,USI
NG"#####.##";5*MU
960 PLAY"04E05E":PRINT#-Z,"WAGER
$ 6.00 PAYOFF: ";PRINT#-Z,USI
NG"#####.##";6*MU
970 PLAY"04E05E":PRINT#-Z,"WAGER
$10.00 PAYOFF: ";PRINT#-Z,USI
NG"#####.##";10*MU
980 PLAY"04E05E":PRINT#-Z,"WAGER
$20.00 PAYOFF: ";PRINT#-Z,USI
NG"#####.##";20*MU
990 PLAY"04E05E":PRINT#-Z,"WAGER
$50.00 PAYOFF: ";PRINT#-Z,USI
NG"#####.##";50*MU
1000 IF Z=2 THEN PRINT#-Z,STRING
$(40,"-"):PRINT#-Z:PRINT#-Z:GOTO
120
1010 PRINT:PRINT"<a>NOTHER <p>R
INTER <m>ENU";
1020 AN#=INKEY#:IFAN#=""THEN 102
0
1030 IFAN#="A"THEN 820
1040 IFAN#="P"THEN Z=2:GOTO870
1050 IF AN#="M"THEN 120
1060 SOUND1,4:GOTO 1020

```



```

1070 GOTO 1070
1080 CLS:PRINT@44,"printing":PLA
Y"T100V3103CO4D05E":PRINTSTRING@
(33,159);"* THE DAILY DOUBLE SEL
ECTION *";STRING@(33,159);:PRINT
STRING@(32,195);
1090 PRINT:PLAY"T100V3104E05E":I
NPUT" TOP CHOICE-1ST RACE:";T1:P
LAY"04E05E":INPUT" 2ND CHOICE-1S
T RACE:";T2:PLAY"04E05E":INPUT"
TOP CHOICE-2ND RACE:";T3:PLAY"04
E05E":INPUT" 2ND CHOICE-2ND RACE
:";T4
1100 CLS:PLAY"03CO4D05E":PRINTST
RING@(33,159);:PRINT"* THE DAILY
DOUBLE SELECTION *";STRING@(33,
159);STRING@(32,195)
1110 PRINT:PRINT"KEY BET:"T1;"-"
;T3
1120 PRINT"ALSO:  ";T1;"-";T4;"
** ";T2;"-";T3
1130 PRINT:PRINTSTRING@(32,175);
:PLAY"03E04E03E":PRINT" POSS
IBLE HEDGE:"T2;"-";T4:PRINTSTRIN
G@(32,175);:PRINT:PRINT
1140 PRINT"<m>ENU <p>RINTER"
;
1150 AN$=INKEY$:IFAN$=""THEN 115
0

```

```

1160 IF AN$="M"THEN 120
1170 IFAN$="P"THEN 1180 ELSE SOU
ND1,1:GOTO 1150
1180 CLS:PRINT@44,"PRINTING":PRI
NT#-2:PRINT#-2,STRING@(40,"-"):P
RINT#-2,TAB(6);"*DAILY DOUBLE SE
LECTION*":PRINT#-2,"KEY BET:"T1;
"-";T3;" Also:";T1;"-";T4;"an
d";T2;"-";T3
1190 PRINT#-2,"POSSIBLE HEDGE BE
T:";T2;"-";T3:PRINT#-2,STRING@(4
0,"-"):PRINT#-2,STRING@(40,"-"):
PRINT#-2
1200 PRINT@37,"PRINT ACTION FINI
SHED":SOUND125,1:SOUND175,1:FORT
I=1T0300:NEXT:GOTO120
1210 CLS:PLAY"T100V3103CO4D05E":
PRINTSTRING@(33,159)+ " PERFECTA-
EXACTA COMBINATIONS ";+STRING@(3
3,159);:PRINTSTRING@(32,195);
1220 PLAY"04E05E":INPUT" ENTER T
OP CHOICE NO.:";T1
1230 PLAY"04E05E":INPUT" SECOND
CHOICE";T2:PLAY"04E05E":INPUT" T
HIRD CHOICE";T3
1240 CLS:PLAY"03CO4D05E":PRINTST
RING@(33,175)+STRING@(9,128)+ "co
mbinations"+STRING@(9,128)+STRIN
G@(33,175);

```

★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 com-
binations. \$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)


```

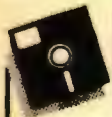
1250 PRINTSTRING*(32,195);:PRINT
" PLAY: ";T1;"-" ;T2;" ** ";T1;"
-" ;T3
1260 PRINT " ";T2;"-" ;T1;"
** ";T3;"-" ;T1"
1270 PRINT:PRINTSTRING*(32,159);
:PRINT"IF TOP CHOICE IS 5-1 OR 0
REATER CONSIDER PLAYING ";T1;"-
a11":PRINTSTRING*(32,159);
1280 PRINT:PRINT:PRINT" <m>ENU
<p>RINTER"
1290 AN*=INKEY*:IFAN*=""THEN 129
0
1300 IF AN*="M"THEN 120 ELSE IF
AN*="P"THEN 1310 ELSE SOUND1,4:G
OTO 1290
1310 SOUND 125,1:SOUND125,1:INPU
T"INPUT RACE NO. ";RN:PLAY"04E05E
";:PRINT#-2,STRING*(40,"-"):PRIN
T#-2," *PERFECTA/EXACTA WAGE
RING*"
1320 CLS:PRINT#44,"PRINTING":SOU
ND155,1:SOUND125,1:PRINT#-2,TAB(
12);"RACE NO. ";RN:PRINT#-2,"Comb
inations To Play: ";T1;"-" ;T2;" *
* ";T1;"-" ;T3:PRINT#-2,STRING*(2
1," ");T2;"-" ;T1;" ** ";T3;"-" ;T
1
1330 PRINT#-2,"IF CHOICE IS 5-1
OR UP CONSIDER ";T1;"-A11"

```

```

1340 PRINT#-2,STRING*(40,"-"):PR
INT#-2:PRINT#-2
1350 PRINT#40,"printing complete
":SOUND 125,1:SOUND155,1:FORTI=1
TO600:NEXT:GOTO 120
1360 CLS:PLAY"T100V3103C04D05E":
PRINTSTRING*(33,159);:PRINT#36,"
BIG TRIPLE SELECTIONS ";:PRINT#
63,STRING*(33,159);:PRINTSTRING*
(32,128);
1370 PRINT" ENTER HORSE NUMBERS"
:INPUT" TOP SELECTION: ";T1:PLAY"
04E05E"
1380 INPUT"SECOND SELECTION";T2:
PLAY"04E05E"
1390 INPUT"THIRD SELECTION";T3:
PLAY"04E05E"
1400 INPUT"FOURTH SELECTION";T4:
PLAY"04E05E"
1410 CLS:PLAY"03C04D05E":PRINT#T
RING*(38,255)+" TRIPLE SELECTIO
NS "+STRING*(38,255)+STRING*(32,
195);:PRINT:PLAY"04E05E":PRINT"P
LAY ";T1;"-" ;T2;"-" ;T3;:PLAY"04E
05E":PRINT " ";T1;"-" ;T2;"-" ;
T4;
1420 PLAY"04E05E":PRINT " ";T
1;"-" ;T3;"-" ;T2;:PLAY"04E05E":PR
INT " ";T1;"-" ;T3;"-" ;T4;:PLA
Y"04E05E":PRINT " ";T1;"-" ;T4

```



DSKMON

Examine and fix sector data, also includes disk read, write, file information display, and selective disk backup.
(ML, 16k or 32k)
Disk (With Source)\$24.95



UNLOCK

Color Computer Disk Fix Program. Complete disk fix utility. Features included are initialize any track (up to track 255), copy any track (up to track 255), verification of any track, and copy of any track fixing I/O errors.
Disk\$24.95



EUCHRE

A Hi-Res version of the card game. Your partner is the computer, the opponent team is played by the computer. Allows any of the four players to "GO" alone.
(ECB, 32k)
Cassette\$19.95

CCADS

A full 6809 machine language monitor with line assembler and disassembler. All you need to debug machine language programs.
(ML, 16k or 32k) Cassette \$19.95
or Disk (With Source)\$23.95

CLOCK

A software real-time clock program for the CoCo. Warning: The clock will stop during tape I/O.
(ML, 16k or 32k) Cassette \$9.95
or Disk (With Source)\$13.95

BULLETIN BOARD SOFTWARE

Run a Bulletin Board from your color computer. Includes upload and download of Ascii files. Requires 1 disk drive, 32k of memory and an auto answer modem. Includes schematics to make modem I auto-answer\$19.95

CHROMA-KEYS

Define function keys and save them to disk or cassette.
(ML, 16k or 32k) Cassette \$9.95
or Disk (With Source)\$13.95

DARKROOM DATABASE

Throw away your Photo-Lab index. Let CoCo look up the facts. Darkroom Data-Base with timer.
(16k or 32k) Disk\$19.95

GRADES

A data base program designed to aid in keeping records of students' test scores. Also calculates final grade, test averages, and other statistics.
(32k) Cassette \$19.95
or Disk (With Source)\$24.95

SPOOLER

Print ASCII files from disk without waiting.
(ML, 64k only)
Disk (With Source)\$15.95

COMMAND

Add machine language programs as commands to BASIC.
(ML, 16k or 32k) Cassette \$15.95
or Disk (With Source)\$19.95



CHROMA-SYSTEMS GROUP

P.O. BOX 366 • DAYTON, OHIO • 45420

Please include \$1 for shipping & handling per item. Ohio residents please add 6% sales tax.


```

; "-" ; T2 ; : PLAY "04E05E" : PRINT
; T1 ; "-" ; T4 ; "-" ; T3
1430 PRINT : PRINT STRING#(33, 128) +
" THE HEDGE BOX "; T1 ; "-" ; T2 ;
- ; T3 ; " "; STRING#(33, 128) ;
1440 IF Z=2 THEN 120
1450 PRINT "<m>MENU <p>RINTER"
;
1460 AN# = INKEY# : IF AN# = "" THEN 1460
1470 IF AN# = "M" THEN 120 ELSE IF
AN# = "P" THEN 1480 ELSE SOUND 1, 4 : G
OTO 1460
1480 CLS : SOUND 125, 1 : SOUND 155, 1 :
PRINT#44, "PRINTING" : PRINT#-2, STR
ING#(40, "-") : PRINT#-2, STRING#(11
, " ") : "TRIPLE SELECTION"
1490 PRINT#-2, TAB(9) "PLAY: "; T1
; "-" ; T2 ; "-" ; T3 : PRINT#-2, TAB(16) ;
T1 ; "-" ; T2 ; "-" ; T4
1500 PRINT#-2, TAB(16) ; T1 ; "-" ; T3 ;
- ; T2 : PRINT#-2, TAB(16) ; T1 ; "-" ; T
3 ; "-" ; T4
1510 PRINT#-2, TAB(16) ; T1 ; "-" ; T4 ;
- ; T2 : PRINT#-2, TAB(16) ; T1 ; "-" ; T
4 ; "-" ; T3
1520 PRINT#-2 : PRINT#-2, "The He
dge Box : "; T1 ; "-" ; T2 ; "-" ; T3
1530 PRINT#-2, STRING#(40, "-")

```

```

1540 GOTO 120
1550 CLS : PRINT CHR#(193) + STRING#(
30, 195) + CHR#(194) ; : PRINT CHR#(197
) + " *** WAGER MASTER OVERVIEW **
* " + CHR#(202) ; : PRINT CHR#(196) + STR
ING#(30, 204) + CHR#(200) ; : PRINT STR
ING#(32, 147) ; : PLAY "T100V3104C04D
05E"
1560 PRINT "THIS PROGRAM IS PRESE
NTED AS ANAID FOR YOUR HANDICAP
PING. IT IS NOT DESIGNED TO DO H
ANDICAPPING FOR YOU! THIS IS FOR
THE BETTOR." ;
1570 PRINT STRING#(32, 255) ; : PRINT
"NOTE ** ALL 'PLACE' & 'SHOW' ODD
S" ; : PRINT "ARE strictly ESTIMATES
AND OFTEN FLUCTUATE WITH THE MUT
UAL POOL. " ; : PRINT STRING#(32, 255
) ; : PRINT : PRINT "< PRESS ANY KEY F
OR MENU >" ;
1580 AN# = INKEY# : IF AN# = "" THEN 1580
ELSE 120
1590 GOTO 1590
1600 FOR X=1 TO 14
1610 READ O$(X), W$(X), P$(X), S$(X
)
1620 NEXT X
1630 RESTORE : RETURN
1640 RETURN

```

The Original FLEX™ for Color Computers

- * Upgrade to 64K
- * RS to FLEX, FLEX to RS file transfer ability
- * Create your own character set
- * Automatic recognition of single or double density and single or doubled sided
- * All features available for either single or multiple drive systems
- * Settable Disk Drive Seek Rates
- * Faster High Resolution Video Display with 5 different formats
- * Save RS Basic from RAM to Disk
- * Move RS Basic to RAM
- * Load and save function on FLEX disk
- * 24 Support Commands 12 with Source Text
- * External Terminal Program

Languages Available

Pascal, Fortran, RS Basic, RS Assembler, TSC Basic, TSC Assembler, Relocating Assembler, Macro Assembler, Mumps

If you are tired of playing games on your TRS-80C Color Computer, or find that you are handicapped by the limitations of the RS BASIC in trying to write a Program that will allow you to actually USE the Color Computer as a COMPUTER, YOU ARE READY TO MOVE UP TO THE FLEX9 Operating System. If you want to have REAL PROGRAMMING POWER, using an Extremely Powerful Business BASIC, PASCALS, C Compilers, a full-blown Macro Assembler with a Library capability so you are not continuously reinventing the wheel... YOU ARE READY TO MOVE UP TO THE FLEX9 Operating System. If you would like to see if YOU REALLY COULD USE A COMPUTER IN YOUR BUSINESS, or begin to make your Computer start PAYING IT'S OWN WAY by doing some Computer Work for the millions of small businesses around you, such as Wordprocessing, Payroll, Accounting, Inventory, etc., then YOU ARE READY TO MOVE UP TO THE FLEX9 Operating System. How?? DATA-COMP has the way!

DATA-COMP's FLEX9 Conversion for the TRS-80C Color Computer was designed for the SERIOUS COMPUTER USER; with features like greatly increased Display Screens, WITH Lower Case Letters, so you can put a FULL Menu on ONE Screen, or see SEVERAL Paragraphs at the same time; with features like providing a FULL Keyboard so you have FULL Control of your Computer AND it's Programs NATURALLY, without needing a chart to see what Key Combination will give you what function; with USER ORIENTED functions to make using the Operating System natural, like having the Computer AUTOMATICALLY determine what type of Disk is being used in what type of Disk Drive and working accordingly, rather than you have to specify each and every thing for it, or like having the Computer work with the Printer you have been using all along without you having to tell the new Operating System what is there, etc..

™FLEX is a trademark of Technical Systems Consultants

P.O. Box 794 HIXSON, TN 37343

DATA-COMP

1-615-842-4601



DATA-COMP has everything you need to make your TRS-80C Color Computer WORK for YOU; from Parts and Pieces to Full, Ready To Use SYSTEMS, DATA-COMP designs, sells, services, and SUPPORTS Computer SYSTEMS, not just Software. CALL DATA-COMP TODAY to make your Computer WORK FOR YOU!

System Requirements

FLEX9 Special General Version x Editor & Assembler (which normally sell for \$50.00 ea.) \$150.00
 F-MATE(RS) FLEX9 Conversion Rout. for the RS Disk Controller \$49.95
 when purchased with Special General FLEX9 Sys. \$59.95
 when purchased without the General FLEX9 Sys. \$59.95
 Set of Eight 64K RAM Chips w Mod. Instructions \$59.95

Color Computer with 64K RAM and EXT. BASIC \$399.95

SPECIAL SYSTEM PACKAGES

64K Radio Shack COLOR COMPUTER, Radio Shack COLOR DISK CONTROLLER, a Disk Drive System, Special General Version of FLEX9, F-MATE(RS) and a Box of 10 Double Density Diskettes: a COMPLETE, ready to run SYSTEM on your Color TV Set. \$1679.95

DISK DRIVE PACKAGES, etc.

These Packages include the Radio Shack Disk Controller, Disk Drives with Power Supply and Cabinet, and Disk Drive Cable:

PAK #1 — 1 Single Sided, Double Density Sys. \$489.95
 PAK #2 — 2 Single Sided, Double Density Sys. \$749.95
 PAK #3 — 1 Double Sided, Double Density Sys. \$569.95
 PAK #4 — 2 Double Sided, Double Density Sys. \$919.95
 PAK #5 — 2 Quine Thinline Double Sided Double Density Sys. \$749.95

PARTS AND PIECES

Radio Shack Disk Controller \$179.95
 1 Single Sided, Double Density Disk Drive Tandem \$249.95
 1 Double Sided, Double Density Disk Drive Quine \$349.95
 1 Quine Thinline Double Sided, Double Density \$279.95

Screen Clean — Clears Up Video Distortion On Your Color Computer \$39.95

Single Drive Cabinet with Power Supply \$89.95
 Double Drive Cabinet with Power Supply \$109.95
 Single Drive Disk Cable for RS Controller \$24.95
 Double Drive Disk Cable for RS Controller \$34.95
 Micro Tech. Prods., Inc. LOWER CASE ROM Adapter \$74.95
 Radio Shack BASIC Version 1.1 ROM \$34.95
 Radio Shack Extended Basic ROM \$89.95

ARIZONA DISCOUNT SOFTWARE

123 N SIRRINE #220 H • MESA, ARIZONA 85201

ALL GAMES DISCOUNTED 20%

SWEET BARGAINS!!



MICHTRON

	tape	disk
*TIME BANDIT.....	22.35	23.95
CASHMAN.....	22.35	23.95
DEMON SEED.....	22.35	23.95
MUDPIES.....	22.35	23.95
INTERCEPT 4.....	22.35	23.95
OUTHOUSE.....	22.35	23.95

COMPUTERWARE

	tape	disk
*MISTER DIG.....	22.35	24.75
*ICE HOCKY.....	19.95	22.35
*SYNTHETIC 77.....	22.35	24.75
SORCER OS-9.....	NA	33.95
*COCO COOKBOOK....	NA	23.75
BASIC PROG UTIL....	16.95	21.20

PRICKLY PEAR

	tape	disk
ERLAND.....	19.95	23.95
COLORCAL.....	19.95	23.95
*TRAVELIN TOAD....	19.95	23.95
LIGHT RUNNER.....	19.95	23.95
BASEBALL.....	19.95	23.95
OCKYWOCKY.....	19.95	23.95

we now carry a complete line of:

MICHTRON CHESHIRE CAT SOUTHERN SOFTWARE SYSTEMS

TOM MIX

	tape	disk
*TOUCHSTONE.....	22.35	24.75
SKRAMBLE.....	19.95	22.35
KING TUT.....	22.35	24.75
*CRASH.....	19.95	22.35
*CUTHBERT.....	16.75	19.15
*BUZZARD BAIT.....	22.35	24.75

COLORQUEST

	tape	disk
ZONE 6.....	23.95	19.95
*FYR DRACA.....	23.95	19.95
XYGOID.....	19.95	15.95
*BEYOND THE CIMEEON MOON....	23.95	19.95
*FEMBOT'S REVENGE	23.95	19.95
ADVENTURE TRILOGY	23.95	19.95

SOUTHERN SOFTWARE

	tape	disk
GRAF ZAPPER.....	13.55	16.95
PIE ZAPPER.....	13.55	16.95
BAR ZAPPER.....	13.55	16.95

CHESHIRE CAT SOFTWARE

	tape	disk
GRAPHICOM.....	NA	25.45
VIDEO MONITOR INTERFACE.....		25.95

DEALERS!! For complete CoCo support

ROADRUNNER COMPUTER PRODUCTS

3808 E Willow, Phoenix, AZ 1-602-971-9131

prices and availability subject to change without notice

THESE PRICES GOOD THROUGH MAY 15, 1984



GAMES

THE KING	21.55
FLIGHT	15.95
S R 71	23.15
WHIRLY BIRD RUN	19.95
LAND ROVER PATROL	19.95

BUSINESS	tape	disk
ELITE	50.95	50.95
ELITE*CALC	47.95	47.95
ELITE*WORD		47.95
INCLUDES MAIL MERGE		
ELITE*FILE	NA	64.95
ALL J PROGRAMS		150.00

PRICKLY PEAR UTILITIES

	tape	disk
CLONE MASTER	NA	29.95
DMNI TAPE CLONE	23.95	NA
COLORKIT	29.70	33.95
MAILING LIST	NA	39.95
DISK ZAPPER	NA	27.95
DISK MASTER	NA	19.95
DISK MANAGER	NA	23.95

SOFTWARE UTILITIES

Vip Programs are Disk Only	disk
VIP WRITER	47.95
VIP CALC	50.95
VIP DATABASE	50.95
VIP TERMINAL	42.45
VIP SPELLER	42.45
VIP DISK ZAP	42.45
THE WHOLE LIBRARY (DISK)	250.00
THE BUSINESS LIBRARY	184.95

24 HOUR ORDER LINE
800-221-9280
EXT. 988

(ORDERS ONLY PLEASE)

INQUIRIES, ARIZONA ORDERS

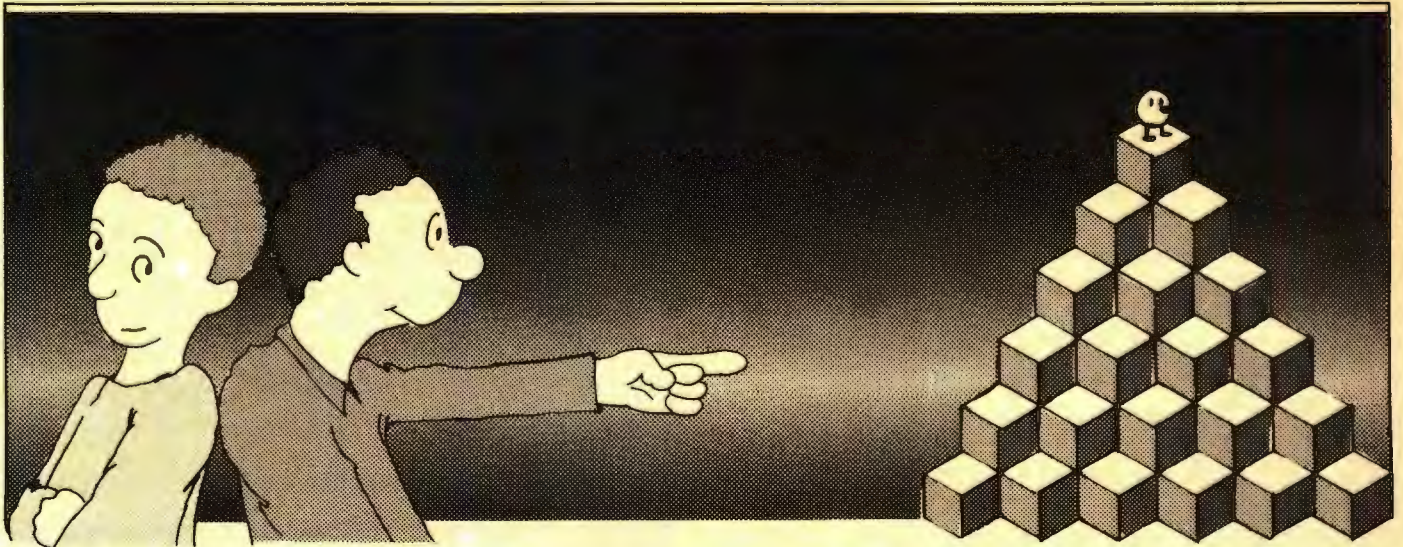
(602) 827-0923

PHONE ANSWERED PERSONALLY
1:00 P.M. TO 6:00 P.M. MST

TO ORDER: We accept VISA and MASTERCHARGE. Money orders and personal checks welcome. No delay. Continental U.S. orders include \$2.00 postage and handling (except VIP which is \$2.00 per piece) All international orders add 10% shipping and handling fee. Arizona residence add 6% sales tax.

We Want Our Q-NERD!

By Jerry D. Forsha



Q-Nerd is my version of Q-Bert for 16K Extended Color BASIC. To load *Q-Nerd* turn the computer off and on or *POKE 113,3* [ENTER] and press the [RESET] button. Load *Q-Nerd* and *RUN*.

Q-Nerd uses the right joystick for movement. To move *Q-Nerd* down to the left, move joystick down and to the left. Right, up and down directions, also move appropriately with the joystick.

As *Q-Nerd* moves, the blocks change color from green to blue, but you must change all blocks to the same color before the colors change. You start with three men. As you move on the blocks, points are scored. On the first color each block is worth 10 points and each time you change colors the points increase by 10. Extra men are given points of 4,000 for the first one, 8,000 for the next one, 16,000 for the next one, etc., to a total of five extra men. If you fall off or the snake and/or ball catches you then your points will be updated.

Line Description

Line 0 sets up dims and variables.

Line 1 disables [BREAK] key, (BASIC runs 30 percent faster).

Lines 2-17 set up game: draw men, blocks, wait to start game.

(Jerry Forsha is a retail sales auditor and free-lance computer programmer specializing in business programs. This is his first computer game.)

Lines 18-25 read joysticks; check each block to see if all are set to the same color; put ball on screen; check platforms; check score for extra men; put snake on screen; go back to read joysticks.

Lines 26-27 put ball on screen; check to see if ball and man are in same position.

Lines 28-29 move man down to the left; check to see if man falls off of the edge.

Lines 30-31 move man down to the right; check to see if man falls off.

Lines 32-33 move man up to the right; check to see if man falls off.

Lines 34-35 move man up to the left; check to see if man falls off.

Lines 36-37 check to see if platform is there; move man and platform; move snake (if on board).

Lines 38-39 check to see if right platform is there; move man and platform; move snake (if on board).

Lines 40-49 check to see if snake is on board; make the snake chase the man; if man on platform, kill snake over the edge; check to see if snake and man are in the same position.

Lines 50-51 draw man going over the edge; update and draw the score; check to see if this was the last man.

Line 52 if ball or snake landed on man, draw saying and play "rats."

Lines 53-55 end of game: draw score; set up variables for a new game.

4	.....	229
11	.....	190
16	.....	212
24	.....	10
32	.....	233
39	.....	41
50	.....	211
END	.....	16

The listing:

```

0 CLS:P MODE3,1:PCLS: CLEAR0: CLEAR
1500: DIMRA(1),LA(1),R(1),RX(1),B
(12),P(2),MR(6),ML(6),S(3),SX(3)
,SA(24),N*(9):Y2=56:C=3:CS=1:SS=
4000:M=1:Q=2
1 POKE248,50:POKE249,98:POKE250,
28:POKE251,175:POKE252,126:POKE2
53,173:POKE254,165:POKE410,126:P
OKE411,0:POKE412,248
2 CIRCLE(10,4),10,3,.50,.15,.85:
COLOR3:LINE(14,0)-(14,6),PSET:PA
INT(10,6),2,3:PSET(7,2,4):PSET(1
1,2,4):COLOR4:LINE(10,4)-(20,4),
PSET:LINE(7,6)-(11,6),PSET: DRAW"
BM4,8D4R2BR4NU2R2":GET(0,0)-(20,
12),MR,G
3 CIRCLE(50,4),10,3,.50,.70,.40:
COLOR3:LINE(46,0)-(46,6),PSET:PA
INT(50,6),2,3:PSET(54,2,4):PSET(
50,2,4):COLOR4:LINE(50,6)-(54,6)
,PSET:LINE(40,4)-(50,4),PSET:DRA
W"BM56,8D4L2BL4NU2L2":GET(40,0)-
(60,12),ML,G:LINE(40,0)-(60,12),
PRESET,BF
4 CIRCLE(180,20),5,4,.6:PSET(180
,20,4):GET(176,18)-(186,22),R,G:
LINE(176,18)-(186,22),PRESET,BF
5 DRAW"C4BM200,4NE2R12NH2":PSET(
200,5):PSET(202,6):PSET(212,5):P
SET(210,6):PSET(198,4):PSET(214,
4):GET(204,2)-(214,6),RA,G:GET(1
98,2)-(208,6),LA,G:LINE(198,2)-
(214,6),PRESET,BF
6 DRAW"C4BM200,6RFDGLHRFDGLHRFDG
LHRFDGLHR4F2DL4":GET(194,6)-(204
,18),S,G:LINE(194,6)-(204,18),PR
ESET,BF
7 CIRCLE(128,20),30,4,.30: DRAW"S
6BM106,17ND4R4D2L2F2BR4E4F2NL2F2
BR4U4NL2R2BR4NR2D2R2D2L2":GET(10
0,12)-(156,28),SA,G:LINE(98,12)-
(158,28),PRESET,BF
8 FORR=0TO9:READN*(R):NEXT: DATAB
R2D8R4U8NL4BR2,BR4NG2D8NR2L2BU8B
R6,BR3R2F1DG4D2R4BU8BR2,BR2R4D4N
L2D4NL4BU8BR2,BR2D4R4NU4D4BU8BR2

```

```

,BR2NR4D4R4D4NL4BU8BR2, BR2NR4D8R
4U4NL4BU4BR2
9 DATABR2R4D2G4D2BU8BR6, BR2NR4D4
NR4D4R4U8BR2, BR2NR4D4R4NU4D4BU8B
R2
10 PMODE1,1:PCLS: DRAW"S4C2BM12B,
20R20F12L20H12D16F12NU16R20U16C3
BM66,42R10F6L10H6D4F6NU4R10U4":P
AINT(72,46),2,3:PSET(68,46,2):PS
ET(70,48,2):PAINT(74,50),2,3:GET
(66,42)-(84,52),P,G:PUT(192,88)-
(210,98),P,OR:PR=0:PL=0
11 PMODE3,1:PAINT(130,14),2,2:PA
INT(158,20),2,2:GET(128,10)-(160
,24),B,G:Y=18:FORX=108TO228STEP-2
0:PUT(X,Y)-(X+32,Y+14),B,OR:Y=Y+
8:NEXT
12 Y=24:FORX=140TO508STEP-20:PUT(
X,Y)-(X+32,Y+14),B,OR:Y=Y+8:NEXT
:Y=38:FORX=152TO928STEP-20:PUT(X,
Y)-(X+32,Y+14),B,OR:Y=Y+8:NEXT:Y
=52:FORX=164TO1228STEP-20:PUT(X,Y
)-(X+32,Y+14),B,OR:Y=Y+8:NEXT
13 Y=66:FORX=176TO1428STEP-20:PUT
(X,Y)-(X+32,Y+14),B,OR:Y=Y+8:NEX
T:PUT(188,80)-(220,94),B,OR:FORY
=0TO28STEP14:PUT(0,Y)-(20,Y+12),
MR,OR:NEXT
14 PMODE1,M: DRAW"S12BM46,"+STR$(

```

STYLOGRAPH™

and

COLOR OS/9

are a Perfect Match

By combining OS/9 and the dynamic features of Stylograph, you attain the ultimate in a Word Processing System.

- Proportional Spacing & Right Justification
- Horizontal Scrolling
- Search & Replace
- What you see on the screen is what you get on the printer.
- Uses FHL O-PAK for 51 x 24 screen

Stylograph \$150 - Buy any 2, Save \$25
 Spell Checker \$95 - Buy all 3, Save \$50
 Mail Merge \$75

See your Local Dealer or contact us direct



Color Flex Versions also available



Great Plains Computer Company

P.O. Box 916
 Idaho Falls, ID 83402

• 208-529-3210


```

YP)+"ND4R2D2NL2BR2ND2U2R2D2L2F2B
R2NR2U2NRU2R2BR2NR2D2R2D2NL2BR2R
2U2L2U2R2BR6ND4R2D2NL2D2BR2U4F2N
D2U2BR2F2ND2E2BR6D2NE2NF2D2BR4NR
2U2NRU2R2BR2F2ND2E2": IFYP=0THENS
CREEN1,0

```

```

15 IFINKEY#="" THEN15ELSEPMODE1,3
:PCL8:PMODE1,1:LINE(45,0)-(211,1
2),PRESET,BF:PMODE1,3:PCOPY1TO3:
PCOPY2TO4:COLOR2:LINE(218,0)-(23
8,12),PSET,B:PAINT(222,2),3,2

```

```

16 PMODE1,3:LINE(X2,Y2)-(X2+20,Y
2+24),PRESET,BF:Y2=Y2-28:PCOPY3T
O1:PCOPY4TO2:PMODE1,1:PUT(138,4)
-(158,28),MR,OR:X1=138:Y1=4:PLAY
"T255V31":SCREEN1,0

```

```

17 GET(140,22)-(150,30),RX,0:GET
(82,124)-(92,148),SX,0:PB=0:X3=8
2:Y3=124:X4=140:Y4=22:TIMER=0

```

```

18 X=JOYSTK(0):Y=JOYSTK(1):IFX<1
0ANDY>50GOSUB28ELSEIFX>50ANDY>50
GOSUB30ELSEIFX>50ANDY<10GOSUB32E
LSEIFX<10ANDY<10GOSUB34

```

```

19 IFB=1THEN20ELSEIFPPOINT(136,2
2)=C ANDPPOINT(116,38)=C ANDPPOI
NT(96,54)=C ANDPPOINT(76,70)=C A
NDPPOINT(56,86)=C ANDPPOINT(36,1
02)=C ANDPPOINT(148,50)=C ANDPPO
INT(128,66)=C ANDPPOINT(108,82)=

```

```

C ANDPPOINT(88,98)=C ANDPPOINT(6
8,114)=C THENA=1:B=1
20 IFA=1THENIFPPOINT(160,78)=C A
NDPPOINT(140,94)=C ANDPPOINT(120
,110)=C ANDPPOINT(100,126)=C AND
PPOINT(172,106)=C ANDPPOINT(152,
122)=C ANDPPOINT(132,138)=C ANDP
POINT(184,134)=C ANDPPOINT(164,1
50)=C ANDPPOINT(196,162)=C THEND
=1

```

```

21 IFD=1THENC=CS+1:C=C+1:PMODE1
,3:PAINT(222,2),C+1,2:PMODE1,1:A
=0:B=0:D=0:IFC=4THENC=1ELSEC=3

```

```

22 IFTIMER>100GOSUB26
23 PUT(204,2)-(214,10),RA,OR:PUT
(240,2)-(250,10),LA,OR:IFPL=3AND
PR=3THENPMODE1,3:PL=0:PR=0:PUT(6
6,42)-(84,52),P,OR:PUT(192,88)-(
210,98),P,OR:PMODE1,1

```

```

24 IFSC=>88 THENSS=SS*2:Y2=Y2+28
:PMODE1,3:PUT(X2,Y2)-(X2+20,Y2+
4),MR,OR:PMODE1,1:IFY2=>140THENY
2=112

```

```

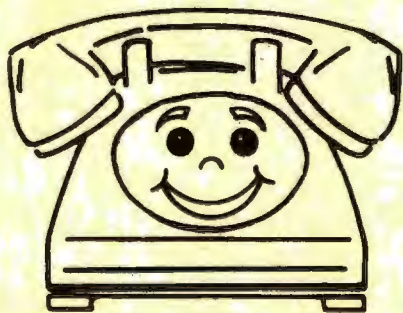
25 IFTIMER>210THENSP=1:GOSUB40:G
OTO18ELSE18

```

```

26 PUT(X4,Y4)-(X4+10,Y4+8),RX,AN
D:IFPB=6THENX4=140:Y4=22:PB=0:GE
T(X4,Y4)-(X4+10,Y4+8),RX,0:RETUR
NELSEIFRND(2)=1THENX4=X4-20:Y4=Y

```



AUTOTERM
 TURNS YOUR COLOR COMPUTER INTO THE
WORLD'S
SMARTEST TERMINAL!
 YOU'LL ALSO USE AUTOTERM FOR SIMPLE
 WORD PROCESSING & RECORD KEEPING

EASY TO USE

ON-SCREEN EDITING via cursor. Full prompting and error checking. Key Beep and Error Beebop. Scroll bkwd/fwd while on line. Save/load files while on line. Maintain a disk copy of session. Automatic graphics. True lower case. Screen widths of 32, 40, 42, 50, 64. No split words on screen/printer. Print all or part of text. Search for strings. Well written manual goes step-by-step and has many KSM examples. Back cover is a cheat sheet.

RECOMMEND 32K to 64K
EASY UPGRADE
 Price Difference +\$13

PLEASANTLY POWERFUL

Total communications ability, 128 ASCII chars, 1200 baud, etc. Send text, graphics, BASIC, ML. Scan/Edit current data while receiving more data. Any modem. Fully supports D.C. Hayes and others. Any printer, page size, margins, etc. Override narrow text width of received data. Examine/change parameters, KSMs and disk directories at any time. Handles files which are larger than memory.

CASSETTE \$39.95
DISKETTE \$49.95
 Add \$3 shipping and handling
 MC/VISA/C.O.D.

TRULY AUTOMATIC

Create, edit, print, save and load Keystroke Multipliers (KSMs). KSMs automate almost any activity. Dial via modem, sign-on, interact, sign-off. Perform entire session. Act as a message taker. KSM may include parameter changes, disk operations, editing, time delays, looping, execution of other KSMs, waiting for part-specified responses, branching based upon responses.

PXE Computing
 11 Vicksburg Lane
 Richardson, Texas 75080
 214/699-7273


```

4+16ELSEX4=X4+12:Y4=Y4+28
27 GET(X4,Y4)-(X4+10,Y4+8),RX,G:
PUT(X4,Y4)-(X4+10,Y4+8),R,OR:PLA
Y"03C":PB=PB+1:IFSGN(X1+2-X4)=0A
NDSGN(Y1+18-Y4)=0THENPB=0:GOTO52
ELSERETURN
28 X1=X1-20:Y1=Y1+16:IFX1=18ORX1
=50ORX1=82ORX1=114ORX1=146ORX1=1
78THEN50ELSEPMODE1,3:PAINT(X1,Y1
+22),C,2
29 PCOPY3TO1:PCOPY4TO2:PMODE1,1:
PUT(X1-4,Y1)-(X1+16,Y1+24),ML,OR
:PLAY"01BB":SC=SC+(10*CS):GET(X4
,Y4)-(X4+10,Y4+8),RX,G:RETURN
30 X1=X1+12:Y1=Y1+28:IFX1=210ORX
1=178ORX1=146ORX1=114ORX1=82ORX1
=50THEN50ELSEPMODE1,3:PAINT(X1,Y
1+22),C,2
31 PCOPY3TO1:PCOPY4TO2:PMODE1,1:
PUT(X1,Y1)-(X1+20,Y1+24),MR,OR:P
LAY"01BB":SC=SC+(10*CS):GET(X4,Y
4)-(X4+10,Y4+8),RX,G:RETURN
32 X1=X1+20:Y1=Y1-16:IFY1<0THENY
1=0:GOTO50:ELSEIFX1=194THEN38ELSE
EIFX1=170ORX1=182ORX1=206ORX1=21
6THEN50ELSEPMODE1,3:PAINT(X1,Y1+
22),C,2
33 PCOPY3TO1:PCOPY4TO2:PMODE1,1:
PUT(X1,Y1)-(X1+20,Y1+24),MR,OR:P
LAY"01BB":SC=SC+(10*CS):GET(X4,Y
4)-(X4+10,Y4+8),RX,G:RETURN
34 X1=X1-12:Y1=Y1-28:IFY1<0THENY
1=0:GOTO50:ELSEIFX1=66THEN36ELSE
IFX1=86ORX1=46ORX1=26THEN50ELSEP
MODE1,3:PAINT(X1,Y1+22),C,2
35 PCOPY3TO1:PCOPY4TO2:PMODE1,1:
PUT(X1-4,Y1)-(X1+16,Y1+24),ML,OR
:PLAY"01BB":SC=SC+(10*CS):GET(X4
,Y4)-(X4+10,Y4+8),RX,G:RETURN
36 IFPL=3THEN50ELSEPL=1:PMODE1,3
:LINE(66,42)-(84,52),PRESET,BF:P
MODE1,1:FORY1=Y1 TO4STEP-4:X1=X1
+4:PCOPY3TO1:PCOPY4TO2:PUT(X1-4,
Y1-4)-(X1+16,Y1+20),MR,OR:PUT(X1
-4,Y1+18)-(X1+14,Y1+28),P,OR:PLA
Y"05ABDCBABCDCBABCDCBA"
37 ONPL GOSUB40,47:NEXT:PCOPY3TO
1:PCOPY4TO2:PUT(118,20)-(138,44)
,MR,OR:X1=118:Y1=20:PL=3:SP=0:GO
TO17
38 IFPR=3THEN50ELSEPR=1:PMODE1,3
:LINE(192,88)-(210,98),PRESET,BF
:PMODE1,1:FORY1=Y1 TO12STEP-8:X1
=X1-2:PCOPY3TO1:PCOPY4TO2:PUT(X1
-4,Y1-4)-(X1+16,Y1+20),ML,OR:PUT
(X1,Y1+18)-(X1+18,Y1+28),P,OR
39 PLAY"05ABDCBABCDCBABCDCBA":O
NPR GOSUB40,46:NEXT:PCOPY3TO1:PC
OPY4TO2:PUT(146,32)-(166,56),ML,
OR:X1=150:Y1=32:PR=3:SP=0:GOTO17

```

```

40 IFSP=0THENRETURNELSEPUT(X3+2,
Y3+2)-(X3+12,Y3+26),SX,AND
41 IFSGN(X1-X3)=1ANDSGN(Y1-Y3)=-
1THENX3=X3+20:Y3=Y3-16:GOTO43ELSE
EIFSGN(X1-X3)=-1ANDSGN(Y1-Y3)=-1
THENX3=X3-12:Y3=Y3-28:GOTO43ELSE
IFSGN(X1-X3)=1ANDSGN(Y1-Y3)=1THE
NX3=X3+12:Y3=Y3+28:GOTO43
42 IFSGN(X1-X3)=-1ANDSGN(Y1-Y3)=
1THENX3=X3-20:Y3=Y3+16
43 IFX3=82ORX3=94ORX3=114ORX3=14
6ORX3=178THENX3=X3+8:Y3=Y3-44
44 IFX3=86THENX3=X3-8:Y3=Y3+44
45 GET(X3+2,Y3+2)-(X3+12,Y3+26),
SX,G
46 IFX3=182ORX3=194THENX3=X3:Y3=
Y3+20:PR=2
47 IFX3=66THENX3=X3:Y3=Y3+25:PL=
2:ELSEIFPL=1AND(X3=98ORX3=78)THE
NPL=2:X3=66
48 PUT(X3+2,Y3+2)-(X3+12,Y3+26),
S,OR:PLAY"03G#"
49 IFSGN(X1-X3)=0ANDSGN(Y1-Y3)=0
THEN52ELSERETURN
50 SCREEN1,1:FORY1=Y1 TO190STEP1
0:PCOPY3TO1:PCOPY4TO2:PUT(X1,Y1)
-(X1+20,Y1+24),MR,OR:PLAY"04AGGA
DEV-":NEXT:PLAY"V31":PCOPY4TO2:S
CREEN1,0
51 SC#=STR$(SC):IFY2=-28THEN53JEL
SEY9=12:FORR=2TOLEN(SC#):S#=N$(V
AL(MID$(SC#,R,1))):DRAW"84BM"+8T
R$(Y9)+",178"+S#:Y9=Y9+10:NEXT:F
ORR=1TO26:COLORQ:LINE(6,174)-((L
EN(SC#)*12),192),PSET,B:PLAY"01T
5A#":Q=Q+1:IFQ=3THENQ=1:NEXTELSE
NEXT:GOTO16
52 PUT(X1-18,Y1-4)-(X1+38,Y1+28)
,SA,PSET:FORR=0TO1:PLAY"T1001B04
DP1002EP20046P1503AP56AP501CT255
":NEXT:GOTO51
53 Y9=116:PMODE1,3:PCLS:DRAW"816
BM54,106D4FR4EU4HNL4BD4F2BU3R4BR
ND3U3F6U6BRNR6D3NR3D3R6BRU6R6D3L
6F3BR4U6R4FD4GL4S8C2BM76,50HL46D
4FR4EUHNL2BD3BR3U3E3F3NL5D3BR2U6
F3E3D6BR2NR4U3NR2U3R4BR8BDD4FR4E
U4HL4BR7D3F3E3U3BR2NR4D3NR2D3R4B
R2U6R4D3L4F3S8
54 DRAW"C3BM96,74F3ND3E3BR2BDD4F
R4EU4HL4BR7D5FR4EU5BR2ND6R4D3L4F
3BM92,150FR4EUHL4HUER4FBR2D4FR4B
U6NL4BR2BDD4FR4EU4HL4BR7ND6R4D3L
4F3BR3NR4U3NR2U3R4C4":FORR=2TOLE
N(SC#):S#=N$(VAL(MID$(SC#,R,1)))
:DRAW"BM"+8TR$(INT(Y9-LEN(SC#)*4
))+",105"+S#:Y9=Y9+14:NEXT
55 SCREEN1,0:SC=0:Y2=56:M=3:YP=1
70:C=3;CS=1;SS=4000:GOTO10

```




PRICKLY-PEAR SOFTWARE

QUALITY PROGRAMS FOR YOUR COCO & TDP-100

PROGRAMS REQUIRE 16K EXTENDED BASIC FOR TAPE, AND 32K DISK UNLESS OTHERWISE NOTED.

Travelin' Toad

TRAVELIN' TOAD is a fully 32K arcade quality high resolution action game. You control the toad with your four arrow keys, and you must guide the toad across a multi-lane super highway, and then help him hop across the canal from log to log and turtle back to turtle back. The object is to bring the **TRAVELIN' TOAD** to safety in his home hole. Along the way you may have the chance to rescue his friend, Tulip Toad, and you may be threatened by some nasty reptiles, too. To make it worse, you can only stay out in the sun for a little while or you die. You'll like this one, 'cause it's the best game of its type available for your Color Computer. Of course it's 100% machine language!

Tape — \$24.95; Disk — \$29.95



Adventure in Wonderland

Simply the best adventure ever written for the color computer. This adventure puts you in the character of Alice as you roam through the many puzzles and perils of Wonderland. To win you must become a queen on the chessboard, eliminate the menace of the Snark, and escape from Wonderland. The program uses a full intelligence simulator so you can enter commands and questions as whole sentences, not a stingy word or two. Also, there are at least three ways out of every trap. (You may think there is no way out at all, but there are always three ways!) Some people have so much fun talking to the various inhabitants of Wonderland that they forget about solving the adventure completely. With a vocabulary of hundreds and hundreds of words you will never run out of topics of conversation. If you want to try your hand at the best of adventures, this is it. 100% ML. Needs 32K of memory.

Tape — \$24.95; Disk — \$29.95

Colorkit

What can we say about the absolute best state-of-the-art programmer's utility. This program adds 35 commands to BASIC that should have been there all along and no short description will do it justice. Summary — light or dark screen, keyclick, screen editor, programmable keys, a super memory tool, variable listing echo to printer, BREAK disable, convert machine language to DATA, global search, single step thru program run, double space printouts of program listings — that's less than half of what it will do. It takes about 6K of space, and if you have 64K you can put it up high and lose no BASIC space at all. 100% ML. Fully relocatable. See the great reviews in Nov. '83 issues of hot *Cocopa* and *Color Computer* magazine. **Tape — \$34.95; Disk — \$39.95**

Dealer and author inquiries are always welcome. Canadian dealers should contact Kelly Software Distributors, Ltd., P. O. Box 11932, Edmonton, Alberta T5J-3L1 (403) 421-8003

Your personal check is welcome - no delay. Include \$1.50 shipping for each program ordered. (Shipping free on \$50.00 or larger orders). AZ residents add 7% sales tax. Orders shipped within two days.

Rom Free

Another great utility from the clear leader in Color Computer Utilities! This program will free you from your Rom packs by easily and automatically moving them to tape or disk. Unlike other programs of this type, the files created can be loaded and EXECuted just like any other program. No boot loader is needed! Once your Rom packs are in memory, you can examine and modify them using standard ML routines. Disk drive owners will particularly want to take note, as **ROM FREE** will free you from ever having to unplug your controller. Information needed to create working backups of virtually all known Rom packs is included. Get those Rom packs onto disk or tape. 100% Machine Language. Requires a 64K color computer, any BASIC, disk or tape. **\$24.95**

Colorcal

is a very different calendar program. You enter all the dates that are important to you, like birthdays, anniversaries, or any other event in your life that falls on the same day each year, and then you save the program. It actually modifies itself as you enter your events, so they become a part of the program, and all the holidays are already programmed in. Now, anytime you want, you can load the program, specify any year or month you like, and a correct calendar for that month or year will be printed on either the screen or a printer. The calendars it prints make a great gift, and you won't miss those important days anymore. Requires 16K and Extended BASIC. **Tape — \$24.95; Disk — \$29.95**



Clone Master

This is the ultimate disk backup utility, and who else but Prickly-Pear, originators of Omni-Clone, could bring it to you. If you are tired of waiting for your BACKUP command to finish, you'll like the speed of CLONE MASTER. This program checks the computer memory size, and if you have a 64K machine it will do a backup on a full disk in about 7 minutes — including formatting the destination disk — with only THREE swaps, not the seven you are used to, and if you are running multiple drives, CLONE MASTER will handle up to 4 double-sided drives. In addition, although we can't guarantee that CLONE MASTER will back up any disk, it can handle backups of most non-standard (protected) disks we have seen — not only on the Color Computer, but on Model III and IV, IBM PC, Kaypro, and Osborne. It handles up to 256 tracks, single and double density — even on the same track, CRC errors, and lots more. It even checks the speed of your drives for you! If you are using a disk drive, you know how disks will crash, so don't leave your valuable software unprotected any longer. Back it up or lose it! CLONE MASTER will adjust to any memory size and works with any version of the ROM's — including the JVC controller. **\$39.95**

Stocked by Quality Dealers, or

Send Order To: **PRICKLY-PEAR SOFTWARE**

8532 E. 24th Street
Tucson, Arizona 85710
(602) 886-1505



The First Saturday In May

By Michael J. Himowitz
and
Julius Nelson

This is the sixth installment in a continuing series of short 'Printer Mysteries' which began in November.

Kentucky is known for beautiful, rolling bluegrass hills, *the Rainbow*, fast horses and especially to the sports-minded, "the most exciting two minutes in sports" — The Kentucky Derby. The first Saturday in May is a long-awaited day filled with celebration and excitement so thick you can cut it with a knife . . . or a racing ticket.

For those of you who have the *Printer Artist* program from the November *Rainbow*, here's a printer mystery sym-

bolizing that special day and the beauty of Kentucky. *RUN* the program and enter the characters below, line by line. For example, 2X means strike the "X" key two times; 5sp means hit the space bar five times, etc. Consult the instructions in the November issue.

If you are interested in sophisticated printer art development, a complete "Printer Artist" system is available from Federal Hill Software, 825 William St., Baltimore, Md., 21230.

Line

1 69:
2 69:
3 45:, 2X, 10:, 1X, 11:
4 43:, 3X, 9:, 2X, 12:
5 41:, 4X, 7:, 4X, 13:
6 27:, 11X, 1sp, 5X, 2sp, 3X, 2:, 4X, 14:
7 22:, 14X, 2sp, 5X, 2sp, 1X, 1sp, 1X, 1sp, 5X, 15:
8 18:, 14X, 4sp, 6X, 2sp, 3X, 2sp, 4X, 16:
9 15:, 11X, 4sp, 11X, 2sp, 5X, 2sp, 1X, 18:
10 12:, 9X, 3sp, 15X, 3sp, 8X, 19:
11 9:, 8X, 3sp, 17X, 3sp, 11X, 18:
12 7:, 7X, 2sp, 23X, 2sp, 11X, 17:
13 5:, 6X, 2sp, 28X, 2sp, 10X, 16:
14 3:, 6X, 2sp, 31X, 3sp, 8X, 16:
15 3:, 4X, 2sp, 35X, 3sp, 6X, 16:
16 3:, 2X, 2sp, 21X, 1sp, 18X, 4sp, 2X, 16:
17 5:, 21X, 2sp, 4X, 1sp, 17X, 4sp, 1X, 14:
18 5:, 19X, 2sp, 6X, 1sp, 11X, 3sp, 4X, 3sp, 1X, 14:
19 6:, 16X, 2sp, 8X, 1sp, 11X, 3sp, 4X, 4sp, 1X, 13:

20 6:, 14X, 2sp, 10X, 1sp, 5X, 1sp, 12X, 5sp, 1X, 12:
21 7:, 12X, 2sp, 11X, 1sp, 4X, 3sp, 12X, 5sp, 1X, 11:
22 8:, 10X, 2sp, 12X, 1sp, 6X, 3sp, 11X, 4sp, 1X, 11:
23 9:, 8X, 2sp, 13X, 1sp, 8X, 2sp, 11X, 4sp, 1X, 10:
24 10:, 6X, 2sp, 13X, 2:, 9X, 3sp, 10X, 4sp, 1X, 9:
25 11:, 4X, 2sp, 13X, 4:, 10X, 2sp, 10X, 4sp, 1X, 8:
26 12:, 2X, 2sp, 14X, 5:, 10X, 3sp, 10X, 3sp, 1X, 7:
27 15:, 15X, 7:, 10X, 2sp, 10X, 3sp, 1X, 6:
28 16:, 13X, 10:, 9X, 3sp, 9X, 3sp, 1X, 5:
29 17:, 12X, 12:, 5X, 2sp, 3X, 1sp, 8X, 4sp, 1X, 4:
30 18:, 10X, 18:, 14X, 5sp, 1X, 3:
31 19:, 9X, 20:, 4X, 2sp, 6X, 1sp, 2X, 2sp, 1X, 3:
32 21:, 7X, 22:, 3X, 2sp, 4X, 2sp, 2X, 1sp, 1X, 4:
33 22:, 6X, 24:, 3X, 2sp, 3X, 2sp, 1X, 1sp, 1X, 4:
34 25:, 3X, 25:, 3X, 2sp, 2X, 4sp, 1X, 4:
35 54:, 3X, 1sp, 2X, 2sp, 2X, 5:
36 56:, 2X, 11:
37 69:
38 69:

(Michael Himowitz is a Washington correspondent for the Baltimore Evening Sun and proprietor of Federal Hill Software. He uses his computer extensively and has written several programs including "CoCo Accountant." He is interested in meeting people who use their computers in journalism.)



DRACONIAN

You brace yourself as your ship materializes in the enemy sector. Your engine roars to life, and you consult the long-range scanner for the position of the nearest enemy base. As you head for the base, blasting asteroids and space-mines in your path, you suddenly notice a monstrous space-dragon looming before you. Reacting quickly, you dodge his deadly fire-breath and blast him out of existence.

Finally, the enemy base comes into view. Avoiding the enemy fire, you destroy the gun turrets one by one with your rapid-fire torpedoes. Then, with the explosions still echoing around you, you rescue the astronaut who was being held prisoner by the enemy. Your mission is far from over, however, as there are more bases to destroy and more astronauts to rescue before the sector will be secured. And all must be done quickly; if you are too slow, the invincible DRACONIAN will surely seek you out as its next victim.

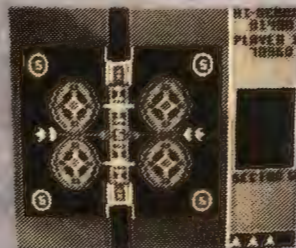
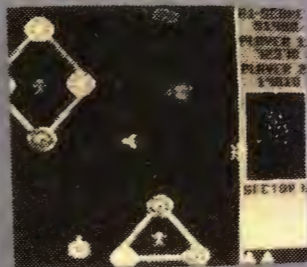
This is it — the single most impressive, awe-inspiring arcade game you can buy for your Color Computer. High-resolution graphics, awesome sound effects, four-voice music, and quality you have to see to believe! Experience the realism of DRACONIAN today!

JOYSTICKS REQUIRED

32K MACHINE LANGUAGE

TAPE \$27.95

DISK \$30.95



CHAMBERS

Exciting high resolution graphics game. Multiple screens. Outstanding sound, Chambers is loosely based on Cosmic Chasm. The object in each level is to destroy all of the evil creatures in each room and then go into the main reactor room and blow up the base.

JOYSTICKS REQUIRED

32K MACHINE LANGUAGE

TAPE \$24.95

DISK \$27.95



WAREHOUSE MUTANTS

Journey through the warehouse seeking out the Mutants who are out to destroy you. WATCH OUT! They will push crates trying to crush you! Outstanding realism—high resolution graphics—multiple screens.

JOYSTICKS REQUIRED

16K MACH. LANGUAGE

TAPE \$24.95

DISK \$27.95

QUIX

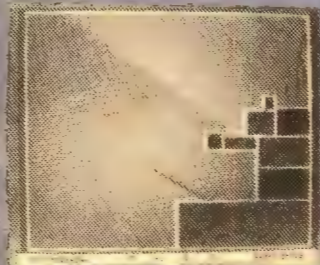
This one is after a popular arcade game with a similar name. Simply frustrating—you'll love it. Done in high resolution graphics with Super Sound.

JOYSTICKS REQUIRED

32K MACH. LANGUAGE

TAPE \$24.95

DISK \$27.95



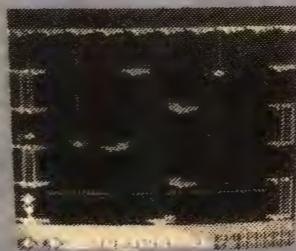
CRASH

This game is a high resolution Machine Language program with outstanding Arcade type graphics. The game consists of 4 screens. Fly the airplane over and through obstacles. Piloted by "Mario" who also appeared in "The King". The object is to conquer one screen after another but don't "Crash". Great fun for the whole family. For 1 or 2 players. Uses joysticks.

TAPE \$24.95

32K MACHINE LANGUAGE

DISK \$27.95



TOM MIX SOFTWARE

4285 BRADFORD N.E.
GRAND RAPIDS, MI 49506

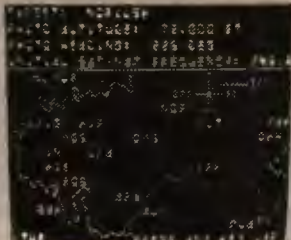
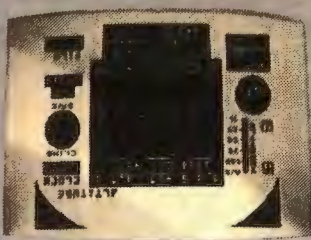


ARCADE ACTION GAMES



TO ORDER CALL 616/957-0444

•ADD \$1.50 POSTAGE & HANDLING•TOP ROYALTIES PAID•
•MICHIGAN RESIDENTS ADD 4% SALES TAX•
LOOKING FOR NEW SOFTWARE

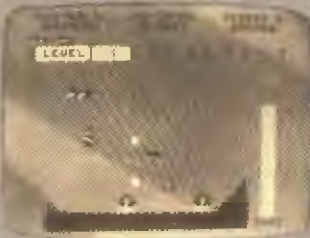


SR-71

SR-71 is a fast action game in which you are the pilot on a mission to take photographs of missile sites in Russia and deliver them to our processing laboratory in Japan. So real you will feel as if you are in the cockpit on a real spy mission. Elude Russian missiles as well as their detection devices. Another Tom Mix exclusive. A must for the adventurous. Fantastic graphics, color and sound. **32K Ext. Basic**
TAPE \$28.95 DISK \$31.95

SKRAMBLE

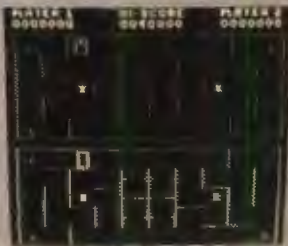
Your mission is to penetrate the enemy skramble system and destroy their headquarters. You will start with three of our latest spacefighters equipped with repeating cannon and twin bomb launcher. If you succeed in evading the elaborate ground defenses, you will arrive at the Cave where flying becomes more difficult. In the cave are UFOs, after which you must avoid a hall of meteorites. Very few pilots succeed this far, but if you do, then you must enter the Fortress, followed by the Maze. One or two player game. Machine Language, high speed, Arcade action. Full color graphics with sound. Keyboard or joystick control.



16K MACHINE LANGUAGE TAPE \$24.95 DISK \$27.95

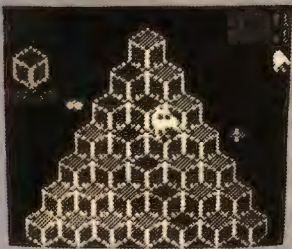
GRABBER

A pac type game. Two complete mazes jump from one to the other. Probably the most outstanding sound you have ever heard. Arcade Action. Method of play, you are the Grabber. The object is to grab the 8 treasures and store them in the center boxes. You start with 3 Grabbers and get extra ones at 20,000 points. Watch out for the googlies! Super high resolution graphics.



32K MACHINE LANGUAGE TAPE \$27.95 DISK \$30.95

CU*BER



Approaches the excitement and challenges of any Video Arcade. The hazards of CU*BER are many. Help CU*BER change the colors on the pyramid while avoiding many of the dangers always present. Vipers, the Nurd, the Dork, bonus points all add up to another exciting release from Tom Mix Software.

32K MACHINE LANGUAGE TAPE \$27.95 DISK \$30.95

AIR TRAFFIC CONTROLLER

Air Traffic Controller is a computer model of an air traffic control situation for the TRS-80 Color Computer. Remotely Piloted Vehicles (RPV's) are operated by the controller in a situation similar to that of a commercial airline in that you must regulate landings and takeoffs of the vehicles.



32K EXT. BASIC TAPE \$28.95 DISK \$31.95

KATERPILLAR II

The color centipede type game since day one. You will throw all imitations aside when you see this. So close to the arcade you will start digging for quarters. Graphic to equal "The King" and "Buzzard Bait." Joysticks required.



16K MACHINE LANGUAGE TAPE \$24.95 DISK \$27.95

TRAPFALL

The "Pitfalls" in this game are many. Hidden treasures, jump over the pits, swing on the vine, watch out for alligators, beware of the scorpion. Another game for the Color Computer with the same high resolution graphics as "The King."



16K MACHINE LANGUAGE TAPE \$27.95 DISK \$30.95

OTHER GREAT GAMES

MAZE RACE is a one or two player game. Play either against the built in timer or against your favorite opponent. **16K Machine Language \$17.95**

PROTECTORS Exciting fast paced arcade game that looks and plays like the popular arcade game "Defender." Wave after wave of enemy fighters drop bombs on your city. **32K Ext. Basic**
TAPE \$24.95 DISK \$27.95

SOLO POOL Now play pool with your color computer. Two players. Plays like machine language. Super Color, high resolution graphics. **16K Ext. Basic \$17.95**

CUTHBERT Run your man on the outline of the squares. When you complete a square it fills in. Fill in all the squares before the bugs get you, and you win. Uses Joysticks, one or two players. **16K Machine Language**
TAPE \$20.95 DISK \$23.95

BIRD ATTACK A fast paced machine language arcade game. Shoot the birdmen before they descend upon you. Watch out for their bombs! **16K Machine Language \$21.95**

UTILITIES

SCREEN PRINT ROUTINE Prints contents of your graphic screen to an Epson, Microline or Radio Shack DMP Printers. Prints positive or reverse format. Horizontal or vertical, small and large printout. Print left, right or center of page. Specify printer when ordering. **TAPE \$19.95 DISK \$21.95**

PROGRAM PRINTER This program will list basic programs to your printer in two column format. Saves paper and makes your listing look professional. Disk based. **\$17.95**

TAPE TO DISK New version works on both 1.0 and 1.1 DOS. Load the contents of most tape to disk automatically. **Machine Language**
TAPE \$17.95 DISK \$21.95

MAIL LIST Maintain a complete mailing list with phone numbers, etc. **Ext. Basic DISK ONLY \$17.95**

COLOR MONITOR Written in position independent code. (May be located in any free memory). Very compact. Only occupies 1174 bytes of memory. Full featured, includes Break-Pointing of machine language programs, register display and modify, memory display and modify, and block memory move commands. Displays memory in hex and ascii format on one line 8 bytes long. **Machine Language**
TAPE \$24.95 DISK \$27.95



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

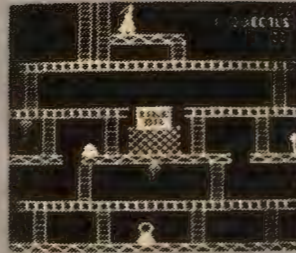
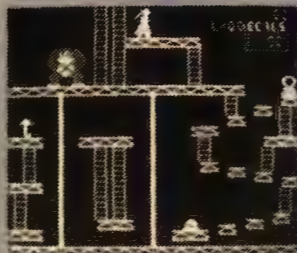
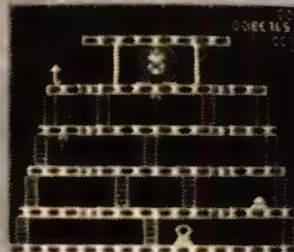


TO ORDER CALL 616/957-0444



THE KING

This game contains all 4 full graphic screens like the popular arcade game. Exciting sound and realistic graphics. Never before has the color computer seen a game like this. Early reviews say simply outstanding.



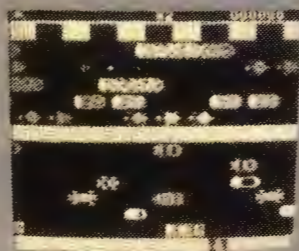
JOYSTICKS REQUIRED
32K MACHINE LANGUAGE
TAPE \$26.95
DISK \$29.95



ELECTRON

Electron is composed of four subgames. You must complete one level in order to advance to the next. Supplied with four men, you are subjected to more difficult games as you move ahead. Beam Buggy, Prachnids, Force Fields and a Maze!

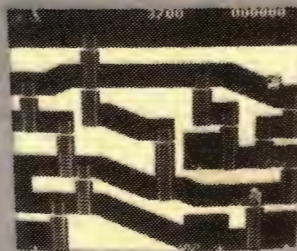
JOYSTICKS REQUIRED
16K MACHINE LANGUAGE
TAPE \$24.95 **DISK \$27.95**



THE FROG

This one will give you hours of exciting play. Cross the busy highway to the safety of the median and rest awhile before you set out across the swollen river teeming with hidden hazards. Outstanding sound and graphics. Play from keyboard or joysticks.

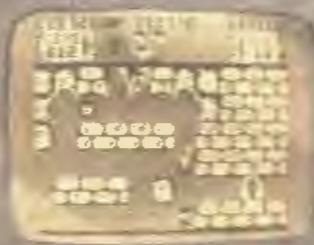
16K MACHINE LANGUAGE
TAPE \$27.95 **DISK \$30.95**



KING TUT

Journey through the caverns of King Tut's tomb. You are on a quest to find treasures hidden in the caverns below. You light your way with only a small candle that grows dimmer as time passes. Watch out for the snakes and the ghost of King Tut himself. Five screens challenge your abilities every step of the way. Joysticks required.

16K MACHINE LANGUAGE
TAPE \$27.95 **DISK \$30.95**



THE TOUCHSTONE

You are one of many priests of Ra who has accepted the challenge of the touchstone. The challenge is a way for any of Ra's followers to become a favored high priest. Given limited use of Ra's powers, you will battle hidden dangers. Entering the mazes, you must be ready for anything.

32K MACHINE LANGUAGE
TAPE \$27.95 **DISK \$30.95**



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•

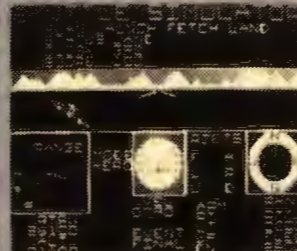
LOOKING FOR NEW SOFTWARE



ARCADE ACTION GAMES



TO ORDER CALL 616/957-0444



SPACE SHUTTLE

This program gives you the real feeling of flight. Full instrumentation complete to the max. Radar, altimeter, air speed, artificial horizon, fuel gauge, a mission status panel and much more. Actual simulation of space flight, weather conditions must be considered.

JOYSTICKS REQUIRED
32K EXTENDED BASIC
TAPE \$26.95 **DISK \$31.95**

EDUCATIONAL VOCABULARY MANAGEMENT SYSTEM

16K Extended basic/32K for printer output TAPE \$39.95 DISK \$42.95

The Vocabulary Management System (VMS) is a series of programs designed to aid a parent or teacher in helping children to learn and practice using vocabulary and spelling words. The 9 programs that comprise the VMS include a full feature data entry/edit program, three printer output programs and 5 vocabulary/spelling game programs. The system's many outstanding features include:

- As many as 300 vocabulary words and definitions may be in the computer's memory at one time.
- Words and definitions may be saved on disk or tape.
- Remarks and/or comments can be saved with word files.
- A disk loading menu allows students to load disk files without typing file names.
- Word lists may be quickly alphabetized
- The three printer segments allow you to create and print individualized tests, puzzles, word-searches and worksheets.
- Answer keys may be printed for all worksheets and puzzles.
- The printer segments allow full use of your printer's special features.
- The 5 game programs are based on sound educational principles and provide practice in identifying words and matching them with their definitions in a fast-paced set of activities.

STORY PROBLEMS

STORY PROBLEMS is a program that is designed to give practice in solving story problems (sometimes called statement thought or word problems) on the Color Computer. It is suitable for use in either a home or school environment. It is also a tool that will allow you to create new story problems to suit your children's needs and ability levels. It has

many features that make it particularly attractive:

- Story problems involving addition, subtraction, multiplication, division or a combination of the four are presented to the student by slowly scrolling each letter of each problem onto the screen.
- Up to 5 students may use the program at the same time.
- There are 4, user modifiable, skill levels.

16K EXT. BASIC TAPE \$19.95 DISK \$22.95

MATH DRILL

MATH DRILL is a program designed to help children to practice addition, subtraction, multiplication and division skills on the Color Computer. It has several features that make its use particularly attractive:

- Up to 6 students may use the program at the same time.
- Answers for addition, subtraction and multiplication are entered from right to left, just as they are written on paper.
- Commas may be included in the answers.
- Partial products for the multiplication problems may be computed on the screen.
- Division answers that have a remainder are entered as a whole number followed by the letter "R" and the remainder.
- There are ten, user modifiable, skill levels.
- A "SMILEY FACE" is used for motivation and reward. Its size increases relative to the skill level.
- Skill levels automatically adjust to the student's ability.
- A timer measures the time used to answer each problem and the total time used for a series of problems.
- After a problem has been answered incorrectly the correct answer appears under (above in division) the incorrect answer.

**REQUIRES 16K EXT. BASIC
TAPE \$19.95 DISK \$22.95**

ESTIMATE

ESTIMATE is a program designed to help children to practice estimating the answers to addition, subtraction, multiplication and division problems on the Color Computer. It has many features that make its use particularly attractive:

- Up to 5 students may use the program at the same time.
- There are 5, user modifiable, skill levels.
- The acceptable percent error may be changed as a student's skill improves.
- A timer measures the number of seconds used to answer each problem and the total time used for a series of problems.
- If a problem has been answered incorrectly, the student is told the percent error and asked to try again.
- If a problem is answered incorrectly a second time, the student is told the correct answer and the range of acceptable answers is displayed.
- A report is given at the end of each set of problems that includes the number of problems done, the number of problems answered correctly on the first try and the average percent error.
- The (BREAK) key has been disabled so that a child will not inadvertently stop the program from running.

**REQUIRES 16K EXT. BASIC
TAPE \$19.95 DISK \$22.95**

TEACHER'S DATABASE

TEACHER'S DATABASE is a program designed to allow a teacher to keep a computerized file of information about his/her students. There are many features that make this program particularly attractive:

- Information on as many as 100 students (or more) may be in the computer at one time.
- Each student may have as many as 20 (or more) individual items of data in his/her record.
- The program will run from cassette or disk.
- Cassette and disk files are completely compatible.
- The program is menu driven.
- Records may be easily changed, deleted, combined or added.
- Information about students may be numerical or text.
- Records may be quickly alphabetized.
- Records may be sorted by various criteria.
- Records may be reordered (ranked) based on test scores or other data.
- Data displayed during a sort may be printed on a printer or saved on disk or cassette as a new file.
- A full statistical analysis of data may be done and sent to the printer.
- Student test scores may be weighted.

**REQUIRES 32K EXT. BASIC
TAPE \$39.95 DISK \$42.95**

PRE-ALGEBRA I INTEGERS

INTEGERS is a series of four programs designed to give students practice in working with addition, subtraction, multiplication, division and the comparison of integers. It has many features that make a very valuable tool for introducing and/or maintaining skills:

- Up to 4 students may use the program at the same time.
- There are 9, user modifiable, skill levels.
- Students are given two opportunities to answer a problem.
- A detailed report of student performance, including number correct on first try, number wrong, total time used and percentage score, is presented at the end of a series of problems.
- The programs will run on a 16K TRS-80 Color Computer with or without disk drive.

Four distinct problem formats are presented. The first presents problems in this format: $-12 + -9 = ?$. The second program presents a problem with missing numerals in this format: $-7 - ? = 18$. The third program presents a problem with a missing sign: $8 - ?6 = 14$. The last program asks the student to determine the relationship ($=$, $>$ or $<$) between two statements $3 - 9 (??) - 4 - 5$.

TAPE \$29.95 DISK \$32.95

**SPECIAL
EDUCATIONAL PACKAGE
SPELLING TEST — WORD DRILL
MATH DRILL — ESTIMATE
STORY PROBLEMS
ALL FOR
TAPE \$79.95 DISK \$82.95**



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





Greetings!

Spring has sprung at last, at least out here in Ypsilanti. The snail is on the leaf. The worm is on the bud. The corn is planted. The pigs are enchanted. And Ben, having cast off his winter fur, prances about in sleek abandon.

Ben and I took a walk down to the pond the day before yesterday. Ben scampered on ahead, scattering out occasional rabbits and quail, yapping and barking for joy. Upon reaching the pond, Ben suddenly froze. Slowly he lowered down on his haunches like a sphinx, narrowed his nose, and began softly whining as if he had just been kissed by a rabbit in a dream. In a minute, I saw what all the commotion was about. Do you remember that turtle I saw swimming in circles on the pond last summer? Well, now that very turtle was swimming around in the pond, followed by seven little tiny turtles. The turtle had replicated.

Gosh, those little turtles were cute. They were just exactly like the mother turtle, only miniature. The mother turtle turned one way, and they followed right along. The mother turtle turned another way, and along they followed. First I considered taking them all home with me to try turtle graphics on paper, just as I had done with the big turtle last summer. But then I didn't want to disturb an idyllic scene on the pond. Also, it's not nice to disturb a mother and her babes.

Luckily, there is a way to have my own turtle on my Color Computer produce its own baby turtles. The statement to do this is called HATCH, and I'll see if I can show you how it works. First, think of a procedure — any procedure. For example, the procedure for drawing a circle:

```
TO CIRCLE :N
  Repeat 20 (FD :N RT 18)
END
```

(W. Bert Woofensburger ["Uncle Bert"] manages a hog and corn farm near Ypsilanti, Mich. He has recently acquired a Color Computer and is learning LOGO. Woofensburger's editor and assistant, Dale Peterson, writes for a living. His recent books include "Genesis II: Creation and Recreation With Computers" and "Intelligent Schoolhouse: Readings On Computers and Learning." He is currently working on a book about Color LOGO with Don Inman and Ramon Zamora, to be published in 1984.)

Next, tell the turtle to go through the procedure, and have a hatched turtle, or two or three of them, do the same. Like so:

```
TO CIRCLES
  SX 90 SY 80
  HATCH 1 CIRCLE 8
  SX 20 SY 170
  HATCH 2 CIRCLE 3
  SX 100 SY 100
  HATCH 3 CIRCLE 5
  SX 140 SY 120
  CIRCLE 4
END
```

An even smarter way to do the procedure would be like this:

```
TO CIRCLE :N :X :Y
  SX :X SY :Y
  REPEAT 20 (FD :N RT 18)
END
```

```
TO CIRCLES
  HATCH 1 CIRCLE 8 90 80
  HATCH 2 CIRCLE 3 20 170
  HATCH 3 CIRCLE 5 100 100
  CIRCLE 4 140 120
```

The last CIRCLE procedure doesn't need to be hatched because that is being run by the mother turtle. I could have called the last CIRCLE procedure

```
HATCH 0 CIRCLE 4 140 120
```

because HATCH 0 means the same as "no hatch," and really refers to the mother turtle.

Why did I put the mother turtle's procedure last? I asked myself that — but I remembered my own mother, bless her. When there was a bowl of potatoes on the table, who always waited until the little darlings had their potatoes? Mother! When there was spinach on the table, who always waited until we had been served our spinach (even though we hated spinach)? Mother! So it shouldn't be surprising that the mother turtle comes last here. Just for the sake of scientific experimentation, I tried putting the mother turtle first in the CIRCLES procedure. What happened? You try it, and see for yourself.

```
TO CIRCLES2
  CIRCLE 4 140 120
  HATCH 1 CIRCLE 8 90 80
  HATCH 2 CIRCLE 3 20 170
  HATCH 3 CIRCLE 5 100 100
END
```

What I discovered was that once the mother turtle finishes, the whole procedure just stops — which means that the hatching in CIRCLES2 never does happen. Now, if the whole procedure stops when the mother turtle finishes, we may have another problem. Even though the mother turtle's subprocedure is last in a procedure, what happens if her subprocedure is simpler than the others, and she still finishes early? I tried it:

```
TO SQUARE
  SX 200 SY 40
  REPEAT 4 (FD 20 RT 90)
END
```


TO SHAPES

```
HATCH 1 CIRCLE 8 90 80
HATCH 2 CIRCLE 3 20 170
SQUARE
END
```

Again, even though the mother turtle may look (on the screen) like all the hatched turtles, she is different. When the mother turtle finishes, the entire procedure stops, even if the hatched turtles have not finished with their subprocedures. Apparently, they "dehatch." Since it is simpler (takes fewer REPEATS) to do a SQUARE, the mother turtle finishes first and all the hatched turtles stop working on their circles, even though they haven't finished. It is most sensible, therefore, to give the mother turtle the most complex subprocedure and to place her last in a hatching procedure. Nevertheless, if for any weird and peculiar reasons you still wish to give the mother turtle a simpler subprocedure than a hatched turtle has, you can tell her to VANISH — and she vanishes once she has finished her subprocedure, while the little hatched turtles are left to carry out their subprocedures without maternal interruption. For instance:

TO SHAPES2

```
HATCH 1 CIRCLE 8 90 80
HATCH 2 CIRCLE 3 20 170
SQUARE
VANISH
END
```

Well, those were some of the things I learned about hatching. Then I began to wonder, "How many baby turtles can a mother turtle hatch at once?" Like a hero, I was determined to find out.

TO WORM

```
REPEAT 10 (FD 4 RT 18)
REPEAT 10 (FD 4 LT 18)
```

TO WORMY :X :Y

```
SX :X SY :Y
REPEAT 5 (WORM)
END
```

TO CANOWORMS

```
HT PC 2
HATCH 1 WORMY 10 10
HATCH 2 WORMY 10 20
HATCH 3 WORMY 10 30
HATCH 4 WORMY 10 40
HATCH 5 WORMY 10 50
```

```
HATCH 6 WORMY 10 60
HATCH 7 WORMY 10 70
HATCH 8 WORMY 10 80
HATCH 9 WORMY 10 90
HATCH 10 WORMY 10 100
HATCH 11 WORMY 10 110
HATCH 12 WORMY 10 120
HATCH 13 WORMY 10 130
HATCH 14 WORMY 10 140
HATCH 15 WORMY 10 150
HATCH 16 WORMY 10 160
HATCH 17 WORMY 10 170
WORMY 10 180
END
```

I discovered some interesting things. First of all, it seems that all the hatched turtles ignored my PC command. Only the mother turtle changed the pen color. Second, all the hatched turtles ignored my HT command. Strange! I thought perhaps the HATCH statement itself was cancelling the PC and HT. I figured, and then thought maybe I'd try to place the PC and HT within WORMY — that way they'd be called up right after every HATCH. So I changed WORMY, like so:

TO WORMY :X :Y

```
HT PC 2
SX :X SY :Y
REPEAT 5 (WORM)
END
```

I also discovered that the worms weren't moving all at once. Clearly they were moving in a sequence. To get a closer look at what was really going on, I slowed the whole thing down by placing a SLOW 100 command at the start of the CANOWORMS procedure. You try it. What I discovered, by running the whole thing very slowly, was that (correct me if my eyes are deceiving me) the way the Color Computer draws when hatching is to move quickly from the one little element of the subprocedure of one hatched turtle to one little element of the subprocedure of the next hatched turtle, drawing only a little at each stop. In other words, when the computer is running at top speed, it may appear as if all those hatched turtles are moving at the same time — but they aren't. That is an optical illusion. In reality, one hatched turtle moves a little bit, then the next hatched turtle moves a little bit, and so on, down the line.

Anyhow, I still hadn't found out exactly how many turtles could be hatched for one procedure. It seemed clear from my CANOWORMS procedure that at least 17 hatched turtles could work together, but how many more were possible? My little fingers were tired and so I decided not to test this any further. Lucky I didn't, too, because about a day later one of my spies told me I could have up to 254 hatched turtles! Wow! Just imagine the CANOWORMS I could have done, if I could have stood the typing!

But what really began to excite me was thinking about all the fancy procedures I had done in the past, and then thinking I could have my Color Computer do them with hatched turtles. One for instance will do:

TO FROST :N

```
IF :N<2 (STOP)
FD :N
RT 45
FROST (3*:N/4)
LT 90
```



the MEMO MINDER

REQUIRES 16K ECB

Get organized - that's why you bought your CoCo. Type in memos, phone numbers, dates, reference notes, anything. Enter a phrase, keyword, even a few letters and locate a record - fast. It's an easy to use program and just right for odds and ends that won't "fit" in a structured data base.

\$9.95 M.O. or Check - No Delay

Cassette includes

Tape & Disk Version

MERRICK & CO

P.O. Box 73

Conifer, CO 80433


```
FROST (3*:N/4
RT 45
BK :N
END
```

TO SNOWFLAKE :N

```
HATCH 1 FROST :N RT 45
HATCH 2 FROST :N RT 45
HATCH 3 FROST :N RT 45
HATCH 4 FROST :N RT 45
HATCH 5 FROST :N RT 45
HATCH 6 FROST :N RT 45
HATCH 7 FROST :N RT 45
FROST :N
END
```

That was great, if I do say so myself. Watching all those turtles moving at once made me think of bees, though. So I decided just for the sake of it to try a honeycomb.

TO HEXAGON

```
REPEAT 6 (FD 10 RT 60)
END
```

TO MORE

```
REPEAT 6 (HEXAGON FD 10 LT 60)
END
```

TO MOREMORE

```
REPEAT 5 (MORE
REPEAT 2 (FD 10 RT 60)
FD 10 LT 180)
END
```

TO HONEYCOMB

```
HATCH 1 MOREMORE FD 10 LT 60
HATCH 2 MOREMORE FD 10 LT 60
HATCH 3 MOREMORE FD 10 LT 60
HATCH 4 MOREMORE FD 10 LT 60
HATCH 5 MOREMORE FD 10 LT 60
PC 2
MOREMORE
END
```

I should confess immediately that I made a mistake when I first typed this up, and put a LT 120 at the bottom of MOREMORE, instead of LT 180. You might try that one, when you have a chance. It's not a honeycomb, but it sure is interesting.

Anyhow, I put the PC 2 in there just so we could know where the queen bee is at all times. Unfortunately, the queen kept being crowded out by her drones. That didn't seem realistic to me. After all, the queen is the boss. I wanted to say to the computer, "If any of the hatched turtles are near the mother turtle, make them turn and move in a different direction." In turtle talk, the instruction looked like this:

```
IF NEAR 0<20 (RT 120)
```

And I placed that instruction right in the earliest subprocedure:

TO HEXAGON

```
IF NEAR 0<20 (RT 120)
REPEAT 6 (FD 10 RT 60)
END
```

You might be slightly familiar with the conditional IF statement because we used it before. The NEAR function refers to the distance between whatever hatched turtle is

moving at the moment (the current turtle) and any designated turtle. In this case, the distance is 20 units (the added value of X and Y distances), between the current turtle and the designated turtle (turtle 0, the mother turtle). So I tried that one out with my honeycomb. The results were . . . interesting, and maybe they show you shouldn't fool with Mother Nature. But, I kept right on fooling. First, I tried reversing the less than sign (<) into a greater than sign (>). Next, I tried increasing the distance value in NEAR, to see if I could get the bees to spread out their honeycomb any further. Finally, I tried adding more hatched turtles, and changing some of the turn instructions.

Well, I know this is a shorter letter than usual, but to be truthful, I'm so excited about this hatch business I can't stand it. I'm going to go back and try everything with hatching! Maybe at last I'll produce some art that Ben approves of. In the meantime, I remain,

Uncle Bert

P.S. You can send your cards and letters to me in care of my good friend Dale Peterson. Just address them like this:

Uncle Bert Woofensburger
c/o Dale Peterson
the Rainbow
9529 U.S. Highway 42
P.O. Box 209
Prospect, KY 40059

FILEBOX/16 HOME FILING SYSTEM

ENTER THE INFORMATION AGE WITH FILEBOX/16.
NOW AVAILABLE FOR THE TRS-80 16K, 32K, OR 64K COLOR
COMPUTER WITH ONE DISK DRIVE.

Create, change, update, delete, search, sort and list files you define. You don't have to be a programmer to use this system. Now includes corrections and features suggested in the review of FILEBOX/16 in the March 1984 RAINBOW magazine.

Applications are virtually unlimited. Use for address lists, car repair records, household inventories, book and record collections, tax records, etc. You can use FILEBOX/16 to print mailing labels. This use alone is worth your purchase price.

Each file you create can contain any number of records. Each record can contain up to 10 fields and 256 characters. Print records to screen or printer. Control report formats.

FILEBOX/16 IS EASY TO USE. This is NOT a system which requires that you learn special keys and operations. It is completely menu-driven. Has built-in lessons to supplement the 20 page loose-leaf User Guide, rated excellent in review.

FILEBOX/16 is written in BASIC with a machine language sort. It uses efficient formatted direct access file logic contained in 8 programs you control from a menu.

SPECIAL PRICE—Now only \$29.90 Diskette
was \$39.90 Plus \$2.00 shipping Only

Please specify 16K or 32K version.

New Jersey residents please add \$1.80 for sales tax.

Mail check or money order to:

CIRCLING STAR SOFTWARE CO.

P.O. Box 1218

Freehold, N.J. 07728

Phone: (201) 431-3660 after 6 p.m.

Call our BBS 10 pm - 7 am Eastern Time



FILEBOX/16 © 1983 by Luke Watson
TRS-80 is a trademark of the Tandy Corp.

Designing A Video Monitor Output

By Tony DiStefano
Rainbow Contributing Editor

(Tony DiStefano is well known as an early specialist in Color Computer hardware projects. He is one of the acknowledged experts on the "insides" of CoCo.)

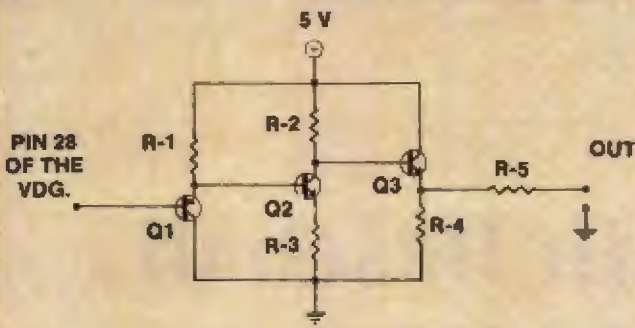
A few months ago, when I wrote the article on how to add a speaker to your CoCo, I mentioned that I was not going to do an article on a video monitor output for the CoCo. Well, I got a lot of letters and phone calls asking me to do one. The major complaint is that most of the monochrome (black and white) video outputs do not have enough gain to drive certain monitors. I thought this was quite strange because I had made one from a schematic in *the Rainbow* and did not have any trouble with gain. I always had plenty of brightness and good contrast with my Electrohome monitor. Well, just this week, I bought an Amdek 300A amber monitor, and guess what? My video monitor adapter did not have enough gain to drive this monitor properly. I thought there was something wrong with the monitor. I brought it back to the place I bought it and aired my complaint. They checked it out and told me that the monitor was okay and that my computer was not strong enough to drive this type monitor. It didn't take long before I took my video monitor adapter and threw it out the window. Now what was I to do? Humm! I guess I'll have to design my own.

What follows is what I designed as a video monitor output for the Color Computer. Following the schematic in Figure 1, you see a three stage amplifier. The first transistor is used as an impedance amplifier. The second transistor is an inverting voltage gain amplifier. The last transistor is used as an emitter follower. This adds the current gain necessary to drive monitors that are terminated with a 75 ohm load, just like the Amdek. It is not hard to construct this circuit. You will need all of the usual project tools like a soldering iron, pliers, cutters, screwdrivers and the like. Get all the parts in the parts list, though I think that most of you will have all of these parts in your junk bin. There is nothing hard to get, but do get all the right resistor values, close is not good enough. You can mount it on a piece of perf board like in the list, or you can mount it on just about anything. The output connection can be made in many ways. You can drill a hole in the back of your CoCo and install a chassis mount RCA connector — Radio Shack #274-346. If you don't want to drill a hole in your CoCo, just use a long wire with an RCA jack on the end, or whatever type terminator your monitor has. Most monitors have RCA terminators. You can mount the board inside the computer with double-sided tape on top of the RF adapter.

The .1 uf capacitor in the parts list does not show up on the schematic. This is a decoupling capacitor and goes from the +5 volt line to ground. This is only to eliminate noise generated from the power supply. This video monitor output will work on any CoCo version, it will even work on the CoCo 2.

Like usual, if you have some problems with my projects or modification, or if you have a good idea you would like to share with me, give me a call on any Monday night after 7 p.m. My telephone number is (514) 473-4910. If you want to write to me, do so. If you need a reply to a question, include a SASE. Till next time.

Figure 1



Parts List

Number	Description	RS#
Q1	MPS2907 PNP	276-2023
Q2,3	MPS3904 NPN	276-2016
R1	470 OHMS 1/4W	271-1317
R2	100 OHMS 1/4W	271-1311
R3	27 OHMS 1/4W	N/A
R4	220 OHMS	271-1313
R5	10 OHMS	271-1301
C1	.1 UF 25V	272-1069
P1	PERF BOARD	276-162

Submitting Material To the Rainbow

Contributions to *the RAINBOW* are welcome from everyone. We like to run a variety of programs which will be useful/helpful/fun for other CoCo owners.

Program submissions must be on tape or disk and it is best to make several saves, at least one of them in ASCII format. We're sorry, but we do not have time to key in programs. All programs should be supported by some editorial commentary, explaining how the program works. We're much more interested in how your submission works and runs than how you developed it. Programs should be learning experiences.

We do pay for submissions, based on a number of criteria. Those wishing remuneration should *so state* when making submissions.

For the benefit of those who wish more detailed information on making submissions, please send a SASE to: Submissions Editor, *the RAINBOW*, P.O. Box 209, Prospect, KY 40059. We will send you some more comprehensive guidelines.

Please do not submit programs or articles currently submitted to another publication.

Tax Relief

With Coco-Accountant II

If you pay taxes, you need Coco-Accountant II! This 32K home and small business accounting program will track your finances and make income tax time a breeze. Spend a few minutes with your canceled checks, credit card bills, cash receipts and payroll stubs. When you're through, Coco-Accountant II will list and total expenditures and income by month, account or payee, provide a year-to-date summary by account and figure your net cash flow. Better yet, it provides a printed spreadsheet showing your year at a glance.

The program sorts entries by date, lists most functions to screen or printer and saves files to tape or disk. A special feature flags tax deductible expenses and expenses subject to state sales tax. It even computes the sales tax you paid! In addition, COCO-ACCOUNTANT II will balance your checkbook and print a reconciliation statement. Up to 450 entries per file on 32K tape version, 500 on 32K disk and 1,000 on 64K tape or disk. All this for only \$24.95 on tape, \$27.95 on disk.



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.

Add \$1.50 for shipping and send orders to:

Federal Hill Software
825 William St.
Baltimore, MD 21230



301-685-6254



Swinging With Baseball Interest Can Aid Educators

By Steve Blyn
Rainbow Contributing Editor

Computers beware! The baseball season is upon us. Many a child's interest has turned once again to America's other popular pastime.

What happened to all of the snow and ice? It seems like just yesterday all of the students were throwing snowballs and talking about the Winter Olympics. Now spring has suddenly arrived and the talk has changed to baseball once again.

As always, it is best to swing with the interests of the kids if you want to introduce something new to them. This is another good opportunity to learn or review a simple read-data program. Baseball, of course, has teams and this leads us to lists. List manipulation is a great introduction to data processing for beginners.

Fortunately, baseball lists change often during spring training and at the beginning of the season. This gives us a perfect time to show the students how learning about the computer can help them to keep their lists current.

At this point, we must confess that the staff of Computer Island consists overwhelmingly of New York Met fans. It is certainly hard for us to keep our baseball list current. We still cannot recover from or even understand the loss of Tom Seaver.

We will naturally illustrate this month's program using the New York Mets as our example. You may alter the data to any ball team you like. If you kids are on a Little League or school team, their list will certainly be more appropriate to your needs.

Let's start by first clearing some memory. Line 30 will *CLEAR 1000*. This will most likely be enough for our purposes and will also easily keep this program in the realm of 16K. A higher *CLEAR* number can be used if your lists are very extensive.

Next we will dimension our list. We can use any number that is greater than the possible total of players. This will free us from worrying later on about keeping count of the number of data entries. *DIM A\$(50)* and *B\$(50)* will keep us well beyond the limit of players, even on the Mets spring training roster. You may, of course, resort to a higher *DIM* number if you require it.

The players' names and their positions will be entered in *DATA* lines. The *B\$* represents the position. Familiar abbreviations were used. For example, 2B stands for second base and LF stands for left field. The *A\$* is the player's name.

The *DATA* is entered as *A\$,B\$*. You may put several pairs on any *DATA* line. A common mistake I have often observed is putting a comma at the end of a *DATA* line. This indicates to the computer that there is an extra entry on the line that you did not intend to create. A comma at the end of a line will therefore cause an unintended entry of a blank data statement.

The *DATA* lines are read on lines 60-100. Notice that the *DATA* need only be read once in this program. Many beginners feel that the *DATA* must be read each time a new search for players is made. Our computer is smart enough to remember what it read once and use the information over and over again for endless information-seeking purposes.

The very last *DATA* entry is *END,END*. This is done so that you do not have to keep track of the number of *DATA* entries. Line 60 tells the computer to look for 50 entries, but line 80 tells the computer to stop reading when it encounters the name *END*. If you wish to add additional players to your list, place new *DATA* lines before the line that says *DATA END,END*.

Line 150 asks for a baseball position. Line 200 will search out and print all of the players that play that position. If none are found, the counter "NN" will be zero and a "Sorry, None Found" message will be displayed.

There are many additions or options that could be included in this program. We allowed for an End or Escape key and an All players key. If 'E' is pressed for the position, the program will end. If 'A' is pressed, all of the players will be listed. If you have a printer, *PRINT#-2* can be added to lines 200 and 330 to get hard copies of your lists.

(Steve Blyn teaches both exceptional and gifted children, holds two master's degrees and has won awards for the design of programs to aid the handicapped. He and his wife, Cheryl, own Computer Island.)

Federal Hill Software

FINE PRODUCTS FOR THE COLOR COMPUTER, DRAGON AND MC-10

Education Corner.....

Mi Coco Habla Espanol! Mon Coco Parle Francais!

Four delightful new educational programs will help your youngsters learn Spanish and French! Each 16K program contains more than 550 basic vocabulary words built into an entertaining game format that encourages children to think as well as memorize! Colorful graphics and music make learning a joy. Three levels of difficulty with choice of translation from English to foreign language or foreign language to English. Ext. Basic required. French 1, French 2, Spanish 1 or Spanish 2, \$18.95 each on tape, \$21.95 on disk. Any two programs only \$33.95 tape or disk. All four programs only \$49.95.

Fun With Math!

KOKOMATH—Koko The Math Clown is suspended over a tub of water. Get 10 problems right and give him a bath! Add, subtract, multiply or divide at three difficulty levels. Extended Basic NOT required!

ROBOMATH—Robo the Robot is stranded on a strange planet. Get 10 problems right and send him back to the mother ship. But watch out for your fuel! Ext. Basic is required.

KOKO or **ROBO**, \$16.95 on tape. Both programs only \$29.95.

Play Blackjaq!

This is as close as you can come to the real thing without losing your shirt! A full casino simulation, with up to 5 players and 9 decks. Play with friends, play all five hands yourself, or let the computer play the vacant hands. But watch out! It plays by card counting rules! There's even a joystick option for two players. Blackjaq keeps track of winnings and losings, displays two card-counting algorithms and prints out the results of every hand if a printer is on line! Nothing else like this available in 16K. Great for the beginner or experienced player. Requires 16K Ext. Bas. Only \$24.95 on tape, \$27.95 on disk.

Baseball Statpack!

Whether you're in Little League, Pony League, high school or a company softball league, your players will love these Big League statistics. Keep track of 180 hitters—AB, Hits, Avg., RBI, HR, SO, Walks, and lots more. Pitching records include Won, Lost, PCT., IP, ER, ERA, SO, BB, and HR. Team records and standings, too! Sort by any stat for incredible screen displays and printouts. Package of three programs, only \$28.95 on 16K tape, \$31.95 on 32K disk. Requires Ext. Bas.

Use All 64K!

IMPROVED VERSION—BUILT-IN MACHINE LANGUAGE SORT!! Did you feel gypped when you found out your "64K" CoCo still had only 32K in Basic? We sure did. So we developed **HID 'N RAM**, the most powerful 64K programming tool on the market. And then we improved it with a built-in **ML sort routine**. With **HID 'N RAM**, you can access that hidden 32K of memory from Basic and use it to store and sort your data. Write a 28K program with every bell and whistle you can dream up and still have 32K left for storage! **HID 'N RAM** is a brief machine language driver imbedded in a Basic demonstration program—a mailing list that puts 500 entries in **RAM!** This shows you how it works. Then you can delete our program and write your own. The **ML driver** stays with you! If you have a working knowledge of Basic, you can easily use **HID 'N RAM**. Complete instructions and programming guide. Only \$24.95 on tape, \$27.95 on disk.

Programmer's Helper

Here are 34 useful subroutines, ready to access from your Basic program. Input, output, centered titles, flashing messages, rotating cursors, screen protects, sound prompts, borders, speedups, slowdowns, break and list disables, timed inputs, graphics and **PRINT()** charts, reverse video and more! You'll wonder how you got along without it. Requires 16K Ext. Only \$21.95 on tape, \$24.95 on disk.

New From Owl-Ware!

Disk Drives \$179.95

These high-quality **SS/DD** drives from Owl Ware are ready to plug in and run with your Color Computer. Will write 35 tracks in **RS Basic** or 40 tracks in **OS-9** with 6ms access. Tough, reliable equipment. Only \$179.95 including shipping.

OS-9 Utilities!

Disassembler-9

A new machine code disassembler for the **OS-9** system. Includes a decoding of **OS-9** system calls and normal 6809 assembly. A must for the serious programmer. Only \$27.95

Transfer-9

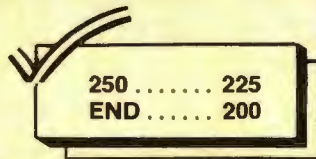
Use any standard word processor to edit files and transfer to **OS-9**. Transfer from any **OS-9** disk or memory to **RS Basic**. Uses low memory in **OS-9**. Does not need a startup of **OS-9** to transfer to **RS Basic**. \$22.95.

Federal Hill Software
825 William St.
Baltimore, MD 21230



We accept checks (no delays), money orders or **VISA/MC** with card number, exp. date and signature. Add \$1.50 for shipping and send orders to **FEDERAL HILL SOFTWARE**, 825 William St., Baltimore, Md. 21230

The main purpose of our program, of course, is to encourage the children to experiment and learn. It is fun for them to plan other options or ways of printing out the *DATA*. By manipulating the *DATA* in various ways, we hope that the kids begin to have a better understanding of databased programs.



The listing:

```

10 REM"BASEBALL TEAM DATA BASE"
20 REM"STEVE BLYN,COMPUTER ISLAN
D,NY,1984
30 CLEAR 1000
40 REM"WE CAN DIMENSION THE STRI
NGS WITH ANY AMOUNT GREATER THAN
THE POSSIBLE NUMBER OF PLAYERS"
50 DIMA$(50),B$(50)
60 FOR T=1 TO 50
70 READ A$(T),B$(T)
80 IF A$(T)="END" THEN 120
90 REM"IF THE PLAYERS NAME IS RE
AD AS 'END' THEN THE COMPUTER ST
OPS READING THE DATA."
100 NEXT T
110 REM"SET THE COUNTER TO ZERO"
120 NN=0:CLS7:PRINT@5,"BASEBALL
POSITIONS";
130 SOUND175,2

```

```

140 PRINT@484,"'A' FOR ALL & 'E'
TO END";
150 PRINT@96,"WHAT POSITION DO Y
OU WANT TO SEETHIS TIME...";:INP
UT PS$
160 IF PS$="E" THEN CLS:END
170 IF PS$="A" THEN 270
180 PRINT
190 FOR T= 1 TO 50
200 IF B$(T)=PS$ THEN PRINTA$(T)
,B$(T):NN=NN+1
210 NEXT
220 PRINT
230 IF NN=0 THEN PRINT"SORRY,NON
E FOUND."
240 PRINT@483,"PRESS ANY KEY TO
GO ON...";
250 AN$=INKEY$
260 IF AN$="" THEN 250 ELSE 110
270 REM"PRINTOUT OF ALL PLAYERS
ON THE TEAM"
280 CLS8
290 PRINT@6,"THE ENTIRE TEAM";
300 PRINT@64,"PRESS ANY KEY FOR
NEXT PLAYER"
310 PRINT
320 FOR T=1 TO 50
330 PRINT T;B$(T),A$(T)
340 EN$=INKEY$:IF EN$=""THEN 340
350 IF A$(T)="END" THEN 240
360 SOUND200,2
370 NEXTT
380 REM"THE DATA IS ENTERED AS P
LAYER'S NAME,PLAYERS POSITION."
390 REM" YOU MAY USE OUR MET PLA
YERS FOR PRACTICE OR ENTER YOUR
OWN FAVORITE TEAM'S MEMBERS."
400 DATA TOM SEAVER,P,DOUG SISK,
P,RUSTY STAUB,RF,JOHN STEARNS,C,
CRAIG SWAN,P,WALT TERRELL,P
410 DATA WALLY BACKMAN,SS,BOB BA
ILOR,2B,HUBIE BROOKS,3B,CARLOS D
IAZ,P,GEORGE FOSTER,LF,RON GARDE
NHIRE,SS
420 DATA BRIAN GILES,2B,TOM GORM
AN,P,DANNY HEAP,RF,RON HODGES,C,
SCOTT HOLMAN,P,MOOKIE WILSON,CF
430 DATA MIKE HOWARD,CF,DAVE KIN
GMAN,1B,TERRY LEACH,P,TIM LEARY,
P,ED LYNCH,P,JESSE OROSCO,P
440 DATA RICK OWNBEY,P,GARY RAJS
ICH,RF,RONN REYNOLDS,C
450 DATA JOSE OQUENDO,SS,KEITH H
ERNANDEZ,1B,JUNIOR ORTIZ,C,MARK
BRADLEY,RT,DARRYL STRAWBERRY,RF,
RON DARLING,P
460 REM "THE NEXT LINE IS DUMMY
DATA TO END THE READING OF THE D
ATA"
470 DATA END,END

```

TRS-80 COLOR BASIC

by BOB ALBRECHT

Beginners

This entertaining self-instructional book is packed with games, experiments, scores of intriguing challenges, and activities related to fantasy role-playing games. The ideal introductory aid for kids, parents and teachers using the Color Computer.

John Wiley & Sons
605 Third Ave., New York, NY 10158

\$9.95

TRS-80 COLOR COMPUTER GRAPHICS

by DON INMAN

Intermediate

Explore the creative and imaginative blending of computers and color. This exciting book will enable you to explore all the graphics capabilities of Extended Color BASIC.

Reston Publishing Company
11480 Sunset Hills Rd., Reston, VA 22090

\$14.95

ASSEMBLY LANGUAGE GRAPHICS FOR THE TRS-80 COLOR COMPUTER

by DON INMAN and KURT INMAN

Advanced

This book is specific to the TRS-80 Color Computer with applications using sound and graphics to illustrate how an assembler can be used to perform feats that would be quite difficult, if not impossible in the BASIC language.

Reston Publishing Company

\$14.95

DYMAX, P.O. 310, MENLO PARK, CA 94025

Dymax orders must be prepaid via check, money order, Visa or Mastercard. Sorry, no Purchase Orders or COD orders. Please add \$2.00 shipping and handling. California residents add 6% sales tax.



FREE!

SPELL 'N FIX II



Hat ↗

Nowadays, when you go to the theatre, you first pay your money and then go to the show ... and hope you enjoy it. But it wasn't always like that. Centuries ago it was the other way around. First you saw the show. Then the performers passed their hats around. If you enjoyed the show, you put money in the hat. The more you enjoyed it, the more you put in.

We're going to try the same approach with software.

INTRODUCING PASS-THE-HAT SOFTWARE

It works like this. Send us a formatted disk along with a stamped, self-addressed mailer. We will use it to send you a copy of SPELL 'N FIX II. We also give you permission to copy the disk as much as you want and give copies to all your friends.

After you've had a chance to use it, that's where the hat comes in. We want you to decide for yourself what the program is worth to you, and send us a contribution. (Hint: send a LOT if you really like it!)

WOW! WHAT A PROGRAM!

SPELL 'N FIX II is not just for spelling mistakes — it catches typos too. It really makes sure that your word processing output is perfect. Easy to use too. Reads your text, fixes your mistakes, lets you look up the spelling of bad words in its dictionary file, even lets you add words to the dictionary. Color Computer Magazine called the original SPELL 'N FIX "a top-drawer piece of software" ... and SPELL 'N FIX II is even better! Originally advertised for \$69.29, it beats the \$200—\$300 dictionary programs for other computers — hands down!

COMPARISON CHART

	Radio Shack Color Dictionary 26-3265	Original SPELL 'N FIX	New SPELL 'N FIX II
Checks SCRIPSIT (R) files	YES	YES	YES
Checks other text processor files	NO	YES	YES
Checks Basic data files	NO	YES	YES
Checks files larger than memory	NO	YES	YES
Full upper and lower case display	NO	NO	YES
Add words from dictionary	NO	YES	YES
Delete words from dictionary	NO	YES	YES
Custom dictionaries possible	NO	YES	YES
Comes with error-free dictionary	NO	YES	YES
Usable for foreign languages	NO	YES	YES
Checks and fixed in one pass	NO	NO	YES
Shows suspect words in context	YES	YES	YES
Usable with just one diskette	NO	YES	YES
Looks up words in dictionary	YES	NO	YES
Looks up words while correcting	NO	NO	YES
DIR command allowed during run	NO	YES	YES
Uses standard Basic file format	NO	YES	YES
Price	\$59.95	\$49.39	FREE

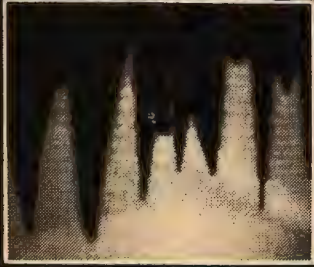
(Note: SCRIPSIT is a trademark of Tandy Corporation)

 **STAR-KITS**
SOFTWARE SYSTEMS CORPORATION

P.O. BOX 209 R MT. KISCO, NY 10549 (914) 241-0287

SHELL software

**ML AUTHORS
TOP ROYALTIES
PAID**



LUNAR LANDER 16K EXT - It's up to you commander, your space craft is damaged and your losing oxygen. You must land to repair. You have a choice of 4 different planets to land on.

32K LUNAR LANDER works with SPECTRUM PROJECT'S Voice Pak. \$15.95



SONAR SEARCH 16K EXT - OK, Captain you have a fleet of enemy ships to find and destroy. Your battleship is equipped with depth charges and sonar. TWO PLAYER GAME.

32K SONAR SEARCH - You must defend your fleet from the relentless strategy of the computer controlled fleet. (JOYSTICK) \$18.95



EXTERMINATOR 16K EXT - You've had it, BUGS are everywhere and its time to fight back. With a can of "RAID" in hand and a JOYSTICK in the other, you begin fighting the marching insects. 32K

EXTERMINATOR - Now there are two action packed screens of fun. \$18.95

STAR RAID 16K EXT - Dock with one of two base station to fuel up and fight the attacking aliens.

32K STAR RAID - Now you can land on earth and fuel up, but its not that simple. (JOYSTICK) \$18.95

FEDERATION BOOT CAMP 16K EXT - You've been drafted for 16 weeks. Four complete tasks, which after completed you advance to the next screen. Can you hack it? (JOYSTICK) \$18.95

SNOOPY & THE RED BARRON 16K EXT - A hires graphic "DOG" fight for TWO players. See review in January's issue of RAINBOW.
32K SNOOPY & THE RED BARRON - A initially advanced version with unlimited options. (JOYSTICK) \$18.95

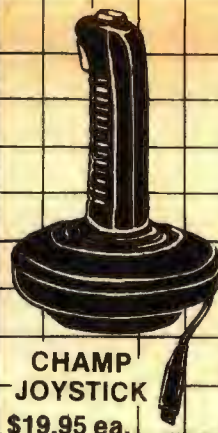
DEATH STAR 32K EXT - You are pitted against the EMPIRE, using your gut feelings and the force you can save the princess. Battle guards, buy weapons, and armor. \$19.95

- ALL SHELL 16K GAMES HAVE 32K VERSIONS INCLUDED
- FREE 16K ADVENTURE WITH \$50.00 ORDER.
- YES! SHELL GAMES ARE AVAILABLE ON DISK. ADD \$2.50.

**ML AUTHORS,
TOP ROYALTIES
PAID!**

USA Orders under \$50 - Add \$2.50
OTHER Orders Add \$5.00 ship/hnd.
Fla. Residents add 5% sales tax.
Visa/MC Add 5%
NO C.O.D. ORDERS

LARGEST SUPPLIER IN THE SOUTH!



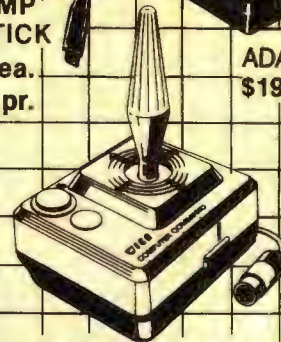
CHAMP JOYSTICK
\$19.95 ea.
\$34.95 pr.



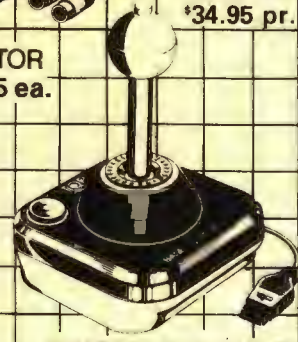
ADAPTOR
\$19.95 ea.



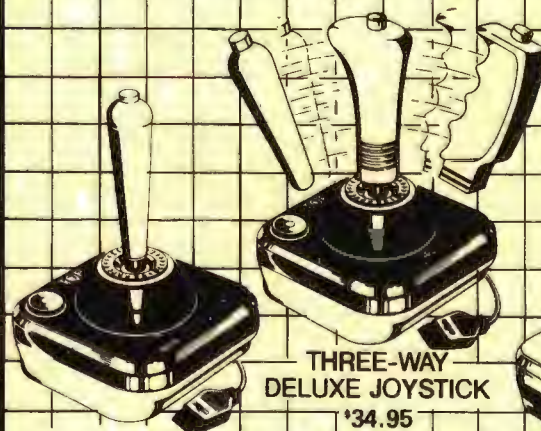
QUICK SHOT
\$19.95 ea.
\$34.95 pr.



ANALOG JOYSTICK
\$49.95 ea



FAMOUS RED BALL™ JOYSTICK \$34.95 ea.



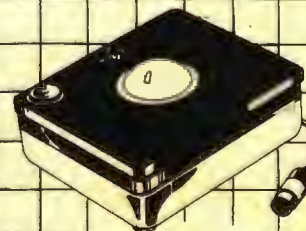
THREE-WAY DELUXE JOYSTICK
\$34.95



BAT HANDLE JOYSTICK
\$29.95 ea.



BOSS
\$24.95 ea.



TRACKBALL
\$69.95



POINT MASTER
\$17.95 ea. - \$32.95 pr.



TRIGA COMMAND
\$19.95 ea. \$34.95 pr.

ORDER LINE 10 A.M. TO 9 P.M.
1-(305) 282-6907
SOFTWARE AUTHORS AFTER 6 P.M.
1-(305) 275-8490



8301 Sarnow Dr./Orlando, FL 32807

Case Of The Overblown Heist

By Doug Thorsvik



Scenario: You're a bank robber and you've just blown your way into an underground vault. Unfortunately, you overestimated the amount of dynamite required; not only did you trap yourself in the vault, but the blast triggered the external alarm (the police are on their way). It did considerable structural damage. All but 15 moneybags are buried in the rubble and they scattered intact. The internal alarms (immediate detection and capture on contact) were also triggered. However, all is not lost; you have enough dynamite to easily blast your way free to the open exit, and since you're an enterprising soul (greedy), you're going to make the most of it and grab some moneybags as you blast your way through, hustling to get out before the police arrive.

Objective: Get out in time with as many moneybags as you can. You'll have to avoid the alarms as you blast your way, nonstop, through three screens to do it.

Instructions: Enter `PCLEAR6` before running the game. To move your player, use the four arrow keys. Diagonal

moves are possible and so is continuous movement by holding down the arrow keys. To pick up the moneybags, run over them and avoid hitting the alarms. Use the space bar to blast. Be careful not to blow away any moneybags (or alarms for that matter). Pay attention to the yellow bar timer on the left — when it's gone, you are too! Hitting or blasting an alarm will get the same results. Exit each game screen through the opening in the bottom right-hand corner; you'll have to travel across three of them to get out. It will take some practice and considerable skill to get all 15 moneybags, but it can be done. When prompted for your initials, type in three letters only and they'll be displayed in the lower right-hand corner with the high score.

This game uses the speed-up poke when drawing the three game screens. If you don't want to use this poke, delete it from lines 1, 33 and 65. If you want more time to get out, change the ".6" in line 17 to a smaller number.

Line Descriptions

- 2 Move game player
- 3-7 Blast routine
- 8 Hi-Res numbers routine
- 9 Hi-Res letters routine
- 10 Flip to a new screen and update score
- 12 Space bar pressed?
- 13-16 Poll keyboard for arrow keys

(Doug Thorsvik is a captain in the U.S. Air Force. He is presently an AFROTC instructor and teaches leadership and management at Washington State University and the University of Idaho.)

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

- 17 Increment timer, time out?
- 19 Test to flip to a new screen, erase game player
- 20 Test and branch on detected color
- 21 Move game player
- 22 Get moneybag, increment score
- 23-24 Trip alarm
- 25 Successful completion prompt
- 26-31 High score routine
- 32-33 Play again routine
- 34 Erase text prompts
- 35 Title screen
- 36 Game sounds
- 37-42 Hi-Res letters and numbers
- 43-49 Game characters
- 50-65 Draw three game screens

A Brief Guide To Using The Hi-Res Letters/Numbers

I've designed the graphic letters/numbers routines to be flexible and easy to use. If you want to use the graphics routines in your own programs, here's how to do it.

Lines 37-42 have to be run to initialize the graphics before the brief subroutines put them on the screen. Line 8 puts numbers on the screen and line 9 puts letters on.

Before using the subroutines you'll have to indicate some specifics:

Numbers: Presub info

ZN=number:Z1=x-coord:Z2=y-coord:Z5\$=background color :Z6\$=color of number:GOSUB8

(Z1 and Z2 must be *odd* numbers for the numbers to look right. The routine draws from right to left, thus, Z1,Z2 specifies the lower right corner of the number to be displayed. The width of the screen is the only limit of the size of the number. For an example, see line 22 in the listing.)

Letters: Presub info

ZL\$=text (capital letters only) :Z1=x-coord :Z2=y-coord: ZC=color of text:GOSUB9

(Z1 must be *even* and Z2 must be *odd* for letter to look right. The routine draws from left to right, thus Z1,Z2 specifies the lower left corner of the text to be displayed. For an example, see line 27 in the listing.)

The explanation is brief, so you'll have to figure out the finer points on your own. This should give you a good start.

9	15
25	47
35	147
42	37
52	55
END	23

The listing:

```

0 'HEIST
1 POKE65495,0:GOSUB35:GOTO10
2 PUT(X,Y)-(X+13,Y+13),A5,PSET:X
=X1:Y=Y1:PUT(X,Y)-(X+13,Y+13),A0
,PSET:RETURN
3 IFX>18THENT=PPOINT(X-9,Y):IFT>
1THENPUT(X-14,Y)-(X-1,Y+13),A4,P
SET:IFT=4THEN23ELSEPLAYB$:PUT(X-
14,Y)-(X-1,Y+13),A5,PSET

```

```

4 IFY>14THENT=PPOINT(X,Y-1):IFT>
1THENPUT(X,Y-14)-(X+13,Y-1),A4,P
SET:IFT=4THEN23ELSEPLAYB$:PUT(X,
Y-14)-(X+13,Y-1),A5,PSET
5 IFX<228THENT=PPOINT(X+18,Y):IF
T>1THENPUT(X+14,Y)-(X+27,Y+13),A
4,PSET:IFT=4THEN23ELSEPLAYB$:PUT
(X+14,Y)-(X+27,Y+13),A5,PSET
6 IFY<154THENT=PPOINT(X,Y+18):IF
T>1THENPUT(X,Y+14)-(X+13,Y+27),A
4,PSET:IFT=4THEN23ELSEPLAYB$:PUT
(X,Y+14)-(X+13,Y+27),A5,PSET
7 GOTO13
8 ZA$=STR$(ZN):POKEZ3,Z1:POKEZ4,
Z2:FORZB=LEN(ZA$)TO2STEP-1:DRAWZ
5$+Z7$+"BR7"+Z6$+Z$(ASC(MID$(ZA$,
ZB,1)))+$BL3":NEXT:RETURN
9 POKEZ3,Z1:POKEZ4,Z2:COLORZC:FO
RZB=1TOLEN(ZL$):DRAWZ$(ASC(MID$(
ZL$,ZB,1)))+$BR3":NEXT:RETURN
10 PMODE1,PP:SCREEN1,0:ZN=8:Z1=7
9:Z2=191:GOSUB8:X1=18:Y1=0:X=18:
Y=0:GOSUB2:GOTO12
11 Y1=Y:X1=X
12 IFINKEY$=CHR$(32)THEN3
13 IFPEEK(341)=247THENY1=Y-14:GO
TO15
14 IFPEEK(342)=247THENY1=Y+14
15 IFPEEK(343)=247THENX1=X-14:GO
TO17
16 IFPEEK(344)=247THENX1=X+14
17 QQ=QQ+.6:LINE(0,0)-(2,QQ),PRE
SET,BF:IFQQ=>178THEN23
18 IFY1<0THEN11
19 IFX>228THENPP=PP+2:IFPP<7THEN
10ELSEGOSUB2:PUT(X,Y)-(X+13,Y+13
),A5,PSET:GOTO25
20 T=PPOINT(X1+7,Y1+7):ON T GOTO
21,22,11,23
21 GOSUB2:GOTO12
22 GOSUB2:PLAYMB$:S=S+100:ZN=8:Z
1=79:Z2=191:Z6$="C2":GOSUB8:GOTO
12
23 PUT(X,Y)-(X+13,Y+13),A5,PSET:
X=X1:Y=Y1:PUT(X,Y)-(X+13,Y+13),A
0,PSET:FORX=1TO10:SOUND180,2:SCR
EEN1,1:SOUND180,2:SCREEN1,0:NEXT
X
24 GOSUB34:ZL$="YOU GOT CAUGHT":
Z1=66:Z2=81:GOSUB9:ZL$="WITH":Z1
=116:Z2=93:GOSUB9:ZN=8:Z1=105:Z2
=105:Z6$="C2":GOSUB8:ZL$="DOLLAR
S":Z1=122:Z2=105:GOSUB9:FORD=1TO
1000:NEXTD:GOTO32
25 GOSUB34:ZL$="YOU MADE IT OUT"
:Z1=66:Z2=81:GOSUB9:ZL$="WITH":Z
1=116:Z2=93:GOSUB9:ZN=8:Z1=105:Z
2=105:Z6$="C2":GOSUB8:ZL$="DOLLA
RS":Z1=122:Z2=105:GOSUB9:FORB=1T
O1000:NEXTB

```



```

26 IFS<=HS THEN32ELSEHS=S:ZN=HS:
Z1=221:Z2=191:GOSUB8:ZL*=W*:Z1=2
22:Z2=191:ZC=1:GOSUB9:W*="":GOSU
B34
27 ZL*="NEW HIGH SCORE":Z1=66:Z2
=83:ZC=2:GOSUB9:ZL*="TYPE YOUR I
NITIALS":Z1=50:Z2=97:GOSUB9
28 FORB=1TO3
29 Q*=INKEY*:IFQ*=" "THENZ9
30 W*=W*+Q*:NEXTB
31 ZL*=W*:Z1=222:Z2=191:ZC=3:GOS
UB9
32 GOSUB34:ZL*="TO PLAY AGAIN":Z
1=70:Z2=83:ZC=4:GOSUB9:ZL*="PRES
S SPACE BAR":Z1=60:Z2=97:GOSUB9
33 IFINKEY*(<>CHR*(32)THEN33ELSEG
OSUB34:POKE65495,0:GOSUB50:GOTO1
0
34 LINE(46,71)-(226,110),PRESET,
BF:RETURN
35 CLS:PRINT@140,"*HEIST*":PRINT
@197,"COLOR COMPUTER VERSION":PR
INT@264,"BY DOUG THORSVIK":PRINT
@388,"20 SECONDS ARE REQUIRED":P
RINT@420,"TO SET UP 3 GAME SCREE
NS"
36 D=13:E=14:HS=500:B*="V30L8T56
;01;1;4;7;10":MB*="L8T22405;1;5;
9;03;1;5;9;01;1;5;9":W*="DRT":Z5

```

```

*="C1"
37 DIMZ*(90):Z3=200:Z4=202:FORZB
=48TO57:READZ*(ZB):NEXT:FORZB=65
TO90:READZ*(ZB):NEXT
38 DATA"U8L5D4L2U5D9NR4","H3U5L3
RD8NR3L2","L7E6UHNL5D85D2","U2H2
UEU2NL6G3DF4L7","U9D4L7UNE3DR4D5
BL4","BU2H6NR6D3RF3D2L5","BU2U2H
2UEL2G4DR2UD4NR2BL2","BL4U3E4UNL
7LG6D2","U8L5D3R2D5L4NU9","BL5E5
UH3ND5LG3DF2D82
39 DATA"NU9R3U2NR2U6R4D8","NU9R3
U8R4DG2DF2D2NL3","NU9R3U9R4D3BD3
D3NL3","NU9R3U9RF3D3G3BR3","U9R3
NR4D4NRD5R4","U9R3NR4D4NRD5BR4",
"U9R7BD4NL2D5NL4","U9R3D9U4R4U5D
9","R2U8NLR4LD8R2","NU5R4U9R3D9"
,"NU9R3U9D6E3NU3GDF2D2","U9R3D9R
4","U9F5D2NH3UE4U2NG3D9
40 DATA"U9F7NU7D2NH5","U9R2ND5R5
D9NL5","U8R6D3L3UD6BR4","U9R7D4G
4ERF2","NU9R3U8R4DG2DF2D2","R4U5
LNUL3U4R7BD4D5","BR2U8LR5LD8BR2"
,"U8R3D8R4NU8","BU2U7R3D9RU3R3NU
6BD3","NU8E5U2NG3LNF3D2F5NU8","N
U3NR3E6NU3GLH4ND3NR3F7D2","BU4U5
R3D9R2U4R2NU5BD4
41 DATA"E7UNL7LG6D2R7
42 Z7*="U8L3D8L2U8L2D8":Z*(32)="

```

FREE PROGRAMMING GUIDE

With every order placed before July 1, 1984, we will include a copy of THE GUIDE TO STRING VARIABLES by J.D. German, absolutely free! This valuable booklet tells you how to unlock the full power of your Color Computer by using the many string variable commands available in Extended Color Basic. It's written in clear, easy-to-understand language and includes plenty of examples and review exercises to lead you through the subject at your own pace.

THE GUIDE TO STRING VARIABLES (When ordered separately) \$3.95

JOYSTICK PLUGS: Deluxe, heavy duty 5 pin DIN connectors to fit the joystick input ports of your Color Computer. Includes instructions and wiring diagram \$4.45/each or \$8.00/pair

☆☆ Educational software for the Color Computer ☆☆☆

- ★ **MUSICAL STRINGS.** An entertaining tutorial that stimulates musical creativity and teaches basic computer string variable concepts. 10-year-olds to adults \$17.95
- ★ **CUSTOM FLASHCARDS.** This great study aid lets you quickly create and save your own sets of flashcards about any subject, in any format. \$17.95
- ★ **ALPHABET SOUP.** A word recognition and spelling game for the whole family \$15.95
- ★ **COLOR MATH QUIZ, DECIMAL MATH QUIZ, and FRACTION MATH QUIZ.** A trio of math drill programs featuring five skill levels, multiple choice answer formats, and entertaining music and graphics to keep ages 4 (with help) to 16 interested each \$15.95 or all three for \$42.95

For more information, write for a free catalog.

ALL PROGRAMS ARE ON CASSETTE FOR THE COLOR COMPUTER OR TDP-100 WITH A MINIMUM OF 16 K OF MEMORY AND EXTENDED BASIC.

SEND CHECK, MONEY ORDER
OR PURCHASE ORDER, PLUS
\$2.00 SHIPPING AND HANDLING TO:

Creative Technical Consultants

P.O. Box 652 Cedar Crest, NM 87008


```

BR5"
43 DIMA0(2),A1(2),A2(2),A3(2),A4
(2),A5(2),N(15)
44 PMODE1,1:PCLS:SCREEN0,0:GET(0,0)-(13,13),A5,G
45 DRAW"BMO,OC3BR2R9G3L4G2R9F2L1
3D2R12G2L7F2R4BL2C2H3R4U4L3U3R4H
3":GET(0,0)-(13,13),A1,G:PCLS
46 DRAW"BMO,OC4BD5RFHLE4UND7F4NL
6DB6NR5GR8E4U6":GET(0,0)-(13,13)
,A2,G:PCLS
47 DRAW"BMO,OC3BR4R5G4L2NG3R8NEG
9R2U7NR2F7L3U7":GET(0,0)-(13,13)
,A0,G:PCLS
48 DRAW"C3BMO,OND13R6ND13R7D6NL1
1D7L11":GET(0,0)-(13,13),A3,G:PC
LS
49 DRAW"C4BMO,OB6R3EUNHRERNU3FR
NEDFDNR3GDNFLGND3HLNG":GET(0,0)
-(13,13),A4,G:PCLS
50 L=15:BB=0:PP=1:QQ=0:S=0:XX=1:
X1=18:Y1=0:X=18:Y=18:FORB=1TO5ST
EP2:PMODE1,B:SCREEN0,0:PCLS:NEXT
B
51 PMODE1,1:SCREEN0,0:FORB=6TO2
42STEP14:PUT(B,0)-(B+13,13),A3,P
SET:NEXT:FORB=4TO242STEP14:PUT(B
,168)-(B+13,181),A3,PSET:NEXT
52 FORB=0TO154STEP14:PUT(4,B)-(1

```

```

7,B+13),A3,PSET:NEXT:FORB=14TO11
2STEP14:PUT(242,B)-(255,B+13),A3
,PSET:NEXT
53 ZL$="HIGH SCORE":Z1=84:Z2=191
:ZC=4:GOSUB9:ZN=HS:Z1=221:Z2=191
:Z6$="C2":GOSUB8
54 ZL$=W$:Z1=222:Z2=191:ZC=3:GOS
UB9:ZL$="LOOT":Z1=0:Z2=191:ZC=4:
GOSUB9:COLOR2:LINE(0,0)-(2,178),
PSET,BF
55 PCOPY1TO3:PCOPY2TO4:PCOPY3TO5
:PCOPY4TO6
56 FORX=1TO15:N(X)=X:NEXTX
57 FORP=1TO5STEP2
58 BB=BB+5:XX=XX+2
59 PMODE1,P:SCREEN0,0
60 FORB2=14TO154STEP14:FORB=18TO
228STEP14:B3=RND(2)-1:IFB3=1THEN
PUT(B,B2)-(B+13,B2+13),A3,PSET
61 NEXTB,B2
62 FORB=1TOBB:C=RND(15)*14:C2=RN
D(10)*14:PUT(18+C,14+C2)-(31+C,2
7+C2),A2,PSET:NEXTB
63 FORX=1TOXX:R=RND(L):T=N(R):N(
R)=N(L):L=L-1:C=T*14:C2=RND(10)*
14:PUT(18+C,14+C2)-(31+C,27+C2),
A1,PSET:NEXTX
64 NEXTP
65 POKE65494,0:RETURN

```

The KEY-264K is here!!

DO YOU HAVE A 32K SYSTEM WITH 64K MEMORY CHIPS ?? ARE YOU STILL BEING TOLD YOU CAN ONLY USE 32K FROM BASIC ??

DON'T BELIEVE IT !! - KEY COLOR SOFTWARE brings you the KEY-264K. An exciting NEW SOFTWARE utility that allows any STANDARD 32K COLOR COMPUTER TO ACCESS 64K RAM FROM BASIC, and with NO HARDWARE MODIFICATIONS REQUIRED!!!

*** Works with CASSETTE based systems! ***

*** Works with DISK based systems! ***

The KEY-264K divides the 64K ram memory into two 32K banks or sides, each of which can be utilized independently by the BASIC interpreter, with the ability to switch instantly from one side to the other. IT'S LIKE HAVING TWO COMPUTERS IN ONE!! Have your BASIC program on one side and keep your variables on the other side, or have your main program on one side and your subroutines on the other side, or have your program on one side and use the other side for 4 additional HI-RES pages, or any combination you like. The possibilities are endless because the KEY-264K allows full communication between sides plus the ability to switch back and forth at will, all from within BASIC. You could also have different programs in each side and switch back and forth between them using simple keystrokes, even while the programs are running!! Or run them both at the same time in the FOREGROUND/BACKGROUND MULTI-TASKING mode. Don't buy that printer buffer yet! With the KEY-264K you can be printing in the background side while utilizing your computer normally in the foreground side AT THE SAME TIME!!! Debugging a program? Use either a BASIC command or simple keystrokes to instantly duplicate your program, in it's present status, on the opposite side. Switch to the opposite side later and pick up exactly where you were before!

For DISK users, the KEY-264K allows you to alternate between DISK and EXTENDED BASIC on the same side with simple keystrokes. No need to pull your controller or power down. You can be in EXTENDED BASIC on one side and in DISK BASIC on the other side and still switch back and forth and have full communications between the two sides.

The KEY-264K does this and MORE thru extensions to BASIC. No need to learn a new language! The KEY-264K adds 15 NEW COMMANDS and 1 function to BASIC, including powerful new BLOCK MEMORY MOVE and GRAPHICS VIEWING commands.

The KEY-264K works on 32K systems with "E", "F", or even modified "D" boards and requires EXTENDED or DISK BASIC with GOOD 64K MEMORY CHIPS! Systems with piggy-back 32K or half-good 64K memory chips WILL NOT WORK!!

ORDER YOUR KEY-264K CASSETTE TODAY by sending check or money order for \$39.95 plus \$2.00 postage U.S.A. (\$5.00 outside U.S.A.) Mass. residents add 5% sales tax.

MASTERCARD, VISA, OR COD
CALL (617) 263-1737

KEY COLOR SOFTWARE
P.O. BOX 360
HARVARD, MA. 01451



WORKS WITH THE NEW 64K
COLOR COMPUTER TOO!!

CONNECT WITH CONFIDENCE

GEMINI-10X COMPLETE SYSTEM



PRINT SPEED—120 cps, Bidirectional Logic Seeking
PRINT SIZE—10, 12, 17, 5, 6, 8.5 cpi
NUMBER OF COLUMNS—80, 96, 136, (40, 48, 68 in Double Wide)
CHARACTER MATRIX—9 x 9 Standard, with True Descenders • 18 x 9 Emphasized • 18 x 18 Double Strike • 6 x 6 Block Graphics • 60 x 72 Low Resolution, Bit Image Graphics • 120 x 144 Hi Resolution, Bit Image Graphics • 240 x 144 Ultra Hi Resolution, Bit Image Graphics
CHARACTER SETS—96 Standard ASCII Characters • 96 Italics • 64 Special Characters • 32 Block Graphic Characters • 96 Downloadable Characters • Super and Sub Script
LINE SPACING—Programmable by n/144"
PAPER HANDLING—Roll Paper • Cut Sheet • Tractor Fanfold • Copies: 3 Carbonless Sheets

COMPLETE SYSTEM
NOTHING MORE TO BUY

- 180 DAY WARRANTY
- BLUE STREAK INTERFACE
- SCREEN DUMP SOFTWARE

319⁹⁵ + \$10 Shipping and Insurance
 15X System 439⁹⁵

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



54⁹⁵ SHIPPING PAID!



COMPLETE DATA COMMUNICATIONS PACKAGE

VOLKSMODEM™—Connects Directly to Wall Phone Jack • Telephone Jack with Voice/Data Switch • 300 Baud (bits per second) • Originate/Answer Mode Automatically Selected • Battery Powered, Low Drain for Long Life (batteries included) • Lifetime Warranty • Includes All Cables for COCO
YOUR CHOICE OF SOFTWARE!

TSP (Terminal Software Package)—51 x 24 Hi-Res Display • Buffer Auto Adjusts for 16K to 64K • Permits Communication to Virtually All BBS and Networks

AUTOTERM™—World's Smartest Terminal Program

INCLUDES
SUBSCRIPTION
TO THE SOURCE

\$79⁹⁵ + \$2.00 Shipping with TSP

\$99⁹⁵ + \$2.00 Shipping with AUTOTERM™



DAYTON ASSOCIATES, INC.

OHIO CHARTER CORPORATION • DUN & BRADSTREET LISTED
 1701 CLAIRCREST BLDG. C • DAYTON, OHIO 45424
 (513) 236-1454
 OHIO RESIDENTS ADD 6% SALES TAX
 C.O.D. ADD \$2.00

FREE
TECHNICAL SUPPORT
 WHEN YOU NEED IT
 DAYTON ASSOCIATES
 CUSTOMERS ONLY

RAINBOW REVIEWS

Atlantis Adventure A Shipshape Undersea Adventure/Owls Nest Software	251
Atom Fast Action With A New Twist/Radio Shack	239
Beam Rider A Colorful Energizing Chase Game/Spectral Associates	234
Before, Between, And After Is Quick, Fun And Easy/CY-BURNET-ICS	254
Business Accounting System To The Rescue/Mark Data Products	230
CoCo Bingo Cards, Markers And Good Play/Colortech Systems	278
Color Dictionary Let Your CoCo Spell/Radio Shack	221
DRB A Reasonably Priced Utility/Micrologic	222
Decimals Handy Aid For Teachers/Shamrock Software	213
Demon Seed Cultivates Action, Fun/MichTron	224
Diskutil A Multi-featured Disk Enhancer/Silicon Rainbow Products	268
DSKMON A Multi-Purpose Disk Utility/Chroma Systems Group	276
Execcart Does It Right/The Dataman	250
Factors Tutor Great With Home Computer/Computer Island	248
Fastdupe A Plus For 64K Disk Owners/Spectrum Projects	263
Flight From Grimdar Is An Exciting Trip/The CoCo Freeware Clearing House	260
Foodwar Gobbling Good Fun/Arcade Animations	265
4 Mile Island Good For The Beginning Adventurer/Owls Nest Software	280
Galactic Taipan Blasts Out Of The Doldrums/Ark Royal Games	264
Grabber This Action Game Will Grab You/Tom Mix Software	251
A Guide To Food Contents Gives Nutritional Information/Computing & Fitness	228
The Investor A Good Idea, But A Good Investment?/J&A Enterprises	214
MDISK A Good No-Disk 'Disk' System/Skyline Marketing	274
Math Invasion Adds Up/Crystal Software	246
Music Reader Is A Competent Tutor/Prickly-Pear Software	252
Number-Kruncher Good For Basic Math/Moonshot Acres Software	232
Paper Tractor A New Friction Option For Printers/Paper Tractor Ltd.	238
Question And Answer Responds To Queries/Moreton Bay Software	244
Sac Excitement, Realism Mark This Text Game/Pai Creations	216
Sea Quest Adventure At 20,000 Leagues/Mark Data Products	247
64 Column Model I/II Emulator A Reasonable Imitation/Spectrum Projects	208
The Sourcerer Bares All/Computerware	240
Speed Reading The Fast, Fun Way/B&B Software	247
Spell-A-Tron Get The Real Sound/Jarb Software	236
TV Graphics Editor Makes CoCo A Van Gogh/International Software, Inc.	262
Taxi Rides Fairly Smooth/Radio Shack	242
Test Aid Brings Some Relief For Teachers/Infotools	258
Whole Numbers Handy Aid For Teachers/Shamrock Software	213

RECEIVED & CERTIFIED

The following products recently have been received by the *Rainbow*, examined by our magazine staff and approved for the *Rainbow Seal of Certification*, your assurance that we have seen the product and have ascertained that it is what it purports to be.

This month the *Seal of Certification* has been issued to:

The Adventure Generator, a 32/64K ECB full-featured Adventure game generating program. Write a ready-to-run Adventure game by entering your own inputs. All you need to do is map out the Adventure you wish to generate and enter the room descriptions, commands, objects and conditional flags as you want them to be used. J&B Software, 1636 D Ave., Suite C, National City, CA 92050, tape \$34.95

Address One, a 16K ECB program which maintains address files and related information. The menu includes: Opening a new file; adding a record; completing label sets; selecting label sets; editing a record; exiting to BASIC, and help and information. West Bay Co., Route 1, Box 666, White Stone, VA 22578, \$20

Alpha-Dir, a 16K ECB program which helps arrange your disk directory(ies) in an alphabetical order. It keeps your disks in order and allows easy access to your programs. This program automatically arranges granules, files type and ASCII flag for all your programs. Microcom Software, P.O. Box 214, Fairport, NY 14450, cassette \$6.95, disk \$14.95

Calixto Island, a Hi-Res 32K graphic Adventure game. Visit the recreation of the classic *Calixto Island*. Travel through a secret laboratory, a Mayan pyramid and meet crazy Trader Jack. Mark Data Products, 24001 Alicia Pkwy., No. 207, Mission Viejo, CA 92691, tape \$19.95

Candy Co., a 32K ML arcade action game. You control the hero, Candy Dan, around the Candy Co. on moving conveyor belts. In this maze game, you must pick up all the candy on the conveyor belts in each frame while successfully outsmarting the bad guys and saving Q.P. Doll. Over 1,000 frames of increasing difficulty. Hi-Res graphics, sound effects, joystick or keyboard input, pause feature, eight digit score and high score name entry. Intracolor, P.O. Box 1035, East Lansing, MI 48823, tape and disk \$34.95

Car Manager, a 16K ECB program which will compute your vehicle miles per gallon and the cost of operating your car per mile, along with total costs for gasoline, maintenance and repairs. All data can be saved to tape or disk to be updated for more recent computations. Records printed to the screen or optional printer. 80 Custom Software, 5720 Brooke Lane, Sylvania, OH 43560, tape \$12.95, disk \$15.95

Castle Ragoona, a 16K non-ECB Adventure. Explore the castle by making your way through a dark and mysterious maze of passageways, conquering evil monsters in your path, and finally climb the tower and raise your flag to signify victory. Tape also includes *Enchanted Village*, a 16K non-ECB beginner's Adventure. Walk through town and collect objects, but watch out for the pirate who will try to steal them away from you. Included is a graphic display of your location in the village and a compass showing directions. Family Computers, 4047 Bee Ridge Rd., Sarasota, FL 33582, tape \$19.95

CGP-115 Screen Dump, prints screen images on the Radio Shack CGP-115 or TDP Color Graphic Printer 1. Derby City Software, 3141 Doreen Way, Louisville, KY 40220, \$19.95

CoCo Cookbook, a 32K, one disk drive program designed to store and retrieve recipes. Generally, it is a free-form database manager that has been optimized for the storage of any type information. Store up to 269 recipes and each can be recalled by storage number or keyword search. Computerware, P.O. Box 668, Encinitas, CA 92024, \$27.95

CoCo Serial/Parallel Interface, an interface which provides switch selectable printer or modem operations. It features switchable baud rates from 300 to 9600 and comes complete with power supply, modem cable and Centronics-type printer cable. PBH Computer Products, Inc., P.O. Drawer 55868, Houston, TX 77055, \$89.95

Disk Dump/Patch Utility, a program that manipulates disk data. Data can be read from any track/sector or granule/offset. The limit is in the number of tracks on your disk, 35, 40, 96, etc. Data is viewed 128 bytes at a time in both hexadecimal and ASCII formats. The data from a disk sector can be scrolled up or down by eight bytes or scanned forward and backward by 128 bytes. Silicon Rainbow Products, 1111 W. El Camino Real, Suite 109, Sunnyvale, CA 94087, disk \$22

Disk Editor/Assembler, a disk version of *EDTASM+* with a number of added commands. Includes both 16K and 32K versions. Radio Shack stores nationwide, cat. no. 26-3254, \$59.95

Disk Fix and OS-9 Utilities, supports double sided/double density, 40 tracks and step rates of up to six ms. (over 368,000 bytes per drive). Each drive is separately configured, allowing any drive combination. Comput-erware, Box 668, Encinitas, CA 92024, \$29.95

Easy To Understand Guide To Home Computers, a complete source for personal computer buying information. It cuts through the technical talk to tell you clearly what computers are, how they work, and why they are so useful. This book tells you about the many ways you can use a computer as a tool to plan your budget, analyze investments, type letters, keep records, play games, etc. Consumer Guide, 3841 W. Oakton St., Skokie, IL 60076, \$3.98

Education #1, a 16K educational package containing seven programs aimed at any age group from the very young through college-bound students. It includes: *Words* — Unscramble up to six-letter words in the time allotted; *Spellit* — Out of random lists of five words, pick out and spell the misspelled word; *Learn Notes* — Learn the notes on a piano keyboard; *Sorts* — Lists and demonstrates four common sorts; *Base Guess* — You pick the base the computer picks the number and guess it; *Morse Quiz* — Learn Morse Code by the alphabet, then words, and finally sentences; and *Equations* — Solves simultaneous equations using matrix inversions. SilverWare, P.O. Box 21101, Santa Barbara, CA 93121, tape \$18.95, disk \$21.95

Educations #2, a 16K, nine-program educational package for the young through college-bound students. It includes: *Mathvaders* — Shoot the correct answer; *Scrambler* — Put lists of items in order and create your own lists; *Language Drill* — Learn foreign words; *Factors* — Pick high numbers with no or low factors to beat your opponent; *Typing Tutor* — Learn or improve your typing skills; *Manibody* — Give up to nine bodies mass, direction and velocity to see, graphically, how gravity affects them; *Maximum* — Pick the largest number in your column to give your opponent the lowest picks in his row; *Chemlab* — Simulates five different chemistry experiments; and *How Far* — Shows the distance and direction of any points on earth. Use coordinates of the predefined cities. SilverWare, P.O. Box 21101, Santa Barbara, CA 93121, tape \$18.95, disk \$21.95

E.T.T. (Electronic Typing Teacher), a 16K ECB program which helps you learn to type the right way, saving you hours of tedious work when entering programs into the CoCo. *E.T.T.*'s video keyboard lets you practice with all the keys labeled, all the keys blank or only the "home" keys labeled. There are over 1,000 sentence variations which include every letter of the alphabet. CoCo Warehouse, 500 N. Dobson, Westland, MI 48185, tape \$21.95

Everyone's Guide To BASIC, an easy-to-understand book which explains the uses of the essential commands in the BASIC language. Easy exercises give you practice using commands. And you'll see how BASIC commands work together in simple, practical computer programs. Consumer Guide, 3841 W. Oakton St., Skokie, IL 60076, \$4.98

Fastdupe, a 64K ECB, ML utility requiring one or more disk drives. It will read your master diskette (standard format) containing up to 20 granules (46,080 bytes) of information; format the blank disks; make up to four backups (depending on how many drives are available) in a single pass, and repeat the duplication process as many times as requested. Spectrum Projects, 93-15 86th Dr., P.O. Box 21272, Woodhaven, NY 11421, disk \$19.95

Finanal, a 16K ECB financial analysis program for construction contractors. It provides the contractor with a point in time financial snapshot of all current jobs and a view of overall results. The program provides a detailed analysis on a 19-column spreadsheet. The results may be plugged into the contractors balance sheet. Requires a line printer. David Sligar Software, 7091 Pickway Dr., Cincinnati, OH 45238, tape \$49.95

Gold Plug-80, a plug which eliminates disk reboots and data loss due to oxidized contacts at the card edge connectors. It solders to the board edge connector. E.A.P. Co., P.O. Box 14, Keller, TX 76248. CoCo disk module (2) \$16.95, disk drives (all R.S.) \$7.95, gold disk cable 2 drive \$29.95, four drive cable \$39.95

Graphic Math Adventure, a 32K ECB Adventure (an enhanced version). Fully player selectable with up to 300 rooms. Search for treasure on land, river and in the labyrinth of caves. Your search is blocked by many obstacles which can be overcome by correctly answering math problems. Any one or all four functions (addition, subtraction, multiplication and division) can be selected to add variety. Also has 24 skill levels. Software Factory, 1333 Morgan Rd., Bremerton, WA 98312, tape \$21.95

The Gunfighter, a 32K Hi-Res arcade game requiring two players and joysticks. You are the top gun in the territory, and life is just great, until the kid rides into town. Who will prevail in the western drama? Only you and your opponent can decide that issue. Can you not only outdraw your challenger, but shoot straighter than he can? Will you be able to dodge the blazing bullets aimed at your heart? Jarb Software, 1636 D Ave., Suite C, National City, CA 92050, tape \$24.95

Hide-A-Basic, a 16K ECB program used to protect your own BASIC programs. It will create up to four machine language routines which can be called from your own BASIC programs to disable the [BREAK] key, LIST command and [RESET] button. This program will also create a special error-skip routine which can be used to trap errors, adding a double protection to the programs. Microcom Software, P.O. Box 214, Fairport, NY 14450, tape \$16.95

Ice Bird, a 16K strategy arcade game in which a player assumes the role of a penguin in a maze of ice blocks. It has the ability to push or shatter these frozen blocks with ease. Your goal is to connect three diamond blocks without getting stung and defend yourself from stinging pursuers by crumbling their hatching blocks or by sliding ice blocks at them as they move about the maze. Crystal Software, 6591 Dawsey Rd., Rock Creek, OH 44084, \$24.95

Ice Hockey, a 32K Hi-Res ice hockey game. Race against the computer or an opponent in this Hi-Res game. Includes a real time clock similar to the NHL. Many skill levels too. Also requires a joystick for each player. Computerware, Box 668, 4403 Manchester Ave., Suite 102, Encinitas, CA 92024, disk \$27.95

Instructional Computing With The TRS-80 by Herbert Nickles and George Culp, a text consisting of nine chapters that describe an approach to using a common computer language — BASIC. It discusses certain fundamentals of the language and the design and development processes that provide a foundation for the production of instructional computing programs. Brooks/Cole Publishing Co., Monterey, CA 93940, \$16.95

Lost World Pinball, a pinball game for the 16K Micro Color Computer. Maneuver the ball around the volcano, dinosaurs, a prehistoric fly, etc., and try to hit any red objects such as bumpers, plungers, red marks and red power strips. Radio Shack stores nationwide, cat. no. 26-3363, \$9.95

Math Design, a two-program math package for the Micro Color Computer. *MiniCalc* functions like a hand-held calculator. You can perform a wide range of mathematical functions with this program. *Spirals* is a geometric exercise which lets you design and plot a large variety of polygonal spirals in

four colors. Use your imagination to plot shapes and designs. Radio Shack stores nationwide, cat. no. 26-3362, \$9.95

MENUWRTR, a program designed to assist the programmer in the development of menu-driven screens (or other alphanumeric and/or semi-graphic screens). The programmer can design up to nine screens which can be called via BASIC's USR function. The ML screen driver routine can be saved to tape along with the programmer's own screens to be used later with the BASIC program for which the screens were designed. Glasby Software, P.O. Box 977, Easley, SC 29640, \$24.95

Morse Code Teacher, a 16K ECB program that teaches Morse code letters and numbers. It gives practice of up to five words per minute. Cynwyn, 4791 Broadway, Suite 2F, New York, NY 10034, tape \$15

Morse Code Tutor, a 16K ECB program that gives code practice up to 27 words per minute. Cynwyn, 4791 Broadway, Suite 2F, New York, NY 10034, tape \$15

Mr. Dig, a game in which you must dig through cherry groves while avoiding enemies such as "meanies." Score points by eating cherries, capturing a diamond and squashing meanies with apples and the power orb. Computerware, Box 668, 4403 Manchester Ave., Suite 102, Encinitas, CA 92024, tape \$27.95, disk \$30.95

MSI Color Calendar, a 32K disk program that enables you to maintain special dates, appointments, payments, etc. Program allows for recurring payments with only one entry. Monthly calendars can be printed or displayed with special date reminders. Delker Electronics Inc., Sam Davis Rd., Smyrna, TN 37167, \$49.95

Mul-T-Screen, a high-resolution screen program, provides character display modes ranging from 8-by-4 to 42-by-24 and 32-by-32. Includes sample programs. Incentive Software, Box 323, Station B, London, Ontario N6A 4W1, \$24.95 tape, \$27.95 disk

Option II, a payroll journal requiring 64K. It totals all expenses by category, sort/view by checks/payee, totals expenses by selection, etc. YGS, P.O. Box 208, Brechin, Ontario L0K 1B0, \$49.95

Personal Computing BASIC Programming on the TRS-80, a book designed primarily for readers who have had little or no experience in programming computers and who wish to acquire a good working knowledge of computer programming in the BASIC language. Brooks/Cole Publishing Co., Monterey, CA 93940, \$15.95

Piratecor, a 32K program designed to protect disk-based software written for the CoCo and compatible systems from piracy. In addition, it has many other features to enhance the software you develop and will aid in duplicating your software if you have more than one disk drive. To make a title screen you should have *Semigraf*, which is included. Sugar Software, 2153 Leah Lane, Reynoldsburg, OH 43068, \$99.95

SCRIPT+, a 32K ECB spelling program with *PMODEJ* "handwriting" in three display modes of eight- or 16-character words with diagraphs. Words, containing up to 16, can be entered from the keyboard or from a cassette recorder. Lesson duration, two computer speeds and two display sizes are selectable and with results of a lesson can be printed or saved to cassette. Cancoco Software, P.O. Box 2914, Medley AB, Canada T0A 2M0, tape Can. U.S. \$17.50

Sea Quest, a 32K Hi-Res Adventure game which takes you on an underwater treasure hunt. Get your shark repellent and scuba tanks ready! Mark Data Products, 24001 Alicia Pkwy., No. 207, Mission Viejo, CA 92691, tape \$24.95, disk \$27.95

The Sourcerer, a source generator for the 6809 microprocessor. It is written in position independent code and is just over 6.5K bytes long. It requires the OS-9 operating system and at least one disk drive. It produces symbolic source codes that can be assembled. Also features automatic equate generation for labels and symbols outside of disassembly range. Computerware, Box 668, Encinitas, CA 92024, tape \$34.95, disk \$39.95

Speed Math, a 16K ECB program for gaming and practicing with the simple mathematics of addition, subtraction, multiplication and division. You can have 10 to 100 problems and pick the difficulty level. West Bay Co., Route 1, Box 666, White Stone, VA 22578, \$8

Spit-N-Image, a machine language disk backup utility program for the 32K or 64K CoCo. It's purpose is to allow backups of most CoCo disks that will not respond to normal backup or copy operations. Computize Inc., P.O. Box 207, Langhorne, PA 19047, tape \$24.95

Subtraction Drill, a 32K ECB program for kindergarten through fourth grade designed to be used individually or with large groups, auto run and menu driven in 10 levels of sequential facts and random facts. Computer displays correct answer after two misses. Erase and quiet options, rewards provided. CY-BURNET-ICS, 5705 Chesswood Dr., Knoxville, TN 37912, \$24.95

Super Color Biorythms, a 16K ECB Hi-Res graphics program that graphs the biorythms physical, emotional, and intellectual cycles of any person, place, or thing. Armadillo International Software, P.O. Box 7661, Austin, TX 78712, tape \$19.95 plus \$2.50 S/H

Super Edit, a line oriented editor for use in editing BASIC programs on the CoCo. It is more powerful than the editor supplied with Extended Color BASIC and is written in assembly language. It resides in memory with the BASIC program and is transparent to the operating system. The Dataman, Box 431, Sta. B, Hamilton, Ontario, Canada L8L 7W2, U.S. \$16.95, Canadian \$19.95

Teacher's Pet, a 32K ML disk program which features 40 students per file, four terms with up to nine tests per term, alphabetical order, letter grades, numeric grades, year-end reports, search, delete, add, screen and printer output, enter classes and grades any time of the year. Aurora Software, 49 Brookland Ave., Aurora, Ontario, L4G 2H6, disk \$34.95

Things To Do With Your TRS-80 Color Computer, by Jerry Willis, Merl Miller and D. LaMont Johnson, a guide to currently available hardware and software for the TRS-80 Color Computer. It includes prices and ratings on: video games; music and art programs; the computer as a teacher; programming and computer languages; telecommunications and networking; business applications; and much more. This book covers both the 16K and 64K models. The New American Library, Inc., 1633 Broadway, New York, NY 10019, U.S. \$3.95, Canadian \$4.95

Time Fighter, a 16K machine language game. Pilot your MD-64 space fighter through a hazardous time tunnel to destroy the dreaded Time Guardian who threatens the natural order of the universe. You must overcome aerial dangers, time zones, navigate invisible mine fields and refuel from a moving supply ship. Mark Data Products, 24001 Alicia Pkwy., No. 207, Mission Viejo, CA 92691, tape \$24.95, disk \$27.95

Triple Transfer Utility, a machine language backup utility program for the 32K or 64K CoCo with one or more disk drives. Its purpose is to allow the transfer of most CoCo ML, BASIC, and DATA files from tape to disk and disk to tape with relocation of most ML programs that interfere with the disk operating system. Computize Inc., P.O. Box 207, Langhorne, PA 19047, tape \$19.95

The TRS-80 User's Encyclopedia, a complete ready reference book for the TRS-80 CoCo owner. This book will answer your

questions, give you "inside" information, and greatly increase your use and enjoyment of your computer. It explains programming languages, including BASIC; guides you through DOS, ASCII, FLEX; simplifies operating procedures; describes hundreds of software and hardware packages and accessories; lists publications, users' groups, and other information sources. Continental Software, 5251 W. Imperial Highway, Los Angeles, CA 90045, \$14.95

TS6551 RS-232 Serial Interface, a programmable RS-232-type serial interface for connecting the CoCo to modems, printers, terminals, etc. This device frees your printer while providing a second serial port with extended features. It provides eight signals commonly used in RS-232 communications with a modem: GND, RND, DTR, DSR, RTS, CTS and DCD. It can also generate interrupts on either a received character or a data carrier detection. T & S Electronics, 6111 Romany Dr., San Diego, CA 92120, \$59.95 introductory offer (\$10 off advertised price)

TS6821 Centronics Interface, a parallel printer interface pack which provides a Centronics compatible interface for connecting your CoCo or CoCo2 to a parallel printer. Unlike other parallel interfaces which operate through the serial port, the TS6821 plugs directly into the CoCo expansion port or the multi-pak interface. T & S Electronics, 6111 Romany Dr., San Diego, CA 92120, \$49.95

T.UTIL, a tape utility designed for use by the home computer hobbyist. It provides tape management functions which help organize the home tape library. The *INDEX* command provides a complete record of the file content of a tape. Additionally, there are commands for appending, reading, writing, and copying tape files. Sadre Software, P.O. Box 3891, Gaithersburg, MD 20878, \$12.95

29 Monsters, a text-only 16K Extended BASIC Adventure program. You are trapped in the evil wizard's castle. To gain your freedom, you must pass through 29 rooms, each one guarded by a hideous monster who will only let you pass if you can devise the correct password based on whether your answer is right or wrong, and if you are wrong, you will be set back along with your escape route. B&B Software, P.O. Box 210, Jenkintown, PA 19046, tape \$14.95

The Seal of Certification program is open to all manufacturers of products for the TRS-80 Color Computer, the TDP-100, or the Dragon-32, regardless of whether they advertise in the *Rainbow*. By awarding a Seal, the magazine certifies the program does exist, but this does not constitute any guarantee of satisfaction. As soon as possible, these hardware or software items will be forwarded to the *Rainbow's* reviewers for evaluation.

— Susan Remini

Quality Software is the Number One Priority at K & K Computers

TRS-80 Color Commodore 64 Sinclair/Timex Apple IIE



LASER TANK - Pit yourself in a game of strategy and excitement against the computer. You must defend your flag from attacking tanks and destroy them before they destroy your flag or you!!! Only \$15⁹⁵.

FAST FIRE - for those of you that think fire spreads fast, you haven't seen anything 'til you've seen Fast Fire! Arcade games some are good, this should be one of them. This machine language game requires 32K extended basic and sells for ONLY \$19⁹⁵ on cassette.

BIORHYTHM - Start your day off right with a prediction from the all knowing CoCo. With the Biorhythm charts of the ages as the CoCo's guide to telling you the secrets of how your day will turn out. This program sells for ONLY \$15⁹⁵ on cass.

SHOOT TO SPELL AND FLASH MATH - An educational package that helps kids learn to spell and educate them on elementary math. An absolute must for adults with school aged children. Only \$15⁹⁵.

SPACE HARVEST - Pilot your spacecraft above the Planetoid Voltar stealing spacefruit and trying to avoid alien guards. Machine language Only \$19⁹⁵.

GRAVILINK - This high-strategy game may look fairly easy, but the force may be against you. Gravlink is a two player game that requires joysticks. The object of this game is to connect four squares together. ONLY \$19⁹⁵.



BLACKJACK - A casino game that puts two players against the beady eyed dealer of the house. This dealer deals the cards as good or even better than Intellivision. If you have any gambling blood at all this game is a must! Same rules as any Las Vegas casino. Only \$15⁹⁵.

All new K&K hacker's **T-SHIRTS** with our famous SuperZap logo, as seen in this ad. Only \$6⁹⁹ plus \$1⁹⁹ shipping and handling.

DISKS AND CASSETTES-DISKS ONLY \$25.00 FOR 10. C-10 CASS. 12 FOR \$12.00 INCL. SHIPPING.

ALL GAME PROGRAMS - require 16K extended (prices are set for cassette, add \$4⁰⁰ for disk, except business.)

PROGRAMMERS!!! - K & K pays the highest royalties for your programs. If your program is good, send it to K & K

TRS-80 COLOR COMPUTER USERS - New programs are added each week. **SEND \$1⁰⁰ FOR OUR COMPLETE CATALOG**

K & K COMPUTERS

P.O. BOX 833 • STERLING HEIGHTS, MICHIGAN

48077

Telephone: (313) 739-6936



GOLF LEAGUE - The most versatile Golf League program anywhere. Here are just a few features: handicaps, three flights, averages, etc. Requires 32K Extended Disk. Only \$49.95

Golf League Scheduler

only \$25.95



SUPER ZAP - Enemy spaceships are attacking from all sides and your mission to defend your starbase from the deadly Armada of Pyrus. This will be a dangerous mission since the Pyrus Armada has never been defeated by any humanoid. Only \$15⁹⁵.

SKY DESTROY - Planes and helicopters are coming from all directions, they must be stopped! This game is similar to Atari's and now available to color computer users. Machine language. Only \$19⁹⁵.

BOWLING SCORED FOR DOLLARS - Do your leagues bowling averages. This program will keep individual scores, team totals, individual averages, team standings, and print all this information to your line printer. On cassette and disk, specify on order. Only \$19⁹⁵.

INVENTORY CONTROL - This program contains all the necessary features required for all types of inventories: sort inventory by stock number, list stock number, description, amount in stock, cost, wholesale, profits, and holds up to 1000 stock items. ONLY \$49⁹⁵.

CHECK LEDGER - This bookkeeping system allows the user to have current information on your expenses by any category you wish. Year end tax statements made easy. Disk required. Only \$49⁹⁵.

ACCOUNTS PAYABLE - Small businessmen, control your business growth by keeping track of all your cash liabilities and payment history, and holds 100 accounts. ONLY \$49⁹⁵.

ACCOUNTS RECEIVABLE - This system keeps track on the status of all customer accounts, all payment histories included, prints billings and holds 100 accounts. ONLY \$49⁹⁵.

REVIEWS

MANSION OF DOOM

Editor:

As a co-author of *Mansion of Doom*, I would like to respond to Mr. Paul Gani's review of our Adventure program on Page 230 of the February 1984 *Rainbow*.

Overall, his review was a fair (although muddled) appraisal of this fine Adventure program. However, some points need clarification:

All Pal Creations Adventures have the verb vocabulary built into the program to make it easier for the Adventurer to get used to the verbs used in that particular program. If Mr. Gani kept using TAKE instead of the accepted word GET, then I'd say he has a personal semantic flexibility problem. Other Adventurers have had no problem getting used to the verb vocabulary, especially since the program tells you all the allowed verbs if you use a wrong one.

All Pal Creations Adventures have the instructions built into the program in order to minimize constant referring back-and-forth between the program and a piece of paper. Also, with the instructions in the program itself, it gives the player a better sense of "being there," a very important part of good Adventures. If this feature makes the program unplayable on a 16K machine, so what? *Mansion of Doom* has always been billed and advertised as a 32K cassette Adventure.

We appreciate Mr. Gani's PCLEAR tip for disk users, but personally no one at Pal Creations owns or uses a disk drive since we specialize in 32K Adventures and simulations on cassette.

We also decided against having a save feature in our Adventures since most people would rather try to solve an Adventure from start to finish. If they can't solve it in one night, then all they have to do is turn the computer off, and they can try to solve it another day. Then the next time they reload it, they will know a little more of what to do and what not to do. All of our cassettes are of extremely high quality and can be reloaded time after time with no degradation in tape quality.

But worst of all was Mr. Gani's reference to a "bug" in the program. *Pal Creations' programs do not have bugs!* If he had spent more time reviewing the program, he would have found clues telling him that "YOREL" was the magic word to get out of the shackles, not "YORL" as he misprinted. And this feature is not a bug, it was designed into the program to provide a more magic-enhanced Adventure environment. An Adventurer needs all the help he or she can get when battling against werewolves and vampires, etc.

We at Pal Creations think that *Mansion Of Doom* is an exciting, high quality 32K

Adventure and stand by its meager \$14.95 purchase price 100 percent. We were amazed that Mr. Gani thought it was overpriced since marketing experts throughout the country keep urging us to raise the prices on all our fine 32K Adventures to \$24.95 and \$29.95 to be in the same price range as Adventures that are inferior to ours. We will continue to offer most our Adventures at \$14.95 in order to give TRS-80 Color Computer owners extremely high-quality programming at reasonable prices.

Leroy C. Smith
Pal Creations

VIP TERMINAL

Editor:

One of the reasons that French food is so good is that the French are merciless critics. Thus, your often "goody goody" reviews, obviously intended not to offend your advertisers, are a disservice both to your readers and to improving the products.

The Color Computer is now maturing to the point where there is some excellent software and worthy of such withering review. But what do we get? Let's take the January 1984 review of the *VIP Terminal* program. This program is certainly one of the best, if not the best available for the CoCo and easily worth twice the price. However, my copy has some interesting features that did not seem to be covered by Mr. Reed.

My use of this program has been strictly to a host CDC Cyber computers (730 and now 835/855). Thus, my first annoyance is that there is no way to reset the default parameters along with autoloading the keystroke multipliers (KSM). My startup then involves the program load, the KSM load, and then resetting the parameters. All this boring detail could be avoided by simply allowing the user to tailor his disk. The load itself seems unnecessarily long since they seem to have the initialization include reading a bad track, and if it is faulty continuing the load. They have the disk rigged so you cannot write on it even though it appears (with the help of their excellent ZAP program) that very little is used of the total disk.

The next point is that the x-on/x-off does not seem to work consistently in receiving data. In the tests that I ran to the Cyber last spring, I asked for my I/O to be recorded at the host. The result was that in 51-column mode and 300 Baud, my terminal would send an X-off about half the time to suspend host transmission; the rest of the time a chunk of text would not be recorded.

If I get back into 32-column mode to make sure I got all the text from the host, there is no way to get back into 51 without getting out of the terminal program. Even though the documentation says that the parameter

table will always allow this, once you clear the buffer and answer the prompt that you want to get out of Hi-Res, the resolution part of the parameter table never comes up again.

Mr. Reed is correct that there are some nice features in the disk handling part of the program. One peculiarity I have encountered in the disk directory program is that unlike the BASIC directory, the *VIP Terminal* directory appears to scan every sector on Track 17 beginning with the third. I am presently using a disk management program to catalog and secure my disk data which duplicates the directory and granule tables on Track 17. The granule table is duplicated to Sector 1 and the Directory from three to 10 is copied from 12 to 17. Thus, the Terminal directory gets two copies, and, if I have killed a file without recataloging, then I get the name of the killed file as well! (The disk management program has a method of using the backup copies to recover a file.

One feature which would be a nice addition would be to be able to change the printer mode without coming out of *Terminal*. Thus some data you want to print out in 80 column and others, like FORTRAN compilations, in 120-character mode.

I mentioned in an earlier letter that I had a problem with the printing of anything with *VIP Terminal* (which also happened with ZAP). The frustration was that I had no problem printing using the POKE 150,18 for my 2400 Baud interface with any other software than Nelson's. The solution was a retuning of the interface, but left me with the implication that Nelson's was somehow either more finely tuned or differently tuned than that for the usual BASIC. Thus, I think that those with slightly skewed Baud rates would be better off if there was some mechanism in the software that would let them tailor their Baud rate to what works with their equipment.

Joe Cain
Golden, CO

Editor:

I must take exception with Jim Reed's review of *VIP Super Color Terminal*, in the January issue. There are some problems with the disk commands in version 3.0 dated June 1983. If you have a disk with more than 28 entries, it is impossible to see the remainder of the directory. This is contrary to the instructions on Page 18 of the operators manual, and apparently was not a problem in version 2.0.

I don't believe this is a major problem and I'm sure Mr. Nelson, who obviously is a top rate programmer, could correct this problem. However, I have written to Softlab

Corp. detailing the problem, received a note asking that I telephone their customer service, which I did. I was then told that they would check on this problem, and never heard from them again. As a matter of fact, the customer service representative didn't even want my name or address, which obviously indicated there was no intention of giving me a reply.

I think the *VIP Terminal* is a fine program. However, the support after the purchase is completely lacking. If the other programs use the same mini-disk operating system, I'll have to be assured that I will not encounter the same problem.

It seems that Mr. Reed is a friend of Tom Nelson, who is a contributing editor to *Rainbow* as well as general council for Softlaw Corp. I feel sure that there is no way Mr. Reed or *Rainbow* would publish a bad review of any Softlaw product.

It should be pointed out that the disk is copy protected which makes it very difficult to try and fix it yourself.

John Spataro
Lynn Haven, FL

Editors Note: The Softlaw Corporation (formerly Nelson Software Systems) no longer copy protects its programs. This means that VIP Library programs now can be backed up. This should alleviate several of the aforementioned problems.

OWLS EYE LIGHT

Editor:

In reference to the review on the Owls Eye Light in your March issue, I installed an Owls Eye on my computer and it looks like original equipment. It is one of the best investments I made for my CoCo. Yes, you have to unplug it to use the joysticks — big deal. It fit my computer fine. Looks good and works great.

Did your reviewer really hook it up or did he guess at how it worked?

Mark Widuch
Princeton, IL

Editor:

I felt I must reply to the review in your March issue on the Owls Eye Light.

First, the ad states it plugs into the joystick port so I had anticipated the joysticks would not work with it. Some of us computer nuts use our computers for more serious things then playing "Pac Man" games anyway.

Second, I have the old style computer with the RAM button and it fit fine.

Third, I don't think the reviewer even installed the light. In the package it doesn't look like a lot but when installed, per the instructions, it looks like a part of the computer.

I have a light kit that mounts in the joysticks. If you have a candle lit in the room

you can't tell if it is on. The Owls Eye can be seen in bright sunlight.

You are giving a good product a bum rap with your review.

Ron Von Holt
Marrietta, GA

PHONICS II

Editor:

This letter is directed toward the March 1984, Page 242, review of *Phonics II*, a sound-letter association program which uses the unique ability of the Color Computer to direct audio instructions and prompts from a cassette tape recorder through the speaker of the TV to the user, in this case, students just learning to read.

The review was subtitled, "Only Phair," presumably for two reasons which the reviewer mentions. First, he states that the tutorial mode of the program does not require any student participation, after which he mentions that the program "does expect the student to repeat aloud the digraph sound with the narrator." That sounds like student participation to me. In addition, the current release of *Phonics II* (version 2.0) also requires that the student type the consonant digraph before going to the next audio prompt. More student participation.

The second "disappointment" the reviewer mentions is with the single sheet of instructions. If he had taken the time, he might have noticed that the program was well documented within itself. For instance, points at which decisions are to be made within the setting up of the program parameters have the option "NEED MORE INFO." Selecting this option brings forth screens of information useful in making parameter choices (a nice touch, I thought, since many people misplace or won't read the documentation which comes packaged with the software). Perhaps the reviewer would have preferred a "user-hostile" program with reams of documentation necessary to render it understandable.

On to more important criticisms, The reviewer states that the instructions were confusing because the program description follows brief loading instructions and a very short warranty statement. He says that he likes to know about something before he attempts to use it. By the way, the instructions he talks about are on the inside of the package. If he had bothered to read the information, which we conveniently placed on the outside of the package (so people wouldn't have to guess about what's on the inside), he would have seen a similar program description!

As the coordinator of software evaluation and computer-delivered instruction of an elementary school of over 500 children and the author of a courseware evaluation instrument used by at least two school districts in Tucson, I attempt to evaluate software on the basis of its educational merit and usefulness with children (witness my review of *LOGO* in the December 1982 edition of the *Rainbow*).

I would simply ask that all software (mine included) reviewed by the *Rainbow* be judged on that basis, rather than the degree to which its packaging conforms to the personal tastes of the reviewer.

Incidentally, anyone desiring a copy of my software evaluation form should send a S.A.S.E. to 8370 E. Lee, 85715

David Hunt
Tucson, AZ

GRAPHICOM

Editor:

My thanks to Paul Hoffman for a very kind review of *Graphicom*. There was one technical error in his review that must be corrected. In his advice to readers on what parts to get to make your own custom joystick or foot pedal for *Graphicom*, the author directed the readers to use a "five-pin DIN connector" for the joystick port. This is wrong. The joystick port requires a six-pin DIN connector. Radio Shack, on its joysticks, uses a six-pin DIN plug that has been altered by having its center pin removed. Though the resulting plug has only five pins, they are spaced quite differently from the spacing of the pins in a true five-pin DIN connector. Worse yet, while true five-pin DIN connectors are readily available at Radio Shack, the necessary six-pin DIN connector is not available.

The required six-pin joystick plug should be available from local electronic supply houses. If you have trouble finding a source of six-pin DIN connectors, you can purchase two (used but in excellent condition) of them for \$5 from us at Cheshire Cat.

I personally highly recommend that purchasers of *Graphicom* make their own custom joysticks. We have come to prefer a joystick made using a Radio Shack joystick mechanism (Cat. No. 271-1705) mounted in a small chassis box (3¼ x 2 x 1⅞ in.) with two buttons mounted along the 3¼ by 1⅞ inch side. Such a box is not available from Radio Shack, but is available from supply houses handling LMB chassis boxes. The alternative of using a footswitch for the menu button is not quite as good, but it does work reasonably well and is much simpler to construct.

My one overall criticism of the review was that it made *Graphicom* sound a lot more complicated to use than it really is. While it does take a bit of getting used to, once you learn how to control the program, drawing proceeds extremely quickly and simply. I invite any sort of comparison of how long it takes to draw a given artistic picture and a given technical illustration to be made between *Graphicom* and any other existing CoCo graphics drawing program. I'll eat my hat if any other program allows general purpose drawing that is even a quarter as fast as *Graphicom*'s.

Martin H. Goodman, MD
San Pablo, CA

MASTER DIRECTORY V2

Can you find that program you saved last month? Do you have many diskettes with multiple copies and need to organize your life? MASTER DIRECTORY V2 to the rescue! In only seconds add each diskette to MASTER DIRECTORY V2. Now ask MASTER DIRECTORY to find that lost program. Can't remember the filename? Ask for all the files that begin with the letter "C" or ask for all files with an extension of BAS.

What! Two files with the name CATS? Drats! Wait! The file on disk #5 was added on Oct. 5 and the file on disk #9 was added on Nov. 10. Hey fantastic!

Now let's get back to work. Let's see DIR. Hey! How did the filenames get in sequence? Yes, MASTER DIRECTORY V2 will sort the directory and remove the null directory entries. It also saves a copy of the allocator and the directory to protect against those nasty disk errors. Listing may be directed to the TV or the printer. Over 100 diskettes and 3000 filenames can be contained in one master directory.

Buy MASTER DIRECTORY V2 for only \$29 pp. Requires 32K DOS (1.0 or 1.1)

DUAL CASSETTE COPY SYSTEM

Allows the use of two cassette recorders. Only \$49 pp.

DISPLAY NOISE ELIMINATOR

Easy to install. Does not violate COCO warranty. \$14pp.

SCRUNCH

Removes spaces from basic programs. Saves memory and improves speed. Only \$3.00pp or FREE with any order.

FREE CATALOG with order or send self addressed stamped envelope.

Send check or money-order to:

COCOPRO
P.O. BOX 37022
ST. LOUIS, MO 63141

Postage paid on all pre-paid orders in U.S.
 Missouri residents add 5.625 percent sales tax.

DEALER INQUIRES INVITED.

Model I/III Emulator Should Be Quite Useful

When the Color Computer first came out, a lot of people were asking if it could run Model I software. The answer, of course, was no; the CoCo is far too different from the Model I and III. The Microsoft Extended BASIC languages are quite similar, though, so the only thing stopping many BASIC programs from running on the CoCo is the very different screen display and character set.

Spectrum Projects' *64 Column Model I/III Emulator* produces a 64 by 16 text display using the *PMODE4* high-resolution graphics mode. The screen memory is placed in the upper 32K of RAM, so 64K memory is required. The character set (in the range 32 to 191 decimal) is almost identical to the Model III's, though the actual character shapes are very different. The block graphic characters are available, both for *PRINTing* and normal point graphics (using *SET*, *RESET* and *POINT*). A Model I/III BASIC program will run on the CoCo with the emulator if:

- it is written entirely in BASIC and does not use *PEEKs*, *POKEs* or *USR* calls (all the locations are different);
- it does not use BASIC commands or functions that are not available in Extended Color BASIC (such as *DEFDBL*, *DEFSNG* and *DEFINT*); and
- it can be loaded into the CoCo (if you are willing to type it in). Since the CoCo's cassette and disk file formats are different from those of the Model I or III, you will have to have some special program on one machine or the other to bridge the gap. Another way would be to send the program over the RS-232 serial I/O ports (if you have RS-232 in the I or III) as an ASCII file; you'll need RS-232 cables on each machine, a "gender-changer" adapter to connect the two male DB-25 plugs and (on the Model III) a null modem adapter. (What I have to say about the Model III goes for the Model 4 as well, assuming you are using it in Model III mode.)

The display is rather hard to read, as 64-column Hi-Res displays usually are. The characters are only three pixels wide, and are plagued with the notorious false colors of *PMODE4*. (Of course, you can almost always turn the color level down to get rid of the color fringes.) The *PRINT @* command now has a range from 0 to 1023 to match the Model I/III's screen locations; *SET*, *RESET* and *POINT* now run from 0 to 127 horizontally and 0 to 47 vertically. If you want an expanded text display simply for your own programming, the emulator will serve reasonably well as none of the CoCo's BASIC commands have been removed.

The *64 Column Model I/III Emulator* should be quite useful to those who have been running BASIC programs on the Model I and III, although the text display has its problems.

(Spectrum Projects, 95-15 86th Drive, Woodhaven, NY 11421; \$19.95 + \$3 S/H)

— Ed Ellers

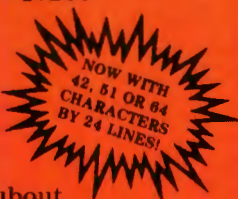
Double Density Software

COLOR TERM + PLUS +

If you're looking for the finest terminal software you can buy, look no further! And now we've added a **high-res** screen display that gives you 32 by 16, 42, 51, or 64 by 24 lines.* And you can switch between the high-res screen and the normal screen *without* destroying what you have in the buffer! + **PLUS** + we have a buffer editor, complete up and down load support, on-line cassette or disk reads and writes, off-line and on-line scrolling, pre-entry of data before calling, word wrap, buffer printing, selective printing, change any parameter so you can communicate with **any** other computer. You can send and receive Basic programs, ASCII file, as well as machine code, + **PLUS** + you can save your buffer to tape (Tape or Rom version) or disk (Disk version). You can communicate with the local **BBS**, **Compuserve™**, **The Source™**, the main frame at work or school, other color computers, Apples, IBM PC's, TRS-80 Model I, II, III, IV, 12, 16, 100, or any other computer via RS-232.

Compare these features with **any** other terminal program:

32 x 16, 42, 51, 64 x 24 Screen
Communications BAUD Rate: 110-19200
Printer Baud Rate: 600-9600
Select Half or Full Duplex.
Select Odd, Even, or No Parity.
Select 7 or 8 Bit Words.
Send Control Characters.
Send a True Line Break.
Separate Keys for Escape and Rubout.
Select All Caps If Needed.
Word Wrap — Eliminate Split Words.
(32 Character Mode)
Selectable Reverse or Normal Video.
(32 Character Mode)



Scroll Protect Up to 9 Lines.
Automatic Capture of Incoming Files, Send One Line At a Time From Your Buffer.
Has Programmable Prompt for "Send Next Line!!
Buffer Size Indicator.
Complete Up and Down Load Support.
Improved Buffer Editor.
On/Off Line Scrolling of Buffer.
On/Off Cassette or Disk Reads and Writes.
Pre-Enter Data Before Going On-Line.
Save/Load Machine Code, Basic Programs or Files.
Select Printer Line Feeds If Needed or Ignore All Line Feeds in Buffer.

*Disk and Rom Pack only (not on tape). PRICE: \$29.95 (TAPE) \$39.95 (ROM PACK) \$39.95 (DISK)

DOUBLE SPOOLER

Tired of waiting for your listings? printouts? etc.? This is THE Spooling Program!! No need to save your programs in ASCII. You can also spool your files and you can spool **ANYTHING** you print on the screen while a program is running!! Requires a minimum of 32K **AND** the 64K computer can spool really **LARGE** files!! Plus more!!
PRICE: \$19.95 (Tape) \$21.95 (Disk)

DOUBLE MEM-DISK

Use that **32K** of unused memory in your **64K** computer for something useful! Store programs in memory and recall them anytime you need them!! Here is a list of the new commands you can enter right from the keyboard:

MSAVE — Save the program in memory.
MLOAD — Load a named program.
MKILL — Kill a program stored in memory.
MDIR — List all programs stored in memory.
MFILE — Merge a program in high mem with current program in low memory.

Those of you with tape systems will have several programs in memory at once so you don't have to wait on that **SLOW** tape system **AND** those of you with disk systems will be able to use that extra space that is going to waste!!

PRICE: \$24.95 (Tape) \$26.95 (Disk)

DOUBLE CABLE

Tired of switching cables everytime you use your modem and printer? This is the fix!! Hook your modem and printer up at the same time! No more switching.

PRICE: \$14.95

\$2.00 shipping and handling on all orders. \$3.00 charge on C.O.D. orders, Mastercard and VISA accepted. Texas residents add 5% sales tax. Allow two weeks for personal checks.

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



DOUBLE SWITCH

Now you can switch between two different devices **AND** you get an on/off indicator at the same time. Switch your **Modem & Printer** or two printers, etc.
PRICE: \$29.95

DOUBLE DOS BASIC

364,000 BYTES!

That's right! Using your 64K Color Computer, and an 80 track drive, you too can have more than **TWICE** as much storage on your disk drive system. **DOUBLE DOS BASIC** allows you to use 35, 40 or 80 track (**double** or **single** sided) drives all on one system, all at the same time! Your system could consist of a 35 track drive, a two drive **AMDEK** system, and an 80 track drive, all working, and hooked up to your system! (The **AMDEK** drives are 40 track drives.) **ALL** commands are supported in **DOUBLE DOS BASIC**. The DOS is **totally** transparent to your BASIC programs! If your system selection is 80 tracks, a **PRINT FREE** command will return **158** granules! Compare this to the 68 granules your system now returns! The 40 track drives would return 78 granules, 10 more than the 35 track system. **EVERY** command in BASIC is supported by **DOUBLE DOS BASIC**. If you haven't already upgraded to 64K, now is the time! Use your system to its **FULLEST!** **DOUBLE DOS BASIC** also gives you **RESET PROTECTION**, unlike most of the other **64K** programs. **AND**, used with our **ROM MOVE** program, you can also get another 8000 bytes of BASIC addressable memory!
DOUBLE DOS BASIC — \$24.95
DOUBLE DOS & ROM MOVE — \$24.95

RAINBOW

Give us your best: Join the ranks of these courageous CoCoists in showing the Color Computer world your high score at your favorite micro-diversion. We want to put your best effort on record in the *Rainbow's* Scoreboard column. All entries must be received by the first of the month to be eligible for the following month's Scoreboard. They must include your full name, address, game title, company name and, of course, your high score. Each individual is limited to three score entries per month. Send your entries to Scoreboard, c/o the Rainbow.

★ New Number One • Last Month's Number One

ALCATRAZ II (Spectral Associates)
9,820 ★Steve Manderschied, Cincinnati, OH

ASSAULT (MichTron)
2,520 ★Laura Sandman, Louisville, KY

ASTRO BLAST (Mark Data)
158,000 ★Larry Plaxton, Medley, Alberta
157,000 Scott Drake, Pine City, NY
104,484 Jim Baker, Florissant, MO
98,000 Tim Warr, Bellingham, WA
87,000 Bernard Parent, Ste-Foy, Quebec

BASEBALL (Radio Shack)
33-0 ★Dan Bovey, Wheaton, IL
19-0 Chris Oberholtzer

BERSERK (Mark Data)
8,500 ★Mark Wooge, Omaha, NE
7,650 David Garozzo, Morrisville, PA
3,100 Edward Liroff

BIRD ATTACK (Tom Mix)
460,275 ★Kevin Boyle, Saskatoon, Saskatchewan
133,825 Ellen Ballinger, Uxbridge, Ontario

BLOC HEAD (Computerware)
1,006,200 ★Lindi Wolf, Fairbanks, AK
819,425 Keith Denhoed, Coalhurst, Alberta
781,350 Joe Golkosky, Portage, MI
444,525 Brian Spek, Keewick, Ontario
366,700 Richard Vehlou, Bayside, NY

BUSTOUT (Radio Shack)
42,000 ★Derrick Kardos, Colonia, NJ
34,700 Sara Hennessey, Golden Valley, MN
28,720 Perry Denton, New Baden, IL
27,880 Mike Wells, Pittsburgh, PA
18,403 Brad Widdup, Dundas, Ontario
8,579 Jeff Bitterling, Bowling Green, KY

BUZZARD BAIT (Tom Mix)
688,550 ★David Casterson, Livermore, CA
489,600 Paul Rumrill, Gales Ferry, CT
484,400 Nic Witschi, Oak Ridge, TN
450,150 Chris Elliott, Salisbury, NC
444,200 Kristopher Stallier, Ft. Wayne, IN
412,600 Michael Lynn, Chicago, IL
373,450 Laurence Witschi, Oak Ridge, TN
322,350 Michael Popovich, Nashua, NH
304,550 Kevin Kordana, Poughkeepsie, NY
280,950 Bruce Tonison, Bay Minette, AL
217,300 Brian Manderschied, Cincinnati, OH
207,100 Steve Manderschied, Cincinnati, OH

CANYON CLIMBER (Radio Shack)
1,400,200 ★James Stevenson, Marshall, TX
989,900 Andre Wagner, Bangor, PA
615,500 Randy Hankins, Tabor, FL
251,100 Beverly Herbers, Placentia, CA
230,500 William Daley, Biloxi, MS
186,700 Denise Mprissette, Sherbrooke, Quebec
165,900 Kevin Stephens, Boyle, Alberta
145,100 Dennis Rodenkirch, Janesville, WI
134,900 Doug Rodenkirch, Janesville, WI
101,400 Ronnie Volans, Ogdensburg, NY

CASHMAN (MichTron)
19,650 ★Perry Denton, New Baden, IL
16,000 Scott Oberholtzer
11,130 Ricky Susfalk, Grand Island, NY
5,690 Rob Acurto, Ballston Lake, NY

CATCH-EM (Aardvark)
79,773 ★Marsha Smith, North Vernon, IN

CHOPPER STRIKE (MichTron)
63,000 ★Andrew Figel, Sardis, OH
47,400 David Figel, Sardis, OH
42,100 Brian Peterson, Muskegon, MI
29,900 Bobby Figel, Sardis, OH

CLOWNS & BALLOONS (Radio Shack)
89,430 ★Perry Denton, New Baden, IL
85,680 Teresa Stutsman, N. Little Rock, AR
83,710 Don Fraser, Shakope, MN
82,730 Jeffrey A. Groves, Hooksett, NH
79,920 Tim Wiechmann, Marblehead, MA

COLOR CUBES (Radio Shack)
4:10 ★Chris Cope, Central, SC

COLOR OUTHOUSE (MichTron)
160,200 ★David Lazar, Englishtown, NJ
101,650 Davey Devlin, Clyde, NC
42,276 ★Perek Mall, Long Grove, IL

COLORPEDE (Intracolor)
10,001,051 ★Mark Smith, Santa Ana, CA
3,355,248 ★Scott Drake, Pine City, NY
2,547,299 Rich McGervey, Morgantown, WV
2,471,342 Vincent Lok, Ontario, Canada
1,317,729 Michel Hengartner, Ste-Foy, Quebec
847,356 John Bondeller, Perrysburg, OH
373,342 Anthony Ruiz, Toledo, OH
132,125 Doug Rodenkirch, Janesville, WI
65,990 Dan Sobczak, Mesa, AZ
55,550 Shawn Chirrey, Mississauga, Ontario

46,503 Lisa Ballinger, Uxbridge, Ontario

COLOR ZAP (Spectral Associates)
146,510 ★Bernard Parent, Ste-Foy, Quebec
139,630 Pierre Rousseau, Cap-Rouge, Quebec

CU'BER (Tom Mix)
196,090 ★Randall F. Edwards, Dunlap, KS
49,510 Doug Kleir, Grand Rapids, MI
12,430 William Wirsig, Dunlap, KS

CUBIX (Spectral Associates)
28,500 ★Randall Edwards, Dunlap, KS
26,240 ★Perry Denton, New Baden, IL
21,500 Michael Rosenberg, Prestonsburg, KY
19,719 Philip Daulton, Louisville, KY
14,950 Dave Garozzo, Morrisville, PA
14,320 D. Seibel, Tumbler Ridge, British Columbia
13,590 Aaron Peelle, Bennington, VT

DANGER RANGER (Med Systems Software)
1,266 ★Rick Arthur, Ballston Lake, NY

DEVIL ASSAULT (Tom Mix)
289,300 ★Michael Rosenberg, Prestonsburg, KY
271,106 Peter Niessen, Carlisle, MA
96,000 Rick Arthur, Ballston Lake, NY
69,600 Gregory Rhinehart, St. Charles, MO

DOODLE BUG (Computerware)
1,767,630 ★Perry Denton, New Baden, IL
427,570 Eiko Cary, National City, CA

DOUBLE BACK (Radio Shack)
1,125,000 ★Mark Hurst, Sheridan, OR
1,080,000 Phillippe Duplanties, St. Jerome, Quebec
605,890 Peter Sherburne, Highland, CA
474,040 Paul Moritz, Butte, MT
435,570 Phillippe Morsan, St. Jerome, Quebec
52,750 Christopher Porter, Naranja Lakes, FL

ELECTRON (Tom Mix)
41,750 ★Michael Rosenberg, Prestonsburg, KY
22,990 Alan Morris, Chicopee, MA
19,500 Robby Presson, Florissant, MO
4,515 Mark Raphael, Englishtown, NJ

FLYBY (Chromasette)
104,980 ★David Finberg, Annandale, VA
28,910 Ron Suedersky, Universal City, TX
20,110 Rick Mansell, Calgary, Alberta
16,670 Michael Rhattigan, Cory, NC
2,805 Dan Sobczak, Mesa, AZ

FOOD WAR (Arcade Animation)
208,000 ★Chris Oberholtzer
178,910 Kevin Boyle, Saskatoon, Saskatchewan

THE FROG (Tom Mix)
109,500 ★Pat Craddick, Janesville, WI
95,790 Eileen Kaakee, Royal Oak, MI
89,910 ★James Baker, Salt Lake City, UT
79,240 Jeanne Hawkins, Deltona, FL
73,350 Evelyn Gagnon, Ontario, Canada
48,500 Terry Sheridan, Janesville, WI
19,922 Elizabeth Pierce, Exeter, NH

FROG TREK (Oeirich Publications)
16,480 Sara Aliff, Northeast, MD

FROGGER (The Cornsoft Group)
63,800 ★Carmen Thew, Surrey, British Columbia
53,965 Ian Clark, Albion, MI
32,010 Laura Schooley, Richmond, VA
27,940 Perry Denton, New Baden, IL
25,425 Kanti Dinda, Kingston, Ontario
22,325 Ric Rice, Crystal River, FL

FROGGIE (Spectral Associates)
74,050 ★Mike Garozzo, Morrisville, PA
68,680 ★Carmen Thew, Surrey, British Columbia

GALACTIC ATTACK (Radio Shack)
67,750 ★Chuck Gaudette, Monroe, CT
58,000 Terry Steen, San Bernardino, CA
55,360 Donald Thompson, Lubbock, TX
54,200 Mike Hughey, King George, VA
54,000 Craig Edelhelt, W. Bloomfield, MI
41,290 Sean Dutton, Goose Bay, Labrador

GALAX ATTAX (Spectral Associates)
253,900 ★Shawn McAlpin, Louisville, KY
113,650 Darrin Filand, WA
104,550 Mitch Hayden, Univ. of MN
82,650 Steve Hargis, Tucson, AZ
75,950 Richard Lacharite, Sherbrooke, Quebec
41,800 Sean Dutton, Goose Bay, Labrador

GHOST GOBLER (Spectral Associates)
1,007,430 ★Todd Brannan, Charleston Hts., SC
825,250 Randy Gerber, Wilmette, IL
423,390 Rich McGervey, Morgantown, WV
255,000 John Osborne, Kincardine, Ontario
228,290 Patricia Lau, York, PA
65,320 Craig Dutton, Goose Bay, Labrador

GLAXIONS (Mark Data)
9,892 ★Ellen Ballinger, Uxbridge, Ontario

GUARDIAN (Quasar Animations)
24,105 ★Bill Pollack, Sherburne, NY
3,090 Davey Devlin, Clyde, NC

INTERGALACTIC FORCE (Microdeal)
113,600 ★Alex Taylor, Manchester, England

INVASION (Spectral Associates)
52,350 ★Tina Pihl, Guilford, CT

JUNIOR'S REVENGE (Computerware)
2,099,300 ★Shawn McAlpin, Louisville, KY
1,115,300 Ryan Van Manen, Grand Rapids, MI
658,000 Pat Craddick, Janesville, WI
354,300 Shawn Chirrey, Mississauga, Ontario
243,800 Dan Ralston, Mississauga, ON
229,100 Doug Kleir, Grand Rapids, MI
161,600 Gary Hansen, Deerwood, MN
156,200 Robert Conyer, Willingboro, NJ

KATERPILLAR ATTACK (Tom Mix)
18,949 ★Vadim Gotovsky, Toronto, Ontario
15,821 Alex Gotovsky, Toronto, Ontario
8,659 Sean Dutton, Goose Bay, Labrador
5,279 Lisa Ballinger, Uxbridge, Ontario

SCOREBOARD

KEYS OF THE WIZARD (Spectral Associates)

682 ★Susan Ballinger, Uxbridge, Ontario
THE KING (Tom Mix)
 10,000,100 ★Mark Smith, Santa Ana, CA
 4,040,300 ●Andy Truesdale, Ferguson, MO
 3,343,000 Corey Friedman, Minnetonka, MN
 2,410,200 Candy Harden, Birmingham, AL
 2,367,900 Richard Lacharite, Sherbrooke, Quebec
 2,213,000 James Quadarella, Brooklyn, NY
 1,595,000 Christopher Porter, Naranja Lakes, FL
 1,300,000 Richard Apollo, Farmingdale, NY
 173,000 Davey Devlin, Clyde, NC
 157,700 Blaine Willick, Hinton, Alberta
 144,850 Todd Ulrich, Baltimore, MD
 107,000 Chris Cope, Central, SC
 100,300 Anthony Ruiz, Toledo, OH

KLENDATHU (Radio Shack)

1,182,885 ★David L. Ferris, Shickahinny, PA
 561,893 Ellen Ballinger, Uxbridge, Ontario

KRON (Oregon Color Computers)

73,530 ★Christopher Porter, Naranja Lakes, FL

LANCER (Spectral Associates)

2,354,000 ★Alex State, Las Vegas, NV
 636,500 Larry Capen, Folsom, CA
 617,500 Donna Willoughby, Brookfield, IL
 583,200 Sharon Casten, Folsom, CA
 474,250 Mike Rausch, Denver, CO
 469,400 Jeff Jackson, Littleton, CO
 462,100 Scott Jackson, Littleton, CO
 185,650 William Wirsig, Dunlap, KS

LASERWORM & FIREFLY (the Rainbow)

54,672 ★Michael Rosenberg, Prestonsburg, KY
 19,402 D. Seibel, Tumbler Ridge, British Columbia

LUNAR ROVER PATROL (Spectral Associates)

16,750 Jim Partridge, Clinton, CT
 162,100 ★Sara Ailiff, Northeast, MD
 154,650 Tom Ailiff, Jr., Northeast, MD
 68,900 Wayne Johansen, Rocanville, Saskatchewan

MARATHON (the Rainbow)

65,350 Gary Jones, Dale, TX
 82,850 Randall Edwards, Dunlap, KS
 61,150 William Wirsig, Dunlap, KS
 56,000 Richard Apollo, Farmingdale, NY
 40,700 Ricky Susfalk, Grand Island, NY
 26,650 Todd Ulrich, Baltimore, MD
 21,300 Tom Alascia, Baltimore, MD

MARATHON (the Rainbow)

101,520 ★David Dean, West Mansfield, OH
 55,110 Michael Rhattigan, Cory, NC
 15,750 Grayson Yeargin, Richmond, VA

MEGA-BUG (Radio Shack)

60,000 ★Robin Worthem, Milwaukee, WI
 18,902 John Tiffany, Washington, DC
 15,999 Ed Mitchell, Ragged Mountain, CO
 14,297 Aleisha Hemphill, Los Angeles, CA
 9,070 Brad Gaucher, Hinton, Alberta
 7,542 Dick Volans, Ogdensburg, NY
 6,128 Denise Morissette, Sherbrooke, Quebec

METEORS

6,039 Gordon Kilbreath, Hinton, Alberta
 3,436 Tina Pihl, Guilford, CT

MICROBES (Radio Shack)

14,200 ★Craig Dutton, Goose Bay, Labrador
 408,350 ★Greg C. Strother, Madison, WI
 134,630 Patrick Daley, Biloxi, MS

MONSTER MAZE (Radio Shack)

533,450 ★John Hankerd, Gaines, MI
 300,000 James Stevenson, Marshall, TX
 60,120 Steve Thomas, Ogdensburg, NY
 50,570 Craig Dutton, Goose Bay, Labrador

MOON HOPPER (Computerware)

956,470 ★Shawn McAlpin, Louisville, KY

THE NEMESIS (Sorcerer Software)

11,946,000 ★Mark Smith, Santa Ana, CA
NINJA WARRIOR (Programmer's Guild)
 106,300 ★Bud Seibel, Tumbler Ridge, British Columbia
 102,400 Christopher Gelowitz, Claresholm, Alberta
 75,300 Brad Gaucher, Hinton, Alberta
 46,400 ●Daniel Milbrath, Ann Arbor, MI
 36,800 Greg Lowry, Davisburg, MI
 34,700 Jeff Weeks, Hinton, Alberta
 26,300 Blaine Willick, Hinton, Alberta

PAC-ATTACK II (Computerware)

56,014 ★Lisa Welte, Baxter, TN

PAC DROIDS (Programmer's Guild)

1,958,500 ★Stefan Lapointe, Chateauguay, Quebec

PAC 'EM (the Rainbow)

301 ★David Dean, West Mansfield, OH

PAC-TAC (Tom Mix)

100,630 ★David Dean, West Mansfield, OH

PHANTOM SLAYER (Med Systems Software)

2,488 ★Troy Messer, Joplin, MO
 1,852 Curtis Boyle, Saskatoon, Saskatchewan
 1,306 Marc Hassler
 652 Michael Brooks, Glade Spring, VA
 604 J. Powell, Bournemouth, England
 342 Susan Ballinger, Uxbridge, Ontario

POLTERGEIST (Radio Shack)

13,565 ★Michael Rhattigan, Cory, NC
 6,455 ●Rich Van Manen, Grand Rapids, MI
 4,995 Ken Mahaffey, Erie, IL
 4,970 Tim Warr, Bellingham, WA
 4,960 Doug Schwartz, Glendale, AZ
 4,790 Brad Gaucher, Hinton, Alberta

POOYAN (Datagrip)

273,450 ★Davey Devlin, Clyde, NC
 185,150 ●Wib Merrithew, Oshawa, Ontario
 164,950 Ronny Ong, Arlington, TX
 156,300 Daniel Bellise, Montreal, Quebec
 105,100 Frederic Daoud, St-Jean, Quebec
 79,000 D. Seibel, Tumbler Ridge, British Columbia

PROJECT NEBULA (Radio Shack)

73,650 Michael Rosenberg, Prestonsburg, KY
 62,700 Allison Germanese, Ringwood, NJ
 57,400 Rick Arthur, Ballston Lake, NY
 55,000 David Lazar, Englishtown, NJ

POPCORN (Radio Shack)

32,000 ★Lisa Welte, Baxter, TN
 16,180 David Kennedy, Denham Springs, LA

PROJECT NEBULA (Radio Shack)

1,065 ★William Daley, Biloxi, MS
 995 ●Dan Bovey, Wheaton IL
 960 Ian Clark, Albion, MI
 885 John Oliver, Williamstown, WV
 760 Patrick Daley, Biloxi, MS

PROTECTOR (Tom Mix)

594,614 ★Mark Smith, Santa Ana, CA
 594,610 ●Roland Hendel, Mississauga, Ontario
 358,514 Cameron Amick, Reisterstown, MD
 347,873 Derek Mall, Long Grove, IL
 275,810 Julian Bond, Berkeley, CA

PYRAMID (Radio Shack)

220 ★Harry L. Perkins III, Norfolk, VA
 220 ★Chris Cope, Central, SC
 220 ★Cornelius Caesar, West Germany
 220 ★Brian Boehnlein, South Bend, IN
 220 ★John Allen, Clemson, SC
 200 Greg Burke, Kenora, Ontario
 200 Kenton G. Field, Fort Francis, Ontario
 200 Sue Knobloch, Oshkosh, WI
 180 Mark Bitterling, Bowling Green, KY

RAINBOW ROACH (the Rainbow)

10,500 ★Michael Rhattigan, Cory, NC

REACTOIDS (Radio Shack)

88,615 ★Robbie Anderson, Monrovia, CA
 36,320 Roger Rothove, Warrensburg, MO
 26,275 Jeff Loeb, Mobile, AL

RETURN OF THE JET-I (ThunderVision)

365,934 ★Roger Buzard, Lima, OH
 148,112 Matt Griffiths, Stilwell, KS
 135,306 Peter Niessen, Carlisle, MA

ROBOTACK (Intracolor)

2,216,950 ★Randy Hankins, Tabor, IA
 1,512,200 Robert Kiser, Monticello, MS
 1,424,300 John Osborne, Kincardine, Ontario
 1,219,810 Steve Skrzyniarz, Tacoma, WA
 815,000 Philip Perry, Edmonton, Alberta
 394,650 Tina Pihl, Guilford, CT

SANDS OF EGYPT (Radio Shack)

82 ★John Allocca, Yonkers, NY
 87 ★Kim Van Camp, State Center, IA

SEA DRAGON (Adventure International)

137,500 ★Peter Niessen, Carlisle, MA
 75,750 ●Steve Schweitzer, Sewell, NJ
 60,430 Steve Skrzyniarz, Tacoma, WA
 56,760 Alan Morris, Chicopee, MA
 50,300 Remi Riess, Val Caron, Ontario

SEA QUEST (Mark Data)

230 ★Casey Stein, Binghamton, NY

SHARK TREASURE (Computerware)

245,000 ★Manon Bertrand, Hauterive, Quebec
 175,000 Maurice Boyle, Saskatoon, Saskatchewan

SHENANIGANS (Mark Data)

164 ★Richard Booth, Westerville, OH

SHOOTING GALLERY (Radio Shack)

120,840 ★Robert J. Wallace, Waldorf, MD
 59,520 Vernell Peterson, Radcliff, KY
 44,870 Mark Nichols, Birsay, Saskatchewan
 44,480 R. Duguay, St. Bruno, Quebec

SKIING (Radio Shack)

12:08 ★Kelly Kerr, Wentzville, MO
 21:35 Jean-Claude Taliana, Brossard, Canada

SNAIL'S REVENGE (the Rainbow)

44:02 Brad Gaucher, Hinton, Alberta
 34,860 ★Michael Rosenberg, Prestonsburg, KY
 11,380 Varunee Turner, Kamloops, British Columbia

SOLO POKER (Radio Shack)

6,150 Alan Sadler, Northwood, ND
 5,690 Clayton Martin, Ontario, Canada
 5,320 David Holland, Tofino, British Columbia

SPACE ACE (Spectral Associates)

3,120 Dan Ralston, Janesville, WI
 2,250 Bob Howard, Ontario, Canada
 1,340 Dan Sobczak, Mesa, AZ

SPACE ACE (Spectral Associates)

850 ★Granville Bonyata, Tallahassee, FL
 740 Allan Mercurio, Portsmouth, RI

SPACE AMBUSH (Computerware)

1,364 ★Perry Denton, New Baden, IL
 1,035,680 ★Curtis Boyle, Saskatoon, Saskatchewan

SPACE ASSAULT (Radio Shack)

1,632,450 ★Walter Broxk, Granisle, British Columbia
 358,660 Mike Snelgrove, Oshawa, Ontario
 354,860 Bruce Madariaga, College Park, MD

SPACE INVADERS (Spectral Associates)

238,580 John Cole, King City, Ontario
 224,130 Derrick Kardos, Colonia, NJ

SPACE INVADERS (Spectral Associates)

4,862,040 ★F.U. Ingham, Clyde, WI
 36,960 Sean Dutton, Goose Bay, Labrador

MORE...

RAINBOW SCOREBOARD

SPACE SHUTTLE (Tom Mix)

595	★Steve Schweitzer, Sewell, NJ
585	Randall F. Edwards, Dunlap, KS
575	Fred Weissman, Brookline, MA
571	Ted McDonald, Summerville, SC
566	Tim Smith, San Rafael, CA
547	Mike Forman, Topeka, KS
SPACE WAR (Spectral Associates)	
400,190	★Mark Felps, Bedford, TX
365,550	Randall Edwards, Dunlap, KS
116,000	Peter Niessen, Carlisle, MA
52,380	Jim Baker, Florissant, MO
13,000	Susan Ballinger, Uxbridge, Ontario
STARBLAZE (Radio Shack)	
9,050	★Judith Simon, Warrendale, PA
6,250	●Mark Weite, Baxter, TN
5,500	Beverly Herbers, Placentia, CA
5,350	Nancy Herbers, Placentia, CA
5,100	Tom Chew, Cranston, RI
STARFIRE (Intellectronics)	
10,000,050	★David Tittler, University of Minnesota
3,444,500	John DeMuth, Prairie de Chien, WI
2,102,450	Dean Bouchard, Kingston, Nova Scotia
1,420,000	Steve Schweitzer, Sewell, NJ
1,000,050	Chuck Ladig, Suisun City, CA
STARSHIP CHAMELEON	
95,900	★Craig Dutton, Goose Bay, Labrador
STORM ARROWS (Spectral Associates)	
68,400	★Jim Irvine, Sudbury, Ontario

TIME BANDIT (MichTron)

109,170	★Mark Wooge, Omaha, NE
106,720	Glen Heidebrecht, Topeka, KS
78,270	David Lazar, Englishtown, NJ
74,800	●Daniel Milbrath, Ann Arbor, MI
48,800	Scott Oberholzer
19,200	Chris Smith, Cincinnati, OH
TRAILIN' TAIL (the Rainbow)	
24,415	★Kentong Fifield, Fort Frances, Ontario
TRAPP FALL (Tom Mix)	
113,408	★Rich Trawick, N. Adams, MI
104,456	Robert Caltral, Ottawa, Ontario
104,424	Brennan Baybeck, Traverse City, MI
104,368	John Osborne, Kincardine, Ontario
98,588	Dan Burch, Louisville, KY
50,160	Mike Sengstock, Meriden, CT
48,326	Adam Jensen, Racine, WI
48,188	Elizabeth Peirce, Exeter, NH
TUBE FRENZY (Aardvark)	
544,560	★Perry Denton, New Baden, IL
240,060	Randall Edwards, Dunlap, KS
230,000	Ken Felix, Crystal Lake, IL
98,640	David Hogue, Mercer, PA
TUT'S TOMB (Mark Data)	
31,740	★George Kaakee, Royal Oak, MI
27,500	Eileen Kaakee, Royal Oak, MI
VENTURER (Aardvark)	
6,718,200	★Kyle Keller, Overland Park, KS
4,126,200	Greg Scott, Orlando, FL
2,291,100	Mike Sitzer, Roslyn, NY
2,657,350	Brian Panepinto, Spencerport, NY
1,769,400	Todd Hauschildt, Red Wing, MN
1,292,500	Richard Vehlow, Bayside, NY

WHIRLYBIRD RUN (Spectral Associates)

516,450	★Dan Shargel, Arroyo Grande, CA
103,900	Dann Fabian, Crestview, FL
98,400	Dave Lubnow, Sussex, NJ
87,350	Philip Daulton, Louisville, KY
73,950	Pat Craddick, Janesville, WI
52,000	Chris Cope, Central, SC
41,000	Rich Apollo, Farmingdale, NY
WILDCATTING (Radio Shack)	
63,723	★Michael Rosenberg, Prestonsburg, KY
48,682	David Rodgers, Carbondale, IL
38,318	Ellen Ballinger, Uxbridge, Ontario
34,828	Kerri Dutton, Goose Bay, Labrador
29,953	Lisa Ballinger, Uxbridge, Ontario
ZAKSUND (Elite Software)	
1,256,000	★Robert Conyer, Wilingboro, NJ
1,128,050	Richard Minton, West Frankfort, IL
1,008,100	Andy Mickelson, Granville, OH
950,500	Michael Rothman, Solon, OH
910,000	Steve Schweitzer, Sewell, NJ
ZAXXON (Datasoft)	
1,510,000	★James Quadrella, Brooklyn, NY
401,900	Mike Hughey, King George, VA
370,400	Chris Coyle, Selden, NY
235,200	Rich McGervey, Morgantown, WV
196,500	F.U. Ingham, Clyde, WI
126,200	Jon Laustsen, Scotia, NY
118,700	Eric Laustsen, Scotia, NY
110,600	Dan Ralston, Janesville, WI
105,900	Tina Pihl, Guilford, CT
104,800	Jeff Weeks, Hinton, Alberta
83,400	Kelly Stiner, Kingsley, MI
80,300	Darren Greenwalt, Livermore, KY
73,600	Shawn Chirrey, Mississauga, Ontario
ZERO G (Chromasette)	
52,235	★Mark Smith, Santa Ana, CA

— Kevin Nickols



Whole Numbers And Decimals Handy Aids For Teachers

Whole Numbers and *Decimals* are education software programs designed to prepare printed worksheets for any number and variety of mathematical problems. Designed and distributed by Shamrock Software of Radnor, Ohio, these programs provide welcomed material for the classroom teacher. The programs are designed to give practice on addition, subtraction, multiplication and division of whole numbers or decimal numbers. Please note that these programs are sold separately.

The program contains a series of subroutines used to formulate each problem type. The programs are written in BASIC language and instructions are given for ways to alter the programs for varied use. This is a welcomed feature and not provided by many software distributors. The changes need to be made prior to running the program because the [BREAK] key and the list command will be disabled when the program is run. You can restore the list function by *POKEing 383,0* as mentioned many times in this magazine.

The programs are printer-oriented and the math problems generated by the programs are not listed on the video screen. Thus, if you do not have access to a printer, you will find this program rather frustrating.

The programs print an actual worksheet of mathematical problems. You have the options regarding the number of problems generated, the range of numbers used (up to 9999), and the number of worksheets printed (each one is different). If you want multiple copies of the same worksheet, you would need to use a copier. The answers are given on the worksheet and designed to be left on the sheet as an aid to the students, or they can be cut off and used as a checklist for grading.

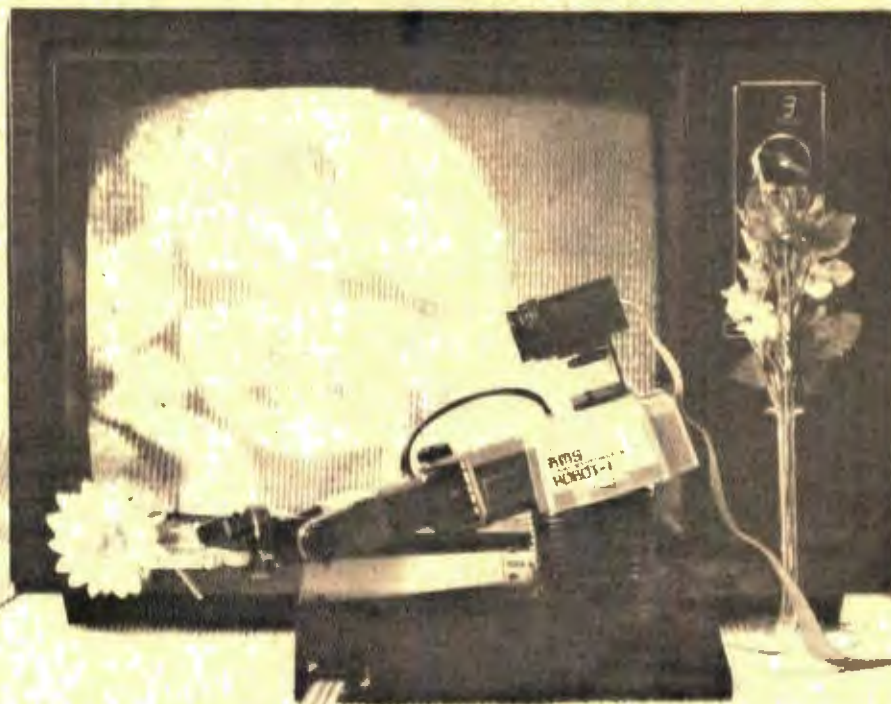
The programs can be used for any age group because any limitations can be utilized. For example, for first graders, simply use numbers less than 10, and adjust the program for addition only. For high school seniors, use numbers in the thousands and mix subtraction with division. Working with decimal numbers is always a little more complicated than working with whole numbers.

The programs are very basic in nature and are cut and dry. There is no title screen, no music, and no bells and whistles. The programs should run on a 4K machine with standard Color BASIC. This program could be used by teachers or parents who want to help their children brush up their arithmetic skills. The documentation is short, but adequate for the operation of the software.

(Shamrock Software, 4382 Norton Road, Radnor, OH 43066, tape \$9.95 for each program)

— J.D. Ray

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 Travelling Robot
- Radio Links between all Functions
- Robot-mounted MicronEye
- Ultrasonic Range Finder

Robot-1C for Color Computers—\$395.00

Robot-1S for S550 Systems—\$395.00

Robot MicronEye—\$295.00

Additional Systems Available

Robot-1G for General Purpose Computers

Robot-1R for Radio Control Systems

The Investor — A Good Idea, But A Good Investment?

How would you like a program that will analyze your stock portfolio? Just enter your purchases and sales of shares, dividends taken in cash or reinvested, commissions paid, and splits. You can enter up to 175 transactions divided among 24 different investments. In return, you'll get an up-to-date display showing your current cost basis and market value, realized and unrealized gains and losses, shares purchased and sold, shares purchased with reinvested dividends, annualized rate of return, and other goodies for each stock. You'll also get grand totals for your entire portfolio, and weighted averages and comparative bar graphs so you can compare your holdings and see how each one contributes to your overall position. That's what *The Investor* will do for you—but with some difficulty.

The program actually comes in two parts. The first program on the tape, *INVUPDT*, is used solely to enter your data into a file and write the file to a cassette. Then you *CLOAD* the second program, *INVESTOR*, and input the file from the data cassette. This second program is the one that gives you all the answers.

That can be a bit of a nuisance when you have several transactions to enter, and some of them happen to be sales of mutual fund shares, for which, unlike other securities, the cost basis is generally figured on an average cost rather than on the first-in-first-out method. So you have to stop and

write your file to tape, read it into the second program, calculate your cost basis, and then read the file back into the first program and enter the sale.

I don't know why J & A Enterprises chose to do it that way. Neither the cassette label nor the instruction manual has an address or a phone number, so I couldn't call them to ask. I can only guess that it was the only way they could fit the program into 16K and have enough memory to handle a reasonably large number of records. I'd rather have a single self-contained program that requires 32K.

The instruction manual—three 8½ by 11 sheets folded in half to make six pages—carefully illustrates each screen, and describes the various menu options. Most of the essential information is in there somewhere, but you've got to go through it carefully several times before starting to enter any data or you'll waste a lot of time and effort doing it wrong. The manual could be greatly improved by the addition of a summary section and some mention of defaults.

After you enter each record, you are asked "IS DATA CORRECT (Y/N)." Guess which one is the default condition. I found out the hard way after keying in several records that didn't get into the file.

If you change your mind while keying in a record, there's no exit key to return to the main menu. Either you finish keying it in and then go through the delete process, or you [BREAK]. If you [BREAK], where do you get back in without losing your data? I figured out the right line by listing the program, but a business application of this type should be usable by someone with zero programming knowledge. If you must [BREAK], then at least the manual should tell you where to *GOTO*.

To enter a purchase or a dividend reinvestment, you must put in the dollar amount, the cost per share, and the number of shares. If the number of shares is not correct, based on the first two variables, the entry will not be accepted, and the "\$ AMOUNT" prompt will come up again. This may be a silly question, but if the program has already calculated the number of shares, why in the world does it have to be entered?

Changing or deleting a record is more difficult than it needs to be. All fields must be reentered even if only one is incorrect. The record to be changed is located first by account number and then by date. If you have more than one transaction in the same stock on the same date, there seems to be no way to change the second one without deleting the first one.

If your portfolio includes mutual funds, as mine does, you may occasionally receive a capital gain distribution (either cash or reinvested in shares) along with your annual dividend. *The Investor* makes no provision for these.

Error trapping should have been better. I read a file full of incorrect data into the second part of the program, and when I selected one of the comparative graph options, it crashed on an FC Error. I believe that a well-written program should never be crashed by bad data. It should either give an answer of some kind, however wrong it may be ("Garbage in, garbage out"), or display a "data out of range" message as a signal to the user that there may be some fault in the entry of records.

There's no doubt that *The Investor* is a very good idea for a program, but I wouldn't buy it in its present form.

(J & A Enterprises, 74 South Meadow Rd., Plymouth, MA 02360, 16K Extended BASIC cassette \$39.95)

—Neil Edward Parks

LINE PRINTERS

\$ 149.⁹⁵

CENTRONICS 588 (used) serial 600
Baud, 80 CPS with 4 pin DIN plug

All prices F.O.B. Henderson, Tx.
Terms: Cash, check or COD
Tx. residents add 4% sales tax

LEADER SALES CORPORATION
P.O. Box 1220, Henderson, Tx. 75652
214/657-7800 after 6:00 P.M.

Discounts available to CC clubs
and volume buyers.

Saguaro Software

EDUCATION

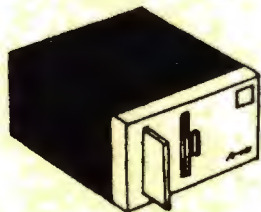
GAMES

NEW

Travelin' Toad	32K	18.75
Ockywocky	32K	18.75
Light Runner		18.75
Colorcal		18.75
Master Graphics Tool Kit	32K	29.75
Guillotine		7.75
Flasher		14.75
SR-71	32K	22.75
The King	32K	20.75
Touchstone	32K	21.75
Junior's Revenge	32K	22.75

Amdesk Color I Plus
\$299

Video Driver - \$20 W/Purchase



Amdisk 3
Amdesk Dual 3" Disk Drive

\$475

Includes 5 Diskettes
And 2 Drive Cables
(One Amdesk, One 5 1/4")

First Box Of Diskettes - \$45⁰⁰

R.S. Controller - \$135 With Amdisk 3

PRICKLY PEAR

Adventure In Wonderland	32K	18.75
Decipher		18.75
ERLAND	32K	18.75
Flight		14.75
Football		14.75
Gangbusters		14.75
Great Word Game		14.75
Jungle		14.75
Monsters & Magic	32K	14.75
Naked Gamer		16.75
Shaff		18.75
Teeeeoff		18.75
Topsy Turvy		14.75
Viking!		14.75

TOM MIX

Air Traffic Controller	Tape-32K	21.75
Buzzard Bait		21.75
Cu*ber		21.75
Journey to Mt. Doom (disk)	32K	21.75
Space Shuttle		21.75

PFA

Dunk-a-Duck	Tape	14.75
Inspector Cluiseau		14.75
Patti Pak		16.75
Stagecoach		14.75
TYCOON	Tape-32K	14.75

SUGAR

Silly Stories		8.75
Silly Syntax		16.75

3" Diskettes	10 for	\$55
Paper - 3,000 Sheets		32.75
Paper - 500 Sheets		5.75
Blank C-15 Tapes		.75
100% Tested Disk S.S.D.D. 5 1/4"	Box of 10	\$20
R.S. Disk Manual		\$17

Add \$3.00 For Disk, \$6.00 For Amdisk

PRICKLY-PEAR

Math Pac		14.75
Music Reader		26.75
Phonics 1 or 2 (tape only)		18.75
Phonics 1&2 (disk only)	32K	21.75
Prereader 1,2, & 3		18.75
Spelling		37.75

PFA

Ed. Pack 123's, ABC's, Big-Bigger		18.75
Biggest, Shapes		18.75
Heart-Lung-Circulatory		26.75
Medical Terminology		14.75

SUGAR

Bible Stories		21.75
Galactic Hangman		14.75
Great U.S.A.		15.75
Prereader		15.75

APPLICATIONS

PRICKLY-PEAR

Ancient Wisdom Trilogy		29.75
Eight-bit Bartender		14.75
Fantasy Gamer's 32k Package		18.75
Fantasy Gamer's Package		14.75
Fantasy Master's Secretary		14.75
Music Box	Tape	18.75
Satellite Tracker		59.75
Super Astrology	32K	18.75

PFA

Astrology (Screen PrintEpson, LP7)		17.75
Bowling Secretary		19.75
Hurricane Tracker		11.75
Stress Evaluator		18.75

UTILITY

Filmast		23.75
---------	--	-------

PRICKLY-PEAR

Clone Master	Tape-32K	29.75
Color Kit		26.75
Disk Manager (tape)	32K	18.75
Disk Master (tape)	32K	18.75
Disk Zapper!! (tape)	32K	26.75
Tape Omni Clone (tape)		22.75

PFA

Super Disk Utility (disk)		35.75
---------------------------	--	-------

SAGUARO

Move-it!		15.95
----------	--	-------

SUGAR

Auto Run	15.75	Tim's	20.75
Semigraf 32K	15.75	Tim's Mail	15.75

New From
Saguaro Software

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

ULTIMATE BINGO

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.

BINGO!

Plus The Bonus Of

JACKPOT

Pull the one arm bandit's arm & see if you can beat the odds.

Both Only:

Tape - 19.95 Disk - 24.95
Amdesk - 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 Amdesk - 29.95.

Arizona Residents Add 7% Tax • Add \$1.00 Per Program For Shipping (\$4.00 Maximum)

Dealer Inquiries Welcome • Some Quantities Limited • Ask About Royalties



7331 E. Beverly - Tucson, AZ 85710 - (602) 885-6508



Excitement, Realism Mark SAC Text Game

A wargamer once said, on being accused of being a war-monger, that "the study of war no more made him a war-monger than the study of cancer made a research physician a cancer monger." The recent revulsion for all things military has been partly to blame for a void in one of the most stimulating areas of simulation and gaming, human warfare. This void has been partially filled by *SAC*, a real-time nuclear flight mission simulation.

SAC requires a 32K Extended CoCo. Its premise places you in the cockpit of your B-52 on the ready pad at Ramstein Air Base, Germany. Suddenly, the tower orders you to scramble and gives you take-off information. Your fingers fly as you start the big ship's eight engines, advance them to full power, release brakes and begin your take-off roll. After lift-off, you receive information about your assigned target and a fail safe code which must be used to arm your plane's single nuclear bomb. From this point you use your navigational computer to fly to your target, bomb it, return to Ramstein and land. Sound easy? It's anything but.

In the immortal words of one Major "King" Kong (pilot of a B-52 in the movie "Dr. Strangelove"), "Well boys, it looks like this is it . . . noocleeur combat, toe to toe with the rooooskies." All the way to and from the target you will be hounded by MIGs and SAMs bent on turning you into a

charred scar on the Russian landscape. You are far from defenseless, however, for your B-52 is equipped with nine sophisticated navigational and weapons systems including missiles and a chaff dispenser for thwarting MIGs and electronic counter measures to avoid the radar of Soviet SAM bases. Some of these systems may become damaged due to enemy action and must be repaired by the flight engineer, which takes a varying amount of time. You haven't felt excitement until you've screamed in on a target at 600 KTS, rapidly approaching the drop point, while the F/E tries to repair the bomb rack in time to drop the bomb. The last thing you want to do is to make a second run on the target. Dropping the bomb within five miles of ground zero results in the target being destroyed.

This is a text style game, not an arcade. All aircraft conditions and combat reports are in text (a la *Star Trek*) but it is still real-time and the action is fast. I feel that more realism is possible in this style of simulation. There is one very nice graphics feature, however. It is a *PMODE4* map of Russia which you can toggle anytime you want it. It is very nicely done and it shows the position of your B-52, all 36 possible targets and Ramstein.

Primary aircraft control can be selected prior to starting. You can select keyboard only or combinations of keyboard and joystick. I preferred the keyboard only mode as I felt it provided better control. Difficulty is selectable also and ranges from "A piece of cake" (the easiest) to "One way trip" (the hardest). If you are in a vengeful mood you can even go after Tehran.

Documentation is good and completely covers all aspects of the simulation, from take-off to touchdown.

I liked this one a lot, it is exciting and realistic. It also has a sobering aspect that makes one hope that this never really happens — at the same time, you gain a new respect for those men who are faced with the task if it ever does.

(Pa) Creations, 10456 Amantha Ave., San Diego, CA 92126,
tape \$19.95)

— David Johnson

Aurora Software

49 Brookland Ave., Aurora, Ontario Canada L4G 2H6

FAMILY GAMES

The popular **STOCKBROKER** and **CRIBBAGE 32K** \$14.95 each.

ADVENTURE GAMES: Sea Quest and Shenanigans from MARK DATA only \$24.95(C); \$27.95(D) each

From BRANTEX, **PIRATE TREASURE 16K** \$13.95

SCAVENGER HUNT 16K \$18.95

EDUCATIONAL GAMES

COLORMIND, CONCEN - improve your memory and logical thinking - **16K** \$10.95 each

Also from **BRANTEX**

EDU-COMBO (Math Derby, Peek 'N' Spell Metric Converter) **16K** only \$29.95

BUSINESS: HOUSEHOLD EXPENSE MANAGER 16K \$19.95

LOAN ANALYSIS 16K \$20.95

NEW from MARK DATA

The amazing **TIME FIGHTER 16K** \$24.95(C)
32K \$27.95(D)

Also the ever popular **GLAXXONS 16K** \$24.95(C)
32K \$27.95(D)

UTILITIES: ROMDISK: Run your rom pack games from a disk! **16K** \$15.95

MR. COPY - make up to 99 copies of one program at once! **16K** \$15.95

Hint . . .

Small Letters On CGP-115

This may be of interest to anyone who has the CGP-115 printer. It changes the size of the print from 40 columns to 80 by using the printer's built-in *CHR\$(18)* command instead of by using the DIP switches in the back. Also, it seems to speed things up a bit.

To place the printer in the small letter mode, one must first type in *PRINT#-2,CHR\$(18)* and [ENTER]. Then type in *PRINT#-2,"test"* and [ENTER]. Now type in *PRINT#-2,CHR\$(17)* [ENTER], and then type in *PRINT#-2,"test"* [ENTER] again. This should place the printer in the 80-column mode and print the word "test" in small letters.

Jerome Bigge
Muskegon, Mich.

**THE
ADVENTURE GENERATOR**
has been approved for use
to create entries in the
Rainbow Magazine
Adventure Contest.

WHERE'S-IT

by C.E. Laidlaw

What programs are on this disk? Which disk is my WIDGET program? WHERE'S-IT will answer these questions for you and maintain disk directory index files with up to 972 programs in each. Completely user-friendly, just run WHERE'S-IT and follow the prompts to: Create index files holding up to 972 programs

Load or save existing index files

Add, delete or update index files for a specific disk

Sort index files alphabetically with a machine language sort

List index files to screen

Print index out with 162 programs to the page

Disk only.....\$19.95
(32K Extended Color BASIC)

We are also a dealer for the following companies:

Moreton Bay Software

Computerware

Spectrum Projects

Mark Data, Amdek, Epson

Pal Creations, Tom Mix

PBH Computer, Inc.

Spectral Associates.

Cognitec, Elite Software

Prickly Pear, Botek

Cobra Software

and many more fine companies.

JARB

SOFTWARE
HARDWARE

1636 D Avenue, Suite C
National City, CA 92050

After hours:

BBS 619-474-8981

Orderline:

619-474-8982

T.A.G. THE ADVENTURE GENERATOR

ADVENTURE

Cassette.....\$34.95
Disk/Amdisk.....\$39.95



FEATURES

Creates stand-alone programs

Up to 100 rooms, 60 objects, 30 command words, and 9 conditional flags

Supports tape and disk output

Optional printer output of important sections during creation of ADVENTURE

Complete documentation

Includes sample ADVENTURE

Works with all models of the CoCo except MC-10

Requires 32K Extended Color BASIC

NEW GRAY LADY

by Terry A. Steen

Control your submarine in its efforts to destroy the enemy fleet. You must launch your sub to surface missiles while avoiding the depth charges. Five different types, hi-res graphics and spectacular sounds. Also a talking version included at no extra charge for those who have an SC01 based voice pack. Four screens and progressive difficulty make this all machine language program a real bargain.

Cassette: \$19.95

Disk/Amdisk: \$24.95

U.S. COD orders accepted, no charge cards please.

Shipping and handling \$3.00

California residents please add 6% sales tax

STRETCH

RAINBOW SCREEN MACHINE

\$29⁹⁵
Tape

Add \$3 for disk

The Rolls Royce of hi-res text utilities. —more features than all others combined! Adds a whole new dimension to your programs.

- Replace that ugly 32 x 16 screen with a professional display of up to **24 lines of 64 lowercase characters**. Combine with graphics for 3 times the information on one screen!
- Adds **underline, subscript, superscript, reverse video, top and bottom scroll protect, double-width bold and colored lettering** with easy to use commands from within your program or **control key input** direct from keyboard. Even a built in **help screen** of commands/ status.
- Machine language extension of BASIC fully interfaced with **ALL keys, commands and PMODES** including PRINT, PRINT @, TAB and comma fields.
- **12 switchable character sizes** (most colored) of crisp, clear, true lowercase letters from 64 x 24 to 12 x 8 for VCR title screens, education, and visually impaired. An **additional 128 useful figures** of Greek, cars, tanks, planes, etc.

Includes character editor and demo program. 16K Ext BASIC required - 32K/64K supported.

"Now I automatically reach for Screen Machine when I power up . . . Screen Machine is what Radio Shack should have put in the computer in the first place . . ."

— G. Cummings - Concord, CA

Screen Machine enables YOU to do tasks which were never before possible due to limited screen capacity. Now YOU can label your hi-res pictures and graphs with ease. Now YOU can write professional programs that feature high density text and lowercase displays. Now YOU can easily create large, colored lettering for VCR title screens and educational uses. And Screen Machine is so easy to use it quickly becomes second nature.

"(Screen Machine) is excellent. I am highly impressed with what you have accomplished . . ."

— L. Bass - Traverse City, MI

You can find dozens of uses for the additional 128 useful graphic figures built right in. And because you can modify Screen Machine's character set using the supplied character editor program you can easily customize Screen Machine to your needs. And with the free Demo program you see and learn all of Screen Machine's powerful features quickly.

"(Screen Machine) is certainly the finest and the most frequently used program in my software library."

— N. Cuong - N. Palm Beach, FL

YOUR SCREEN!

SUPER SCREEN MACHINE

\$44⁹⁵ Tape
Add \$3 for disk

Revolutionary — heralded as the most useful, powerful and versatile state-of-the-art utility ever developed for the Color Computer!

All the features of Screen Machine and more:

- Variable **SMOOTH Scroll**, **Key Click** and **Break Key Disable** for professional displays, listings, business use.
- **EDTASM+ Command** for instant compatibility with R.S. editor-assembler cartridge. **Superpatch+ Command** for disk users.
- **Dynamic Screen Dump Command** for use with Custom Software Engineering's Graphic Screen Print program for simple printer "Snapshots" of your screen.
- **The New Standard** — Upgradeable at any time from previous Rainbow-Writer or Screen Machine purchase. Return old program, manual, plus cost difference and \$7.00 shipping and handling.

Publishers/Authors: contact the hi-res text experts for custom displays in your software.



RAINBOW CONNECTION SOFTWARE

RAINBOW CONNECTION SOFTWARE

3514 6th Place NW, Suite D
Rochester, MN 55901
507-288-4424

YES, I want to easily create dazzling displays with the best SCREEN Enhancer for my Color Computer. Please RUSH me the incredible SCREEN MACHINE at the affordable price of:

Rainbow S.M. \$29.95 Tape - \$32.95 Disk _____

Super S.M. \$44.95 Cass - \$47.95 Disk _____

Shipping \$2.00 _____

Minnesota residents add 6% Sales Tax _____

Visa & Mastercard add 3% _____

_____ Exp _____

TOTAL _____

NAME _____

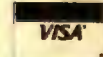
ADDRESS _____

CITY _____

STATE _____

ZIP _____

Personal checks welcome - no delay.
Send SASE for catalog.
Not affiliated with
THE RAINBOW



Available in fine stores everywhere, the Dataman and Kelly Software in Canada.

NEW!

SENSATIONAL! GRAPHIC ADVENTURES

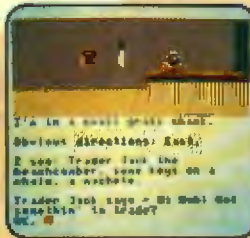
DISC NOT REQUIRED

Cassettes \$24.95 ea.
Discs \$27.95 ea.
32K Required



SHENANIGANS

From the heart of the city to lonely wilderness. An action filled journey to find the fabled pot of gold at the end of the rainbow. The first of our sensational new hi-res graphic adventures. You'll love it!



Actual photographs taken from Calixto Island screen.

CALIXTO ISLAND New Hi-Res Version

A challenging puzzle with an occasional twist of humor. You'll visit a secret laboratory, a Mayan pyramid and you'll meet crazy Trader Jack—all in living color and exciting detail. A classic!

BLACK SANCTUM New Hi-Res Version

Encounter the forces of black magic as you roam around an old 18th century monastery. You'll see all the evil locations in this spooky adventure in full hi-res detail. If you enjoy suspense, this one's for you.



SEA QUEST

Get your shark repellent and scuba tanks ready to search for treasures under the sea. You'll run into a pirate, a mermaid and hungry sharks in this colorful and unique adventure. Outstanding!



OTHER GREAT GAMES FROM MARK DATA

BUMPERS

Tension mounts as you wildly race through a hidden obstacle course. Barrier walls are invisible until you bump into them and you must proceed cautiously as each dead end has a hidden booby trap. Especially exciting when two players compete simultaneously.

COSMIC CLONES

Clonial Warriors, Super-Klones, Double Bombs and "the Death Layer" relentlessly challenge the most skillful player in this unique, fast action game. This is one of our favorites.

GLAXXONS

Pit your playing skill against squadrons of swooping, diving spacecraft. Fast and furious with seven selectable skill levels and automatic game acceleration... guaranteed to blister your joystick finger.

EL BANDITO

El Bandito has to be a crafty little hombre to stay alive as he loots the local countryside. Escape into a tunnel to avoid that angry spider... race around the corner towards your lair. Two players may compete simultaneously in this unusual game.

All games: Cassettes ... \$24.95 ea. Discs ... \$27.95 ea. 16K Required



Mark Data Products

24001 Alicia Pkwy., #207, Mission Viejo, CA 92691 • (714) 768-1551

ORDERING INFORMATION: Phone your order for speedy delivery. Use your MasterCard or Visa. We also accept checks and money orders. ALL ORDERS: Please add \$2.00 shipping and handling in the continental U.S. All others, add air shipping and \$3.00 handling. California residents add 6% sales tax. Foreign orders please remit U.S. funds. Distributed in Canada by Kelly Software Distributors. SOFTWARE AUTHORS: Contact us for exciting marketing details.

Let Your CoCo Spell With *Color Dictionary*

It's nice to see Radio Shack increasing their Color Disk library. Their newest edition which I received to review is *Color Dictionary*. It comes in their familiar three-ring binder, as do *Disk Scripsit* and *Disk Spectaculator*. Upon inspecting the binder, something surprised me — an insert in the beginning of the book. This insert is also the same one I found in my copy of OS-9. It is entitled "Read Me First" and continues:

All computer software is subject to change, correction, or improvement as the manufacturer receives customer comments and experiences. Radio Shack has established a system to keep you immediately informed of any reported problems with this software, and the solutions. We have a customer service network, including representatives in many Radio Shack Computer Centers, and a large group in Fort Worth, Texas, to help with any specific errors you may find in your use of the programs. We will also furnish information on any improvements or changes that are "cut in" on later production versions.

The reason for quoting this notice is that I can finally give credit to Radio Shack for offering quality after-market support for the Color Computer. They are finally recognizing the importance of their product and (hopefully) see it as a long-term investment. With this sheet comes a registration card that is filled out and mailed to Fort Worth. The sheet also contains a space for a Version Log and the version purchased is listed already. Both the versions of *Color Dictionary* and OS-9 are 01.00.00. I like this idea and I hope that Radio Shack has made this their policy indefinitely.

The manual is laid out in the same format as *Disk Scripsit* or *Spectaculator* and leaves none or very few questions to be asked if the manual is thoroughly read. The program comes with two diskettes. One is the dictionary and the other the system disk. Although much easier to use with two drives, the program will work with only one. *Color Dictionary* is written by Robert G. Kilgus, the same author who wrote *Disk Scripsit*, so it wasn't unusual to see the same type of operating system implemented. In fact, the first menu that appears after typing `RUN"DOS"` is the same menu that appears in *Disk Scripsit* if selection 8 is chosen to "Return to BASIC." There are five choices: 1) Return to BASIC; 2) Run a Program; 3) Start Clock Display; 4) Display Free Space Map; and 5) Copy a File. These all work the same way as in *Disk Scripsit*. At this point the manual informs you to make a copy of *Disk Scripsit* onto the diskette you are using for *Color Dictionary*. (Note: A backup copy of the system disk and the dictionary disk should have been made by now, and the originals stored away!) This is done by choosing option 5 and copying the file "SCRIP/BIN." What Kilgus has done is incorporate *Disk Scripsit* with *Color Dictionary* to be able to switch back and forth between each other. I'm not sure how he accomplished this, but when in the main menu for *Disk Scripsit*, the program will now allow you to press the

number 9, which will send you back to *Color Dictionary*! It only works if they are on the same diskette. Now all of your *Scripsit* files can be transferred to the *Color Dictionary* disk and you can go from *Scripsit* to *Dictionary* and back by using menu selections. Note that menu selection 9 does not appear on the *Scripsit* menu, but it is there.

Option 2 at the main menu allows you to run a program. To get to the next menu of *Color Dictionary*, select option 2, then type "CHECK" [ENTER] and the second menu will appear. Its choices are: 1) Lookup; 2) Check Spelling; 3) Correct Spelling; 4) Go To *Scripsit*; and 5) Return to DOS. Lookup is a great feature. With it, you can search the dictionary for any word, words, group of letters, words beginning with certain letters, ending with certain letters, and so on. For example, if you wanted to see all the words that begin with the letter "z," you would enter "z*," the "*" being a wild-card character giving the whole z section of the *Dictionary*. You could also type "zoo*" or any amount of letters. The other wild character the program uses is the question mark "?." While the "*" stands for any amount of letters, the "?" stands for only one, although more than one "?" can be used in a search. A good example is if you forget the spelling of a word. Let's use the word "receive." You can't remember if the "i" is before or after the "e." You simply enter "rec??ve" and all the words in the *Dictionary* that have "rec" at the beginning and "ve" at the end and are seven letters long will appear. You could have also typed "rec??ve*" and words that match that are seven letters or longer would appear on the screen. If the question mark is used as the first letter, the entire *Dictionary* is searched for

```

    Now a LOGO for the
    COLOR COMPUTER

    TINY TURTLE

    TINY TURTLE is an affordable,
    fully compatible LOGO language
    with high resolution turtle
    graphics, music, fast pro-
    cessor operation, and re-
    trieval of user procedures.
    TINY TURTLE comes complete
    with soft copy reference user
    manual.

    32K/EXTD BASIC
    CASSETTE or DISK          $39.95
    HARD-COPY MANUAL          $4.95

    ALSO

    GAS MILEAGE MONITOR
    DISK                       $9.95

    SDS COMPUTERS             BOGOTA, NJ
    POB 450                    07603
    NJ ADD 5% TAX
  
```


matches. (The process can be stopped at any time by hitting [BREAK].) After the list has appeared on the screen, you have the option of printing it or hitting [ENTER] to continue. One note, *Color Dictionary* does not have a section to set the Baud rate of your printer. There are two options here. One, insert a line at the beginning of the "DOS/BAS" program to *POKE* your Baud rate, or go to *Scriptsit* from the *Color Dictionary* and set the Baud rate from *Scriptsit* and return to *Dictionary*. This lookup feature will be a joy to anyone who does any kind of word puzzles. With a 60,000 word dictionary at your fingertips, finding the right word to fit should be a breeze.

Of course, there is another powerful feature of this program to check and/or correct your spelling from a *Scriptsit* document. These are options 2 and 3. After pressing 2 at the menu, the program asks for a filename which should be on the disk you are using or you will need to switch disks before you enter a filename. The filename is assumed to be in *Scriptsit* format with "/TXT" as an extension (default). After entering the filename and placing the *Dictionary* disk in the appropriate drive, the program proceeds to search through your *Scriptsit* file and check each word against its dictionary. The "suspect" words (words that are not in its dictionary) are displayed and can also be printed. When this is completed, selection 3 from the main menu corrects the spelling. Each suspect word is shown and you are asked to enter the correct spelling, skip to the next incorrect word or return to the main menu of the "CHECK" program. If a mistake is made when correcting, you are given a chance to change it again, making this part of the program very easy to work with. Upon completion of all the changes, you can resave the file using the same filename or by entering a new one.

Color Dictionary will prove to be a great asset to any *Color Disk Scriptsit* user, as well as anyone who just wants the program for finding words using the wild card character searches. Among its drawbacks are that words cannot be added or changed in the *Dictionary*, meaning it can't be customized. For us Canadians (Canuks!), the Canadian spelling of certain words has been left out. For example, "colour" as opposed to "color." It does have quite an extensive list of words, and most forms of words are included, including most plurals, which are always listed directly below the root word, although it may not be in alphabetical order.

(Radio Shack Stores nationwide, 32K tape \$59.95)

— Eldon Doucet

DRB Utility Is Reasonably Priced

If you own a disk system, you have probably discovered by now that the *DIR* command leaves a lot to be desired. Not only does it scroll the file names off of the screen, but it also does not give you all that much information about your files.

The latest offering to tackle some of these shortcomings is *DRB (Directory with Bytes)*. *DRB* is written in BASIC and will work on a 16 or 32K machine.

When you *RUN DRB*, it asks you if you would like your directory displayed on the screen or printer. If you choose the printer option, the program checks to make sure that it is ready. If it is not, it will let you know and then *END* itself.

The directory display produced by *DRB* includes the information you are used to, plus it will show you how many bytes long each of the files are. If the screen should fill up while displaying the directory, the program will pause and wait for you to hit the space bar. Once all of your directory is displayed, the program will also display the number of free and used files, granules and bytes on the disk.

When I first ran *DRB*, I thought to myself, "Oh, that's nice," and decided to try it out on another of my disks. When I typed in *RUN* again, all I got was an OK. It was only after loading the program again that I discovered that it does a *NEW* after it is done. Why, I don't know.

DRB comes with another program called "DSKNAM." What this program does is allow you to put a name on your disks, which will then be displayed along with the directory. It does this by storing your name in the last eight bytes of track 17, sector 18, which is not used by RS DOS.

All things considered, *DRB* is, at best, an interesting utility program. Despite the fact that it is very reasonably priced, most of you could probably write it yourself in an hour or so. If you have never written a BASIC program, and have never read your disk system owner's manual, then you might want to consider buying it. Otherwise, a "do-it-yourself" project would be your best bet.

(Micrologic, Box 193, First Ave., East Brady, PA 16028, 16/32K cassette, \$7.95)

— Gerry Schechter

"Plug in Kits" for CoCos* Including the new CoCo II from... *MetroKit Retrofit*

- EYE-BALL SAVER.** Flip easily from NORMAL VIDEO when using games, to REVERSE VIDEO when you write text. Ready to plug in. Price \$19.95....Order # MK 1233
- COCO SOUND.** Did you buy one of those video things to drive a monitor and now can't hear the sweet sounds of CoCo? No TV or external amp required. Price \$24.95....Order #MK 1235, for COCO IIs, order #MK 1235A
- COCO DRIVE.** Monochrome video driver. Make that text really readable. An improvement really worth plugging in. Price \$19.95....Order #MK 1236
- DELUXE VERSIONS** for #1 and #3 combination. Price \$29.95....#MK 1239

METRO ELECTRONICS, 5131 Mission St., San Francisco, CA 94112 (415) 333-1917 Established 1963

Terms: Check, Money order, Visa/Master. Add \$2.00 for Shipping and handling.

* D & E Board will require soldering.

[California residents add sales tax]

+++++For COCO IIs, add "A" to part number.+++++



THE INTRONICS EPROM PROGRAMMER

Price: \$140.

Newly Designed Unit NEW VERSION 2.4

- Plugs into ROM pack port.
- Now programs 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



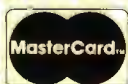
SPLC-1 Lower Case FULLY ASSEMBLED, TESTED & GUARANTEED FOR 90 DAYS \$59.95

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

YOUR SOURCE FOR THE COLOR COMPUTER

- *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 \$199
- F-A-S-T- UPGRADE SERVICES \$CALL!



(Dealer Inquiries Invited)

- MINIMUM \$2.00 SHIPPING & HANDLING.
- NYS RESIDENTS ADD SALES TAX.
- ALL OTHER ORDERS ADD 4% SHIPPING.

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

OS-9 40-Track
Program \$24.95

- NOW OPERATE 35/40/80 DOUBLE SIDE, DOUBLE DENSITY DRIVES UNDER OS-9

64K Terminal
Package \$24.95

- AFFORDABLE REQUIRES 64K MEMORY GIVES YOU 52-58K BUFFER WRITES TO DISC READS IN FROM DISC STANDARD DISPLAY



62 COMMERCE DRIVE
FARMINGDALE, NY 11735
(516) 249-3388

Cultivate Action, Fun With *Demon Seed*

With such a large amount of software available for the Color Computer and so many variations of each, it is sometimes difficult to decide on what to purchase. In the area of popular arcade games, there can be as many as six or eight different versions from assorted companies, so you can flip a coin to decide what to purchase or, instead, pick up *the Rainbow* and go through the reviews to help you make up your mind. So pull up a chair right next to me and we'll boot up this program together and take a look.

Computer Shack has released a new arcade game called *Demon Seed*. The object is to protect the world from the demonic forces that want to take over the universe, or something like that. You, brave warrior, must (as usual) save the (pick one of the following): world, cosmos, earth or your pet hamster from this evil. Do you have what it takes? Are you ready? Can you handle it? Do you want to turn the page?

When the program appears on your magic tube, the first thing you will see is the title screen of *Demon Seed*. If you would like to watch the demo mode for awhile, just leave it alone. Otherwise, hit the [ENTER] key to begin the game. As the game unravels the first wave of bats will swoop down on you against a black background. You may fire upon them

by pressing the button on your joystick, or defend yourself with the available shields by moving the stick forward. When you bring up a shield you become immobile for awhile until the energy of the shield wears off. The shields last about six seconds, so be ready to move again. You can fire through your shields if you want. Also, the amount of shields given to you are unlimited and you don't have to "save" them for the harder rounds.

During this first wave you may only have two shots on the screen at any given time. The second round is identical to the first one with the bats, but only one shot on the screen is allowed. Each screen will end once you have killed off every intruder in sight.

The graphics and game play improve considerably when you reach the next level. Here, the visual effects are colorful and very smooth. Small eggs form on the screen and swarm left and right, back and forth, growing right before your eyes. Whoosh, swoosh, like a slithering snake. Then they hatch. The *Demon Seed*. Wicked wings flapping furiously, blue and red and yellow. They fire upon you randomly, quickly, sometimes machine gun-like.

They swoop down at you, on you, past you, and return again at the top of your screen. You need quick reflexes now. Shoot a wing off. Whichever one you hit grows back in a short time. If you shoot both wings off, the demon turns back to an egg. Tuff stuff, eh? If you hit the demon squarely right between the eyes you finish him off. The sound of the shots and hits are electronic. These third and fourth rounds use the same firing principle. Two shots on the screen the first time around and one for the second.

If you have survived this far, you have the privilege of blowing away (pick one): the mother ship, the flagship, your landlord or your citizenship to save face and the world.

There it sits, waiting silently, suspended in the darkness of space and your living room. Our old friends, the bats, arrive for a return engagement to hassle you. You fire at the bulkhead of the ship, putting a dent in it at best. The ship slowly starts to descend, giving you less time to avoid the shots being fired from the ship. The middle portion serves as a rotating protection device to disperse the damage you inflict, so you must continue to aim for the same spot when it comes around a couple of times to finally open up a channel and lay waste to the king baddie himself. Get in one clean shot and *whapp!* The ship explodes all across your screen and you can start all over again.

Another feature of the game is a display of the high scores of the evening. You can also pause for some fresh air or restart the game anytime you want.

I should like to point out at this time that the disk I received for review was copy-protected. When you purchase *Demon Seed*, you will not be able to make a copy for your backup files. Neither the backup nor copy commands will work. Also, as the program loads, the disk head travels back and forth at least eight times to achieve a load which I feel brings about unnecessary wear and tear on the disk drive unit. I also think the disk would wear out sooner than normal because of this.

All in all, *Demon Seed* is a good arcade game that will grow on you. It is available in 16K and 32K versions.

(MichTron, 1691 Eason, Pontiac, MI 48054, \$27.95 tape, \$29.95 disk)

— Steve Schechter

Quality Christian Software

MONEY BACK GUARANTEE

If for any reason you are not fully satisfied with any program you purchase from Quality Christian Software just return the original program (Cassette or Diskette) and we will refund the purchase price of the program.

***** 4 NEW PROGRAMS *****

PILGRIM'S PROGRESS: An interactive adaptation of Pilgrim's Progress in the form of an adventure game. Your progress is directed away from the city of destruction and towards the Celestial City. Important Biblical Doctrines are grasped as the player proceeds. Requires 16k E.C.B. — \$17.99 Cassette.

CHURCH TIME: A light hearted non-theological adventure for the whole family. You're almost late for church and to top it off you forgot your Bible. Rushing back into your house you find that the sticky front door has bolted behind you. The object is to find your Bible and get outside so that you won't be late for church. 32k E.C.B. — \$10.99 Cassette.

BIBLE REFERENCE PROGRAM: Topographical Bible Reference Program covering 27 Topics with 60 Biblical References. 16k E.C.B. not required — \$10.99 Cassette.

3-GAME PACK #3: Reversed Sword Drill game #2, "Who Did That" Game #2 & "Who Said That" Bible Quote game #2. — 16k E.C.B. — \$10.99 Cassette.

JUDE: A full text commentary and reference study on the Epistle of St. Jude. See the review in the December 1983 Issue of RAINBOW. Page 286. Requires 32k E.C.B. Cassette \$13.99 Disk \$16.99

3-GAME PACK #1: Books of the Bible Game, Bible Character Word Scramble game & "Who Said That" Bible quote game. Requires 16k E.C.B. — Cassette \$10.99

3-GAME PACK #2: Reversed Sword Drill game, "Who Did That" game & Bible Places Word Scramble game. Req. 16k E.C.B. — Cassette Version \$10.99.

 Please Add \$2.00 for freight
C.O.D.'s add \$4.00
Overseas add \$6.00

QCS
P. O. Box 1899
Duncan, OK 73534
405/255-5696

24 Hour
Phone
Service

Color by HOT CoCo



If you like color . . . you're going to *love* HOT CoCo magazine.

The exciting new monthly devoted exclusively to the TRS-80 Color Computer.* It's from the publisher of 80 Micro.

Let HOT CoCo color *your* system with:

- Feature articles on color graphic techniques
- Computer art
- Games
- Specific color applications in home, education, business and hobbies

PLUS

- Ideas on patching, aiding and trouble shooting
- Buyer's guides
- Product and book reviews
- Hardware interfacing and enhancing
- Programming techniques and tutorials

Best of all, HOT CoCo is written by users just like you.

The material is always up-to-date and useful. Hardware, software, books . . . what's new . . . what's best . . . what works. And you get one year for only \$24.97. A 13th issue is yours FREE with pre-payment (check or credit card). Use the attached order form, the coupon, or call toll free 1-800-258-5473. Subscribe Today!

YES! please sign me up for one year of HOT CoCo at \$24.97.** I understand that with payment enclosed or credit card order I will receive a free issue making a total of 13 issues for \$24.97.

MC VISA AE CHECK/MO BILL ME

Card# _____ Exp. Date _____

Signature _____ Interbank # _____

Name _____

Address _____

City _____ State _____ Zip _____

Canada & Mexico \$27.97/1 yr. only, US Funds
Foreign surface \$44.97/1 yr. only, US Funds drawn on US bank.
Please allow 6-8 weeks for delivery.

745 FRB

HOT CoCo • PO Box 975 • Farmingdale NY 11737

*TRS-80 Color Computer is a trademark of Radio Shack, a division of Tandy Corp.
**This price voids all previous offers.

HOT CoCo

RAINBOWfest

CHICAGO

The fun and excitement of **RAINBOWfest** is coming your way . . . and now there will be a **RAINBOWfest** near you!

For the 1983-84 season, we scheduled four **RAINBOWfests** in four parts of the country. If you missed the **RAINBOWfests** in Fort Worth on Oct. 14-16, Long Beach on Feb. 17-19, and at New Brunswick on March 30-April 1, you still have time to make plans *now* to attend our Chicago show. It will offer fun, excitement, new products, seminars and information for your CoCo!

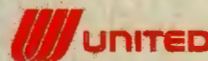
Our Chicago show will be held at the Hyatt Regency, Woodfield, which offers special rates for **RAINBOWfest**. The show will open at 7 p.m.-10 p.m. Friday, run 10 a.m.-6 p.m. Saturday and close with an 11 a.m.-4 p.m. session Sunday. It will have a CoCo Community Breakfast featuring an outstanding national speaker from the Color Computer World. And the exhibition will be interspaced with a number of seminar sessions on all aspects of CoCo — from writing in machine language to making your BASIC work better.

But most of all, there will be exhibitors. Lots of them. All ready to demonstrate products of every kind. Some with special programs and hardware items to introduce. Others with show specials.

Tickets can be secured directly from *the Rainbow*. We'll also send you a special reservation form so you can get your special room rate.

Come to **RAINBOWfest** . . . help us all celebrate CoCo Community at its finest.

Discount Air Fares



United Airlines and *the Rainbow* have joined together to offer a special discounted fare to attendees of **RAINBOWfest**, Chicago. Simply by calling United at the toll free number listed below and identifying our meeting, with account number 2426, you will be eligible for a special "super saver" fare. This could mean as much as a 50 percent discount off that regular coach fare.

(800) 521-4041

Account Number 2426

Chicago — June 22-24

Come to **RAINBOWfest** — the site of CoCo's very first show. And right next to the world's largest indoor shopping mall.

RAINBOWfest-Chicago

DATES: June 22-24

HOTEL: Hyatt Regency Woodfield

Rooms: \$46 per night single/double

KEYNOTE: Ed Juge, director of market planning for the Tandy Corporation

Advance Ticket Deadline:

June 18, 1984

YES, I'm coming to **RAINBOWfest** in Chicago.

Please send me:

_____ three day tickets at \$8 each total _____

_____ one day tickets at \$6 each total _____

(Specify day) _____

_____ breakfast tickets at \$11 each total _____

TOTAL ENCLOSED (U.S. FUNDS ONLY, PLEASE) \$ _____ Handling Charge \$1

—Also send me a hotel reservation card for Chicago

NAME (please print) _____

STREET & NUMBER _____

CITY & STATE _____

TELEPHONE _____ ZIP CODE _____

COMPANY _____

Orders received less than two weeks prior to show opening will be held for you at the door.

VISA, MasterCard, American Express accepted.

My Account # _____ Ex. Date: _____

Signature _____



FREE RAINBOW

poster for first 500 tickets ordered.

FREE T-shirt to first 5 people from each state who buy tickets.

Make checks payable to:
the Rainbow

MAIL TO:

RAINBOWfest

P.O. BOX 209

Prospect, KY 40059

RAINBOWfest Chicago

Seminar Program And Speakers

Ed Juge

Keynote Speaker

Ed, director of market planning for the Tandy Corporation, will be our keynote speaker at RAINBOWfest's "CoCo Community Breakfast."

Frank Hogg

Advanced Operating Systems

Frank is the president of Frank Hogg Laboratory and a forerunner in FLEX and OS-9 systems.

Richard Parry

Music Synthesis

Richard is the founder and owner of Speech Systems and is the designer of music and speech synthesizers.

Linda Nielsen

Women And Computers: How And Why

Linda, of Moreton Bay Laboratory, and several others active in the CoCo area, will lead a discussion on women's involvement in computing in general and the Color Computer in particular.

Jim Reed

Writing For *Rainbow*

Jim, Managing Editor of *the Rainbow*, will talk about how you can submit programs and articles to magazines for fun and profit.

Charles Santee and Michael Plog

Improving Educational Software

Michael Plog is an education writer for *the Rainbow* and an educational researcher in addition to being a major partner in the Center for Opinion Research.

Dr. Santee is an education writer for *Hot CoCo* and has published poetry and curriculum as well as statistical and educational software (including *CCM#3* for JARB Software). He is a recipient of several grants and awards for educational technology.

CoCo Classroom

Sharpen your programming skills and learn about LOGO. Introduce your computer illiterate friends to the wonderful world of CoCo. Classes will be conducted by trained Radio Shack instructors.

PLUS . . . Additional seminars are planned as well.

Admission to all seminars is at no charge. See registration form for admission prices to exhibit area and breakfast.

A Guide To Food Contents Gives Nutritional Information

For those trying to lose weight, or for others looking to eat a balanced diet, the search for proper nutritional information often leads to piles of magazines and stacks of books. *A Guide To Food Contents* is the first attempt by a programmer to cover this area for the CoCo.

Available on tape or disk, the program requires 32K minimum for use. A one-page instruction sheet details concisely the program's operation, which is simple and direct. The program loads in three parts. The first section puts up a screen listing the abbreviations used in the program and loads "Part 1." Parts 1 and 2 run in an identical manner, showing a menu listing the food categories covered in that part, and giving the option to load the other part. Part 1 covers vegetables, fruits, meat and poultry, and fish and seafood. Part 2 gives information on milk, cereal products, cakes and puddings, spreads, etc., beverages and alcoholic drinks.

After choosing the desired food category, a listing of individual foods is given, each prefaced by a number. It is a good idea at this point to have a paper and pencil to jot down the numbers of the foods you intend to look up, as this can save a lot of frustration going back and forth from the listing to the menu to the listing and then to the screen searching for your particular food item. The listings are for the most part alphabetical, but this varies with each food category.

After you have compiled the list of reference numbers for the particular foods in your chosen category, you will be asked to enter a number, or to press [ENTER] to return to the main menu. When the number is entered, the name of the food is listed, often with a qualifying remark (boiled, fried, raw, etc). Below that is the listing of contents, as below:

BEEF, HAMBURGER (2.6 oz.)
cal,195
wat,137gr
pro,11.3gr
fat,15.8gr
carb,1.5gr
vit. A, folic acid, B1, B12, niacin
min, iron, phosphorus

Sometimes there is some minor confusion, caused by slight differences in food description (i.e., "beef, chipped," chosen from the food category becomes "beef, chopped" in the listing). The greatest problem, though, is not due to what is in the program, but what is missing.

It is possible to use this program to find information on a number of individual food items, but a number of very important items, both individual food items and even categories, are missing. In individual foods, there was no listing for skim milk, french fries or baked potatoes. No mixed foods, such as pizza are given, no soups, and no breads and very little in starches. The lack of these common foods would seem to make diet planning somewhat difficult.

In testing both tape and disk versions, the tape proved easy to use, running with no problem and to my full satisfaction. The disk did cause a problem, though. The first section loaded with no problem, but when Part 1 would begin to load the disk drive would just light up and do an imitation of a Mazda (instead of going "click, click, click," it just sat there and "Hmmmmm"ed). As I could not load it, I could not LIST to find the error. A friend found that by using a well-known processor (Nelson Software *Color Writer II*) it was possible to "read" the disk, and so found the problem. There was a "speed-up" POKE in the second line of both Parts 1 and 2. Two computers, a stock 32K "E" board and a home upgraded 32K "E" board, each had this problem, but removing the POKES allowed the program to load and run. Even without the "speed-up," the program was, in effect, instantaneous, so its removal was not a detriment.

A Guide To Food Contents lives up to its name, providing a useful quick reference to many food items. A little more polish and perhaps the addition of some foods not included in the guide would raise this from an interesting guide to a real tool, to be used in diet planning.

(Computing and Fitness, 35080 Chandler Ave., #80, Calanesa, CA 92320, tape or disk versions \$39.95)

— Nevin J. Templin

CANADIANS!

AVOID CUSTOMS DELAYS & CHARGES

ORDER YOUR SOFTWARE IN CANADA

WE HANDLE THE FOLLOWING PRODUCTS, ALL ON TAPE EXCEPT FLEXI-FILER

COMPUTERWARE

ADDRESS FACTORY	24.95
BLOCKHEAD	36.95
COLOR CONNECTION	39.95
DOODLE BUG	36.95
EL DIABLERO	26.95
FLEXI-FILER (DISC)	87.95
HOME MONEY MANAGER	26.95
MEGAPEDE	29.95
MOON HOPPER	33.95
NERBLE FORCE	33.95
PAC ATTACK	33.95
RAIL RUNNER	33.95
SEMI-DRAW	29.95
SHARK TREASURE	29.95
SPACE AMBUSH	29.95
SYNTHET 7	29.95

SPECTRAL ASSOC.

ALPHA SEARCH	17.95
ANDROID ATTACK	29.95
INVADERS	24.95
CUBIX	29.95
DEFENSE	29.95
GALAX ATTACK	29.95
GHOST GOBBLER	26.95
KEYS OF THE WIZARD	26.95
LANCER	29.95
MAGIC BOX	31.95
MS. GOBBLER	29.95
PLANET INVASION	29.95
SPACE RACE	29.95
SPACE WAR	29.95
STORM ARROWS	29.95
TRILOGY	67.95
WHIRLYBIRD RUN	29.95

TOM MIX

PROTECTORS	33.95
SPACE SHUTTLE	39.95
TAPE DUPE	29.95
TAPE TO DISK	24.95
THE FROG	37.95
THE KING	34.95
TRAPFALL	37.95

MARK DATA

COSMIC CLONES	33.95
GLAXXONS	33.95
EL BANDITO	33.95
SUPER SCREEN	37.95

PRICKLY PEAR

ANCIENT WISDOM TRILOGY	53.95
ASTROLOGY	47.95
8-BIT BARTENDER	26.95
FLIGHT	26.95
GANGBUSTERS	26.95
TEEEOFF	33.95
HOUSEHOLD HELPER	26.95
JUNGLE	26.95
MONSTERS & MAGIC	26.95
SHAFT	33.95
SONGBOOK	39.95
VIKINGS	26.95

ALL ITEMS INCLUDE SHIPPING AND HANDLING -- ALL PRICES IN CANADIAN DOLLARS
10% DISC. ON 2 ITEMS -- 15% ON 3 OR MORE ITEMS
ONT. RESIDENTS ADD 7% TAX

VISA — MASTERCARD ACCEPTED

FOR CATALOG SEND \$2 (REFUNDED FIRST ORDER) TO:

T & S SOFTWARE

P.O. BOX 583 ORLEANS, ONT. K1C 1S9
SOME ITEMS ALSO AVAILABLE AT COTS MICROSYSTEMS,
1396 STARTOP ROAD, OTTAWA

See You At

RAINBOWfest

Chicago
June 22-24

One Stop Shopping For The Color Computer

TRANSTAR - 120 Daisywheel Printer

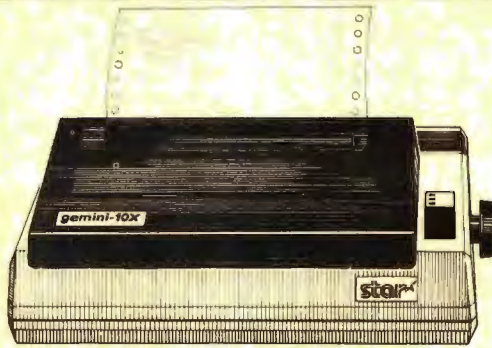
13 inch carriage
14 CPS
Parallel Port
6 mo. warranty

Reg. \$599.95

SALE

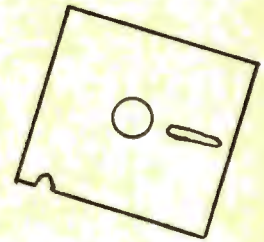
\$589.95

including S/P Converter
while supply lasts



MORE QUALITY: 120 cps - thrupt time of 55 lpm • resolution (120x144) bit image & block(6x6) graphics • extra fast forms feed
MORE FLEXIBILITY: super/sub script • underlining • back-spacing • double strike mode • emphasized print mode • compatible with most software supporting leading printers • 10" carriage • 15 carriage Gemini 15 available
MORE RELIABILITY: 180-day warranty (90 days for head & ribbon) • mtbl rate of more than 5 million lines • print head life of more than 100 million characters.

Gemini 10X **\$319.95**



FLIP IT!

Punch Your
DISKS
For Double the
STORAGE

\$9.95

	Cass.	Disk
VIP DATABASE		\$59.95
VIP Writer	Both for	\$59.95
VIP Terminal	Both for	\$49.95
CerComp Hi-Res Screen		\$19.95
Double Density ColorTerm +	\$29.95	\$39.95
Elite Calc	\$59.95	\$59.95
Compuserve Sign Up Kit		\$39.95
Key Color Software	Key 264K	\$39.95
COUCO Battery Backup System		\$99.95

Money Manager from

80 Custom Software

28 ACCOUNTS See January
300 Transactions Rainbow for
Checkbook Balance Review!
32 K • Cassette \$24.95 • Disk \$29.95



REITZ™

Serial To Parallel Converter
Transfer Data to your Printer
At Up to 9600 BAUD!

\$59.95

Please include phone number with all orders. Also add \$5.00 s/H for all printer and computer orders.
\$2.00 for all software orders. Ohio residents please add 6% state sales tax.

1(800)-242-COCO (outside Ohio)

1-419-537-8937 Computer Order Line

DISCOVER THE WORLD OF COMPUTING WITH

REITZ™
COMPUTER CENTER



3170 W. Central
Westgate Meadows Shopping Center
Toledo, Ohio 43606
Phone (419) 537-1432 (in Ohio)
Fort Wayne Area call (219) 493-7251
10 a.m. to 9 p.m. EST



Business Accounting System To The Rescue

By Bruce Rothermel

From early morn' to setting sun, this humble reviewer is the Director of Marketing for a manufacturer of power tools. The accounting functions for the company are performed by a group of bean counters and number crunchers affectionately (?) referred to as the Sales Prevention Department. They magically feed numbers into our HP-3000 Computer which spews endless reports on reams of greenbar paper. With corporate sales of over \$200 million dollars, this immense accounting group is necessary.

However, after the pinstripe suit is returned to the closet, I become the President, Chief Executive, Head Honcho, Boss, and entire staff of a small home-based business called Cobra Softwear. No, that's not a misspelling. I have a mail-order business which sells Mustang and Cobra emblem La Coste golf shirts to owners of these exceptional vehicles.

What started out as a very small operation has progressed into a real business. And my previous methods of accounting — shoving bills into one drawer and checks into another — has become woefully inadequate. To my rescue has come the *Business Accounting System (BAS)* from Mark Data

Products.

The *BAS* is a family of programs which operate interactively. They require a CoCo with at least 32K RAM, and 80-column printer and at least one (two preferred) disk drives.

On loading *BAS*, the Mark Data Super Screen program is executed converting the TV screen to a 51 character by 24 line display, a great improvement over the standard screen. The operator is presented the program menu, which lists the options available to the user. When a task is selected, the CoCo loads the program to handle that task from the system disk. This modular system reduces the amount of memory required. When a transaction is completed any pertinent data is automatically transferred to the data files of the other programs in the *BAS*.

Using *BAS*, you can create, update and maintain data files and prepare the necessary accounting reports including transaction journal, a P&L or income report, and an interim or trial balance and a balance sheet.

Operation is similar to standard manual accounting procedures with the CoCo providing assistance during each step. An understanding of accounting fundamentals is helpful; however, the documentation and self-prompting screens walk the user through the basics of getting the system going.

The system is shipped with dummy data loaded on the disk. The first part of the 31-page instruction manual takes you through the basics of starting the system, entering transactions and printing reports. After getting familiar with the system by working with dummy data, you get into the meat of the program by customizing the supplied Chart of Accounts for your business.

The Chart of Accounts then becomes the heart of the accounting system. A Chart of Accounts is supplied which is so complete that it could be used by many businesses without change.

I found that it was too complete for my needs. I didn't need all the accounts furnished so I deleted many of them and added a few to meet my specific use.

The Accounts are grouped into the following classifications:

- Assets
- Liabilities
- Equity
- Sales
- Cost of Sales
- Operating Expenses
- Other Expenses

This accounting system observes the rule — the sum of all assets must equal the sum of all liabilities plus the sum of all equities. Each transaction must affect two accounts. The computer insists on it. In fact, the message "Assets = Liabilities + Equity" is displayed at the top of the screen as each data record is reviewed.

While the 10 programs included in *BAS* interact with each other to create one system, an explanation of each program may help you to understand the capabilities of the total system.

- 1) **START** — reserves the required disk buffer space and calls the **SETUP**.
- 2) **SETUP** — program which sets up proper printer operation and loads and executes the Super Screen program. **SETUP** then requests the "workdrive" number 0



F-16

Instrument
Flight
Simulator

Reviewed in January 1984 Rainbow! "... this program is the Right Stuff!" Specify 16 or 32/64 K, direct save to disk \$19.95 +\$1.00 S&H



TSPPOOL

Don't wait for your printer anymore! Tspool allows you to type the next document at the same time your printer is printing the first one. Specifically designed for Telewriter-64 users. Optional descenders included for DMP-100 printers. For 32/64K, disk compatible \$24.95 + \$1.00 S&H

DESCENDERS

BACK BY POPULAR DEMAND! User transparent graphic lowercase descenders for LPVII/DMP-100 printers. For use with Basic (16/32/64K) or Telewriter-64 (32/64K) only, disk compatible. \$15.95 + \$1.00 S&H



TELEWRITER-64

For your convenience, we offer Telewriter-64 at \$49.95 tape or \$39.95 disk +\$1.00 S&H. In our opinion, this is the BEST word processor you can buy. Save 15% on our TSPPOOL or Descenders if you order in combination with Telewriter-64.

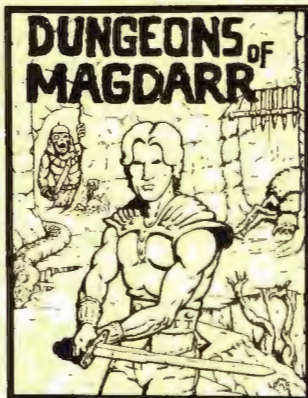
Telewriter-64 is a trademark of Cognitac

COD orders gladly accepted, call (813) 321-2840 between 9am & 5pm EST
Sorry we cannot accept credit card orders

KRT Software
P O Box 41395
St Petersburg, FL 33743

AARDVARK LTD.

VIDEO ADVENTURES™



DUNGEONS OF MAGDARR - Serious D of D for up to 8 players. Features full 3d GRAPHICS! You get a choice of several characters that grow from game to game and are interchangeable with characters from our famous Dungeons of Death game. A real dungeon with level after level of monsters to conquer and treasures to find - all in hi-res 3d graphics.

Available On: TRS80C, IBM PC, CMD64
TAPE \$19.95 DISK \$24.95



BAG-IT-MAN - The ultimate arcade game for TRS80C or CMD64. This one has three screens full of BAGS OF GOLD, CARTS & ELEVATORS TO RIDE IN, MINE SHAFTS, and TWO NASTY GUARDS. Great sound and color and continuous excitement.

Available On: TRS80C 32K, CMD64
TAPE \$19.95 DISK \$24.95



QUEST - A different kind of Graphic Adventure, it is played on a computer generated map of Alesia. You'll have to build an army and feed them through combat, bargaining, exploration of ruins and temples, and outright banditry! Takes 2 - 5 hours to play and is different each time.

Available On: TRS80C 16K, CMD64, VIC20 13K, MC10 16K, T199 (EXT. BASIC), IBMPC
TAPE \$14.95 DISK \$19.95



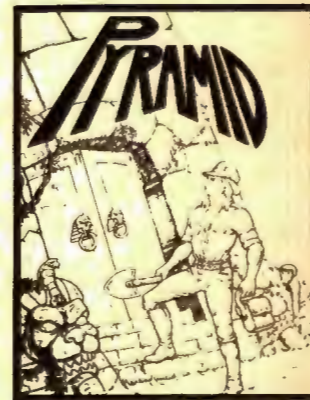
STARFIRE - If you enjoyed Star Raiders or Star Wars, you will love Starfire. It is not a copy, but the best shoot-em-up, see them in the window space game on the CMD64 or TRS80C. The fantastic graphics will put you right in the control room as you hyperspace from quadrant to quadrant fighting the aliens and protecting your bases.

Available On: TRS80C 16K, CMD64
TAPE \$19.95 DISK \$24.95



MARS - Your ship crashed on the Red Planet and you have to get home. You will have to explore a Martian City, repair your ship, and deal with possibly hostile aliens to get home again. This is recommended as a first Adventure. It is in no way simple - playing time normally runs from 30 to 50 hours, but it lets you try out Adventuring before you battle the really tough ones. Full Graphics Adventure.

Available On: TRS80C, CMO 64, IBM PC
TAPE \$19.95 DISK \$24.95



PYRAMID - ONE OF THE TOUGHEST ADVENTURES. Average time through the pyramid is 50 - 70 hours. Clues are everywhere and some ingenious problems make this popular around the world. FULL GRAPHIC ADVENTURE.

Available On: TRS80C 16K, CMD64, MC10 16K, IBM PC
TAPE \$19.95 DISK \$24.95

NEW! GRAPHIC ADVENTURES

AARDVARK offers over 120 original high quality programs. Send one dollar for a current catalog and receive a \$1.00 gift certificate good towards your next purchase.

Authors - AARDVARK pays top dollar for high quality programs. Send a copy today for a personal review and editorial help.

TO ORDER: Send amount indicated plus \$2.00 shipping, per order. Include quantity desired and your preference of tape or disk. Be sure to indicate type of system and amount of memory. When using charge card to order by mail, be sure to include expiration date.



CHARGE CARDS
WELCOME



1-313-669-3110

PHONE ORDERS ACCEPTED
8:00 a.m. to 8:00 p.m. E.S.T., MON-FRI

AARDVARK Action Software

2352 S. COMMERCE • WALLED LAKE, MI 48088 • (313) 669-3110

CMD64 / TRS80C / IBMPC / VIC20 / T199

for single systems, 1 for dual disks. The workdrive is defined as the disk drive to which all accounting data is stored.

- 3) DATESET — enters the current date.
- 4) MENU — ties all parts of the accounting system together giving you a choice of:
- 5) TRANSACT — The transaction program.

Here you can:

- a) Post a transaction
 - b) Post a check
 - c) Reviews a posted transaction
 - d) Return to main menu
- 6) PJOURNAL — prints out a listing of every transaction stored in the file. Each page is numbered and you have the option of clearing the Journal file at the end of an accounting period.
- 7) PINCOME &
- 8) PBALANCE print a formatted balance sheet. They compare to see if Assets = Liabilities & Equity. If not, the
- 9) CHARTFIX program is called so you can catch the error.
- 10) NEWFILES will probably be used only once to set up your company name, address, etc., and to set up your custom Chart of Accounts.

The actual operation of the *BAS* program is easier to do than explain.

My little shirt business is now set up on *BAS* and a biweekly run of the system will help me keep one of my New Year's resolutions — to get organized. It will also be of great value at the end of the year when tax time rolls around. My accountant will love the printed reports and a running audit trail for all sales and expenses.

The only difficulty I encountered was that the Super Screen program included in *BAS* is not documented. Error messages are given in numerical code rather than in the two-letter alpha code the CoCo usually uses. Mark Data has stated that a listing of the error codes will be included in future shipments. I would prefer full documentation, but an explanation of the unique error codes is a help.

The *Business Accounting System* is not inexpensive, but considering what it can do to organize a small business, it is quite a value.

(Mark Data Products, 24001 Alicia Parkway, No. 207, Mission Viejo, CA 92691, 32K & one disk drive, \$99.95)

Number-Kruncher Good For Basic Math

When I first unpacked my Color Computer, I typed in a program called "Drawing Board" from the Radio Shack manual. This program makes colored lines on the screen when you press the arrow keys. My wife's unappreciative comment was: "Wonderful, now we own a \$500 Etch-A-Sketch."

The program *Number-Kruncher*, from Moonshot Acres Software, is sort of like that. It gives your several hundred dollar computer system all the power of a \$10 pocket calculator. *Number-Kruncher* allows you to key in a number, select an operation, and then key in a second number. The two numbers and the answer are all displayed simultaneously in a box in the center of the screen. It requires 16K of memory and Extended Color BASIC.

While you might sometimes want to use your computer like a calculator, this program is too limited to be useful. First of all, it has only the four basic functions: addition, subtraction, multiplication and division. No square roots, trig functions, or other advanced features. Second, the format of numbers used is very restrictive. Numbers may have, at most, six digits to the left of the decimal point and, at most, two digits to the right of the decimal point. The program does permit chaining of operations and can hold one number in memory. The program provides several screens of instruction and help screens to remind you how to use the program.

The documentation suggests that you might want to incorporate this program into your own software. One suggestion is to use it as an on-screen calculator for a financial application, like an income tax program. But *Number-Kruncher* is too limited to do even the simple calculations you'd want in an income tax program. For example, the income tax rate in my state is 2.2 percent. Since you're only allowed two digits to the right of the decimal point, you can't multiply by .022, and so you can't calculate the state income tax.

All in all, I can't imagine any reason to buy this program.

Editor's Note: Moonshot Acres Software advises us that a percent function has been added to *Number-Kruncher* and that present owners are being mailed patch instructions.

(Moonshot Acres Software, Route 1, Box 423, Rockfield, KY 42274, \$7.95 on cassette, postage paid)

— David Finkel

TYPE TREK

16K EXTENDED BASIC
ARCADE-TYPE TUTORIAL

1 or 2 players • players on different levels can compete
Includes 3 games • letter, word and sentence practice
Automatically introduces new keys • automatic promotion
13 "ranks" (levels) based on keys mastered • Select long,
medium, or short game • display scoreboard • Fully documented
with illustrated manual • 19.95 tape/22.95 disk (includes 56H)

Send check or money order to:
CoCo Chips, 92 Acorn Circle, Oxford OH 45056



FLORIDA SEARCH NO LONGER!

The Software Connection of
Fort Lauderdale is your one stop source
for your Color Computer Software,
Peripherals, Books, Magazines & Repairs



THE SOFTWARE CONNECTION, INC.

5460 No. State Rd. 7, Suite 108
Fort Lauderdale, FLORIDA 33319
(305) 484-7547

"TRS-80 COLOR COMPUTER PRODUCTS"

"ENHANCED 1248-EP EPROM PROGRAMMER"

The list of directly compatible EPROMs increases by one, now including: 2508's, 2758-0/1's, 2516's, 2716's, 2532's, 2732's, 68732-0/1's, 68764's, and 68766's.

NEW FEATURES INCLUDE:

- 1) Intelligent algorithm that reduces programming time to as little as 1/6 that of fixed cycle programmers.
- 2) Diagnostic routines to isolate defective EPROMs, or locate differences.
- 3) A feature that guards against EPROM type entry errors.
- 4) Diagnostic routines that prevent keyboard entry errors from causing disastrous consequences.

FIRMWARE FEATURES

- 1) EPROM ERASED!
- 2) COMPARE EPROM TO RAM!
- 3) BLOCK PROGRAMMING!
- 4) BYTE PROGRAMMING!
- 5) DUMP EPROM TO RAM!
- 6) JUMP!

Firmware is "stack-oriented", "position independent", and "menu driven". Supplied in an EPROM, it can also be stored on disc or tape for execution from RAM if desired.

STANDARD HARDWARE FEATURES

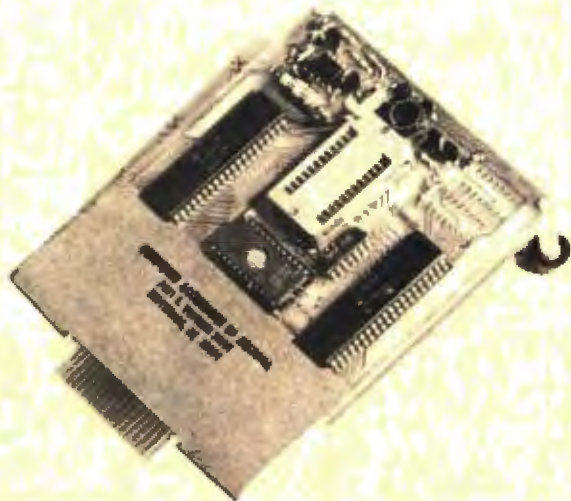
- 1) It has its own "on-board" 25 volt programming supply.
- 2) A quality textool "zero insertion force" (ZIF) socket.
- 3) Socket for firmware on-board.

A PIA port is also available on the programmer. This 8 bit parallel I/O port with handshake lines, can be used for many applications, such as a parallel printer port. Details on how to use this port as a printer interface are included in the instruction manual.

The instruction manual describes how to take full advantage of the power of this versatile programmer. We think you'll agree, that never before was an EPROM programmer so easy to use, and feature packed as is the 1248-EP.

The enhanced 1248-EP costs only \$129.95.

Firmware upgrades are available to our previous 1248-EP customers, in EPROM, for just \$29.95.



* TRS-80 is a trademark of TANDY CORP.
** SDS80C is a trademark of the MICRO WORKS.

"THE CK4 SERIES PROM/RAM CARDS"

The CK4 cards work with 2K, 4K, and 8K ROMs or EPROMs of the 5 volt only variety in 24 pin packages. The CK4 can also work with static RAMs, and increase your available memory by as much as 16,128 bytes.

The CK4-1 is specifically designed for use in computers with "F" series boards, or those machines that are "write protected" in the address range of \$C000 through \$FEFF. The CK4-1, therefore, does not incorporate features designed in the CK4 for use with RAM.

The CK4-2 is the unpopulated version of the CK4 series board. Buy this version and configure to meet your specific requirements, and stretch the value of your dollar.

FEATURES SUMMARY

- 1) MIX ROM AND RAM!
- 2) EXPAND RAM FROM 2-16K!
- 3) YOU WRITE PROTECT RAM!
- 4) EXTREMELY FLEXIBLE DECODING!
- 5) PROVIDES FOR BATTERY BACKUP!
- 6) LOW COST!

PRICES

CK-4 \$29.95 ea. CK4-1 \$27.95 ea. CK-2 \$15.95 ea.

NEW PRODUCT OFFERING

A/D-80C ANALOG TO DIGITAL CONVERTER BOARD

The A/D-80C is a 16+ channel analog to digital converter with two 8 bit PIA ports plus handshake lines.

*Implement closed-loop control of analog processes!

*Use it to control your homes environment!

*Computerize your laboratory or darkroom!

*Build a multi-channel voltmeter!

*Use it for waveform generation!

*For robotics!

The A/D-80C is software programmable up to a maximum of 10 bits of resolution. The number of channels can be expanded beyond the 16 channel capability supplied, and the channels are software selectable.

The A/D-80C performs nearly 9K A/D conversions per second.

A generous area of the board is designated for wirewrapping to permit customization of analog signal processing circuitry.

Extensive documentation is provided to assist the user in the development of his application. Software listings are provided as an aid to software development, and a socket is provided for an EPROM for user developed software drivers.

CONSULT FACTORY FOR AVAILABILITY AND PRICE INFORMATION ON NEW PRODUCTS

FACTORY FRESH COMPONENTS:

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PRICE</u>
2716 EPROM	2K by 8 Bit.	\$4.50 ea.
2532 EPROM	4K by 8 bit.	\$6.50 ea.
6821P	P.I.A.	\$3.50 ea.
74LS156	Open collector decoder	\$1.70 ea.
Socket	Textool "Zero Insertion Force"	\$9.00 ea.

Minimum component order: \$25.00

ORDERING INFORMATION:

Add \$3.00 to all orders to cover shipping and handling. Canadian residents add 5% to cover special handling. Arizona residents add 5% sales tax. All items shipped UPS. Please allow 2-3 weeks for delivery. Prices subject to change without notice.

Make checks payable to:

COMPUTER ACCESSORIES OF ARIZONA
5801 E. VOLTAIRE DRIVE
SCOTTSDALE, ARIZONA 85254
(602) 996-7569

Beam Rider — A Colorful, Energizing Chase Game

Spectral Associates has done it once again folks. *Beam Rider* is not only pleasing to the eye, but is also a lot of fun to play. Because of the many different ways that one can play the game, young and old alike will find it hard to stop trying to find new screens, gain higher bonus scores or to just see how long they may be able to survive.

As is the case with all of Spectral Associates programs, the loading instructions are very clear and easily understood. You will need at least 16K RAM (Extended BASIC is not required) and one joystick. If you are using a cassette system, type *CLOADM* and [ENTER]. With a disk system type *LOADM* and [ENTER]. When you receive the OK prompt type *EXEC* and you will be presented with the title screen, which is also the high score screen. To begin play, push the fire button on the right joystick and you will be jumped to the first screen.

Each screen or board contains blocks (blue) arranged in different patterns that must all be cleared off before one can proceed to the next board. Each board also has three characters:

- 1) The beamer (white solid circle) which you control with the joystick.
- 2) The red chasers, which follow your beamer around the board attempting to get in your way whenever possi-

ble. Coming into contact with one of the chasers when your beamer is not energized will destroy the beamer. On the first board there is one chaser, while all of the rest have two. The chasers start off slowly, but as you clear the blocks from the board, they get faster.

- 3) The spinner (white spinning circle) which moves about the board at random. If your beamer or the beamer's energy beam contacts the spinner in any way it will destroy your beamer. Whenever the spinner touches one of the blue blocks, the block becomes multicolored and for a few seconds (while it is still multicolored), it will be an energizer.

Clearing an energizer causes your beamer to become energized. While you are energized all point values are doubled and the chasers cannot destroy your beamer. While energized a bar will appear at the top of the screen. This gives you about seven seconds of energy. When this is gone, the bar will disappear and your beamer will be vulnerable again until you are able to clear another energizer. If you are able to beam through a chaser while your beamer is energized, you will be awarded 1000 points and the chaser will be immobilized for about 1.5 seconds. Each time an energizer is cleared the bonus counter will increase by one and when the current board is cleared of all the blocks, you will receive a bonus of 1000 times the number of energizers cleared. An additional beamer is given for each 50,000 points scored.

There are three basic ways to approach this game. The first is to go for only as many points as possible, not worrying about clearing boards. (I was able to score over 160,000 on the first board this way.) The second way is to clear as many boards as possible, not worrying about the amount of points scored. (A friend was able to get to the sixth board this way.) The third method of play is the obvious combination of the first and second methods. Score as many points as possible early in the play of a board and then trying to clear the rest of the board before the chasers can get too fast and trap your beamer. There is a fourth method that I have discovered, but I will not reveal it here. I am, at this writing, in a bet with my brother-in-law for the championship of the family and I don't want to give him any advantage in the final playoff!

Each board is different. I don't know how many different boards or screens there are, but I wouldn't be surprised if there were about ten. Some of the boards are good for scoring points, while others are better for just running and trying to get to the next board without dying. All of the boards have a very pleasing symmetry or design.

I particularly like the way the red chasers have a blurring effect when they become very fast. The destruction of your beamer is an event that has to be seen and heard to be believed! The sound of your destruction is like a tomato hitting the wall and as if that isn't enough insult, when your beamer is destroyed it goes to pieces, bouncing all over the bottom of the screen!

Overall, this game is easy to play and learn, but offers enough of a challenge to make any dedicated gamer an addict in one short evening. The graphics are well done and the sound effects are functional without being a nuisance. (Just don't go to pieces!)

(Spectral Associates, 3418 South 90th Street, Tacoma, WA 98409, tape \$24.95, disk \$28.95)

— Mike Standefer

COMPUTER FORMS

Continuous forms, labels, paper, checks, invoices, statements—with your imprint. Continuous letterhead with a perf so fine that you need a magnifying glass to tell it's a fan fold sheet. Matching envelopes.

Regular letterhead, business forms and cards also.

Send sample for quote.

Computer/Printer supplies and furniture.

Send \$3.00 (refundable on first order) for our 76 page full color catalog.

DESERT PRESS, INC.

P. O. Box 15128
Las Vegas, Nevada 89114

DSL COMPUTER PRODUCTS INC.

ULTRA CONTESTER

Disk and Tape I/O, Auto Sort, works in 16, 32, or 64K computers.

Over 30,000 calls possible. Written by WPX record holder AH2E.

Disk or Tape **\$39.95**

ELECTRONIC CALLIGRAPHER

PROWRITER VERSION

Also available for R/S, Epson, Gemini Printers. Specify Printer.

\$18.95

HI-RES ADVENTURES

SHENANIGANS	24.95
CALIXTO ISLAND	24.95
BLACK SANCTUM	24.95
TOUCHSTONE	27.95
TIME BANDIT	27.95
KING TUT	29.95
SEA QUEST	24.95

GAMES

CANDY CO.	34.95 (C/D)
MUDPIES	29.95 (C)
TRAPFALL	27.95 (C)
AIR TRAFFIC CONTROLLER	28.95 (C)
GRABBER	27.95 (C)
SPACE SHUTTLE	28.95 (C)
DEVIL ASSAULT	27.95 (C)
BUZZARD BAIT	27.95 (C)
THE KING	26.95 (C)
DOODLEBUG	24.95 (C)
STORM	24.95 (C)
ROBOTTACK	24.95 (C)
THE FROG	30.95 (D) 27.95 (C)
COLORPEDE	29.95 (C)
BIRD ATTACK	21.95 (C)
BALLOON ATTACK	29.95 (D) 24.95 (C)
COLOR DFT	25.95 (C/D)
COLOR FURY	27.95 (C)
CASHMAN	27.95 (C)
OUTHOUSE	27.95 (C)
AREX	34.95 (C)
ZAXXON	39.95 (C)
MOON SHUTTLE	29.95 (C/D) 27.95 (C)
CHOPPER STRIKE	27.95 (C)
DEMON SEED	27.95 (C)
ELECOTRON	24.95 (C)
SR071	28.95 (C)
BLOC HEAD	26.95 (C)
HYPER ZONE	26.95 (C)
JUNIOR'S REVENGE	28.95 (C)
BUMPERS	24.95 (C)

TYPING TEACHER

Learn Keyboard Skills, Improve Typing Speed.

\$9.95

FOR ALL COCOS

DSL'S GREATEST HITS

- GODFATHER THEME
- ML RABBIT
- BUG CHASE
- AUTO LINE
- ESCAPE
- TUBECUBE
- SPELLER
- HARDCOPY
- GEO STUDIES (5 STUDIES)
- WORD CC 7
- PACKMAZE
- POKING AROUND
- COCO SAFARI
- MIMIC
- SO-I-SEZ
- CLOSE TO YOU

ALL 20 PROGRAMS

\$39.95 TAPE \$49.95 DISK

HALF-OFF RACK

CAVE HUNTER	12.50
ASTRO BLAST	12.50
EL BANDITO	12.50
HAYWIRE	12.50
SPACE RAIDERS	12.50
DEFENSE	11.00
WARKINGS	9.95
STARBLASTER	19.95
SHARK TREASURE	12.50
STARSHIP CHAMELEON	12.50
GALAX ATTACK	11.00
DEATH TRAP	9.95
CATERPILLAR	9.95
HAPPY HURDLER	6.50

LIMITED QUANTITIES

HARDWARE

32/64K TDP 100	219.00
32/64K EXT TDP	309.00
32/64K CC2	209.00
32/64K EXT CC2	259.00
TDP LINE PRINTER I	199.00
GEMINI STX 80	199.00
GEMINI 10X	299.00
DELUXE JOYSTICKS	39.95
STD. JOYSTICKS	10.00
DISK DRIVE 0	349.00
DISK DRIVE 1,2, OR 3	249.00
MODEM I	99.00
ATARI STYLE JOYSTICKS	19.95

ACCESSORIES

NANOS CARD	4.95
EPSON RIBBONS BLACK, BLUE, RED, BROWN, GREEN	7.49
GEMINI RIBBONS	2.95
DISK MAILERS 10 PACK	8.95
DSL DISKES IN PLASTIC CARRY CASE	19.95
DISKS	
SENTENIAL S8/SD	19.95
SENTENIAL S8/DD	22.95
VERBATIM	34.95
DISK DOUBLER	11.95
GRAND SLAM 64K KIT	75.00
16-32K RAM SLAM	49.95
2 WAY RS 232 SWITCHER	29.95
3 WAY RS 232 SWITCHER	39.95
4 TO 4 PIN CABLE	4.95
CASSETTE CABLE	5.95
MASTER CONTROL II OVERLAY	2.58
64 K RAM BUTTON	2.95
BOTEK INTERFACE FOR EPSON	59.95
MD KEYBOARD	49.95
MULTI PACKS	
DSL GREATEST HITS TAPE	39.95
DISK	49.95

APPLICATION

SPECTRUM VOICE PAK	69.95
TALKING TERM	39.95
ELITE-CALL	59.95
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
SPELL N FIX	59.29
DISK MAILER	24.95
TELEWRITER TAPE	49.95
SUPER CONTESTER I	14.95 (C)
SUPER CONTESTER II	24.95 (C)
COUNTRY LOCATOR	14.95 (C)

UTILITIES

PRINTER SPOOLER 64K	9.95
COLOR GRAPHIC EDITOR	19.95 (C)
SUPER SCREEN	29.95 (C)
GRAPHIC SCREEN PRINT	
EPSON	9.95 (C)
OKIDATA	9.95 (C)
GEMINI	9.95 (C)
PROWRITER	9.95 (C)
LP VII/RS	7.95 (C)
LOGICAL DISK COPY	14.95
EDTASM	49.95 (R)
TAPE DIRECTORY	14.95 (C)
TAPE TO DISK	17.95 (C)
DISK TO TAPE	19.95 (C)

DSL COMPUTER PRODUCTS INC.

313-582-8930

313-582-3406 (Data)

P.O. BOX 1176

DEARBORN, MI 48121

Michigan Residents Add 4% Sales Tax to Order.

Please include \$2.00 for S. & H.



Get The Real Sound With *Spell-A-Tron*

As voice packs for the Color Computer gain popularity and additional users, (see November '83 *Rainbow*), more programs are being released which take advantage of its speech capabilities.

For those not familiar with CoCo voice packs, a quick review. The voice pack is a ROM-type cartridge which plugs into the ROM pack slot. When a machine language program containing a text processor and a dictionary are loaded into memory, your Color Computer can then speak words and phrases contained in BASIC language programs.

The resulting speech is slightly electronic with a Swedish east-coast accent (to my west-coast ear). I refer to the resulting voice as Uncle Sven.

An ideal application of speech capability is spelling testing programs. Since the computer can pronounce the word, it is unnecessary to "flash" the word on the screen or use audio tapes which make it difficult to change the test words or the order of the test words.

Jarb Software has released their *Spell-A-Tron* program, designed to assist children in mastering their spelling words with the assistance of a 32K minimum Extended BASIC CoCo, a voice pack using a Votrax SC-01 synthesizer chip and DEI Software's *Translate* program. (For this review I used Spectrum Projects Voice Pak and included software.)

Spell-A-Tron consists of two separate programs. *Spelling* and *Wordmaker*. *Spelling* is the spelling quiz maker. After loading the program and a user specified word file, the following options are offered :

- 1) Hear and see all words
- 2) Hear and computer will speak all words
- 3) You spell the words you hear
- 4) Load a new word file

In the "Hear and see all words" mode, the computer will pronounce the word, display it on the screen, and pronounce the word again.

In the "Hear and computer will speak all words" mode, the computer will pronounce the word, then display and pronounce each letter, and then pronounce the word again.

In the "You spell the words you hear" mode, the computer will pronounce the word to be spelled twice and then accept the student's response. Pressing the [/] key repeats the word. If the correct spelling is given, the student is congratulated and given the next word to spell. If the incorrect spelling is given, the student is asked to try again. After three incorrect tries the correct spelling is given. After all words are presented, all incorrectly spelled words are displayed for review.

The second program, *Wordmaker*, is used to create custom word files used in the first program, *Spelling*. The word file contains each word in two forms, the word correctly spelled and the word in phonetic form. *Wordmaker* offers

the following options:

- 1) Enter spelling word
- 2) Find a word
- 3) List word file
- 4) Sort word file
- 5) Create word subfile
- 6) Load word file
- 7) Save word file

The enter spelling word mode is the main workhorse of *wordmaker* and offers the options of:

- 1) Enter pword
- 2) Save pword
- 3) Speak pword
- 4) Delete pword
- 5) Main menu

Pword means phonetic word, the string that is passed to the voice synthesizer. In most cases, the spelling word and pword will be spelled the same, however some words have to be misspelled for them to sound right when spoken. Television is tell-a-vision phonetically. Using *Wordmaker*, the word is pronounced and you just change it until it sounds right and then save it.

Spelling and *Wordmaker* can hold up to 200 words in each file.

A textfile called *Tronlist* is included on a separate tape. It contains about 200 words in the sixth grade to adult category.

In use, the program works fine. The student is asked to spell the test word which is pronounced twice. The ability to repeat the word by pressing the [/] key is very helpful. On some words in the *Tronlist* file, I had difficulty determining the pronounced quiz word. Vowel sounded a lot like foul. To eliminate these sound-alikes, I used *Wordmaker* to change the pword to overemphasize the accents and add spacing. Submarine became sub-ma-rine. It is very easy to play with the pwords until they sound right to you.

I just returned from a trip to many cities across the country. After sampling speech patterns in Boston, Dallas, New York and Los Angeles, I am sure different pwords will be used in different areas of the country for the same spelling word. I found the different speech patterns to be delightful. Here in California, a "Yawl" is a fore-and-aft rigged sailboat, in Texas the same pword is used as a greeting, i.e., "Yawl have a good day!" What I am trying to get to is that you can have your CoCo pronounce the word the way you say it.

In summary, *Spell-A-Tron* does a good job of giving a spelling quiz. It does not keep score; proper spellings are rewarded with "Right," "Correct" and "Super" responses being said to the user. The only improvement I would suggest would be adding some interesting graphics to the screen to hold the interest of younger students.

(Jarb Software, 1636 D Avenue, Suite C, National City, CA 90250, \$28.95 compatible w/disk or tape, Votrax Pak & 32K Extended BASIC required)

— Bruce Rothermel

THE PEEPER

A Unique Interrupt-Based Program Tracer
From Spectro Systems

Imaging being able to monitor the operation of a machine-language program While It Is Running. To display any portion of memory in any of Coco's 26 documented display modes, and to move through memory using the arrow keys. To slow the action to a crawl, or freeze it at will. Instantly switch between watching the output of your program and watching Peeper dynamically display (on screen or printer) the contents of the 6809's registers and stack, showing changes as they are happening. In the slowest speed mode, Peeper provides continuous single-stepping; faster modes give a coarser trace. Or, halt the action and single-step by repeatedly pressing the space bar. Peeper supports breakpoints, memory examine/change, and more. Think how much easier it would be to modify someone else's ML software if you could determine what routines were being executed at any given point!

For fun, (and this requires no ML experience), use Peeper with arcade games, watching the fine details of the animation effects in slow motion. See how the game looks and plays in other graphics modes. Or watch what is happening on "hidden screens" you never see. (Makes a superb demonstration.)

**REQUIRES 16K COCO
ON CASSETTE (COPYABLE TO DISK)
WITH ASSEMBLER LISTING** **\$24.95**

FASTAPE

The Next Best Thing To A Disk Drive
From Spectro Systems

Fastape gives you cassette I/O at 3000 baud-Twice Normal Speed. It uses the high-speed (POKE 65495,0) mode, and makes it convenient to stay in this mode throughout. Features automatic adjustment of cassette and printer parameters when speed mode is changed. Control-key functions for many Basic commands and for changing speed modes. Compatible with all tape file types. Can be used with Telewriter-64 and many other utilities.

"I strongly recommend this fine utility" Rainbow, 7/83
"A treat for those without disk systems" Hot Coco, 10/83

REQUIRES 16K COCO CASSETTE \$21.95

TAPE-DIR®

Tape-Dir is a basic program used for displaying and/or printing information about cassette files. In addition to listing file name, Tape-Dir will list and/or print the following information:

1. Type of file - Machine Language, Data, Basic.
2. Format - Binary or ASCII.
3. M/L Start, End, and Execute addresses.
4. For Basic & Data Files - will show number of bytes used! Useful for sorting out your tape files by those that will run on your 16K, 32K machine!
5. Will bypass tape I/O errors - no aggravation!

**REQUIRES 16K EXTENDED COCO, CASSETTE PLAYER,
(PRINTER OPTIONAL)**

CASSETTE \$11.99

TAPE SPOOLER®

- Re-direct printer output to cassette for later printing or archival.
- Uses 310 byte machine language driver which is appended to basic programs.
- After 1 call, all print#-2 basic statements redirect all printer output to cassette.
- Can be turned on and off while your basic program is running.
- Can write to cassette and printer at same time.
- Absolutely no change to printer formats.
- All control codes normally sent to printer will be captured to the cassette with printed data.
- Supplied utility will print from tape, convert the tape to a disk file, print the converted disk file, and print multiple copies of either the tape or disk (multiple copy function cannot process files greater than 14,790 characters)

- ** Great for generating 2 separate reports from the same file on a single pass.
- ** Use as a "printing press" for generating multiple copies of meeting notices, ads, circulars, you name it!
- ** Share a printer!!! Take your "Saved Printout" on tape to a friend that has a printer!

**REQUIRES 32K EXT. COCO & CASSETTE
(DISK - PRINTER OPTIONAL)**

CASSETTE \$21.95

TREK-TRIV

The Star Trek Almost Impossible Super Trivia Quiz
For serious "Trekies" only! All others need not apply!

- Four programs on one cassette
- Trek, Trek II, Quiz and Quiz II
- Sound Effects
- Advance through various sections and receive promotions up to fleet admiral! But if you miss ... well, you'll find out!
- Receive a print-out of your rating, rank, and intelligence description (sometimes a bit harsh-but only if you deserve it)
- Fun - but V-E-R-Y Challenging.

**REQUIRES 32K COCO, CASSETTE RECORDER
SUPPLIED ON CASSETTE - ALL FOR \$19.95**

OS-9 "CONVERT" ★★★★★

New - From Computize ...

This high quality M/L Utility will CONVERT Standard OS-9 Formatted Files/Disks (5¼") to Radio Shack OS-9 to run on your COCO. Will also convert 40 track to 35 track if you require. Runs under COCO OS-9.

REQUIRES 64K COCO AND 2 DRIVES

SUPPLIED ON DISK ONLY \$49.95

SUPER BACK-UP UTILITY®

...WITH S.B.U. FROM COMPUTIZE - YOU'LL NEVER NEED ANOTHER BACK-UP UTILITY FOR YOUR COCO!!!

SUPER BACK-UP UTILITY WILL PERFORM ALL OF THE FOLLOWING FUNCTIONS:

1. **TAPE TO TAPE** (Regardless of most protection schemes!)
2. **TAPE TO DISK** (Move Cassette programs to Disk!)
3. **AUTO RELOCATE** (For those Cassette programs that conflict WITH Disk operating systems.)
4. **DISK TO TAPE** (Place Disk programs onto Cassette)
5. **DISK TO DISK** (Our powerful Spit-N-Image Program, *Regardless of protection schemes!)

- * **MENU DRIVEN!**
- * **REQUIRES 32K EXTENDED COCO**
- * **REQUIRES 1 OR 2 DRIVES** (For Disk Functions)
- * **ALL MACHINE LANGUAGE!!!**

**COMPARE WITH OTHER INDIVIDUAL PROGRAMS
COSTING IN EXCESS OF \$100.00 OR MORE!!!**

**★★★ ONLY \$49.95! ★★★
(SUPPLIED ON DISK)**

T.T.U. - TRIPLE TRANSFER UTILITY (C)

M/L For Cassette & Disk Program Transfer

Transfer contents of disk to tape * Transfer content of tape to disk * "Select" or "All" Option * Will automatically relocate those cassette programs that conflict with the disk operating system * Will display machine language program address * Copies ASCII, Basic, & Machine Language Programs * All contained in 1 menu driven program! !!

REQUIRES 32K CC EXT.

Cassette \$19.95 Disk \$24.95



SPIT-N-IMAGE (C)

M/L Disk Back-Up Utility



There is no need to suffer the heartbreak of crashed disks any longer. Spit-N-Image will create a mirror image of your valuable disk programs which do not respond to normal back-up functions. Will also initialize and back-up in one pass. Data processing experts always insist on having a back-up - it's good practice - Don't wait!

**REQUIRES 32K CC AND 1 OR MORE DRIVES
CASSETTE \$29.95 DISKETTE \$34.95**

GRAPHICOM

Simply stated - the finest graphics program
written for the COCO (or any other computer)!

FEATURES



- U-S-E-R F-R-I-E-N-D-L-Y!
- 4 Mode (Including Hi-Res Artifact)
- Animate Mode
- Color Palette with over 15 color patterns for use with Hi-Res Artifact
- Send/Receive pictures over standard modem at 300, 600 or 1200 baud.
- Supplied utility allows capturing Hi-Res Screens from most COCO arcade type games (Even protected ones)
- Multiple Hi-Res character fonts (user changeable & definable)
- Supplied utility for transferring graphicom screens to basic or other M/L Programs
- Supplied utility for loading screens from basic or other sources
- Built in Screen print (Pre-defined for Epson, C-Itch, RS LP VII, LP VIII, DMP 100, DMP 200, DMP 120, GCP 115, GEMINI 10, and OKI) 110 to 9600 baud
- Slow scan television send/receive options
- Many additional features, operating hints, hardware mods and suggestions, etc. etc.!

**★ EASY TO LEARN GRAPHIC MENU ★
REQUIRES 64K COCO - 1 DRIVE - JOYSTICKS
SUPPLIED WITH 2 EXTRA PICTURE DISKS FOR
MORE CHARACTER FONTS, PICTURES & GRAPHICS!**

ON DISKS \$24.95

64K-IT®

New - From Computize ...
Enables the Full 64K of RAM in your 64K Color Computer. Provides up to an additional 16K of RAM. Permits you to change, modify or copy the BASIC, EXTENDED BASIC, ROMPACK, OR DISK PACK

TAPE \$11.99

REQUIRES 64K COCO

Check or M.O.



Add \$2.00 Shipping
PA Res. add 6% sales tax

P.O. BOX 207
LANGHORNE, PA 19047

215-946-7260

COMPUTIZE, INC

New Friction Option For Printers

When I was deciding to buy a printer, one of the most important aspects that I had to consider was whether I wanted the "Friction" option. All printers have the usual "Tractor" mechanism, and if you desire the added convenience of using single sheets of paper, such as stationery, your personal letterhead or whatever, the cost is usually around \$100 extra.

Now, for those of you who have bitten your fingernails away completely because you now wish you paid the extra scratch for the friction feature, a cheaper (but sturdy) way to get the same results is available for *any* printer. It's called the Paper Tractor.

The Paper Tractor is a flexible plastic device that is inserted into your tractor mechanism and will carry your single sheets of paper through without any hassle.

To use this handy device, you just place the paper you would like to use in and under the half-inch folds provided on the top, right and left hand sides of the "tractor." The fit is snug and the paper will stay firmly in place. Then just thread it over your printer sprockets as though it was your usual tractor-feed paper.

You may align it at this point, checking to make sure that your print head is at the desired height on the paper. Then just print as normal.

One precaution you should take while printing is to make sure that you do not go past the end of the paper and onto the device itself, or worse, onto the platen of your printer. If your printer has a "paper out" detector, it will still function as usual.

Even though my printer has friction feed as a standard feature, I tried the Paper Tractor as described and it worked beautifully. The samples I ran were at 9600 Baud and bi-directional, which I thought might have had a negative effect because of the speed and irritation to the Paper Tractor, but it came out beautifully.

After using the tractor a couple of times, I found that I could even print on the very last line of my samples since the Paper Tractor itself extends into the paper-out switch because of its length.

The only inconvenience I can imagine is that if you intend to print an awful lot, the time needed to withdraw the Paper Tractor and insert new sheets of paper will slow things up a bit.

The Paper Tractor is a handy complement for you non-friction printer owners. It handles up to 11 x 14 paper, will work with any printer, and can be used instantly by anyone. The documentation provided does not actually explain how to use it, but if after looking at the photos provided you can't figure it out, you shouldn't be near a computer, anyway.

(Paper Tractor Ltd., 1 South Fairview, Goleta, CA 93117, \$11.95)

— Steve Schechter

Chattanooga Choo Choo Software

We Pay Postage!
(in the U.S. and Canada)

Your One Stop Station For Computer Programs

Track 29

Prickly-Pear Software
20% OFF
Disk Omni Clone \$31.95
Tape Omni Clone \$23.95

15% OFF As Shown
(32K) Disk Master \$21.20
(32K) Disk Manager \$25.45
Disk Zapper \$29.70
(32K, 64K)
*Vikings, *Flight (32K)
\$16.95 ea.

Colorkit Tape \$29.70 Disk \$33.95
Mailing List (32K) Disk \$42.45
Tee Off, Erland, (32K EB)
Adventure in Wonderland (32K)
Tape \$21.20 ea. Disk \$25.45 ea.

Adventure Int'l
Arex 16K \$34.95
Fire Copter (16K) \$24.95
Airline \$24.95

Silverware
Disk Utilities
Practicals #1
Utilities #1
Graphs & Charts
\$18.95 ea.

Computerware
NEW Video Plus
Connect CoCo to composite video monitor
\$24.95

NEW Color Connection II
Tape \$29.95 Disk \$39.95
*Junior's Revenge (32K) \$28.95
Bloc Head, Doodle Bug \$26.95 ea.
Grand Prix (32K), Shark Treasure
\$21.95 ea.

Mark Data Products
*Glaxons, *Bumpers,
*El Bandito & *Cosmic Clones
\$24.95 ea.
Super Pro Keyboard \$67.95

Datasoft, Inc.
Zaxxon (32K) Tape or Disk \$31.50
Moon Shuttle (32K) \$29.95
(Tape & Disk)
Pooyan (32K) \$29.95
(Tape & disk)

Buy 1 Program Get 10% Off
Buy 2 or More Programs Get 15% Off
Except Prickly-Pear Software (15% Off As Shown)

SUPER SPECIALS

Early Games
Preschool Learning Games
Tape or Disk
\$29.95 \$25.45

NEW
"Programmer's Institute"
Complete Personal Accountant
3 Finance packages in one (32K EB)
Tape \$74.95 Disk \$79.95

NEW Colourware
Real Talker, Disk Compatible,
Hardware Voice, Synthesizer
\$59.95 ea.

Text to Speech Program included (16K, 32K, 64K)
NEW Intra Color
Colorpede \$28.25
Robottack \$23.45

Kraft Joystick
The Best \$39.95 ea.
1 Year Warranty
NEW Gold Connectors
for Disk controller \$16.95

NEW Candy Co. (32K)
Introductory Special

No Other Discounts Apply

Spectral Associates
Geography Pac \$32.95
Ms Gobbler (32K)
Storm Arrow, Lancer (32K)
Gallax Attax, Lunar Rover (32K)
Ghost Gobbler, Whirly Bird Run
\$21.95 ea.

Tom Mix Software
*Donkey King (32K) \$26.95
Space Shuttle (32K) \$28.95
Cu*ber (32K)
Grabber, Frog, Buzzard Bait (32K)
\$27.95 ea.

Anteco Software
Home Epense Manager \$19.95
Stock Analysis & Trend \$21.95
Pinball \$24.95

Available in Rom Pac
Pinball, 8 Ball \$29.95 ea.
Ghost Gobbler, Caterpillar \$25.95 ea.
Whirly Bird Run, \$27.95

Model 100 Software Available.

Ask About Our Unclaimed Freight!

*Also available on disk (32K) at extra charge. All Programs (16K) on cassette unless otherwise stated. Send for free complete listings! TN residents add 6.25% sales tax, C.O.D. orders add \$2.00.

(615) 875-8656 • P.O. Box 15892 • Chattanooga, TN 37415

Atom — Fast Action With A New Twist

When I took chemistry in college a few years ago, the worst part was trying to memorize the periodic table of elements. It would have been bad enough just to memorize the abbreviations of 103 different elements, but some of them (like "Pb" for lead) are based on Latin names and have no apparent connection to the common name. (My mother told me a cute way to remember the symbol for one element; when you think of antimony, think of alimony and then remember the "Sb" who's paying it.) Depending on the field you're in, you might remember a few from the names of various combinations that you come across (like NiCd for nickel-cadmium batteries or HCl for hydrochloric acid), but remembering the whole list would take a lot of work and, by the time you get all 103 down pat, a few more may well have been discovered!

Radio Shack's *Atom* is actually an educational tool disguised as a fast-action arcade game. The object is to maneuver a gravitron around a nucleus, pick up orbiting electrons and fire them into the "electron holes" on the inner ring surrounding the nucleus. By doing this, you build up atoms of different elements, starting with hydrogen and

working up through the table. (For various reasons, the game uses only the first 54 elements.)

The only controls you have over the gravitron are moving it in a circle around the nucleus, moving inward and outward and picking up and firing electrons. The game's greatest problem is that the directions of movement are those *seen from the gravitron's point of view* and not the directions that you see on the TV screen. This makes it very difficult to move around, as the direction of movement on the screen doesn't match the direction in which you point the joystick. (Yes, I know that this method is scientifically correct; it works well if you are able to see the field from the point of view of the gravitron, but you can't.)

The manual uses something akin to a split screen; throughout the book, the top half of each page is devoted to a lesson about the structure of atoms while the bottom half contains the game instructions. Another nice touch is the large wall chart of the periodic table, done in a science-fiction style with the symbols placed in a picture of an atom complete with a gravitron "gunship" carrying an electron.

Atom would be a terrific game if the controls were easier to handle, but as it stands it takes a lot of practice just to keep from crashing.

(Radio Shack stores nationwide, cat. no. 26-3149, \$19.95 ROM Pak)

— Ed Ellers

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.
- * Most printers supply power at the parallel port. With these printers you may order your interface without the power module. Printers that require the power module are: Epson, Panasonic, Smith-Corona TP1, Centronics, and Mannesman Tally.
- * Modem users | You may order your Botek interface with a modem cable and switch to select between your printer and modem. Several modem connectors are available, so please tell us what modem you have.
- * Price: Model CCP-1 ———— \$ 69.
Model CCP-2 - with modem cable and switch — \$ 84.
Either model without power module deduct --- \$ 3.
Shipping costs included in price.
Michigan residents add 4% sales tax.



- * We carry the finest disk drive system that you can use with your Color Computer. The system includes: TEAC double sided disk drive, drive enclosure and power supply, J & M disk controller, and cable. We configure the TEAC drive so that it can be used as two single sided drives or as a double sided drive. The J & M disk controller is Radio Shack compatible ——— \$ 425.

* C-Itoh Prowriter Printer ----- \$ 339

Order from:

BOTEK INSTRUMENTS

313 739-2910

4949 HAMPSHIRE, UTICA, MICH. 48087

Dealer inquiries invited

The most comprehensive & flexible data management system available!

FLEXI FILER

Easy to Learn • Easy to Use

"Flexi Filer uses perhaps the easiest screen display format I have yet encountered."
Brian James,
Rainbow Magazine
November 1983

"... this is an impressive and relatively inexpensive system that compares with some of the best."
Brian James,
Rainbow Magazine
November 1983

"Flexi Filer really shines in its ability to select subsets of a file."
Scott Norman,
Color Computer Magazine
January 1984

"I was generally impressed with Flexi Filer."
Scott Norman,
Color Computer Magazine
January 1984

"Flexi Filer is the easiest of the systems to learn."
Scott Norman,
Hot CoCo
February 1984

COLLECT

Up to 35 fields per record, with up to 240 characters per record. You designate the name of each field, its position, and its format, (alphanumeric, numeric, money, date, or exponential) The size of your data base is unlimited — only your disk space will limit your files.

ORGANIZE

You determine how the information is displayed and stored by designing your own entry screens. Your format can be changed any time. Easy screen definition makes data entry simple. The quick assembly language keyboard routine insures that you can't type faster than Flexi Filer!

SELECT

Using logical operators (less than, greater than, equal, and or) you can select any subset of your data base with up to 36 different criteria. A generic search feature finds any occurrence of a given string in a field throughout the data base!

SORT

All or any selected subset of records can be sorted in ascending or descending order by any of your 35 fields with a very FAST assembly language sort!

REPORT

Design customized reports and labels to fit your individual needs, including page headings with titles,

automatic page numbers, and column headers. Store up to 10 often-used formats. Numeric fields can be totaled automatically for summaries. Printing your information in the format most useful to you is a snap! And you can set the baud rate for faster printers too. Reports will print to the printer or screen.

FILE MANAGER

Sophisticated file manipulation is the sign of a true data base manager. With Flexi Filer you can archive and/or delete records via selected subfiles. (For example archive records with an old date into a separate file and delete them from your working data disk. This frees up disk space without losing important data.)

You can also transfer data between files — all records or selected subfiles. This is handy for adding fields to old database layouts or revising records without re-entering data!

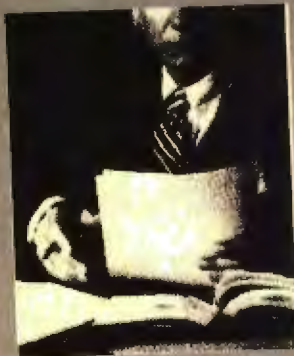
Also included is password protection, automatic expansion of record files, and easy access to user programs.

MANUAL

Comprehensive documentation describes every feature and operation in easy to read forms, including system flow charts and report layout forms.

32K Disk \$69.95

VERSA MAIL



- Menu-driven program for mailing lists.
- Over 2500 records possible per file; over 800 possible on a single-disk system.
- Files may be on 1-4 drives. Versamail automatically selects the proper drive.
- 8 preset fields include Last Name, First Name, Company Name, Address, City, State, Zip Code, and Phone Number.
- 12 programmable fields allow you to tailor your mailing list to your needs.
- Names are automatically sorted on insertion — no special sort option needed.
- Logical selection allows you to search for records by any field with 6 different qualifiers.
- Binary search algorithm speeds record access.

- Many label formats, including custom "run time" message feature. Label formats may be saved or loaded from disk.
- Mail merge feature allows you to create block letters with data from the mailing list. Can be used with any ASCII editor including Color Scribe, Teletwriter, Scripsit, and Super Color Writer II.
- Printer baud rate, compression, and uncompression codes may be changed and saved to disk.
- Soundex Search allows you to look for a name without knowing how to spell it correctly — just type it sounds like.
- Requires 64K Color Computer, one disk drive, and an 80 or 132 column printer.
- Sorts by name and address automatically. Labels and listings may also be sorted by zip code with a fast assembly language sort.

64K disk \$39.95



Computerware is a federally registered trademark of Computerware.

ORDER NOW! CALL: (619) 436-3512
OR WRITE: P.O. BOX 668 • ENCINITAS, CA 92024

Taxi Ride Fairly Smooth

Children's Computer Workshop has developed a series of programs for Radio Shack with a goal "... to create software that is wholesome and engaging, encouraging children to play constructively and learn actively." *Taxi* is one of the games in the seven- to 10-year age group focusing on cooperation and strategy. The three- to six-year-old series is for "Basic Pre-School Skills" and the 10 and over series stresses "creative exploration."

Taxi is designed to allow one or two players to drive around various cities while picking up fares, earning payment and getting tips.

The game is suited to one player but is designed for two children to develop an understanding of cooperation and strategy in picking up their fares and thus earn more money and higher tips. The two-player "company" works towards a higher score through cooperation — helping each other with spotting fares, dividing up the city into sections and driving carefully without running red lights and getting fined or getting into accidents.

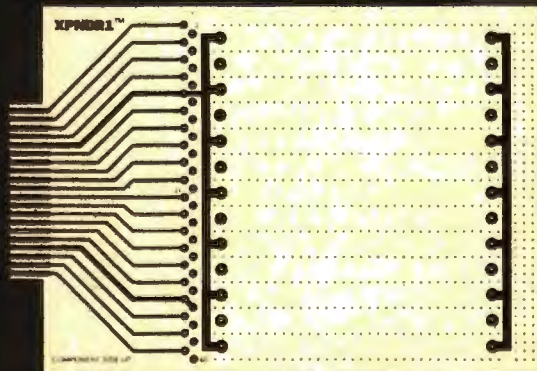
Trying out the game with two sets of youngsters (David, 10 with Mike, 12 and Jennifer, eight with Sarah, eight) gave

me insight as to whether *Taxi* does what it claims. It does. Both sets of children truly enjoyed the game and did start developing a system to make more money. Cooperation was evident from explaining the introductory instructions to each other to playing the game. The first time around, an adult was needed for suggestions. But after that the children were on their own.

The game design, with high resolution graphics and sounds, is excellent. The children were enthusiastic in playing and kept at it to improve their scores.

The program, as good as it is, has some problems. These problems deal not with the game, but with the execution. The worst of the problems is the loading time. The introductory loads in a respectable 28 seconds. When *RUN*, a poem and then a high resolution taxi picture are put on the screen while *CLOADing* another 28 seconds. The directions ask if you want instructions. If you answer yes, it takes almost a full five minutes to load. The children had a hard time controlling themselves waiting this length of time. Remarks such as, "This tape is too long" and "I don't believe it" were made. In a classroom setting a teacher had better have something for the children to do during this load. At the end of the load (providing there are no I/O Errors), the screen asks a series of questions. How many players? Do you want to practice? We practiced and the program gave a sample screen of city blocks, taxi, and fares to pick up and where to drop them off. The practice is almost a game by itself. The child also learns how to position the joystick to drive and pick up passengers by centering it (the new self-centering joystick by Radio Shack would be good in this game). When the practice is completed, you have the choice of practicing again or continuing with the game. We continued and it

Documentation For A Bare Breadboard...??



...You Bet Your CoCo.

XPNDR1™

CoCo Expander Card

Gold edge connector plugs into the CoCo cartridge connector. Signals are labeled on the bottom (wire side). The 4.3 x 6.2 inch glass/epoxy card is drilled for ICs and components. Includes 8 page *Application Notes* which cover the basics of building hardware for your CoCo.

\$19.95 each or 2 for \$36.

SuperGuide™

Precision molded plastic insert designed specifically to align and support the XPNDR1 card in the CoCo cartridge slot. Patent pending.

\$3.95 each

Available now from:

ROBOTIC MICROSYSTEMS

Box 30807 Seattle, WA 98103

FREE OFFER !

COMPUTER CASSETTES

58¢



FREE "Party Trivia Game Program Cassette" with each order of 20 or more C-10's. Specify TRS-80 Color Computer, MC-10, TI-99/4A, VIC-20, or C-64.

- C-10 Length
- 5 Screw Shell/Free Labels
- Lifetime money back guarantee
- Storage Box add 12¢ each
- \$2.00 shipping charge-any quantity
- (Canadian Orders \$4.00 shipping)
- NJ Residents add 6% Sales Tax.
- Send check or money order to

PARALLEL SYSTEMS

Box 772 Dept. R
Blackwood, NJ 08012
609-227-9634

took 32 seconds to load the game introduction. You are then asked a series of questions, including how many players, taxi speed, what kind of traffic, long or short game. You have choice of three cities, Dallas, New York, and San Francisco. Since this is on tape, it is wise to go in numerical order, otherwise you are instructed to rewind the tape and start over. The city loaded in at 23 seconds and then the high resolution graphics loaded in at about 45 seconds. We could then start the game.

The screen shows the city on the top five-sixths of the CRT and the bottom one-sixth includes a game time (about three minutes), plus a separate fare and tip total for each player. When the game is over, a chart shows how well each player did and shows gross total minus fines, for net total of the company. You can also get a chart of the individual player's totals.

The next fault with *Taxi* is the instruction booklet. The authors did a superb job of drawing high resolution graphics of the cities. Being an ex-New Yorker, I spotted the Empire State Building, Kennedy Center, the Twin Towers and St. Patrick's Cathedral. I've been to San Francisco and recognized landmarks there, though I cannot name them. Dallas, well, I can tell you J. R. is not included. And this is the flaw. Nowhere in the instruction booklet is there an explanation of the city graphics. What a shame! Even the streets are modeled after the street designs of each city.

The booklet, while going into excellent detail about loading and playing the game, and even activities, does not mention how much RAM is needed. My CoCo is 64K but I do not know if this game will work on a 16K machine. Extended BASIC is required. But do not have your disk plugged in or the game will not work. The game uses auto-

start and will cause problems with a classroom networking system. With such a long loading time this would cause difficulties for a teacher having to load computers individually from a recorder.

My general overall feeling towards *Taxi* is positive. My recommendation is that it is worth the money. However, I hope the authors develop future programs that will be disk driven, and include complete explanations for directing and graphic screens.

(Radio Shack Stores nationwide, tape \$19.95)

—Michael F. Garozzo

DELUXE LEAPFROG









16K tape. Uses joysticks.

Spectacular sound & graphics
High score & reset features
Only \$21.95 plus \$2 shipping

FREE BROCHURE!

Just send a postcard with your name and address to:

PHOTOGRAPHICS SOFTWARE
114-41 Queens Blvd.
Forest Hills, NY 11375

<h3>KEYBOARDS</h3> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>HJL</p> <p>MICRONIX</p> <p>\$79.95</p> </div> </div>	<h3>HARDWARE FOR YOUR CO-CO</h3> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>DRIVE 0 \$379.</p> <p>DRIVE 1 \$229.</p> </div>  </div>	<p>a Serial/Parallel Interface for the Radio Shack™ Color Computer Our interface allows your CoCo to connect with most, currently manufactured, printers and offers such features as:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Switch selectable baud rates from 300 to 9600 <input type="checkbox"/> Switch selectable printer or modem operations. <input type="checkbox"/> Elimination of recabling. It comes cabled with standard "DIN" connectors for CoCo and Modem. Also "Centronics" standard 36 pin connector for printers. <input type="checkbox"/> Self contained Power Supply and Cord. <p style="font-size: small;">Radio Shack™ is a registered trademark of Radio Corp.</p> <div style="text-align: center;">  <p>\$89.95</p> </div>														
<p><small>C. Rah Prowriter</small></p> <p>8510 \$399.</p> 	<h3>TANDON DISK DRIVES</h3> <p>Perfect for replacement or add on drive for any 5" drive system.</p> <table style="width: 100%; font-size: small;"> <tr><td>TM100-1 40 Track Single Sided</td><td style="text-align: right;">\$179.</td></tr> <tr><td>TM100-2 40 Track Double Sided</td><td style="text-align: right;">\$279.</td></tr> <tr><td>TMS0-1 6ms trk-trk Single Sided Thinline</td><td style="text-align: right;">\$169.</td></tr> <tr><td>TMS0-2 6ms trk-trk Double Sided Thinline</td><td style="text-align: right;">\$219.</td></tr> <tr><td>Single case with extenders with drive above</td><td style="text-align: right;">\$49.95</td></tr> <tr><td>Dual case with extenders for drives above</td><td style="text-align: right;">\$79.95</td></tr> <tr><td>Two Drive Cable</td><td style="text-align: right;">\$24.95</td></tr> </table>	TM100-1 40 Track Single Sided	\$179.	TM100-2 40 Track Double Sided	\$279.	TMS0-1 6ms trk-trk Single Sided Thinline	\$169.	TMS0-2 6ms trk-trk Double Sided Thinline	\$219.	Single case with extenders with drive above	\$49.95	Dual case with extenders for drives above	\$79.95	Two Drive Cable	\$24.95	<p>64K COCO KIT \$62.95</p> 
TM100-1 40 Track Single Sided	\$179.															
TM100-2 40 Track Double Sided	\$279.															
TMS0-1 6ms trk-trk Single Sided Thinline	\$169.															
TMS0-2 6ms trk-trk Double Sided Thinline	\$219.															
Single case with extenders with drive above	\$49.95															
Dual case with extenders for drives above	\$79.95															
Two Drive Cable	\$24.95															
<h3>WICO</h3> <p>Atari to CO-CO Adapter \$17.95</p>	<p style="transform: rotate(-45deg); font-weight: bold;">NEW!</p> <h3>PBH JOYSTICK</h3> <p>\$49.95</p> <p>ONLY THE FIRE BUTTON MOVES!</p>	<p><small>Verbatim Database</small></p> <p>SS/DD \$25.95</p> 														
<h3>PBH CORDLESS JOYSTICK</h3> <p>☆☆☆☆☆☆</p> <p>\$99.</p> <p>COMING SOON</p>	<h1 style="margin: 0;">COMPUKIT CORPORATION</h1> <p style="font-size: small; margin: 0;">orderline 1-800-231-6671 local orders and shipping info 1-713-480-6000 16206D Hickory Knoll Houston, Texas 77059</p>															



OWLS NEST

SOFTWARE

'WE GIVE A HOOT'

FILE CABINET - Data Management System

NEW!!!

With FILE CABINET you can create and maintain records on anything you choose. Recipes, coupons, household inventory, financial records - you name it. You create records containing up to five fields you define. You can search, sort, modify, delete, save on tape and display on the screen or send to the printer. The program is user friendly and user proof. Error trapping and prompting are extensive. A comparable program would cost you much more. Cassette 16K EXT - Postpaid \$19.95

LABELIII (Reviewed in Nov. 83 Rainbow)



With LABELIII you can develop and maintain a mailing list. Display on screen or printer. Print lists or labels in your choice of 1, 2, or 3 wide. Supports 3 or 4 line addresses with phone optional. Fast machine language sort on last name, first name, or zip code. Cassette 16K EXT - Postpaid \$19.95

ATLANTIS ADVENTURE



This one is tough! We challenge you to complete this in 30 days. If you can we will send you any cassette program we sell at no charge. (We will even pay the postage.) You start on a disabled sub, near the lost city of Atlantis. Your object is to get the sub and yourself safely to the surface. Cassette 16K EXT - Postpaid \$21.95

ADVENTURE STARTER (Reviewed in Feb. 84 Rainbow)



Learn to play those adventures the painless way. You start with a simple adventure and then move into an intermediate. We also include hints and tips on adventuring. Your 16K EXT cassette includes both "MYHOUSE" and "PIRATES" adventures. Finish this and you are ready for "ATLANTIS." Cassette 16K EXT - Postpaid \$17.95

FOUR MILE ISLAND ADVENTURE



You are trapped inside a disabled nuclear Power Plant. The reactor is running away. You must bring the reactor to a cold shutdown and prevent the "China Syndrome." Can you save the plant (and yourself)? It's not easy! Cassette 16K EXT - Postpaid \$17.95

ESPIONAGE ISLAND ADVENTURE



You have been dropped off on a deserted island by a submarine. You must recover a top secret microfilm and signal the sub to pick you up. Problems abound in this 32K text adventure. Cassette 32K EXT - Postpaid \$17.95

PROGRAM FILE (Reviewed in Oct. 83 Rainbow)



Organize your cassette programs. Let your computer find that program for you. Create and maintain a four field file. You can search, sort, modify, delete and display on screen or printer. Sorting may be done by name, type or location. Cassette 16K EXT - Postpaid \$14.95

OWLS EYE INDICATOR LIGHT



Don't leave your coco on and fry your chips! The OWLS EYE plugs into either joystick port and may be mounted beside the keyboard where it is easily visible. Simple 10 second installation!

OWLS EYE - Postpaid \$ 8.95

SPORTS CAR ADVENTURE

NEW!!

An easy to intermediate text adventure that requires you to fix that "old Junker" in the garage. You don't have to be a mechanic but you are going to have to "fine tune" your wits.

Cassette 16K EXT - Postpaid \$12.95

CASSETTE TAPES C-06 \$7.50 dozen/ \$9.50 dozen with hard boxes. Please add \$1.50 per dozen shipping and handling.

*C.O.D. orders please add \$1.50

*No delay for personal checks

VISA*

OWLS NEST SOFTWARE

P.O. BOX 579, OOLTEWAH, TN 37363



Responses To Queries In Question And Answer

There are many programs on the market that drill children in addition and subtraction. *Question And Answer*, from Moreton Bay, not only acts as a drill, but an actual teaching tool. It works with the concepts of numbers that are equal, greater than and less than, as well as providing practice in addition and subtraction. There is also instruction in the computer techniques needed to answer the questions. *Question And Answer* is actually a series of programs, each dependent on the skills learned in the preceding program. It is written for a 16K CoCo with Extended BASIC.

The first program in the series is called Step 1. In this program the child learns how to use the program and also the kinds of responses that he will need. Practice is provided in completing simple numerical equations like $X + Y = ?$, in which the child enters a number, or in deciding if a number is equal to another number or greater than a second number. This is done through the keying in of True [T] or False [F]. Step 2, the next program, is like Step 1 except the concept of "less than" is introduced.

Step 3 introduces more complicated problems in which the numbers before the equal sign are to be entered, e.g., $? + Y = Z$.

Step 4 instructs the child on how to enter the symbols $=$, $>$ and $<$. The problems can now take on the form $X + Y ? Z$ or $X - Y ? Z$.

The last program is called QAA. It is a summary program which incorporates all the instructions and practices all the skills used in the first four steps. In Steps 1 through 4, the numbers are all one digit. In QAA, the numbers can be up to four digits long, depending on the skill level.

After *CLOADing* and *RUNning* the chosen program, the user is asked to wait while the rest of the program loads, after which he is asked to [ENTER] his name. He then has the choice of being instructed on the skills and keys needed to use the program or proceeding to the mathematical problems. The skills are taught in a clear and concise manner and the child cannot go on until the questions are answered in a way that shows conceptual understanding. I find the example used to teach a child what "True" means, unfair to many children. If the child using the program is named Johnny, the statement "Johnny loves Santa" is displayed. The child is expected to respond with "True" [T]. If he does, a screen appears that says, "Santa loves Johnny, too!" There are many children for whom Santa Claus is not a part of their life. A response of "False" [F] to this statement produces a screen which displays, "I'm so sad Johnny doesn't love Santa." I feel that this kind of statement produces feelings of being an outsider for the child who does not believe in Santa Claus. I think a more appropriate and universal statement should have been used.

When the user gets to the part of the program in which he has to solve problems, after the problem is displayed on the screen, he is told what kind of answer he needs to input. For example, if the problem is $3 + 4 = ?$, he is told to respond with a number. If he answers correctly, a screen appears which graphically displays "RIGHT!" or a happy face. An incor-

The OS-9 experts have developed something new.

C Compiler Version 2 for color computer OS-9 DOS for color computer Relocatable Assembler for Flex and CoCo DOS

C Compiler

Dugger's Growing Systems C is the original C Compiler for the 6809 and is the proven leader in the field. It is a growing subset of the C programming language. It runs in 20K, has assembly language output, position independent code, an extensive library in assembly language source, and code optimizer.

The Color Computer and Flex (which will run on the Color Computer) are now both available with full floating point package (float, long, for, goto, etc.) in addition to the basic C commands. CoCo Dos also contains features which use the BASIC ROM functions (cls, polcat, partial floating point, etc.).

Dugger's Growing Systems has the cost effective C for OS-9. It contains all the necessary C commands (while, if, if else, int., char, etc.) which may be linked, loaded, and used in a multi-user, multi-tasking environment.

Relocatable Assembler

The relocatable assembler package includes assembler, linker, and manager. May be used with the Color Computer or Flex.

Symbols up to 32 characters Many special characters allowed in symbols (\$, %, etc.) Multiple files assembled without exiting the assembler Direct output to printer at any time Generates either absolute or relocatable modules which are linked together with RLINK to generate executables Supports two types of global variables (VAR and COMN) Fortran type common Compatible with source for most assemblers Macros with parameters Conditional assembly.

Linker

Use text-like files which are generated by RASMB or any other source Allows inclusion of multiple source files, each of which can have any number of program modules Provide for library files, whose modules are included only as required Specify at link-time execution address and global storage area for easy generation of ROM-able code Will link together both absolute and relocatable modules Extensive linkage information output on request.

Manager



Provide a tool to build a "library" of relocatables Edit feature to list, insert, and delete modules.

Check and Compare Prices

CoCo C Compiler Version 2.3 (requires disk assembler and text editor)	49.95
Relocatable Assembler (package: assembler, linker, and manager) RASMB CoCo Version 1.7	49.95
Flex C Compiler Version 2.3	75.00
Relocatable Assembler (package: assembler, linker, and manager) RASMB Flex Version 1.7	75.00
OS-9 C Compiler Version 1.2	59.95
C Programming Language, Kernighan and Ritchie	19.95
Shipping add \$3.00	
C.O.D. add \$3.00, foreign handling 15%	
California residents add 6%	
MasterCard and Visa accepted. (619) 755-4373	
Dealer inquiries invited.	

DUGGER'S GROWING SYSTEMS

Post Office Box 305, Solana Beach, California 92075 (619) 755-4373

Math Invasion Adds Up

rect answer produces a graphic "NO!" (rather harsh) or an unhappy face. After every five problems, a scoreboard appears. To end the use of the program, "S" is inputted when a problem appears. This causes a final scoreboard to be displayed.

The documentation recommends that if the child is a beginning reader, an older child or adult will be needed in getting the young child started. After the child has mastered the concepts being taught, he should have no trouble using the program by himself.

There is no limit on the time needed to work out a problem. A child should be encouraged to use paper and pencil or any other tools he may need in order to find the answers. In the last program, QAA, the child or the adult can choose an appropriate skill level. A number between 1 and 1000 is entered. This is a bit much. It is difficult to distinguish the difference between skill level 250 and 251. However, it's nice to see a program that allows a child to work at his own pace and at his own level.

According to the documentation, the correct answer will be displayed after an incorrect answer has been given. Unfortunately, this is not the case. Learning is definitely lost when a child cannot find out what his mistake was.

Another flaw in *Question And Answer* is that when the answer requires a number and characters other than numbers are entered, the answer is considered incorrect. I would much rather see an error message displayed and the problem repeated. It is just too easy for little fingers to hit the wrong keys by mistake.

I especially like the fact that teaching a child how to use the computer is incorporated into the program. There is so much learning going on in these programs that I found myself overlooking most of the things that are wrong with them and concentrating on all the things that are right.

(Moreton Bay, 316 Castillo Street, Santa Barbara, CA 93101, tape \$17.95)

— Stephanie Snyder

Having three grade schoolers, I can appreciate the value of a good educational program, and that is definitely the category for this program.

Math Invasion is loaded by an auto-load, auto-start program. Anyone who has bought much software has seen this loader. The title screen is displayed while the program loads, and from the title page the computer starts a demonstration of how the game is played.

Once you have seen the computer play the game, you can try yourself by touching any key. This leads you to a menu to select the home galaxy of the invaders: Addition, Subtraction, Multiplication or Division. Once this is done, you must select one of three skill levels. Now you can start to blast the invaders, but unlike other invader games, you must load the gun with an answer to one of the invading problems. Using the numbers on the keyboard, the answer must be fired at the proper invader using the right and left arrows and the spacebar. There are four invaders on the screen at all times trying to get to the surface of your planet. As the game progresses, they come faster and faster. One point is given for each right answer and one subtracted for each wrong answer.

Although this game uses low resolution graphics, it is an extremely fast, clean program that gets and holds the attention of the child playing the game. This simple-to-operate program gets the job done. *Math Invasion* is worth its weight in gold to anyone with children learning math.

(Crystal Software, 6591 Dawsey Road, Rock Creek, OH 44084, \$19.95)

— James McCracken



COMPUSETTE.

NEVER UNDERSOLD

"We'll Meet or Beat ANY Comparable Offers!!"



AGFA
PE 611

Diskettes	Qty.	Retail	Sale	Cassettes	12-Pak	24-Pak	250-Case*	500-Case*
40-Track	10 pak	\$3 ⁰⁰	\$1 ⁹⁹ ea.	C-5	65¢	55¢	41¢	36¢
Single Sided	20 pak	\$3 ⁹⁹	\$1 ⁹⁹ ea.	C-10	69¢	59¢	49¢	39¢
Double Density	50 pak	\$2 ⁹⁹	\$1 ⁷⁹ ea.	C-15	79¢	69¢	59¢	49¢
With Hub Rings	100 pak	\$2 ⁹⁹	\$1 ⁹⁹ ea.	C-20	89¢	79¢	69¢	59¢
	10 pak case	\$4 ⁹⁹	\$3 ⁵⁰ ea.	Hard Box	26¢	21¢	16¢	13¢

* 250/500 Bulk Quantities, Labels 4¢ Extra

UPS Shipping (48 States) \$3⁰⁰ Per Pak, \$18⁰⁰ Per Case

Micro-80™ INC.

2665 Busby Rural Road
Oak Harbor, Wash., 98277




IMMEDIATE SHIPMENT

1-(206)-675-6143

Adventure At 20,000 Leagues

Have you ever wanted to go deep-sea diving in search of treasures lost centuries ago; the cargoes of hapless ships who set sail and were never heard from again? It's a fantasy that has infected each of us at one time or another. But the practicalities of life forbid all but a few from ever becoming deep-sea treasure hunters.

Now, however, every owner of a CoCo can become an underwater treasure hunter without ever donning a wetsuit. With the introduction of *Sea Quest*, a 32K Extended Color BASIC graphic Adventure, the armchair Adventurer can comb the beaches, explore the hurricane-sacked houses, and scour the ocean floor in search of clues to treasures that would ransom a king.

As in most Adventures, the object of the game is to find several treasures — in this case five — and return with them to a central location. Now, this is not the toughest Adventure I've ever embarked upon, but it's guaranteed to occupy several hours. To date, I've managed to find four of the treasures, but the fifth eludes me completely; I haven't a clue. I've been aggravated, puzzled, perplexed and disgusted, which, as bad as it sounds, is exactly what puzzle solving is all about. It's the quest, the mental stimulation and the sweet taste of victory that make all the aggravation worthwhile.

Besides, in this particular game I was surprised to meet up with this knife-brandishing character that, each time I tried to pass him, kept saying, "Dis be my island, mate, and I don't be liking strangers." I would almost swear that I ran into this guy in Miami one summer.

Both the cassette and disk versions of *Sea Quest* come in stylish packages with short, but ample, documentation printed on the backs of the packages. After all, you don't need a textbook accompanying an Adventure that even *EXECutes* automatically. The thrill of these games is in *discovering* what works — not being told. Right?

But, after all else has been said, it's the graphic screens that are the shining stars of this game. They're some of the best that I've seen. The fantastic strides that have been made in this genre of games in such a short time display clearly that their potential is only now beginning to be realized — potential limited only by the imaginations of the programmers. What's more, Mark Data appears to be on the cutting edge of the new graphic Adventure technologies. I've spent some time scratching my head over each of their releases, and I've been more than impressed with them all.

All things considered, you simply can't go wrong with *Sea Quest*. The worst thing that I could say about it is that I'm going crazy trying to find that last treasure. As for the price of \$24.95 for cassette and \$27.95 for disk, I figure that the time I've spent playing the game converts to around \$3 an hour — and I'm by no means finished solving it yet.

If only all of life's little pleasures were as cheap!

(Mark Data Products, 2400 Alicia Pkwy., #207, Mission Viejo, CA 92691, 32K ECB cassette \$24.95, disk \$27.95)

— Kevin Nickols

Speed Reading The Fast, Fun Way

Speed Reading by B & B Software, consists of six text programs. Side one includes *A Service of Love* by O. Henry, *The Adventures of Hercules*, and *Life on the Mississippi* by Mark Twain. Side two has *The Tell-Tale Heart* by Edgar Allan Poe, *Hamlet, Prince of Denmark* by William Shakespeare, and *The Hollow of the Three Hills* by Nathaniel Hawthorne. At the beginning of each side of the tape is a number drill which is designed to improve peripheral vision, a necessary skill for speed reading.

Speed Reading was written for either 16K BASIC or 16K Extended BASIC. However, in the latter case a *POKE 25,6:NEW* is required.

After the user *RUNS* one of the text programs, he is asked to choose a reading speed. The parameters are between 100 and 3000 words per minute. The documentation states that the average reading speed is 250 words per minute and I found this a good place to start. The user is then asked to *INPUT* a starting page. Each page is a text screen, 13 screen lines in length. The stories range from 27 to 36 pages long. The user can start reading at any point in the story. If he enters a page number that is past the end of the story, the text begins with Page 1.

If, while reading a story, the user finds the text too slow, he can speed it up by keying [F]. This will increase the speed by five percent. Conversely, if the speed is too fast, it can be slowed down by keying [S] and this will decrease the speed by five percent. This can be done as many times as the reader finds necessary. B & B recommends choosing a speed that is faster than you can comfortably read.

When you wish to stop, depress [E] and the screen will clear. The program will then display the final reading speed.

It is necessary to understand that this is a training program. We all know that "practice makes perfect."

There is no testing at the end of the text, and the reader should be careful to monitor his comprehension as he progresses. If the story doesn't make sense, he needs to slow down.

This is not a program for young children. The stories are quite involved and very different writing styles are employed. I would estimate that a person should be at least in junior high school in order to use these programs effectively. However, the text is brought to the screen through use of *DATA* statements and the user could include new stories by doing a lot of typing and changing the *DATA* statements. Although a fair knowledge of programming is necessary, this makes the scope of the text, and of the program, unlimited.

The documentation offers many suggestions about how to develop speed reading skills, but like all self-help, material extensive and repetitive use is critical if benefits are to be gained.

If this article took you more than two minutes and 12 seconds to read, then *Speed Reading* may be just what you need.

(B & B Software, P.O. Box 210, Jenkintown, PA 19046, tape \$17.95)

— Stephanie Snyder

Factors Tutor Great With Home Computer

Factoring numbers. I can still remember those greatest and least common factors from my sixth grade math class. Some Fun! "What is the greatest common factor of 232 and nine million," my math teacher used to say. Oh sure, I finally got the hang of it, back in the sixth grade. We didn't have computers, nor did we have programs like this. Both would have helped.

It all started coming back to me when I ran *Factors Tutor* and I tried to put myself in the place of those children trying to learn factoring today.

The first part of the program gives directions on how to factor a number. There are several pages of instructions that are quite good but do not replace a teacher standing at a chalkboard explaining what to do. Not that the directions are not helpful, but factoring is confusing and you still need someone to explain what the directions are saying. Once you get the hang of it, the program's directions reinforce your understanding. I did not like the continuous music back-

ground that played while the directions were flashing before me. I know that children are apt to have music on the TV playing while studying. I do not. I like to concentrate on what I'm reading and I found that the music distracted me. In a classroom of multiple Color Computers, this musical introduction would cause problems.

The directions combine low resolution graphics and explain factors, prime numbers and greatest common factors. The program then asks if you want to pick certain numbers to factor or let the computer pick the numbers. You also have the choice of choosing a level from one to four. One is the lowest level using two-digit numbers while the highest level, four, has three-digit numbers.

If you pick level one, you get a problem such as: $28 = 1 \times 28$. You must then factor 28. The program first asks if the number 28 is a prime number. If you answer "no," you not only get to continue the problem but get rewarded with a happy face and music. An answer of "yes" gets a sad face and low-note sound. I could do without the low note for a negative response. The sad face is enough punishment. Besides, you cannot continue until you get it right. Let's say that you are stuck and do not recall how to factor. The program has a built in "help." Press "H" and the definition, not the answer, for the section of the problem you are working on appears. Fantastic! Now the student has to think out what he is doing and try to apply the directions to achieving the solution. The problem we started with was $28 = 1 \times 28$. If I answered that 28 was a factor, the program tells me not to use the same number as the problem itself and will not accept that as a factor. It then prompts me to continue. When I answer that 4 is a factor, the program asks me "4 times what number is a factor of 28." I answer "7," my response is then used in the original example and the program changes it to read, " $28 = 1 \times 7$." The program then continues and asks me if "4" is a prime number. If not, I must factor that. The screen then shows " $28 = 1 \times 2 \times 2 \times 7$." Since all remaining numbers are prime, the problem is solved and you get a happy face and Beethoven's Fifth Symphony.

After several problems are completed, the program shows a screen with the examples that you have factored. Now comes the tough part. The program asks, "What is the greatest common factor of each of the problems shown." And I thought I had finished factoring the problems! I get a pencil and paper and start to work out the problem. If I give a wrong answer the program says "no" and, fortunately, provides me with one of the numbers that can be used as a G.C.F. (Note how expert I am becoming . . . greatest common factor for you novices). I am then asked if this is the only common factor. In my problem there were several common factors and the program finally asked me which of these was the greatest. I answered properly and the program rearranged the examples with the greatest common factor first and the other factors afterwards. All with accompanying music.

The program concludes with a score of your efforts and returns to the main screen of directions.

My conclusion is that *Factors Tutor* is well done and enjoyable. The program has plenty of bells and whistles to hold the interest of the student and would definitely be worthwhile for school or home.

(Computer Island, Dept. R, 227 Hampton Green, Staten Island, NY 10312, 16K Extended cassette \$19.95)

— Michael F. Garozzo

WANTED!

Young men and women seeking adventure, excitement and thrill-a-minute action. No experience necessary—just you and your Color Computer. See below:

FOR THE 32K THRILLSEEKER

ZAXXON, Disk or Cass.	DataSoft	\$29.95
PROTECTOR II, Cass.	Synapse	\$29.95
DESERT PATROL, Cass.	Arcade Anim.	\$21.95
ICEMASTER, Cass.	Arcade Anim.	\$21.95
FOODWAR, Cass.	Arcade Anim.	\$22.95
WACKY FOOD, Cass.	Arcade Anim.	\$19.95
CASHMAN, Cass.	Comp. Shack	\$24.95
CHOPPER STRIKE, Cass.	Comp. Shack	\$24.95

LOTS OF PLAY FOR 16K

MOONSHUTTLE, Cass.	DataSoft	\$26.95
SHAMUS, Cass.	Synapse	\$29.95
FROG TREK, Cass.	Oelrich	\$14.95
3-D TIC-TAC-TOE, Cass.	Oelrich	\$16.95

Interested applicants send check or m/o to:

OELRICH PUBLICATIONS
4040 N. NASHVILLE
CHICAGO, IL 60634

Credit card orders, call: 800-621-0105
(In Illinois: 312-545-9286)

!!! FREE !!!

Published Monthly by Computer Publishing Inc., Hixson, TN.

\$1.95



Bulk Rate
U.S. Postage
PAID
Chattanooga, TN
Permit No. 357

Color Micro Journal

The Color Computer Monthly Magazine

\$1.95 per Issue Vol. 1, Issue 2 October, 1983

THIS 'N THAT

The **BIG NEWS** this month is that **OS-9** has finally arrived for the Color Computer. The **ASTOUNDING** part of the Radio Shack **OS-9** Package, besides the price, is the **DOCUMENTATION**. You 'Old Time Radio Shack Followers' will not believe what you see. Jon Shirley has been telling us that the main reason for the "lack" of documentation with a lot of their products was the restrictions placed on releasing that information by **Microsoft**; I

OS-9 on the COLOR COMPUTER

One of the "Operating Systems of the Future" is **now available** for the "little Old Color Computer"; **OS-9**. Freely translated, **OS-9** means "Operating System for the **6809**" (**OS-9** is now being written for the **68000**, also). Since it is fairly obvious that **UNIX** and "UNIX-Type" Operating Systems will be running on just about every computer to come out in the next few years, a whole new language is beginning to appear on the horizon.

Color Computer OS-9; the Package

We had been running a preliminary release of **OS-9** on the Color Computer for a few weeks, and received the "Official Radio Shack" version for Review a couple of days ago. To put it mildly, this package is **IMPRESSIVE!** For \$69.95 (Radio Shack Catalog Number **26-3030**), you receive a 9 1/2" x 7 5/8" x 2" package containing 4

FREE SAMPLE ISSUE

1-800-338 6800

MON.-FRI. 9-5 E.S.T.

USA-\$12.50 per year. Canada& Mexico-\$19.50 per year

Surface Foreign-\$24.50 per year. Airmail Foreign-\$48.50 per year

Color Micro Journal™

TM Color Micro Journal is a trademark of Computer Publishing Inc.

5900 Cassandra Smith Rd.

Hixson, TN. 37343

Do It Right With *Execcart*

Have you noticed lately the sudden proliferation of utilities available for our Color Computer? But you figured whatever you are doing is good enough. Me, too!

Well, in the mail the other day was a package from *the Rainbow*. In it was a utility program to backup ROM packs. So who needs a backup program to do that? Read on!

After I destroyed the CPU chip in my CoCo by accidentally removing a ROM pack from the computer while the power was still on, I decided it might be a good idea to backup all the ROM packs I own and run them from RAM.

I came up with a procedure which, while not very elegant, was effective (sort of!). It was as follows:

- 1) disable auto-start of cartridge,
- 2) save a copy to cassette (*CSAVEM, &HC000, &HDIFF, \$HC000*),
- 3) remove ROM pack (after turning off the power),
- 4a) load the copy to low memory and see if it would run (usually not, that is why 4b),
- 4b) load and run my 64K RAM turn-on program,
- 5) load in the ROM pack copy and run it from RAM.

This system worked just fine until I got a disk drive. Turns out the disk controller and the ROM pack software both want to be in the same place at the same time. This means going back to using the ROM packs themselves, which also means I will probably catch that dreaded disk disease called I/O Error from abused connectors. Oh, what to do?

Enter the utility *Execcart*. This program, written by Peter Karwowski, does exactly what the above procedure attempted to do except it does it easier, quicker, better and even provides some features I had not thought about. It is a tape-based, ML program designed to run on a Color BASIC 64K CoCo. It comes with an 11-page manual that describes in detail every step necessary to use this program.

Its major features include making an executable backup copy of your ROM pack on cassette, instructions on saving this backup to disk, automatically disabling Extended and disk BASIC to prevent interference with the backup copy, and automatically finding the exact end address of the ROM pack to conserve cassette and disk space. Two extra features

also included are the ability to turn on the 64K RAM and move all the BASIC ROM to RAM for modification and moving just Color BASIC to RAM to allow for maximum user RAM space.

The most dominant feature of this package has to be the manual. Its 11 pages are broken into six different sections. The first is an introduction which includes a brief description of the features and hardware requirements.

The second section, "GETTING STARTED," explains the setup procedure needed to disable the auto-start feature of the ROM packs. Actually, it describes two methods to do this, the first one being the preferred tape-over-pin method. The second one involves plugging in the ROM pack with the power applied and, though the warning of potential danger is adequate, I feel this method is too much like Russian roulette to be useful and should never be used.

The next and largest section is entitled "LOADING AND USING EXECCART." It is a whopping five and one-half pages long and describes in minute detail everything needed to use this program. It even goes as far as giving the listing for a BASIC program you can use to make a disk copy of a program on cassette.

The last three sections briefly describe potential problems the user may encounter with certain ROM packs and some peripheral uses for *Execcart* (as described in a previous paragraph).

I used *Execcart* with four different ROM packs and it worked flawlessly. It was also extremely easy to use. I guess all that is left to say is, if you own ROM packs and a disk drive, you need this type of program. If you have lots of ROM packs and your connectors are wearing out, you need a program like this. If you would rather be doing things the right way instead of the hard way — you need *Execcart*.

(The Dataman, 420 Ferguson Avenue North, Hamilton, Ontario, L8L 4Y9, cassette \$17.95 Canada, \$14.95 U.S.)

— C.L. Pilipauskas

See You At
RAINBOWfest
Chicago
June 22-24

"ROOTS" GENEALOGY PROGRAM KEEPS FAMILY TREE DATA, 8 GENERATIONS: PEOPLE, HORSES, DOGS, OTHER. ASSEMBLES, ORGANIZES, PRINTS PHOTOREADYDATA. 32K EXT TAPE \$20.00

"INVENTORY ONE" (ALAN ROUSE) EFFICIENT FOR BUSINESS, HOME, CLUB. TAPE = 148 RECORDS, 32K. DISK FAR MORE. PRINT STATUS, REORDER REPORTS. 16K EXT TP/DISK \$30.00

"KNIX GRAF" 80-COLUMN PRINTER WITH TRS-80 MODE BLOCK GRAPHICS PRINTS PHOTOREADY BARGRAPHS. NO SCREENPRINT PROGRAM REQUIRED. EXCEPTIONAL! 16K EXT TAPE \$20.00

"ADDRESS ONE" MAINTAINS ADDRESSES AND DATA. PRINTS 1-UP LABELS. SEARCH AND VIEW. 16K EXT TP/DISK \$20.00

"FILE ONE" SMALL DATABASE. A MUST! 16K EXT TP \$20.00
 "SPANISH ONE" LEARN WORDS/PHRASES! 16K EXT TP 12.50
 "SPANISH TWO" AS ABOVE. ADVANCED. 16K EXT TP 12.50
 "I DO THINK" 3 PROGRAMS CAN THINK. 16K EXT TP 12.50
 "LETTERS ONE" PRE-SCHOOL LEARNING. 16K EXT TP 8.00
 "NUMBERS ONE" PRE-SCHOOL LEARNING. 16K EXT TP 8.00
 "MONITOR ONE" EXPLORE COMPUTER MEM. 16K EXT TP 6.00

POSTPAID

WE INVITE AUTHOR INQUIRIES.



WEST BAY

ROUTE 1 BOX 666
WHITE STONE VIRGINIA 22578



SEND BASE FOR LIST OF OTHER PROGRAMS. VA ADD 4% TAX

This Action Game Will Grab You

You can decide for yourself whether it's the music or the arcade action from which the name *Grabber* is derived for one of Tom Mix's latest games. At any rate, it's almost as much fun to listen to the tune as it is to play the game.

And the game — a highly imaginative variation of the Pac Man type — is good, quite good. *Grabber* is the kind of quality that we have come to expect of Tom Mix, who has given us such creations as *Buzzard Bait*, *The King*, and *Journey to Mt. Doom*.

The screen is divided into two identical mazes, one above the other. As the *Grabber* is in pursuit of treasures, you move from one maze to the other with just a push of your fire button. Your object is to pick up four treasures in each of the mazes and store them in the center boxes. A white square in the opposite maze shows where you will materialize when you press your button.

The reason you will want to be transported to the other maze, of course, is because there are monsters attempting to devour you. But be careful, because another monster may be waiting in the other maze.

You can kill the monsters. When they first appear in a maze, they are the same color as you. And as long as this is the case, his touch is fatal. You can rectify the situation by running over one of the four X's that appear in each maze. This changes your color and allows you to eliminate him.

You start with three grabbers and get an extra one at 20,000 points. When you have stored a total of eight treasures (four on top, four on bottom), there's a musical fanfare and you move on to the next level of competition. Every third and eighth board of each level is a bonus board. The faster you clear these boards, the more points you will receive.

The game requires 32K and is written in machine language. One or two players may play. Hitting the [ENTER] key allows you to pause; tapping the [SPACE BAR] re-convenes the game. As with most good games, there is a high score feature that enables you to enter your tally at the end of the game — but only if your score exceeds 15,000 points.

And if you don't like the background music or if it gets old after a while, you can always turn the sound down. But I think you will agree that it puts *Grabber* a cut above most games of this genre.

(Tom Mix Software, 4285 Bradford N.E., Grand Rapids, MI 49506, \$27.95 tape, \$30.95 disk)

— Charles Springer

Hint . . .

Gaining Confidence

There is an easy way to check taped programs. Simply use the *SKIPF* command. It will read over your file and report any I/O Errors *without* losing whatever program you may have in memory. Then, if you have a problem, you can still make a new save.

Alan A. Framer
Charlottesville, Va.

Atlantis Adventure — A Shipshape Undersea Adventure

Yo ho ho and a bottle of rum! I, the mighty Captain Crunch, have run into a bit of a problem. It seems my submarine has been experiencing some minor difficulties — we're stuck on the bottom of the sea. I need some help and it seems nobody but you is around to help. Of course, I have to stay and eat my breakfast, so I was wondering if you could give me a hand. . . .

Sound familiar? I didn't think so. Although I modified it a little, this is basically how *Atlantis Adventure*, a new game from Owl's Nest Software, begins. As the intrepid Adventurer, your mission, if you choose to accept it, is to try to raise the incapacitated sub back up to the surface. As usual, this is much easier said than done.

Without revealing too much of the Adventure, the game allows you to travel underwater, inside the submarine, and in the city of Atlantis. The Adventure flows very fluidly, and there isn't really any place you can get stuck for too long, provided you remember your purpose.

Atlantis Adventure comes supplied in both a 16K and 32K game. The only difference between the two is that the 32K version has a game save and a game load feature. Also included are the instruction and loading sheet, and a small form to fill out if you solve the Adventure. If you solve the Adventure, upon mailing in your form, you will receive, postpaid nonetheless, a free game of your choice from Owls Nest. I think this is a nice way of issuing a challenge to purchasers of the game. I also like the idea of getting the free program! The game is fairly challenging, so don't expect to walk away with this prize!

The instructions to *Atlantis Adventure* are fairly complete, but it would be nice if a verb list was included. (Software companies and Adventure writers take note!) The game loads easily, and two copies of both versions (16K and 32K) are supplied on each side. The instructions also inform you that a tip sheet is available for the cost of a S.A.S.E., which is another nice touch.

I can honestly recommend *Atlantis Adventure* for any semi-experienced Adventurer, or possibly an advanced beginner. The game provides challenge for everybody and is very well plotted. If you are looking for an advanced Adventure, however, I would sail clear of Atlantis.

(Owls Nest Software, P.O. Box 579, Ooltewah, TN 37363, 16K/32K tape \$21.95 [postpaid])

— Eric Oberle

Hint . . .

Reuse That Buffer

If you have a disk system and are not using the cassette for any input/output, there is a whole 255-byte buffer area just going to waste. The cassette buffer is located from 01DA to 02D8 Hex. This is a good place to put that little ML utility

There are any number of small ML utilities that are just waiting to be placed down in this under-utilized area.

Charles M. Thoneh
Fort Greely, Alaska

The Music Reader Is a Competent Tutor

By Larry Konecky

At last, music educational software is available for the Color Computer. Prickly-Pear Software has introduced a package of seven programs called *The Music Reader*. All but one of the programs in this package contain a short tutorial on one aspect of music literacy and each of them contains drill and practice on material covered in the tutorials. *The Music Reader* comes in both a tape and disk version. The tape version requires 16K Extended Color BASIC and disk requires 32K Extended BASIC.

The areas covered by the seven programs are listed as follows:

- 1) Notes and Rests
- 2) Complete the Measure
- 3) Note Names
- 4) Piano Keyboard
- 5) Key Signatures
- 6) Rhythm Practice
- 7) Musical Terms

With disk, access to each program is presented through a central menu and with the tape version, each program must be loaded individually.

Tutorial type instruction is normally not considered the most effective or efficient mode for Computer Assisted Instruction (CAI). Music seems to be an exception to this rule of thumb though. Learning to read music requires a complex act of associating symbols and sound in a timed sequence. Books are not capable of providing the necessary sounds for written musical examples. Home computers, however, have the capability for text, graphics, and sound presentations, separately and simultaneously. This capability is utilized quite effectively by *The Music Reader* in its instructional sections.

Even though the tutorial sections are well done they are necessarily brief, due to the limitations of 16K of memory. If you know absolutely nothing about reading music, I suspect you would have some difficulty understanding the material even though it is presented in a clear logical manner. I have found that even in private lessons learning to read music can be difficult for many persons. The programs presented in this package can be best utilized by those who are engaged in private or group music lessons at the beginning levels and would like guidance and practice at home.

The first program, *Notes and Rests*, gives a short instructional sequence on notes, rests, and their relationships. A combination of text, graphics, and sound are used to present fundamental concepts. Also contained in this program is a random drill and practice type CAI exercise. The user is given two tries to answer each question in an eight answer multiple choice format. Notes and rests, from whole through sixteenth and some dotted values, are included in the exercise. Two answers are required for each example provided. First, the note or rest name must be given and then the beat value for the same example. One problem with this format soon became apparent as I worked with the exercise. The first set of multiple choice items are listed 1 through 8 and the second set is listed A through H. If "1" is the answer to the first set then "A" is the answer to the second. If "2" is the answer to the first set then "B" is the answer to the second. The second set of answers would be scrambled in such a way that the user must know the answer in order to reach a correct response. This is an oversight which should have been avoided.

The second program, *Complete the Measure*, is a continuation of the first program. Concepts about notes and rests covered in the first program are covered in a higher level drill and practice exercise. The student must complete measures by selecting a note or rest which will correctly fill in the given measure. Exercises are provided in either $\frac{1}{4}$ or $\frac{6}{8}$ time.

Program three concentrates on naming notes on a musical staff by letter name. Learning names of notes seems to be a particularly problematic area for many beginning music students. Some music teachers have traditionally used flash card drills and practice to aid their students in this subject area. Program three's drill and practice mode emulates this kind of teaching strategy and would be a very useful program for any beginning music student. Either bass clef, treble clef, or grand staff may be selected for drill. Also, drills may be conducted with or without ledger lines. I would have liked to have seen a timed response mode in this routine, as speed of recognition is an important part of musical reading. Each of the practice modes allows students to take as much time as desired before responding.

The fourth program, *Piano Keyboard*, continues the tutorial begun by the first three lessons by introducing the concepts of accidentals (sharp, flat and natural notes). Also, relating sounds of notes to a piano keyboard is introduced.

UPLOAD

\$16.95

This is the UPLOAD side of DLOAD and DLOADM in Extended Color Basic. Send a basic or machine program to another ECB Color Computer. Programs can be passed directly or by phone if both computers are hooked to modems. (not supplied). Uploaded program arrives at the receiving end ready to save, run, or execute. Patch to correct the flaw in DLOADM is supplied in public domain.

INDEXER

\$14.95

Program produces a sorted list of variables and line numbers used in your basic program. Following each variable or line number will be a listing of the numbers of the basic lines which contain the variable or line number. RUNNING the basic program is not required. Bonus! Global search of basic program for a variable, a text string, or a basic keyword.

Fast machine language

16K/32K EXTENDED BASIC, Tape or RS Disk
Add \$2.00 for shipping and handling

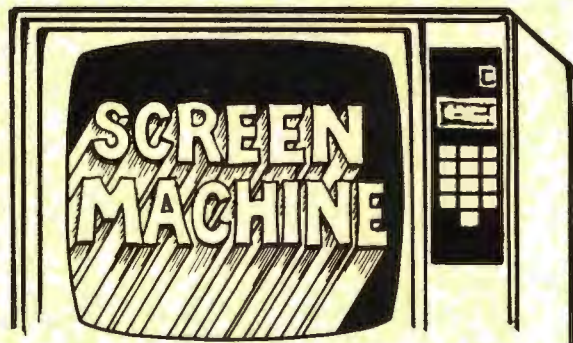


ML-US'R SOFTWARE
115 RISING SUN, Dept R
FORT MITCHELL, KY 41017



GET WITH THE PROGRAM

RAINBOW SCREEN MACHINE



The Rolls Royce of graphics/text screen enhancers — more features than all others combined!

- Add these features to your computer/program: ML extension of Basic loads on top of 16, 32, or 64K machines to enable easy mixture of hi-res graphics and text in your programs. Dense text or large lettering for children, visually impaired or VCR title screens with no programming!
- User definable 224 character set featuring lower case descenders, Greek, cars, tanks, planes, etc., completely interfaced with all keys, commands, and PMODES. 12 sizes (most colored) from 16x8 to 64x24.
- 2 distinct character sets automatically switch for sharpest lettering featuring underline, subscript, superscript, reverse video, top and bottom scroll protect, double width, colored characters in PMODE 4, and help screen.
- Includes demo program, character generator program and manual. 16K Ext. Basic required - 32K recommended, \$29.95 Tape, \$32.95 Disk.
- Super Screen Machine adds SMOOTH Scroll, Key Click, Break Disable, Screen Dump command and more. \$44.95 Cass - \$47.95 Disk.



2⁷ 16³
7FFF

AE5 .00

ASSEMBLER MATH

At last! A hi-res *graphics* tutorial that teaches the fundamental concepts of binary and hexadecimal *math* so essential to assembly language programming on the Co Co.

Sections include:

- Decimal to binary
- Binary to decimal
- Binary addition
- Binary subtraction
- Binary to hexadecimal
- Hexadecimal to decimal
- Decimal to hexadecimal

Includes demo and extensive manual
32K Extended Basic — \$24.95 Cass - \$27.95 Disk



CONQUEST OF KZIRGLA & SCEPTER OF KZIRGLA

Dungeons, wizards, treasure chests, hidden trap doors and more. If you enjoy challenge and complexity, these adventure games are for you. Featuring real-time graphics with arcade sound for your color computer. "Scepter" requires 16K Extended Basic, \$16.95 Cass - \$19.95 Disk. Hi-res sequel "Conquest" 16K Extended Basic Cass \$21.95; 32K Disk \$24.95.

Discover the Rainbow in your Color Computer!



RAINBOW CONNECTION SOFTWARE

RAINBOW CONNECTION SOFTWARE

3514 6th Place NW, Suite D
Rochester, MN 55901
507-288-4424

ITEM	CASSETTE/DISK	PRICE	NAME
			ADDRESS
			CITY
			STATE ZIP
		Sub Total	
		Shipping	\$2.00
		Minnesota residents add 6% Sales Tax	
#		Visa & M. C. add 3%	
Exp		TOTAL	

Personal checks welcome - no delay.
Dealer inquiries invited.
Send SASE for catalog.

Not affiliated with
THE RAINBOW



Again, a good combination of text, graphics, and sound is used to present musical concepts. The drill and practice mode gives the student practice on naming notes of a piano keyboard over a two-octave range.

Program five introduces concepts on major and minor scales along with their respective key signatures. Again, both a tutorial mode and a drill and practice mode are provided. Either major scales only, minor scales only, or both may be drilled.

The sixth program is the only program of the series which does not contain its own tutorial section. It provides further practice on developing concepts introduced in the first two programs. This is also the only program of the package which drills the student on actual performing skills. Each of the other programs deals primarily with the fundamental knowledge and concepts necessary to read music. In this practice mode, a staff containing three measures of music is presented which the student must tap out by using the space bar. If tapped incorrectly, the program shows what was tapped in comparison to what should have been tapped. This particular program provides learning for which special teaching machines have been developed and demonstrates the versatility and usefulness which computers have in music education.

The seventh and last program of the package provides learning for 120 musical terms. It is divided into four levels of usage. Those terms most commonly used are contained in the first level and least used terms are covered in the fourth level. This program would be useful to a music student at any level. Even students at the college level could find this program useful.

It should be noted that each of the drill and practice modes of the seven programs contains various levels to choose from. Also, upon ending a drill session, an accuracy score is provided. Two tries are allowed to answer each question before it is counted wrong. The student may drop out of any drill and practice mode at any time to move on to a new program or to review any of the instructional material provided.

Overall, this package is well done and the subject material is covered in a clear and logical manner. Of particular note is the fact that seven complete programs are contained in one package (seven for the price of one). I have seen CAI programs for other computers which cover the same material as one of these, at higher prices. If you have a limited musical background or are involved in musical instruction of some kind, these programs could be of great benefit to your musical development.

(Prickly-Pear Software, 8532 E. 24th Street, Tucson, AZ
85710, \$34.95 tape, \$39.95 disk)

Before, Between, and After Is Quick, Fun, and Easy

By Kenneth D. Peters

Numbers and more numbers! Three prepositions are your game options in this number recognition drill. *Before, Between, and After* is an educational program for preschoolers through third grade that tutors your child in basic number recognition and in using numbers in sequence. I have two kids that have enjoyed using the program; a preschooler, age four and a first grader, age six.

When I first received the program for review it took only a few minutes for me to run through it to test out all the options on the menu and the "help" mode. It wasn't until I sat back and watched my kids, who were within the age group the program was written for, that I realized the value of the program's routines and the tutorial "help" mode. The program was well-written and friendly.

Graphics are excellent throughout the program and a treat to watch. *Before, Between, and After* uses auto-run to automatically load and run the program. Therefore, even though the actual number drill program is written in BASIC, you must use *CLOADM* to load the program. A title screen is displayed while the program loads, with a variation of the title screen appearing a little later if you have a 32K machine. And finally, the copyright screen appears. The copyright screen is probably the most unique to watch. In addition to the initial graphic screens shown prior to the program, high resolution graphic rewards are given for each problem completed.

Following the copyright screen the program begins with the menu: 1) Before, 2) Between, and 3) After. The drills are presented by the response to the menu: 1) Before — what number comes *before* the number given, 2) Between — what number comes *between* the two numbers given, and 3) After — what number comes *after* the number given. After selecting the type of number drill you want, you have the opportunity to select the range of numbers to be used in the drill, thus customizing the program to your child's ability. Hitting the space bar automatically selects numbers 1 to 25. [CLEAR] allows you to set any number range. For my four-year-old, we used the numbers one to 10, appropriate for someone just learning numbers. For my son in first grade we had to select a much larger range of 1000 or greater. Numbers have always been easy for my son and he seemed to buzz through the drills quite readily. Using larger four- or

SHAMROCK SOFTWARE PRESENTS

WORD SEARCH PUZZLE MAKER WITH DEFINITIONS - Enter a word and its definition. The puzzle contains the words, but only prints out the definition. In order to solve the puzzle, the correct words for the definitions given must be determined. **\$9.95**

VOLUME WORKSHEET MAKER - Prints out worksheets containing problems in changing from one volume measurement to a different volume measurement and/or finding the volume of common geometric solids. **\$9.95**

16K EXT. COLOR BASIC & PRINTER REQUIRED - OTHER WORKSHEET MAKERS AVAILABLE - OHIO RES. ADD 5.5% SALES TAX

SHAMROCK SOFTWARE 4382 NORTON ROAD RADNOR, OHIO 43066 614-494-2277

five-digit numbers seemed appropriate for him and made him think a little more.

After selecting the range of numbers, the first problem appears with the cursor positioned, according to the student's choice of drills, appropriately before, between, or after the number(s) given, waiting for your answer. Answers may be changed at any time prior to pushing [ENTER] by using the left arrow. An incorrect answer gets a brief sound and the message "No, that's not it. Try again!"

The correct answer makes the computer respond with a reward of either the American, Confederate, or Tennessee flag and will play a brief portion of an appropriate song. The program returns to the menu after 10 problems have been correctly answered. The number of the problem the student is currently working on appears at the top of the screen. The documentation also provides you with information to exit the program before the end of 10 problems and return to the menu should the student want to select a different drill or number range.

The Tennessee flag and songs are in the program because the author lives there. In fact, the author is a principal in one of the primary schools in Tennessee and has "field-tested" his programs in the school. Improvements to the program have come from suggestions of the kids and parents using *Before, Between, and After*. If you would be interested in having your state flag substituted for the Tennessee flag, Mr. Ben Burnette Jr. has offered to customize *Before, Between, and After* for you for a small extra charge and under two conditions. You must send him a picture of your flag and a copy of the musical portions of three or four songs you wish to use with the flag routine.

One of the flag routines in *Before, Between, and After*, the Confederate flag, has become quite popular in our house. The reason? The television series "The Dukes of Hazzard!" The author also noted over the phone the popularity of the Confederate flag and the "Dukes" in his school. Although probably not the intent of the programmer to make any reference to the television series, the Confederate flag routine is probably the most-liked reward and perhaps the biggest incentive to continue with the problems in *Before, Between, and After* so they can see the "Dukes" flag again!

My kids were sometimes disappointed when the flag didn't appear or the Dixie song did not play. Since this was a BASIC program, I was able to make a couple of changes. For those of you who might already have *Before, Between, and After* or who may purchase it in the future and might be interested in placing more emphasis on the Confederate flag and Dixie, here are the necessary changes: If you want to be sure Dixie is played every time the Confederate flag is displayed, change line 148 by eliminating the RND function for the DX value and let DX=1. The selection of the flag routines takes place at line 142. Therefore, if you want to be sure the Confederate flag always is the reward, change line 142 to eliminate the RND function and let B=1.

Perhaps the only suggestion I might have for *Before, Between, and After* would be to include an "option" or flag menu so students can select the flag they want to use as a reward. Sometimes it seemed that one or two flags were dominating the screen! That's the way random things work sometimes. You could add a flag menu in the area of the program menu and either suppress the random function or include the random selection as a fourth option in the flag menu. On the other hand, I saw my kids driven to correctly answer more questions in the hope of being rewarded with the "Dukes (Confederate)" flag and song.

One of the nice things I came to appreciate as I watched my preschooler use *Before, Between, and After* was the "tutorial mode" or "help" mode, which the child can ask for at any time by pressing [H] and [ENTER]. Both visual and sound effects are used to show the student how to arrive at the correct answer and generally include the appearance of a small sequence of numbers before and after the desired number with the correct number highlighted in bright colors and sound. After the tutorial mode is over, the child must answer the same problem correctly before he can continue on to the next problem. I think the tutorial mode has been beneficial for my preschooler in learning the number sequence. Without it, I believe she would have become frustrated or dependent on mom or dad for help. I know she used it a lot at first, but gradually got away from it as she used the program and learned her numbers. She also learned to associate the physical keyboard number sequence with the number sequence of one to 10 to make her decisions. But that, too, was only temporary and faded with practice.

Before, Between, and After provides a good drill of numbers in an organized, effective, and entertaining manner. The documentation is quite thorough and well written. No one should have trouble using this program. If you're shopping around for educational programs for preschool and early primary age children, *Before, Between, and After* should be considered. I love programs that are easy enough for my children to use independently of myself or my wife, except for initial and/or occasional help. *Before, Between, and After* is one of those programs.

(CY-BURNET-ICS, 5705 Chesswood Dr., Knoxville, TN 37912, 16K/32K ECB \$24.95 tape or \$29.95 customized flag routine tape)

NEVER UNDERSOLD
—Leader Since 1980—

COMPUSETTE
at
Manufacturer Prices

Industries Finest


AGFA PE 611

	Retail	Your Cost
C-05	99¢	55¢ each
C-10	\$1.29	59¢ each
C-20	\$1.59	69¢ each
C-30	\$1.89	89¢ each
Cases	49¢	21¢ each

Packed 24 Per Pack

UPS \$3⁰⁰ Per Pack 48 States

Micro-80™ INC.
2685 Bushy Rural Rd.
Oak Harbor, Wash. 98277



IMMEDIATE SHIPPING
(206) 675-6143

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. Appreviations; 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 on 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.



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% sales tax. COD orders are welcome. CIS orders EMAI: to 70405, 1374. Dealer inquiries invited.

The Presidents of the United States



16K, 32K Tape - \$24.95
32K Disk - \$29.95

Who was the only Eagle Scout to become President? Which President had the shortest term of office? Which President later became Chief Justice of the U.S. Supreme Court?

Find out with the great new educational game **The Presidents of the United States**.

- Grades 5 and up
- Study mode
- 2 separate games
- User-modifiable data
- 100% Machine Language
- Menu-oriented
- Up to 8 players



Flying Tigers

16K Tape - \$24.95
32K Disk - 27.95
Joystick required

Somewhere in the far future, while flying home from an alien skirmish, your squadron of Warhawk II's is ambushed by aliens from hyperspace. In the battle that follows, all 10 of your wingmates are shot down. They eject to relative safety on a small asteroid. **YOU** are their only defense as the aliens close in for the kill!

- 100% ML
- Arcade quality
- 5 levels of difficulty
- Super hi-res graphics and animation
- Sensational space sound effects
- Skill and strategy needed

The CoCo Calligrapher

32K ECB Tape - \$24.95
32K ECB Disk - \$29.95

Turn your CoCo into a calligrapher's quill. Three separate print styles! Upper and lower case!

Gay Ninety
7890 ABCD
NOPQRSTU
efghij klmnop
wxyz.,!?"-:;'"0

Requires a Bit Mode Printer. Works with Epson, Okidata, Gemini 10X, R.S. Line Printer VII, DMP 100 or equivalent.

Old English

90A B C D E
N O P Q R S
a b c d e f g h i j k l

36 point (1/2 inch) letters are variably spaced — great for flyers, invitations, signs, etc. Input up to 17 lines of text at a time; save and retrieve data.

Cartoon

7890 ABCDEF
RSTUVWXYZa

Test-Aid Brings Some Relief For Teachers

By Carol Kueppers

Circle the letters of all responses which apply to you:

- a) I have access to a Color Computer, tape recorder and printer.
- b) I frequently prepare multiple choice tests and/or questionnaires.
- c) I have a master list of questions, but they must be retyped for each test.
- d) None of the above.

If you circled "d" turn to something else in this magazine, this review is not for you. Those who circled any of the other choices may find the cassette-based program *Test-Aid* from Infotools well worth adding to their libraries. This menu-driven program allows preparation of data files of multiple choice questions, each having four alternative answers. Once the data files are available the program permits selection of any item for use on a printed test.

A file is first set up in the generate mode, in which questions of up to 255 characters are entered onto a formatted screen. Following entry of the question, a new screen

appears, formatted with the letters a, b, c, d, and each alternative answer (with up to 123 characters apiece) is entered.

Editing is performed by the string replacement method, where the portion to be replaced is first typed and then its replacement. This allows for the correction of typos and insertion of text, but for major changes it is often easier to return to the generate mode and reenter the entire question.

The renumber mode allows rearrangement of items within the file. Unfortunately, each item must be moved individually, as there is no block renumber command. Thus, on all but the smallest files, it is far simpler to work from a master printout and make note of the appropriate groups of items.

Should you want to make extensive changes in a file, either by editing the items or changing the order of the questions within the file, it should be noted that the files created by *Test-Aid* are compatible with any word processor which can handle ASCII files. One can load a *Test-Aid* file into the word processor and perform editing or regrouping of the questions. The file lacks numbers, but it is not difficult to find individual question and answer sets. You may find this faster and easier than working within the confines of the *Test-Aid* program.

The display and select question mode allows one to either display individual items, or to rapidly "page" through sections of the file using the right and left arrow keys. Items are selected for placement in the test by depressing the up arrow key. The position of items on tests may be specified independent of their main file numbers, so that file item 40 can be

emerald computer services



NORTHWEST COLOR COMPUTER CENTER 206-778-8828*

PRINTERS + VIDEO MONITORS + DISKS

- 84K COLOR COMPUTER 2 \$255 • DRAGON 84 \$299
- DRIVE 0 \$375-395 • DRIVE 0/1 DUAL \$575-595
- AMDISK 0/1 DUAL \$595 "CALL FOR SYSTEM CONFIGURATIONS"

EPSON • Okidata • Mannesman Tally • Star Micronics •
 Transtar • Comrex • NEC • Amdek • Qume • Tandon •
 TEC • Teac • Panasonic • BMC • HJL • Hayes • Zenith •
 Softlaw • Computerware • Elite • Moreton Bay •
 C. Itoh • Mark Data • Homebase • Derringer •

SOFTWARE + COMPUTERS + MODEMS

LEADING EDGE PC
 "IBM Compatible"

COMMODORE

MORROW DESIGNS
 micro DECISION

23215 58th W.

IBM PC JR

Master Card

* Plaza Center

Mountlake Terrace, Wa 98043 •

VISA

COMPLETE SUPPORT FOR HOME, PERSONAL & BUSINESS USERS!

test item 2. If hard copy of the entire data bank is desired, each item must be selected in this manner as the program does not have a print all questions option. Because paging through and selecting items is accomplished rapidly, and the main menu can be called at any time, I found it simplest to first select and print all items and then work from my hard copy to choose the questions and their order for tests.

The freedom to choose an item from any position in the file and assign it to any number on the test is an outstanding feature. Those who teach several classes of the same subject will appreciate the ease with which separate tests for each class can be prepared.

The program allows a single heading of up to 255 characters, which, oddly enough, requires the insertion of blanks if one wishes to have it centered. Considering the care with which the program is written to format the questions on the page, one wonders why the author left centering of the heading to the user. Should you wish to include brief instructions on your test, they must be included as part of the heading, as no other provision is made for the insertion of text into the test.

The print hard copy option is well thought out to trap errors before the test is printed, and is also useful in the preparation of the test itself. Before printing, both the total number of items selected and the numbers of the main file items in the order they will be printed on the test are displayed. Thus, a display of 20 2 3 indicates that main file number 20 will be the first test number.

Another desirable printing option allows for either continuous feed, or pause after each page. The printed test is nicely formatted on the page, with two spaces separating it

from the heading. Once the selected items are printed, it is possible to add more items, either from the same file or by clearing the file from memory and loading in another. Thus, except for the mechanics of continuously loading in files, it makes no difference if one prepares a series of short files, or several larger ones.

The count and clear mode not only provides a count of the number of items in the main file as questions are generated, but also permits clearing either the entire file from memory, or only the "test queue." The latter option permits preparation of several different tests from the same file.

The program is accompanied by a detailed spiral-bound manual which is easy to follow for step-by-step preparation of tests. The last page of miscellaneous information contains the important notice that, one should inadvertently break out of the program, data will not be lost if *GOTO 40* rather than *RUN* is typed. This message is so important that I urge every user to add it as a footnote to each page of the manual.

Once I had tried all options a few times, I was sufficiently familiar with the commands to be able to prepare a multiple choice test quickly. Although I preferred using *Test-Aid* in conjunction with my word-processing program, this is not necessary. By making minimal use of the editing and renumbering features and working from a master printout, it is fairly easy to prepare a large question file for preparation of numerous multiple-choice tests using *Test-Aid* alone. I think that anyone who prepares such tests frequently would find this program useful and a definite time and effort saver.

Since this review was written, the *Test-Aid* program has been released in an enhanced version. It is now possible to obtain a printout of the entire file by entering a shifted up-arrow, a feature which saves considerable time over the method used initially. The program is now available on either tape or disk and supports the use of both tape and disks for storage of files, so that the user with a disk drive will find working with a series of small files very quickly. In addition, if only one file is used for selection of the test questions it is possible to specify the number of copies to be printed. There are also now two versions of *Test-Aid*, one which creates questions with four alternative answers, and one for five alternative answers. The purchaser should specify his choice when ordering.

(Infotools, 111 Country Club Lane, Oxford, OH 45056, 32K or 64K ECB tape \$21, disk \$23)

See You At
RAINBOWfest
 Chicago
 June 22-24

SOFTWARE-HARDWARE

FOR RADIO SHACK'S TRS-80 MODEL 1/3
 TRS-80 COLOR COMPUTER

•SEND FOR FREE CATALOG•

UTILITY PROGRAMS ON CASSETTE

SU-1 CASSETTE COPY \$ 10⁰⁰ **|| SPECIFY ||**
 SU-2 CASSETTE DUMP \$ 10⁰⁰ **COMPUTER**

<p style="text-align: center; font-weight: bold; font-size: 1.2em;">Y-PAK</p> <p style="text-align: center; font-size: small;">TRS-80 COLOR COMPUTER</p> <div style="text-align: center;">  <p style="font-size: x-small; transform: rotate(-90deg); position: absolute; left: -40px; top: 50px;">Y-PAK</p> </div> <p style="font-size: x-small; margin-top: 5px;">TURN YOUR COMPUTER INTO A 2-SLOT SYSTEM. SWITCH BETWEEN THE TWO WITH EASE.</p>	<p style="text-align: center; font-weight: bold; font-size: 1.2em;">RECORDER STAND</p> <p style="text-align: center; font-size: small;">\$ 19⁰⁰</p> <div style="text-align: center;">  </div> <p style="font-size: x-small; margin-top: 5px;">MADE OF STURDY PLASTIC. HOLDS RECORDER AT A PERFECT ANGLE.</p>
--	--

RAM/ROM USER-PAK FOR TRS-80 COLOR \$ 30

•GAMES ALSO AVAILABLE•

B. ERICKSON SOFTWARE · P.O. BOX 11099 · CHICAGO IL 60611

CALL (312) 276-9712 for INFORMATION

'Free' Flight From Grimdar Is Exciting Trip

"Freeware" is a concept recently originated by Andrew Fluegelman, the author of the very popular terminal program "PC TALK" for the IBM PC. By making his programs readily available, Fluegelman has attempted to revolutionize the software business. You send Fluegelman a disk and he sends you one of the best communications programs in the industry. If you like the program, you send him a donation. Although he only advertises via the information networks (CompuServe and The Source), he has found a large following of customers who willingly donate up to \$25 after sampling his fine program. More recently, advertisements from Star-Kits have offered the *Commterm* program for the CoCo, free of charge to those who send a tape and self-addressed stamped envelope. Now, from the CoCo Freeware Clearinghouse, we have more Freeware for the Color Computer.

The first offering of the CoCo Freeware Clearinghouse is Freeware Tape #101: *Flight from Grimdar*. To obtain the program, you are requested to send a blank tape (or disk) along with a postage-paid return mailer. The transaction does not involve any money, but contributions are accepted after you receive and use the program.

The program is a space-trek game which combines the elements of an Adventure with the action of a space chase. Steven Richards, the author of the Adventure, has written the game in BASIC, using both sound and graphics to enhance the action. The game requires only modest skill and intelligence to play. Even adults can play the game with a little study and practice.

The scene opens on a war-torn, smoldering battlefield. The bodies of your fellow Earth soldiers lay about you. You know it can only be moments before the fierce warriors of Grimdar begin their final assault. Your only chance for survival is escape.

While examining a mysterious device found on a dead Grimdarian soldier, you find yourself suddenly transported to the bridge of a deserted Grimdarian starship. You struggle to recall the instructions from your cadet days, when you were briefly taught the controls of various starships. Suddenly, the Grimdarians attack! No time to think! Fire up the rocket engine and blast off into space. Search the galaxies for planet Earth and safety from the pursuing barbarian hoard.

The Adventure is played in a three-dimensional grid of 27 quadrants. You move through the galaxy by specifying the speed and direction of the ship. The Grimdarians are never far behind and will easily overtake you at the most unexpected moments. The starship's fuel supply limits your range, the directions for operating the spaceship are scanty, and you are always in danger of running off the edge of the known universe.

Each game is different. The Grimdarians can seldom be outdistanced. Your goal, planet Earth, assumes new coordinates for each game. Thus, the Adventure is always challenging.

This game is not the equal of extensive Adventures and simulation/role-playing games available from the major game companies. However, as an initial offering from the CoCo Freeware Clearinghouse, it serves as a good example of what can be accomplished by an enthusiastic CoCo programmer. I think we should all support the freeware concept. I like the idea of being able to preview a program before making a financial commitment. Send them your tapes and, after playing *Flight from Grimdar*, show your appreciation.



(The CoCo Freeware Clearinghouse, P.O. Box 1084, Morgantown, WV 26507, 16K, 32K Color Computer Extended cassette or disk, send tape or disk and SASE, contributions accepted)

— Stuart Hawkinson

COLOR COMPUTER Buyers Club

- Members enjoy a 25-40% savings on software!
- Over 500 programs from 38 companies to choose from!
- More software constantly being added!
- Hardware & accessories at substantial savings!
- Special order service for members!
- No service charge for VISA or MC!
- Your savings can far exceed your dues!

Join Today and Start Saving!

Dues are \$24.50 - We accept  Personal Checks, M.O. or Charge It! 

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

VISA MC _____

Exp. Date _____ Bank # _____ (MC only)

Mail to: **Color Computer Buyers Club**
P.O. Box 241
Eaton Rapids, MI 48827

Aurora Software

49 Brookland Ave., Aurora, Ontario Canada L4G 2H6

PRESENTS: **TEACHER'S PET** - A must for every teacher. The features include: 40 students per file, 4 terms with up to 9 tests per term, alphabetical order, letter grades, numeric grades, averaging and weighting, class lists, term and year end reports, search, delete, add, screen and printer output, enter classes and grades any time of year, disk 1/0, and more in fast Machine Language. 32K Disk System.

..... \$34.95

HI-RESOLUTION SCREEN UTILITY

HI-RES SCREEN UTILITY
Features: Double Height Characters
 On Screen UNDERLINING
 Bell Character Tone generator
 Switchable Full Screen Reverse Video
 True Upper & Lower case character set
Reverse Video Highlighting
 Programmable Line Lengths From 28 to 255 characters
 28 Characters per line
 32 Characters per line
 36 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 seeing display layout
 All functions are easily programmable thru BASIC Fully BASIC COMPATIBLE including GOSUB & 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

INTRODUCING TEXTPRO III

"The Professionals" Word Processing System

Display
Formats
28 to 255 x 24

64K
Support

- 9 Hi-Resolution Display Formats: from 28 to 255 Columns by 24 lines
- True Upper / Lower Case Display
- Three Programmable Headers
- Programmable Footer
- Automatic Footnote System
- Automatic Memory Sense 16-64K
- Up to 48K of Workspace on 64K
- 10 Programmable Tab Stops
- 7 Tab Function Commands
- Automatic Justification
- On Screen Underlining and Double Size Characters
- Change Formatting at Any Time
- Edit Files Larger Than Memory
- Compatible with All Printers
- Easily Imbed Any Number of Format and Control Codes
- Typist Friendly Line and Command Format Entry
- Automatic Key Repeat

TEXTPRO III is the most advanced Text Editing and Word Processing System available for the Color Computer. One of the reasons for this is, Textpro works in a totally different way than the other Color Computer Word Processing programs. It uses simple 2 character abbreviations of words or phrases for commands. These commands are used at the beginning of a line and are preceded by a "." period. Several commands can be chained together on the same line for ease of use. Through these commands you tell the Word Processor how you want the margins set, line length, indenting information, and so on. You can change the way you want a document formatted at any point in the document. You also have the freedom to write without worrying about how long the line is or where the margins are and so on. The Word Processor automatically takes words from one line to the next and fills out the printed line to the desired length. You can even use the command to Input Text from the Keyboard while a document is being processed, and use that information to change the formatting or enter any other valid text Processor command. With this kind of flexibility and an extensive set of commands and functions available, its no wonder that TEXTPRO III is the most advanced Word Processing System.

Screen Formatting

Textpro III has 9 Hi-Resolution Upper/Lower case display formats available, from 28 to 255 characters per line by 24 lines. You also have advanced screen commands such as double size characters and on screen underlining. You can also use the standard 32 by 16 display for systems having lower case hardware kits installed. The display defaults to a 51 by 24 format that is easily switched to any other format available. Along with the Hi-Resolution screen we added automatic repeating keys "Typomatic." The rate is fully adjustable from ultra fast to super slow or can be turned off entirely for your convenience.

64K Support

Textpro III fully supports the use of 64K on the Color Computer. It has fast automatic memory sensing and configures itself accordingly. Textpro III does not require Extended Basic or Flex to take full advantage of a 64K RAM system. On a 64K Disk System there is over 64K of workspace available and files larger than memory are fully supported. Tape based systems have up to 48K available for workspace.

Text Editor

Textpro III has a full featured, line oriented screen editor. It supports single or multiple line copy and move, global or local search and replace of any character string, character insert and delete, block delete, adjustable speed automatic key repeat, single and automatic line edit, programmable underline and double width control coded, change screen background color and line lengths, automatic line numbering, line resequencer, and insert and delete line numbers.

Disk & Tape I/O

Textpro III uses fully compatible ASCII formatted files that do not have to be converted like some of the other Word Processing Systems. It will load, save and verify basic ASCII formatted tape files. The disk version supports Load, Save, Directory, Kill, Append, Text Process file from Disk, Roll part of file to disk and get next portion of file from disk.

DISK \$59.95

TAPE \$49.95

Standard Commands

Textpro III features a whole host of Document Formatting commands. The setup command section includes: Line Length, Top, Left, and Bottom Margins, Page Length, Page Numbering on/off and Automatic Word Fill and Justification on/off.

Some of the vertical control features include: test for number of lines left on the page, skip to next page, set page number, wait at top of page, single and multi line spacing, and skip blank lines.

Textpro III features 3 programmable header lines that can be centered, left or right justified. It also has one programmable footer line. 3 commands for continues, single and paragraph indenting, center text, underline and double width print commands.

Footnotes and Special Commands

Some of the special features allow imbedded control codes to access intelligent printer features like: superscript, subscript, change type font and even graphics. You can even imbed control codes within justified text. There is a command that automatically places footnotes at the bottom of the page, which can be very handy for term papers, etc. Another command allows you to display a message on the screen and input text from the keyboard. This text is then printed as if it has been part of the original text, thus you can produce things like a personalized form letter. There is also a repeat command that allows you to repeat an entire document or a part of one as many times as needed up to 255 times. This can be used to produce mailing labels or combined with the previous command to produce a selected number of personalized form letters.

Tab Functions

Textpro III features an elaborate system of tab commands for complete control over column formatting. There are 10 programmable tab stops that can be defined or re-defined at any time in the text file. They can be used with the following tab commands: Center Over Tab Column, Right Justify to Tab Column, Decimal Align Over Tab Column, Left Justify to Tab Column (Normal Tab) and Horizontal Tab. Tab functions may also be used with a numeric tab column position for maximum flexibility. You can also define the Tab Fill Character to any printable character to fill in the blanks with dots, dashes, etc.

5566 Ricochet Avenue
Las Vegas, Nevada 89110

**CER
COMP
(702) 452-0632**

All Orders Shipped From Stock
Add \$2.50 Postage



PAL CREATIONS

Specializing in 32K ECB Text Adventures
And Simulations On Cassette

- * **SAC** For those against nuclear disarmament — pilot a B52 to any one of the 36 Soviet cities, destroy it with a nuclear bomb, and make it back to the base. 9 difficulty levels. You can use keyboard or joystick or both. This simulation takes a lot of pre-planning and fast thinking. **\$19.95**
- * **HERE COME DE PREZ** Are you fed up with the State of the Union? If so, run for president in this 1 or 2 player simulation complete with scandals, national disasters, and debates . . . **\$14.95**
- * **PRIVATE INVESTIGATOR** Murder! Could Sherlock Holmes have solved this whodunit adventure simulation? **\$14.95**
- ISLE OF FORTUNE** You are a fisherman in a waterfront bar. The old salt just told you a tale of treasure on an island, before the poison dart struck Sail your ship to dangerous adventure awaiting you on the Isle of Fortune **\$19.95**
- SCAVANGE HUNT** Find the items on the list and return them to Hickory Ridge to free your niece Rebecca from the hermit of Medicine Tree County. **\$15.95**
- * **BOMB SCARE** A terrorist group has planted 8 bombs in a city. Your mission: locate and disarm all 8 before time runs out. 1 is The Big One. **\$14.95**
- * **DARK CASTLE** Monsters-magic-myths. King Lothar of Rom has been abducted by the evil wizard. Destroy the wizard and return Lothar to his throne **\$14.95**
- MANSION OF DOOM** Destroy the Vampire, rescue Princess Marlana. **\$14.95**
- * **WITCHES KNIGHT** Back to the days of old, where knights were bold and magic ruled the land. Many enchanted surprises await you on your quest to free Sir Noble from the witches evil spell. **\$15.95**
- BEACON** Can you signal the ship before it runs aground? . . . **\$14.95**
- * **SPACE ESCAPE** Explore a death-ridden alien spacecraft in search of a way back to Earth **\$14.95**
- STALAG** Escape the German prison camp before its bombed **\$14.95**
- * **EVASION** Sequel to STALAG! Get out of Germany alive. **\$19.95**
- * **FUNHOUSE** Work your way through this unique Funhouse searching for the way out **\$14.95**
- * **SCATTERBRAIN** Help wanted: Put Commodore Winslow's 85-room mansion in order in this graphic adventure **\$14.95**

Buy any 1 of the programs above and get
any of the bonus programs below FREE!

- * **SKI LODGE** Times are tough, weather is bad. Manage a Vermont ski lodge successfully to win this 1-4 player simulation.
- MOTHER LODE** You just inherited your great-grandfather's goldmine. Did he die penniless?
- ENO** You inherited a million dollars. Just one catch — first you have to find it!
- BETTER** A better betting game for 1-4 players. You choose the winning criteria.
- MATCH-IT** A challenging word game in which you identify your opponent's 5-letter word using deduction. 1-4 players.

* DIFFERENT EVERY TIME

Send check or money order to:

PAL CREATIONS

10456 Amantha Ave., San Diego, CA 92126

Calif. residents add 6% sales tax.

TV Graphics Editor Makes CoCo A Van Gogh

Actually, if Van Gogh had a CoCo and a copy of *TV Graphics Editor*, he probably would not have ever put a brush to canvas. This machine language program lets you draw just about anything your imagination can come up with and you don't have to worry about dripping paint on the carpet, either. Your joystick is the brush and your trusty TV is the canvas. *CLOADM* gets you started and then you are given the choice of approximately 30 different commands to choose from. These are not menu-driven but are well-documented in the five pages of command instructions and single introduction page.

You are given three resolution modes to work with. These are equivalent to *PMODE1*, *PMODE3*, and *PMODE4* of the standard CoCo system, the highest resolution being 256 across by 192 down. A unique keyboard command is *GRID*; this places a 32 by 24 dot grid across the canvas and is very helpful when proper alignment is required. Of course, the grid can be erased when you are finished with it. Another handy feature is the ability to print any character in upper- or lowercase anywhere on the canvas; numbers and punctuation are also possible. A *LINE* command lets you draw lines between each joystick-controlled cursor, and this can be fun when two people want to draw a picture together. You can also draw an ellipse or arc, choose colors to paint specific areas, exchange two colors, magnify or shrink areas, and the list goes on. It takes awhile to try all the features.

Fortunately, you can save your masterpiece on cassette, load back in whenever and enjoy or modify if necessary. There is also an option to print your picture using a Radio Shack dot matrix printer or to the RS CGP-115 Color Graphics Printer.

The manual suggests that self-centering type joysticks may be easier to use. I found the standard RS sticks adequate, but a very fine touch is needed, especially in the Hi-Res mode. This was most evident when trying to erase a line, a procedure that requires you to draw over the unwanted line. As with most tasks, a little practice goes a long way and that certainly applies here. I would also like to see a couple of pictures included on the program tape. This would give you some feel for the potential artistic talent we have at our fingertips.

TV Graphics Editor is a lot of fun and it's a nice break from the old game-playing routine.

(International Software, Inc., 820 Dunsmuir Road, Victoria, B.C., Canada, V9A 5B7, tape \$29.95 Canada, \$24.75 U.S.)

— Ron Hansen

See You At

RAINBOWfest

Chicago

June 22-24

Fastdupe: A Plus For 64K Disk Owners

What can you say about a backup disk program that for one disk drive owners is as simple as loading the program, executing it, putting in a blank disk, and pressing [ENTER] to get an unhassled backup of your original program?

I could talk about the many times that I have had to remove the "source" disk, insert the "destination" disk, load, unload, load, unload, etc., forever it seems. In the process, you are risking damage to both new and old disks, and valuable programs as well.

Those days may be long gone, thanks to *Fastdupe*, a new creation by Marty Goodman and distributed by Spectrum Projects that all disk owners will love.

Those with a single disk drive will enjoy a newly found freedom in backup procedures that, in most cases, require less than 30 seconds. If you are among the folks with two, three or four disk drives, you can make four backup copies in the same amount of time.

When the process is complete, the computer signals successful copies on the appropriate number of drives, accompanied by a beeping sound. Just tap the [SPACE BAR] to silence the beeping if it bothers you.

Want to dupe more disks? Just load your disk drives, and hit [ENTER].

The only drawback for some will be that *Fastdupe* is a utility that requires 64K. It reads your master diskette (standard format) containing up to 20 granules (46,080 bytes) of information, even formats blank disks, and makes the backups in a single pass.

With the sensitive nature of disks and the necessity of having backup copies, *Fastdupe* would appear to be a must item on every disk drive owner's list.

(Spectrum Projects, 93-15 86th Drive, P.O. Box 21272, Woodhaven, NY 11421, \$19.95 disk)

— Charles Springer

SPEED UP YOUR PROGRAMS NOW!

-Now everyone can create fast, efficient Machine Language programs without learning Assembly language programming. That's right, with this new **BASIC COMPILER**, called **INTBASIC**, one can convert BASIC programs to Machine Language.

-INTBASIC is a machine language program featuring most BASIC command words. It is compatible with Color, Extended Color and Disk BASIC systems. It loads from tape or disk and is EXECuted "In Memory" (NO DISK NEEDED).

-INTBASIC allows m.l. programs to use ALL 64K OF RAM. Versions for 16,32 and 64K systems are ALL INCLUDED FOR THE SAME PRICE. Color Computer II versions are also now available (Please indicate model #).

Send check or money order.
No C.O.D.
Utah residents add 5% tax.

WASATCHWARE
7350 Nutree Drive
Salt Lake City, Utah
84121
Call (801) 943-6263

Tape- \$39.95



-Send for our current list of other software available.

YORK 10™ CASSETTES



COMPUTER GRADE DATA TRAC BLANK CASSETTES

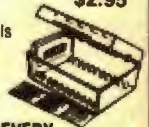
C-05, C-06, C-10, C-12, C-20, C-24, C-32

From the leading supplier of Computer Cassettes, new, longer length C-12's (6 minutes per side) provide the extra few feet needed for some 16K programs.

- BASF-LHD (DPS) world standard tape.**
Premium 5 screw shell with leader.
- Internationally acclaimed.**
Thousands of repeat users.
- Error Free • Money back guarantee.**

500 C-12's or C-10's — 38¢ each
(w/labels, add 4¢ • Shipping \$17./500
500 Boxes 13¢ ea. • Shipping \$10./500
(Free Caddy offer does not apply)

CASSETTE STORAGE CADDY
Holds 12 cassettes
w/o boxes
Includes edge labels
and index card
\$2.95



**TRACTOR FEED • DIE-CUT
BLANK CASSETTE LABELS**
WHITE: \$3.00/100 \$20.00/1000
**COLORED LABELS • Pastels -
Red, Blue, Green, Yellow, Lavender**
\$4.00/100 \$30.00/1000

FREE
1 CADDY WITH EVERY
4 DDZ. CASSETTES PURCHASED
(does not apply to 500 quantity offer)

Call: 213/700-0330 for IMMEDIATE SHIPMENT on Credit Card Orders

ORDER NOW ... MAIL TO ... YORK 10™ 9525 Vassar Ave. #R1 Chatsworth, CA 91311

ORDER FORM

ITEM	1 DOZEN	2 DOZEN	TOTAL
C-05	<input type="checkbox"/> 7.00	<input type="checkbox"/> 13.00	
C-06	<input type="checkbox"/> 7.00	<input type="checkbox"/> 13.00	
C-10	<input type="checkbox"/> 7.50	<input type="checkbox"/> 14.00	
C-12	<input type="checkbox"/> 7.50	<input type="checkbox"/> 14.00	
C-20	<input type="checkbox"/> 8.75	<input type="checkbox"/> 16.50	
C-24	<input type="checkbox"/> 9.00	<input type="checkbox"/> 17.00	
C-32	<input type="checkbox"/> 11.00	<input type="checkbox"/> 21.00	
Hard Box	<input type="checkbox"/> 2.50	<input type="checkbox"/> 4.00	
White Labels	<input type="checkbox"/> 3.00/100	<input type="checkbox"/> 20.00/1000	
Colored Labels Color	<input type="checkbox"/> 4.00/100	<input type="checkbox"/> 30.00/1000	
DESCRIPTION	PRICE	QUANTITY	
Storage Caddy	2.95		
		SUB TOTAL	
Calif. residents add sales tax			
Shipping/handling (any quantity — using prices above)			3.50
Outside 48 Continental States — Additional \$1 per caddy; per doz. cassettes or boxes.			
TOTAL			

Each cassette includes two YORK 10 labels only. Boxes are sold separately. We prefer to ship by UPS as being the fastest and safest. If you need shipment by Parcel Post, check here .

NOTE: Additional charges outside 48 Continental States. Shipments to AK, HI, and USA possessions go by Priority Mail; Canada & Mexico—Airmail; All others— Sea Mail.

Ask about our
DUPLICATING
SERVICE

CHECK OR M.O. Charge to ENCLOSED Credit Card: VISA MASTERCARD
 PLEASE SEND QUANTITY DISCOUNTS

Card No. _____ Exp. _____

Name _____

Address _____

City _____ State/Zip _____

Signature _____ Phone _____

Computer make & model _____ Disk? (y/n) _____

Gobbling Good Fun In Foodwar

When I first received this game, my first thought was the game *Burgertime*. This was before I played the game or even read the instructions. I say this because *Foodwar* is nothing like *Burgertime*. It is a very unique game that, once I learned how to play, was very enjoyable. I say that because the instructions left a lot to be desired. The instructions were very basic, but after about 30 minutes on the game, the instructions became clear. An example: The instructions stated that falling in a "hole" would cost one life. Well, when the first screen appeared, I wasn't sure what the "holes" were. I will admit, I found out real soon. They were the hockey puck-looking figures that changed color. The technique of throwing food also took some work. I will inject a little personal preference here and say it would have been nice to have had a little story in the instructions to get the player really into the game.

I have one other thing I would like to see changed. After you have been killed the last time, if your score is in the top 10, your initials are requested. Next, the screen prints the top 10 scores. All of this is well and good, but then, to start another game, you push the fire button and the game starts over from the very beginning (drawing the title screen again, then asking what level of play is desired). Well, when I first played *Foodwar*, this was impressive. It went along with the superior graphics of the game. But after I've been killed by those nasty chefs, I want to get back to the action as soon as possible. Having to watch the title screen redraw after each game got very frustrating. Also, I always wanted to play the highest level (it has 10 levels), and I had to move the joystick over to select that level at the beginning of each game. After I had played a few hours, I turned the game over to my 10-year-old son. After his second game he discovered that holding down the fire button after the scores are displayed makes the title screen be drawn much faster. This also works at the beginning of the first game. Now the suggestion: I would like to be able to keep the same level of play by just pushing the fire button again. I would also suggest documenting how to make the title screen print faster in the instructions.

The object of the game is to eat an ice cream cone before it melts, thereby advancing to the next level. To keep you from this goal, evil, nasty chefs try to hit you with all kinds of food. This includes pies, bananas and berries. For defense, you can pick up food and hurl it at them. If they hit you with the food or if they run into you, this costs you one life. But, by carefully picking your shots and never staying in one spot too long, you can keep the chefs under control and get to your ice cream before it melts. Don't rest too long after eating the ice cream because they attack again in the next level with even greater accuracy and determination. You receive an extra man for every 100,000 points. This is not impossible to do, but don't count on getting an extra man very often.

While I wasn't impressed by the use of sound, the graphics in the game were outstanding. Michael Lustig used the available colors to their best advantage. My only concern was with the blue and orange ice cream. While the ad in *the*

Rainbow stated the game had 15 screens, I didn't have time to count them while I was playing. I decided to take Michael's word for it.

I let my two sons play the game and my seven-year-old enjoyed the game even though his score wasn't too good (but then again, he doesn't care about scores anyway). My 10-year-old really enjoyed *Foodwar* and he is starting to get pretty good; not as good as his ol' man but he is coming along quickly. I would recommend this game highly, but I must add that I would like to see better documentation. I can't say anything about the packaging because the disk did not come packaged by the company.

Foodwar is a 32K game available on disk or tape and is well worth the price. I reviewed the disk version. Below I have rated the game on various qualities, from one to 10 with five being mediocre. By the way, don't count on seeing many tens. They are harder to get here than in the Olympics.

Graphics	9	Superior with good use of colors
Sound	5	Disappointing after seeing the graphics
Difficulty	8	Fast action, requiring total of play concentration, but playable
Replayable	8	Arm gets tired before you do
Documentation	3	Almost non-existent

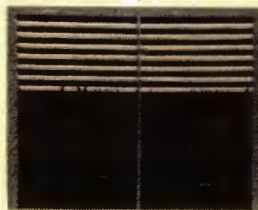
(Arcade Animation Inc., 21 The Fairway, Upper Montclair, NJ 07043, \$27.95 disk, \$25.95 cassette)

— Dale E. Shell

DOUBLE BUSTER

(C) 1984 by Derringer Software, Inc.

No more fighting over who gets to play next! Double Buster lets two play this classic game at the same time. Players compete against each other and against the clock. Single player action is also available. Four levels of play allows beginners to have fun at slow speed and the more advanced players at high speed! Score is based on the amount of "bustin' out" you can accomplish within the allocated time. Scores kept for singles and doubles game in all levels.



DOUBLES



SINGLES

\$21.95

Requires joysticks and can be played on 16K Extended tape or disk systems! Please indicate tape or disk when you order. Send check or money order to: Derringer Software, Inc. P. O. Box 5300, Florence, S.C. 29502-2300. Visa or Master Card customers can call (803) 665-5676 9:00am to 5:00pm Mon-Fri. Please include \$2.00 for shipping and handling — No COD's.

★ See the ad for AT WITS END also ★

MINER BY LARRY LANDWEHR

Like his father before him, Sid is a coal miner. Working hundreds of feet below ground it is Sid's job to blast the rock so that the coal seam is exposed. See if you can direct Sid to the most productive areas. How many lumps of coal can you collect before you run out of dynamite? Young and old alike will enjoy this hi-res all machine language game from the author of "IN ASSEMBLY LANGUAGE".

CAT# DMO18 16k \$14.95 (CAN) \$12.95 (US)

EXECCART BY PETER KARWOWSKI

EXECCART is a M/L program that allows you to copy ROMPAC programs to tape. They can then be loaded back into a 64K CoCo and examined or modified. You can run most of your ROMPAC's from disk without ever having to remove the disk controller. This saves tremendous wear and tear on the contacts. EXECCART may also be used to add a loader to your own programs to turn on 64K and to copy your BASIC ROMs into RAM so that you can make modifications.

CAT# DMO09 64K \$17.95 (CAN) \$14.95 (US)

THE SPOOLER BY PETER KARWOWSKI

Whenever you use your printer, your computer is totally dedicated to feeding it. This isn't such a problem when you just want to print out a couple of lines, but LLISTING a long program can be very boring. If you have better things to do than sit around waiting for the printer, then "THE SPOOLER" is just what you need. THE SPOOLER will work on ANY TRS-80 Color Computer from a 16K right up to 64K with disks. Extended BASIC is NOT required.

CAT# DMO10 16K \$12.95 (CAN) \$10.95 (US)

THE DATAMAN

NEWERROR BY PETER KARWOWSKI

NEWERROR will provide four extra functions and abilities for your Color Computer.

1. Give you an audible error warning.
2. Provide full english error messages.
3. Add the ON ERROR GOTO command to BASIC
4. Allow simulated errors for debugging.

As an added bonus we include a second M/L program that you can add to your own BASIC programs to provide them with the ON ERROR GOTO feature. You may use this program even in programs you sell.

CAT# DMO08 16K \$19.95 (CAN) \$16.95 (US)

SCREEN BY JOHN MIRAK

Four much needed features are added to Basic with this new machine language utility program from Australia.

1. Automatic line numbering
2. Line by line program listing
3. Motor on/off from the keyboard.
4. Your choice of light or dark, orange, green or black screen with light or dark orange or green characters.

Works with Basic, Ext Basic & Disk Basic

CAT# DMO15 16K \$12.95 (CAN) \$10.95 (US)

ADD 3% SHIPPING & HANDLING
PER ORDER-MINIMUM \$2.50

420 FERGUSON AVE. N.
HAMILTON, ONTARIO
CANADA L8L 4Y9
PHONE 416-529-1319

**DEALER
INQUIRES
WELCOME**

SWISS ARMY KNIFE BY RALPH BLOCH

One of our most prolific authors (PRETTY PRINTER-P.U.F.F.-LIBRARY) has come up with another winner. As the namesake of this program has many blades so SAK has many functions. The disk owner will find it indispensable for diagnosing and fixing the many gremlins that attack a disk system. It will work on any number of tracks and can even read FLEX disks. By copying one sector at a time you can often save an otherwise uncopyable disk.

CAT# DM553 32K \$29.95 (CAN) \$25.50 (US)

SUPER EDIT BY LARRY LANDWEHR

This powerful new utility program from the author of "IN ASSEMBLY LANGUAGE" adds many new editing commands to Basic. You can PRINT one screenful at a time, DELETE a line or lines, JOIN several lines together and hide your programs, or FIND strings and variables. Also included are commands to INSERT, COPY, MOVE & REPLACE one line or a block of lines. Super edit works with Extended Basic but Extended Basic is not required.

CAT# DM016 16k \$19.95 (CAN) \$16.95 (US)

**SEND \$3 FOR OUR NEW
80+ PAGE CATALOGUE**

BONES BY MARK MORAN

This original dice game is fun for the whole family. Play by yourself, against the computer or with your friends. Although simple enough for the youngest player the adults will find it addictive.

CAT# DM011 16K \$12.95 (CAN) \$10.95 (US)

Now you can "Roll Them Bones" on the MC10. We have transferred this popular game without losing any of it's features.

CAT# DM101 4K \$12.95 (CAN) \$10.95 (US)

MUSIC EDITOR BY PATRICIA SHELTON

This program will take regular sheet music and convert it to "play by number" music. You enter the words, notes and chords from the keyboard and the program will output, to the screen or printer, an easy to read version for C or G type organs. Your files can be edited and saved to disk or tape. Easily produce a songbook of your own favorite tunes.

CAT# DM012 16K \$12.95 (CAN) \$10.95 (US)

HOME INVENTORY BY JEFF PYNE

Home Inventory was written for the average home owner to simplify the tedious task of weeding through his possessions. This small database will save an organised list of brand names, serial numbers, values, dates of purchase etc. This could prove to be your most valuable program if you ever have to deal with an insurance company so be sure you have a copy of the programs output in a safe place in case of fire or theft. Ext Basic required-Printer optional

CAT# DM013 16K \$12.95 (CAN) \$10.95 (US)

Diskutil Is A Multi-featured Disk Enhancer

By Frank J. Esser

The disk BASIC system supplied by Radio Shack with its disk interface is complete because it provides the user with all the necessary commands to properly handle the disk drives. However, the Radio Shack system is lacking in one area. In an effort to keep the system simple, it appears that they have made it inefficient in its interface to the user. There are many examples such as the requirement to give both the source name and the destination name when copying files from one disk to another. If the second name was missing, they could have assumed that it was to be the same on the second disk, etc.

Diskutil is a program written to fill in the voids and at the same time add a little refinement to the disk operation. How many times have you wished that you could control the order that filenames were stored in the dictionary? Well, wish no longer, for *Diskutil* will allow you to place the directory in any order you desire. It performs many other functions plus it enhances many of the standard Radio Shack commands and makes life a lot easier.

Diskutil comes on a 5¼" diskette with no protection features. The standard BASIC BACKUP command will work with no trouble. The documentation consists of four 8½" x 11" single-sided pages. The documentation package at first looks a little skimpy, but all the necessary information is presented in a clear and concise manner. The real trick to using *Diskutil* is to get the program up and running and

experiment with the different functions. In this manner you will learn quickly what *Diskutil* can do for you and how you can use it to simplify your daily operations.

Diskutil is run by typing in *LOADM Diskutil*. The program will auto execute, therefore you will not be required to type in the *EXEC* command. The first screen displayed asks that you insert a diskette in drive 0 and press [ENTER]. Once that has been accomplished, the directory of the disk in drive 0 is read and the main menu is displayed. The menus used throughout *Diskutil* are different than those normally used by utility programs. The menus are green characters on a black background. All the acceptable commands are listed on the screen. Each command is executed by the entry of a single character, usually the first character in the command name. Those characters which are valid entries for a given command are highlighted on the screen by flashing them between a black character on a green background and the normal menu display. This is very effective and does not distract from the screen display itself. The directory of the disk in the default drive is displayed on the right of the screen. The entire directory is displayed only if the number of entries is such that they will fit in the window displayed there. If there are more entries than will fit in the window, the window itself can be moved through the entries by using the up/down arrows. Thus the entire directory can easily be scanned. The window is the standard black characters on the green background. The following commands are displayed on the primary menu and are the command list for *Diskutil*: ALPHABETIZE; BACKUP/ SUPER COPY; EXAMINE FILE DATE; FORMAT (DISKINI); LOAD/LOADM; MOVE FILENAME; SUPER DIRECTORY; VERIFY; COPY; GAT; INFO; DRIVE; HELP; KILL; RENAME; and QUIT. Lets examine each of these commands individu-

Talk is Cheap!

You want your color computer to talk,
but how much will it cost?

\$50 . . . \$100 . . . \$200 . . . NO!

HOW ABOUT \$29⁹⁵?

**SPEAK UP!™ is a machine language
Voice Synthesizer program for your
TRS-80 Color Computer.* It is
100% software. Nothing else to buy.
Best of all, YOU can make
basic programs talk!**

16K and 32K versions on one cassette.
Has text to speech capability.

*T.M. Tandy Corp.

16k minimum

It's easy to use, and will say
virtually anything!

Talk really is cheap!



Reviewed in the April 1983 issue of *RAINBOW*.

COD orders, checks accepted - NO DELAY
WE PAY POSTAGE

1-800-334-0854, ext. 890
Except North Carolina



Classical Computing, Inc.

P.O. Box 3318
Chapel Hill, NC 27515

ally since that is what *Diskutil* is all about.

The **ALPHABETIZE** command allows you to sort the disk directory in three ways. You can sort by the filename, extension name or file type. Upon entering this section, you are asked for the type of sort you would like. Responding to the sort prompt with a null entry will get a sort by filename. Upon entering your answer, the directory is read from the disk, sorted according to your response and then rewritten to the disk. For those of you who do not fully understand the workings of your Color Computer, the placement of the information on the disk proper is in no way linked to the position of an entry in the disk directory. Thus sorting the directory entries will not harm the data on the disk or the ability of the disk BASIC system to find it.

The **BACKUP/SUPER COPY** command will make copies of a given disk in two ways. You can request a sector by sector copy of your disk to be made to a second disk. This command is very similar to Radio Shack's **BACKUP** command, except it runs much faster than Radio Shack's. Upon entering this section, you are requested to give source drive and the destination drive number. If you respond with zero in both cases, you will go into the single drive copy mode.

You are then requested to place the source disk into the source drive and the destination disk into the destination drive, strike any key and the process will begin. With the verify on, it took approximately four seconds/track to complete the copy. With the verify off, it took considerably less time. In both cases, the program will always tell you its destination during the entire copy process, which is an excellent feature. The second method is the file by file copy. Upon entering this section you are again asked for the destination and source drive numbers. As before, answering with zero to

both will put you into the single drive mode. Upon entering your drive numbers, you are asked if you want to be prompted before each file transfer. If you answer no, then all files are copied as found in the source directory. If you answer yes, then before each file is transferred, you are asked if you want that file transferred. Your response can be either yes, no or abort.

The abort response will abort the entire process and return you to the main menu. Thus, you can either copy your entire disk automatically or you can selectively copy programs in an interactive mode. Why would anyone really want to perform a copy in this mode anyway? The straight track for track copy, even though it runs faster, will not correct for fragmented programs on the disk. The copy on a program basis will. Thus, you may cut down on the number of disk accesses needed to load a given program. If the file already exists on the destination disk, you are given the **AE BASIC** error and then asked if you want to overwrite the existing program. If you respond with no, then you proceed to the next program.

The **EXAMINE FILE DATA** command allows you to step through any of the programs on the disk sector by sector. Each sector is displayed on the lower half of the screen for your visual pleasure. The file displayed is the one being pointed to in the directory window at the time the command was executed. All you can do from this section is view the data, you cannot modify or change it in any way.

The **FORMAT (DISK/IN)** command is very similar to BASIC's **DSK/IN** command. Upon entry, you are asked for the drive number. Entering the drive number, you are asked "ARE YOU SURE (Y/N)." Responding with yes will get the following message displayed on the screen, "INITIALIZ-

ARE YOUR WALKING FINGERS GETTING FOOTSORE?

Tired of typing in those long, but wonderful, programs from each of **THE RAINBOW**? Now, you can get **RAINBOW ON TAPE** and give those tired fingers a rest. With **RAINBOW ON TAPE**, you'll be able to spend your time enjoying programs instead of just typing . . . typing . . . typing them! All you need to do ever again is pop a **RAINBOW ON TAPE** cassette into your recorder, **CLOAD** and **RUN** any one you want.

Think of it! Not 10 or a dozen — but between 20 and 30 — programs every month from **RAINBOW ON TAPE**. All the really good programs from **THE RAINBOW**! All the long ones . . . so you don't have to type them in. Just **CLOAD** and **RUN**!



Now...The Best Color Computer Magazine Offers The Best Tape Service

RAINBOW ON TAPE single issue rate is: within the US, \$8, Canadian and Mexican rate, \$10, all other countries, \$10.00
RAINBOW ON TAPE subscription rate is: within the US, \$70, Canadian and Mexican rate, 80, all other countries, \$95.

US FUNDS ONLY PLEASE

VISA, MasterCARD and American Express accepted. All subscriptions begin with the current issue and back issues are available beginning with April, 1982. Tapes are sent first class mail to arrive approximately the same time as your current issue of **THE RAINBOW**.



ORDER RAINBOW ON TAPE TODAY! HANDY ORDER CARD BETWEEN PAGES 34 & 35

TRS-80 COMPUTERS

ALL PURE RADIO SHACK EQUIPMENT

DISCOUNT
15%
AND UP
OFF SUGGESTED LIST

COMPUTERS

ALL TRS-80
MODELS

CALL FOR
COMPETITIVE
PRICES



PRINTERS

- RADIO SHACK
- EPSON
- OKIDATA
- C. ITON
- SMITH CORONA

CALL FOR
COMPETITIVE
PRICES

ACCESSORIES

WE CARRY A FULL LINE OF:

- SOFTWARE
- HARD DRIVES
- MODEMS
- PRINTER ACCESSORIES
- TELEPHONES AND ANSWERING MACHINES

GAMES

- BIG FIVE
- ADVENTURE
- SPECTRAL
- INSTANT SOFTWARE
- TOM MIX SOFTWARE

FREE

- PLEASE WRITE AND REQUEST ...
- CUSTOMER DISCOUNT PRICE LIST
 - MANUFACTURE WARRANTIES

© TRS-80 TANDY CORPORATION

PERRY COMPUTERS

Dept. No. C-3 137 NORTH MAIN ST., PERRY, MI 48872

FOR ORDERS CALL 1-800-248-3823

FOR INFORMATION CALL (517) 625-4161

ING DISKETTE IN DRIVE x." Upon completion you are returned to the main menu. Responding with a no will get an immediate return to the main menu.

The **LOAD/LOADM** command is one of the more versatile and powerful commands. Executing this command and answering all the prompts will result in either a basic or machine program being loaded and automatically executed. You do not have to worry about the drives running forever because they did not shut down before the program started, as is the case with many games. The program loaded will be the one being pointed to in the directory window when the command is executed. Upon entering the command, you will be asked, "ARE YOU SURE YOU WANT TO LOADM AND EXECUTE -----?" Once the program is loaded and executed, *Diskutil* is gone and must be reloaded when needed.

The **MOVE FILENAME** command is another of those very versatile commands. This command will allow you to pick any one directory entry and place it anywhere in the directory you may want it. Now what good is all that you ask? Well how many times have you saved a file to disk thinking it would appear at one place in the directory only to have the file manager find a hole somewhere else? There are some programs, such as *Teletwriter-64* which are actually composed of more than one program. If you are like most everyone, you want backups to that valuable software you purchased. However, when you put it on your backup disk with other programs, it did not get cataloged in the manner you wanted. Well with **MOVE FILENAME** you can put the directory in any order you want. You can achieve the exact results you wanted in the first place.

The **SUPER DIRECTORY** command will create a list of the directory of the disk being pointed to in the directory window at the time the command is executed. The display will appear on the screen with an option to make a hard copy on the printer also. The format for both the screen and the printer display is as follows:

- BASIC Program - Length in bytes
- Data File - Type, Number of characters
- Mach Program - Start, End, Execute Address
- ED/ASM File - Length in bytes
- All Others - Length in bytes

This command is the only one which gave me any trouble. When the printer option is selected and the program is required to go back to the disk before the complete line can be printed, the printer or the program loses one byte. The lost byte does not occur all the time, but often enough to make the printed output somewhat undesirable. I tried the command on two different computers, with different printers and disk drives. The results were the same in both cases. The printers used in both cases were Radio Shack printers. Mine is a DMP-200 and the other was a LPVIII. The only draw back in an otherwise excellent program.

The **VERIFY** command toggles the verify function between off and on. If the verify function was off, executing it will turn it on. If it was on, execution will turn it off.

The **COPY** command will copy the file being pointed to in the directory window when the command is executed. You are then asked for the drive number of the drive that the file is to be copied to.

The **GAT** command will display the full file allocation table of the disk in the default drive. The display is in a Hex format on a checker board background. Again, this is a display only and you can only look.

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!**



★ ★ ★ ★ FREE PROGRAMS ★ ★ ★ ★

ON ANY ORDER OF 20 OR MORE TAPES OR 10 OR MORE DISKETTES
YOU WILL RECEIVE TWO COLOR COMPUTER PROGRAMS OF THE ABOVE PRODUCT!

**COMPUTER
CASSETTES**

- ★ 5 SCREW SHELL
- ★ FREE LABELS
- ★ ERROR FREE TAPE
- ★ IMMEDIATE SHIPPING



T&D Computer Products
P. O. Box 256-C
Holland, MI 49423
(616) 396-7577

**DYNAMAG
DISKETTES**

- ★ ONLY \$1.60 EACH
- ★ 5 1/4" SINGLE SIDE DOUBLE DENSITY
- ★ 100% ERROR FREE
- ★ MEET ALL INDUSTRY SPECIFICATIONS

ITEM	PRICE	QUANT.	TOTAL
C-10	.59		
C-20	.69		
C-60	.85		
C-90	.99		
Cases	.18		
Disquettes	1.60		

Outside USA	Subtotal	
Add \$3.00	Shipping	3.00
USA funds only	Mich. Res.	4%
	TOTAL	

Name _____
Address _____
City _____ Sr. _____ Zip _____
Credit Card _____ Exp. _____

GRAPHIC MATH ADVENTURE \$21.95 FASTER & BETTER

Challenging Adventure! Fully player selectable up to 300 "room." Search for treasure on land, on river, and in the labyrinth of caves. Your search is blocked by many obstacles which can be overcome by correctly answering math problems. Any one or all four functions (+, x, -, ÷) can be selected to add variety. 24 skill levels make the game challenging for all ages. 32K EXT BASIC Required Version 1.2 NOW AVAILABLE

City Wars \$14.95 Minotaurs Maze \$21.95

Picture war and peace making skills against that of your friends. Each player starts with 10 cities, each armed with assault missiles and anti-missile missiles. A challenging game in 16K EXT BASIC.

Great Adventure game with creatures, treasures, magic spells and medieval weapons. The graphics add another dimension to play. The townspeople have promised you great wealth if you can find your way through the maze to the Minotaurs' lair and destroy the creatures. Requires 16K EXT BASIC.

BACKUP MASTER/ GRAPHIC MONITOR \$29.95

SUPER powerful UTILITY allows backups to be made of most programs — cassette, disk, even ROM based!!

- Over rides all software autostart mechanisms
- Fully relocatable — will not interfere with any program
- Capable of reading many tapes which BASIC can't

64K USERS have extra power

- Modify BASIC to suit your needs
- Save copies of BASIC, Ext BASIC, Disk BASIC, etc.
- Run address dependent ROMS from RAM



CONCENTRATION \$6.95

40 blocks hide 20 patterns. Pit your memory skills against your friends. Two players. Non-EXT BASIC cassette.

15% off ALL "SPECTRAL ASSOCIATES" SOFTWARE

LANCER	24.95	21.20	GAME PACK III	17.95	15.25
STORM ARROWS	24.95	21.20	PICKWHICH	12.95	11.00
WHIRLYBIRD RUN	24.95	21.20	SPACE CHESS	12.95	15.25
CUBIX	24.95	21.20	KEYS OF THE WIZARD	24.95	18.65
ALPHA SEARCH	18.95	16.95	LOTHARS LABRYNTH	17.95	15.25
MS GOBBLER	24.95	21.20	LEMANS	17.95	15.25
GHOST GOBBLER	22.95	20.35	COLOROUT	12.95	11.00
SPACE SENTRY	18.95	16.10	CCTHELLO	17.95	15.25
TRIOLOGY	52.95	45.00	COSMIC SUPER BOWL	17.95	15.25
COLOR COSMIC INVADERS	39.95	17.80	SPACE TRADERS	12.95	15.25
SPACE RACE	24.95	21.20	YAHTGC	14.95	10.15
SPACE WAR	24.95	21.20	ALCATRAZ II	14.95	10.15
GALAX ATTAX	24.95	21.20	GEOGRAPHY PAC	34.95	29.70
DEFENSE	24.95	21.20	TYPING TUTOR	22.95	20.35
PLANET INVASION	24.95	21.20	FLEXPLUS DOS	22.95	62.00
PIGGY	12.95	11.00	ULTRA 80C	52.95	45.00
COLORZAP	17.95	15.25	COMPUVOICE	37.95	32.25
DESERT GOLF	14.95	10.15	SOUNDSOURCE	27.95	23.75
C-TREK	14.95	10.15	GRAPHICS 'N TEXT	22.95	20.35
GAME PAC I	12.95	15.25	DISASSEMBLER	17.95	15.35
GAME PAC II	12.95	11.00			

Gameboard Pac \$6.95

Contains three hi-res gameboards: checkers, Othello and Pentii.

PROGRAMMERS —

We pay highest royalties — write for details.



Software Factory

1333 Morgan Road
Bremerton, WA 98312
(206) 377-1694

WRITE FOR FREE CATALOG
Add \$3 Shipping — No COD



Dealer & Author inquiries invited

The INFO command will give a display of the pertinent data for the file being pointed to in the directory window at the time the command is executed. The data displayed has the following format:

FILENAME: — file name
FILETYPE: — 0,1,2
FILEFORM: — binary, ASCII
OF GRANS: — number of disc granules used
GRANULE MAP: — on which of the disc granules this file resides

The DRIVE command sets the default drive number. This will be the drive accessed when a drive number is not entered.

The HELP command will bring up a limited help screen. This screen gives the BASIC command entry formats.

The KILL command operates in a similar manner to BASIC KILL command. The file in question will be the one pointed to by the directory window at the time the command is executed. However, before the file is erased from the directory, the prompt "ARE YOU SURE(Y/N)?" must be answered. If you answer no, you are returned to the main menu. If you answer yes, the file is killed or the entry is removed from the directory.

The RENAME command is the same as the disk BASIC command with one exception. If you do not specify an extension name, the old extension name will be retained. The file being renamed is the one pointed to in the directory window at the time the command is executed.

The QUIT command is just that. Exercising this command will return you to the BASIC interpreter and erase the program from memory. However, before performing a cold start, all disk drive heads are positioned over track 0. This stops the annoying habit of disk BASIC from banging the heads against the stops until it can determine just where they really are.

Diskutil is advertised as a program which will enhance the disk handling routines and make life much easier. Well it does that and then some. It provides utilities which operate in a more friendly manner than the original ones; offers the ability to sort the directory entries and move file names around in the directory to obtain the desired order; and displays information about each of the files in the directory as to type, length, and where they are actually stored on the disk. *Diskutil* allows you to step through each of the sectors in each of the files, going both backward and forward. It provides for two types of disk backup, by file or by track and gives you the ability to load and run both BASIC and machine language programs with a single command. Also, *Diskutil* gives you the ability to copy single programs without going through the hassle of having to type in the file names twice. All of this in a single program which runs smooth as silk. The only problem I encountered was the mentioned print routine dropping an occasional character when the disk was being accessed. Other than that, the program ran perfectly.

I think this is a program of excellent quality that was well designed and written. For anyone with any kind of disk library, I think *Diskutil* is a must. I have nothing but the highest regard for this program and find it an excellent addition to any library.

(Silicon Rainbow Products, 1111 W. El Camino Real, Suite 109, Sunnyvale, CA 94087, Logical Computer Products, P.O. Box 125-S121, Arlington, MA 02174, \$35, plus \$2 S/H)

FINALLY!

A REAL SPREAD-SHEET PROGRAM FOR THE COLOR COMPUTER

DYNACALC™

Business people use spread-sheets to organize columns and rows of figures. DYNACALC simulates the operation of a spread-sheet without the mess of paper and pencil. Of course, corrections and changes are a snap. Changing any entered value causes the whole spread-sheet to be re-calculated based on the new constants. This means that you can play, 'what if?' to your heart's content.

But DYNACALC isn't just for accountants. DYNACALC can be used for just about any type of job. Not only numbers, but alphanumeric messages can be handled. Engineers and other technical users will love DYNACALC's sixteen-digit math and built-in scientific functions. There's even a built-in sort command, so you can use DYNACALC to manage small data bases - up to 256 records.

DYNACALC will let your computer do just about anything you can imagine. Ask your friends who have VisiCalc, or a similar program, just how useful an electronic spread-sheet program can be for all types of household, business, engineering, and scientific applications.

DYNACALC is designed to be used by non-programmers, but even a Ph.D. in Computer Science can understand it. Built-in HELP messages are provided for quick reference to operating instructions.

DYNACALC has a beautifully simple method of reading and writing FLEX data files, so you can communicate both ways with other programs on your system, such as the Text Editor, Text Processor, Sort/Merge, RMS data base system, or other programs written in BASIC, C, PASCAL, FORTRAN, and so on.

Except for a few seldom-used commands, DYNACALC is memory-resident, so there is little disk I/O to slow things down. The whole data array (worksheet) is in memory, so access to any point is instantaneous. DYNACALC is 100% 6809 machine code for blistering speed.

Color Computer DYNACALC works with the FLEX operating system from Frank Hogg Laboratory (64k required). If you aren't already using this powerful operating system, we have a special deal for you: order DYNACALC (regularly \$200) and FHL Color FLEX (regularly \$99) together for only \$250.

To order, see your local DYNACALC dealer, or order directly from CSC at the address below. We accept telephone orders from 10 am to 6 pm, Monday through Friday. Call us at 314-576-5020. Your VISA or MasterCard is welcome. Be sure to specify that you want the Color Computer version.

ORDER YOUR DYNACALC TODAY!

Computer Systems Center
13461 Olive Blvd.
Chesterfield, MO 63017
(314) 576-5020



MDISK Is A Good No-Disk, 'Disk' System

With the price of 64K RAM chips so low and all the available information on how to modify your CoCo to 64K memory, there is little excuse not to have a 64K CoCo. But once you have the full 64K, how do you make use of all of it? Easy! You run *MDISK*.

MDISK is a utility for the 64K CoCo that changes the upper 32K of memory (page 1) into a "virtual disk" system. It may be used with or without a disk drive.

With *MDISK*, you can:

- 1) save and load up to 15 programs within page 1;
- 2) display a directory of files stored there;
- 3) delete unwanted page 1 files;
- 4) run BASIC or EXEC machine language programs directly from *MDISK*; and
- 5) chain from one BASIC program to another, preserving data already created.

As an added bonus, *MDISK* will test the page 1 memory and if any errors are found, *MDISK* will help pinpoint where the problem is.

MDISK is a ML program that loads into the upper 2K of page 0 memory. It is written in position independent code and can be relocated anywhere within page 0. Disk BASIC is not required and it will run without changes on a cassette-based 64K CoCo.

The greatest appreciation for *MDISK* would probably be from those who have the 64K of memory but cannot afford the Disk BASIC system. We all know the frustration of having to load tape programs into memory. It takes a long time to transfer the programs and if any I/O Errors occur, then it takes more time to try and load them in again.

With *MDISK*, you still have to load the programs in from tape, but once you have them in memory, you safely tuck them away into page 1. Save up to 15 programs (provided you do not exceed the memory capacity of 32K) and then recall them into your working area as though they were coming from a disk. The transfer time is very fast and I/O Errors are effectively non-existent.

Prior to loading *MDISK*, be sure to do *CLEAR 200, &H77FF*. If you fail to do this, your system will either lock up or run wild. You will then have to shut everything down and start over again. Next, *LOADM* the program, then type *EXEC*.

A menu screen will be displayed showing all the usable options of *MDISK*. These include:

- S - Save program to page 1
- D - Directory of files saved
- K - Kill a file in page 1
- L - Load program to BASIC
- C - Chain program to BASIC
- R - Run program in BASIC area
- G - Go to ML (*EXEC ML* program)
- E - Exit *MDISK* (return to BASIC)

All of these options should be self-explanatory with the exception of CHAIN. Let's explain that one a little further.

If we load a program into the BASIC work area, two things happen. First, the previous program is wiped out and our new program takes its place. Second, all the variables used within the first program are cleared to zero or set to the "null" string if they are string variables. There is no way of passing a variable from one BASIC program directly to another. Not until *MDISK* came along.

With the CHAIN feature, the new BASIC program still replaces the old, but all the variables are preserved. The second program picks up from where the first one left off.

Unfortunately, there is a catch. If the two programs are *PROG1* and *PROG2*, and you want to chain the variables to *PROG2*, then *PROG2* must be shorter than *PROG1*. If you try to chain from a shorter to a longer program, *MDISK* either will not allow it or strange things begin to happen.

MDISK has two operating modes, manual and auto. In the manual mode, you call *MDISK* by typing *EXEC*. You then respond to the menu item desired, then return to BASIC.

In the auto mode, you can execute *MDISK* from a running program. This calls for the inclusion of two additional lines within the program. The first line makes a call to *MDISK* through a *DEFUSR* statement, and the second line defines the operation to be performed. Both are well documented and explained in the user's instructions.

With these two added lines, it is possible to run *PROG1*, which will automatically pass variables and load *PROG2*, which can then call on *PROG3*, etc., all while you just sit back and drink your favorite beverage.

The same limitations that apply to CHAIN, mentioned above, also apply to LOAD in the auto mode. Namely, a shorter program cannot call for a load of a longer program.

There are two features within the program that I did not like. The first is that if you save a program to page 1 using some particular name, then later you save a program using the same name, *MDISK* will save both programs with the



"Double-Entry" General Ledger Accounting System for Home or Business on 16K, 32K or 64K.

This user-friendly MENU driven system comes complete with operator's manual and sample printouts.

★★★ PROGRAM FEATURES ★★★

• Balance Sheet • Income & Expense Statement (current year-to-date categories "YTD") • General Journal & General Ledger •

This system handles 2400 "Journal Entries" on the 32K & 64K versions. The 16K version can handle up to 740 records.

1 diskdrive, printer & at least 16K with ECB required.

COMPARE FEATURES & PRICE, then BUY "THE OTHER GUY'S"

INTRODUCTORY OFFER \$69.95

Manual with sample printouts \$10.00 (can apply toward purchase)

WE ARE "THE OTHER GUY'S SOFTWARE"!

AMT • Full Featured Amortization Program

★★★ This one does it all — Look at these features ★★★

This program will compute monthly, bi-monthly, quarterly, semi-annual, or annual payments using positive or negative amortizations (useful for calculating new loans such as FHA 245, GPARM & ARM). It will also calculate BALLOON PAYMENTS. Up to 12 months can be viewed on the screen including: payment number, interest, principle, and balance. Printing will produce the above output PLUS title block, total interest to date, total principle to date, & total amount paid to date. (Instruction book included) This program is fully "MENU" driven and user-friendly. Requires 16K ECB — Tape or Disk.

INTRODUCTORY OFFER \$29.95

DEALER INQUIRIES INVITED.

(add \$1.50 for postage and handling)

Send check or money order, US funds to:

THE OTHER GUY'S SOFTWARE • 875 S. Main • Logan, UT 84321

Phone: (801) 753-7620

Don't bang your head
against a brick wall looking
for that perfect gift!

the Rainbow 9529 U.S. Highway 42
502/228-4492 P.O. Box 209
Prospect, Ky. 40059

I would like to send a gift certificate for a one year (12 months)
subscription to:

Name _____
Address _____
City _____ State _____ Zip _____

+++++

From:

Name _____
Address _____
City _____ State _____ Zip _____

Payment Enclosed

Charge VISA MasterCard American Express

My Account# _____ Interbank# (MC only) _____

Signature _____ Card Expiration Date _____

GIVE 'EM THE RAINBOW!
THE SOLID MONTHLY
FOR COCO USERS!!

Subscriptions to the Rainbow are \$28 a year in the United States. Canadian and Mexican rate U.S. \$35. Surface rate to other countries is U.S. \$65; air rate U.S. \$100. All subscriptions begin with the current issue. Please allow up to 5-6 weeks for first copy.

Just for your
TRS-80® COLOR
TDP System 100
Dragon 32
MC-10

same name. When making a call to the program by its name, *MDISK* will always use the first one saved. The second one is not accessible. The only way around this is to *KILL* the first program before saving a second with the same name. (If you modified *PROG1* and then tried to resave it as *PROG1*, you would now have two versions named *PROG1* and the second, corrected version would not be accessible.)

The second feature I didn't like was in the auto mode. If some type of error is made while in *MDISK*, it prints an error message on the screen. In the manual mode, this error message stays on the screen and you can see what went wrong. In the auto mode, the error message flashes by so fast, it is not possible to tell what it is. It would have been an improvement if some time delay occurred here to give the user a chance to see the error message.

The instructions said that it is possible to save *DATA* to page 1, but they gave no examples of how this is done. I could not figure a way to do it.

Would I buy *MDISK*? If I didn't have disk drives, yes. Many of my operations call for the back and forth use of two or more programs. To do this from cassette was time consuming and, at times, frustrating. *MDISK* saved me this frustration. Having disk drives, the time factor and frustrations are greatly reduced, but the *CHAIN* feature sure is a tempting one.

With the exceptions of the limitations above, *MDISK* is one of the better utilities I have seen for the 64K CoCo.

(Skyline Software, 4510 W. Irving Park Rd., Chicago, IL 60641, tape \$27.95, disk \$29.95)

— Al Burzynski

DSKMON: A Diversified Disk Utility

DSKMON, or DiSK MONitor, is a multipurpose disk utility designed specifically to serve three main functions of the serious Color Computer disk system user: It is the practical purpose of learning how the Color Computer uses its disk system; it allows the display and modification of data from the disk; and it allows file manipulation to the point of getting file information and selectively backing up files from one drive to another.

Let me explain the functions in detail. The learning aspects of the program are the same as with any disk monitor that will read in data and display it. One can investigate how data is stored on disk by examining the data off the disk using the monitor to read in sectors and displaying the information in various formats on the screen.

DSKMON requires two separate commands to perform this. The first command is "R" for Read Sector. After "R" is entered, the program will prompt for the drive, track and sector that you wish to read in (all inputs here are given in decimal). Then the "D" command is used to Dump the Buffer to the screen that now contains the sector specified by the "R" command. The screen is set up giving eight bytes to a line in Hex dump format followed by the ASCII equivalents on the same line. The information can then be scrolled on the screen by use of the up and down arrow keys. If any data needs to be modified (changed), then [BREAK] is hit to return to the main menu and the "M" command is chosen for Modify Buffer. A different type of screen is displayed using a "window" which singles out the byte that can be modified by typing in a two-digit Hex value to change it. This screen takes some getting used to and frankly, I've seen better. A screen where overtype is used would have been better (users of *VIP Disk Zap* or even *C-Bug* know what I mean).

One of the major learning aspects of this program lies, not in the operation of the program, but in the study of the source code. Yes, source code. This is one of the few programs I have seen that comes complete with the source code. The information here does not teach one directly how information is stored on the disk, or how to manipulate data to and from the disk, but allows one to study the actual program itself and learn how to perform disk I/O in machine language. It's worth the price of admission! I would like to see more companies take an interest in the machine language programmer and learner, and offer source code with their programs. Of course, I realize that this could lead to copyright problems with new and budding programmers taking source code from these programs and manipulating it as their own code. But I am glad to see it and plan to study the code in more detail in order to help me in my own program writing.

Another area *DSKMON* deals with is File Information. This command gives you a complete record of information pertaining to the storage of a file on disk. The display tells you what kind of file it is as well as the format of storage, granule usage, ML start, end, exec addresses, or disk space usage for other files. A Granule Conversion command is

STAT'S ****EXPANDED****
A STATISTICAL ANALYSIS PROGRAM, THAT CALCULATES MEAN, VARIANCE AND STANDARD DEVIATION FOR BOTH SAMPLES OR POPULATION PERMUTATION AND COMBINATIONS, Z and T TESTS, CURVE FITTING, (LINEAR, EXP., LOG., POWER,) EASY MODIFICATION OF STORED DATA, COMBINE TWO FILES, ETC. USER FRIENDLY!
CASSETTE \$24.95
OR DISK *

COLOR GRAPHIC PRINTER UTILITIES
UTILITIES FOR RADIO SHACKS CGP-115, COLOR GRAPHIC PRINTER/PLOTTER WORD PROCESSOR--SUPPORTS EMBEDDED CONTROLS FOR PRINT SIZE OR COLOR RIGHT JUSTIFICATION. DESIGNED JUST FOR THE CGP-115
SCREEN PRINT PROGRAM---TRUE FOUR COLOR PRINT OUT, WORKS IN MODE 3 OR 4 YOU WON'T BELIEVE THE DETAILS
DRAWING BOARD---ETCH-A-SKETCH FOR THE PRINTER, ANY COLOR, EASY CORRECTIONS
CASSETTE \$24.95
OR DISK *
REQ. EXT BASIC

RELOCATE
RELOCATE MAKES AUTOMATIC TAPE COPIES OF ANY COLOR COMPUTER CARTRIDGE. ALLOWS CHANGES TO BE MADE TO THE PROGRAM SUCH AS (PRINT-OUT GUIDETEX, CHANGE BAUD RATE IN ASCRIPSIT, ETC.) REQUIRES EITHER A 64K MOD. OR A 16K OR LARGER COMPUTER WITH A CARTRIDGE MEMORY EXPANSION OF 4K OR LARGER, VERY EASY TO USE! ONCE FAMILIAR WITH THE PROGRAM, COPIES CAN BE MADE IN LESS THAN FOUR MINUTES
CASSETTE \$24.95

COMPUTERIZED ALARM SYSTEMS
LET CoCo WATCH YOUR HOUSE WHILE YOU ARE AWAY, LESS THAN TWENTY DOLLARS OF RADIO SHACK COMPONENTS. PLANS AND SOFTWARE. WRITE FOR DETAILS
(THIS AD TYPESET WITH THE COLOR GRAPHIC PRINTER)

TRANSITION TECHNOLOGY PLEASE SPECIFY SYSTEM
P.O. BOX 1332 16K-RIN
HIGHLAND PARK, IL 60035
SHIPPING AND HANDLING \$1.50 C.O.D. EXTRA
* AVAILABLE ON DISK ADD \$2.00 *STANDY Corp

SUPER SCREEN



- A big 51 character by 24 line screen.
- Full upper and lower case characters.
- Easily combine text with hi-res graphics.
- PRINT @ is completely functional on the big screen.
- The powerful ON ERROR GOTO is fully implemented.
- Auto-key repeat for greater keyboard convenience.
- Control codes for additional functions.
- Works with 16K, 32K or 64K computers.
- Available on disc or cassette.
- Works with extended and/or disc BASIC.

51 CHARACTERS BY 24 LINE DISPLAY

Super Screen is a powerful, machine language program that significantly upgrades the performance and usefulness of 16K or greater, Extended and Disc Basic Color Computers. The standard Color Computer display screen is totally inadequate for serious, personal or business applications so Super Screen replaces it with a brand new, 51 character wide by 24 line screen including full upper and lower case characters. Instead of a confusing checkerboard appearance, you now have true lower case letters along with a screen that is capable of displaying 1224 characters. The difference is startling! Your computer takes on new dimensions and can easily handle lines of text that were simply too long and complex to display on the old screen.

COMBINE TEXT WITH HI-RES GRAPHICS

You can now write truly professional looking programs that combine text with hi-res graphics. Super Screen allows you to create graphics displays with the Basic LINE, DRAW and CIRCLE statements and then notate the graphics with descriptive text. You can even use PRINT @ if you wish for greater programming convenience. Super Screen's versatility will amaze you.

PRINT @ IS FULLY IMPLEMENTED

The PRINT @ statement is a valuable asset to the programmer when formatting text on the screen. The standard Color Computer will report an error if you specify a location higher than 511 but Super Screen allows locations all the way to 1223! You get a big screen and a powerful formatting tool as well. Of course, Super Screen also supports the CLS command allowing you to clear the big screen using standard Basic syntax.

ON ERROR GOTO

That's right! Super Screen gives you a full implementation of ON ERROR GOTO including the ERR and ERL functions. Now you can trap errors and take corrective action to prevent crashed programs and lost data using the same standard syntax as other computers. The ON ERROR GOTO capability overcomes a serious deficiency of Color Computer Basic and greatly improves your capability to handle sophisticated tasks. All well written, 'user friendly' programs use error trapping techniques and yours can too! Now that's power!

AUTO KEY REPEAT

No more frustration as you edit a long line in your Basic program; just hold the space bar down and automatically step to the desired position in the line. Need a line of asterisks? Hold the key down and auto repeat will give them to you. Those of you who spend many hours at your keyboard will appreciate this outstanding addition to Super Screen's long list of impressive capabilities.

CONTROL CODES FOR ADDITIONAL FUNCTIONS

Super Screen recognizes several special control code characters that allow selection of block or underline, solid or blinking cursor and other functions. You can 'Home Up' the cursor or you may erase from the cursor to the end of a line or to the end of the screen just like many other computers. These special codes give you an extra dimension of versatility and convenience that put Super Screen in a class by itself.

AND MORE GOOD NEWS...

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! Super Screen's low price will really please you; only \$29.95 on cassette or \$32.95 on disc!

64K Memory Expansion Kit

All parts and complete instructions

\$64.95



Mark Data Products

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

All Orders: Please add \$2.00 shipping and handling in the continental U.S. All others, add air shipping and \$3.00 handling. California residents add 6% sales tax. Foreign orders 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

ACCOUNTING SYSTEM

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 schema. 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.

The MDP system:

- Is accurate, user friendly and simple to use.
- Is easy to customize for specific user requirements.
- Immediately updates the chart of accounts.
- Provides an audit trail.
- Includes end of period procedures.
- Is capable of future expandability.

This accounting software equals or exceeds higher priced packages for other computers and includes a detailed operating manual.

Requires 32K and a Single Disc Drive
PRICE: \$99.95

ORDER ENTRY SYSTEM

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.

The MDP system:

- Is accurate, user friendly and simple to use.
- Is easy to customize for specific user requirements.
- Produces a traceable invoice.
- Handles receivables as well as closed orders.
- Is capable of future expandability.

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

Requires 32K and a Single Disc Drive
PRICE: \$99.95

THE MARK DATA PRODUCTS SUPER PRO KEYBOARD...

The most popular replacement keyboard for your CoCo.

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

Only \$69.95

IMPORTANT NEW BOOKS

"Your Color Computer" by Doug Mosher. Over 300 pages of detailed information—A CoCo encyclopedia. \$12.95.

"Programming the 6809" by Rodney Zaks and William Labiak. One of the best 6809 machine language texts available—required reference material. \$15.95.

WE STOCK SOFTLAW PRODUCTS

The VIP WRITER Text Processor is rated tops by Rainbow, Hot CoCo and Color Computer Magazine. After evaluation we rate it tops too. **Disc \$59.95.**

also included in the program to convert a granule number (given in Hex) into its appropriate track and sector numbers (given in decimal).

The last major function of *DSKMON* is to give Selective Backups of any files on a disk from drive 0 to drive 1. It allows by prompting and copying of any or all programs from one disk to another. This can be used only by two drive owners. As quoted in the instructions: "Apologies to those users with only one drive, but the continual switching of disks defeats the purpose of this command." Well, I still think it would be faster to type in a "Y" when asked to copy a program to another disk than to type the *COPY* command for each program.

DSKMON comes on a disk for 16K or 32K and there were no problems loading the program or the source code (*MACRO-80C* was used for the text). The instructions are clear and complete and the program is totally relocatable. And, of course, with the source code, one can do whatever they want to the program and then just reassemble it. One note, the instructions stated the program was called *DSKMON*, but the one on my disk was named *DMONI*.

(Chroma Systems Group, P.O. Box 366, Dayton, OH 45420, disk \$24.95)

— Eldon Doucet

Cards, Markers and Good Play Spell *CoCo Bingo*

For those of you who are from another planet, or have not been by a church or club hall on Tuesday nights . . . bingo is a game played on numbered cards. The cards have five columns with each column headed by a letter which, when put together, spells B-I-N-G-O.

Normally, the game is played by placing numbered balls in a cage, then shaking the cage and picking out a ball at random. Each time a ball is drawn, the number on the ball is called aloud. And if that number matches any number on your card, you mark it with a chip.

The object of the game is to get five chips in a row, either horizontally or vertically — "bingo."

The instructions included with *CoCo Bingo* give a more complete (all you ever wanted to know) explanation of the game of bingo.

The only difference between *CoCo Bingo* and regular bingo is the absence of the balls bouncing around in the cage. *CoCo Bingo* randomly selects the numbers for you and even comes with 25 bingo cards and a large supply of markers in a resealable pouch (a nice touch so all of the chips and cards don't get lost).

To use *CoCo Bingo*, just *CLOAD* and *RUN*. That's it! After *RUNning*, the title page is displayed and then you are given a choice as to the speed you wish the numbers to appear. Once you set the time interval, numbers will start appearing in a stationary ball on the screen. We think that the authors should have used a little more imagination and generated a more eye-catching display of balls being thrown around and popping up (picky, picky, picky). We tested the game with two children and two adults and found that when we used a caller and each player had two cards, five seconds was more than ample time to locate numbers on your cards. Without a caller, 10 or 15 seconds was more preferable since it gave you time to look at the screen, then at your cards.

If you think you have a bingo, yell "bingo" (or, as we Smiths say, "Schmidlap"). Then you or the person designated as the number-caller hits any key on the CoCo, which stops the balls from continuing. A display then appears which shows what numbers have been called during the game. The person who called bingo (Schmidlap) then checks his/her card to see if he/she actually has bingo. If the person did not have bingo, you have the option of continuing the game from where you left off.

If a bingo ends the current round and you choose not to continue, the CoCo will erase the program from memory and return you to BASIC.

This old favorite is great for parties and keeping groups of kids of any age busy on rainy days. The game is at its best when some form of prize is awarded for each bingo.

The program is written in easy-to-understand BASIC and you can really learn some good programming techniques.

Overall, *CoCo Bingo*, with cards and markers included, is well worth the price.

Hold on . . . I think I have a Schmidlap!

(Colortech Systems, 17401 Dartmouth Avenue, Cleveland, OH 44111, tape \$12.95)

— Barry & Sandy Smith

The **ORACLE II** The Ultimate CoCo Monitor.



The ORACLE II is not a rehashed monitor program adapted to the CoCo, but a state of the art monitor designed to compliment the CoCo and its unique abilities.

Compare some of our features:

- 64K Compatible - the ORACLE II can relocate itself and its monitor screen above disk basic.
- Single Stepper - a single variable speed stepper that allows you to step both rom and ram.
- Disassembler -
- Graphics Support - allows you to step a program while watching any graphic screen, in any graphic mode, and toggle between the monitor screen and back, with one key.
- ASCII/hex search-up to a 10 byte search.
- Full screen display and editing of memory.
- Over 40 commands.

CoCo disk or tape (both versions included) \$35.95
Spectral or FHL Flex version 45.95
(+ \$2.00 shipping and handling)



MICRO MAGIC

P.O. BOX 142, SUMNER, WA 98390
(206) 863-8762
(24 Hours)



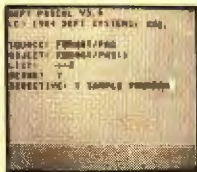
VISA

Learn Pascal

DEFT™ Pascal Now Supports **Full Pascal** Language
Use All Your Memory Without OS-9 And **Save**

DEFT Pascal Includes

Full Pascal Compiler (Version 3.0)



Supports Full Language.
Code In English-Like **Pascal**.
Execute In Fast Machine Code.

Object Linker — Lets You

Divide And Conquer Your Programming Problems. **Linker**
Combines Multiple Program Objects Into One Binary Program.
Easy to use.

DEFT Pascal Comes With Complete User Documentation For
Only \$79⁹⁵

DEFT Doc

Personalized Letters, Term Papers, Reports,
Software Documentation, Articles, Mailings, Etc.

DEFT Edit — Full Screen Editor



Add And Delete Characters And Lines.
Get And Write Files.
Move Blocks Of Text.

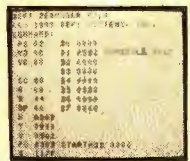
Text Formatter — Performs

Table of Contents Generation, Right And Left Justification,
Pagination And Decimalization, Automatic Text Insertion,
Headers And Footers And **More**.

DEFT Doc Comes With Complete User Documentation For
Only \$39⁹⁵

DEFT Bench Simplifies Software Development

Symbolic DEFT Debugger



Let's You Debug Machine Programs In English,
You Don't Have To Be A 6809 Machine
Wizard With Prompted Commands.

Macro Assembler — Supports

Entire 6809 Instruction Set. Macro Facilities Let You Define
Your Own Instructions. Supports Pascal Interfaces. Easy To
Use.

DEFT Edit Full Screen Editor

Object Linker (See DEFT Pascal)

DEFT Bench Comes With Complete User Documentation For
Only \$49⁹⁵

Order **DEFT Pascal** And **DEFT Bench** Together
(Colour Software Workbench)
And Get Free Source Files to **Text Formatter**
Only \$119⁹⁵

Here's What Frank Esser of The RAINBOW Magazine Says About **DEFT** Version 2 Software:

"The whole package is quite impressive."

"I am totally impressed with the professional quality of both the programs and the documentation. They are, in my opinion, excellent."

"... includes all the necessary tools for the serious programmer to produce good programs with a minimum of effort. For those who are not familiar with Pascal, I think it provides an excellent environment to learn in."

Develop efficient programs more easily, or help someone prepare for college. 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.

DEFT Question Line
(301) 253-1300



For Credit Card Orders Call Toll Free

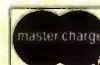
1-800-368-3238 Operator 8

In Virginia

1-800-542-2224 Operator 8

Or Fill Out Our Order Coupon

DEFT Question Line
(301) 253-1300



"TRS-80" and "Color Computer" are Trademarks of TANDY Corporation

DEFT and **Colour Software Workbench** are Trademarks of DEFT Systems, Inc.

Enter Quantities of Each Item: **DEFT Pascal** **DEFT Doc** **DEFT Bench** **Colour Software Workbench**

Method of Payment (check one) Check Enclosed. Visa Master Card

Account Number Card Expiration Date /

Signature _____

Name _____

Street _____

City _____ State _____ Zip _____

Add 3% for shipping and handling; Maryland Residents add 5% State Sales Tax and Mail To:
DEFT Systems, Inc., P.O. Box 359, Suite 4, Damascus Centre, Damascus, MD 20872

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-DIR**ectory 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.

4 Mile Island: Good For The Beginning Adventurer

The "impossible" has happened! This area was devastated by a severe earthquake. The 4 Mile Island reactor has been severely damaged. The plant has been deserted. Only you can save the area from a major disaster! Your goal is to achieve a cold shutdown of the reactor at 4 Mile Island. Alternative? Death!

The new Adventure program *4 Mile Island* by Owls Nest Software is a good program for the beginning Adventurer, or even a seasoned Adventurer that wants to take a break from searching through thousands of rooms. This program is simple, yet challenging (I found 25 rooms to search).

You must traverse through the interior of the reactor in order to solve the method to achieve a cold shutdown. One of the good items about this program is that you do not have an unlimited amount of chances to solve the Adventure. If you take too many turns, the reactor overheats and has **MELTDOWN**, thereby ending the game. This is not a "real-time" Adventure, but the feature simulates "real-time," making the game more challenging.

The Adventure comes on a tape for a 16K Extended BASIC Color Computer. It has an auto-load feature so the program starts up after loading. The program also disables the **LIST** feature in BASIC so that you cannot look for the answer after the game has been booted up. The program also will not work from a disk, but the auto-load feature does disable the disk so that you do not have to disconnect it.

In summary, *4 Mile Island* Adventure is an excellent Adventure for the beginner. I am sure that you will enjoy this Adventure just as much as I did.

(Owls Nest Software, P.O. Box 579, Ooltewah, TN 37363, tape \$17.95)

— Paul Lee

Hint...

Having RFI Problems?

If you are getting interference in the CoCo's video display on your TV, there may be a simple answer. If the set has a 75-ohm input connector (for cable TV), you can use a phono jack-to-F connector adapter (like Radio Shack 278-255) to plug the CoCo directly into the TV without using the switch box. Check your set's instruction manual for any special switches or jumpers that may have to be changed

— Ed Ellers

See You At
RAINBOWfest
Chicago
June 22-24

DISK DRIVES

STARTING AT

\$159.00

**WITH CASE &
POWER SUPPLY
\$189.95**



TANDON MPI TEAC

Speed .5ms tk to tk and up
Capacity 250k unformatted
Tracks 40
Warranty 6 months

ORDER TOLL FREE!
1-800-635-0300



Even more savings!!

ALL DRIVES FULLY TESTED & WARRANTEED

- Complete Disk Drive with Power Supply & Case \$189.95
- Two Drives in Dual Case & Power Supply \$359.00
- 1/2 ht double sided double density Disk Drives (Panasonic) \$219.95
- 1/2 ht double sided double density Disk Drive with ps & case \$249.95
- 2 double sided double density drives with ps & case \$489.95
- Single ps & case \$39.95

Color Computer Controller

Supports double sided double density drives
with 1 year warranty and manual.

\$139.95

Ask about our 3way Color Computer Drive Kits

- Complete with Diskettes starting at \$329.95
- Diskettes with FREE library case \$19.95
- Head Cleaner Kits \$Call
- Unadvertised Specials \$Call
- Drives cleaned, aligned & tested \$29.95



TECHNICAL STAFF ON DUTY, PLEASE CALL FOR ASSISTANCE.

CALL US TODAY!!

(617)234-7047

* DEALER INQUIRIES INVITED.



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

CoCo Community

We have compiled a list of Color Computer Clubs because of the many requests we have received. CoCo Clubs may wish to exchange newsletters, share ideas for topics of discussion at monthly meetings, etc.

Please let us know if we have omitted any clubs and send us complete up-to-date addresses. Only those clubs which have signed our "agreement form" will appear in this listing of CoCo Clubs. Also, please notify us if you wish to add or delete any names on this list. Send your information to:

CoCo Clubs
the Rainbow
9529 U.S. Highway 42
P.O. Box 209
Prospect, KY 40059

ALABAMA

Birmingham Alabama Color Computer Club, Robert Matthews, 1725 14th Ave. S., Birmingham 35205, (205) 933-0887

Huntsville Color-80 Users Group, Randy Niemann, 1011 Versailles Dr., S.E., Huntsville, 35803, (205) 882-2485

ALASKA

Alaska Color Computer Users' Group, Rick McDannel, 430C Beluga Ave., Ft. Richardson 99505, (907) 428-0392

ARIZONA

Tucson Color Computer Club, William H. Nunn, 6857 A Lighting Circle #22, Tucson, 85708

ARKANSAS

Central Arkansas CoCo Club, Melinda Braslovsky, 1203 Erving Rd., LP Cabot, 72023, (501) 982-8854

CALIFORNIA

CoCo Nutz Computer Club, Walter V. Seay, 68-461 Highway 86, Thermal, 92274, (619) 397-4252

Citrus Color Computer Club, Joseph Kohn, P.O. Box 6991, San Bernadino, 92412 (714) 792-8721

Joe Bennett, 1169 Florida Street, Imperial Beach, 92023, (474-6213)

Local Color—A CoCo Club of San Francisco, Andrew G. Kieval, P.O. Box 421242, San Francisco 94142

Los Angeles CoCo Users Group, Mark Randall, 2227 Canyon Rd., Arcadia, 91006, (213) 355-6111

Los Angeles-Wilshire Color Computer Users' Group, c/o Norm Wolfe, 269 S. Lafayette Park Pl., Los Angeles, 90057

Sacramento Color Computer Club, Wayne Christie, P.O. Box 9, Elverta, 95626

San Joaquin CoCo Club, Steven Paul Moreno, P.O. Box 99024, Stockton, 95209, (209) 951-3938

Salinas Color Computer Club, Larry Livingston, 501 Monterey Highway, Salinas, 93908, (408) 484-9697

Silicon Valley Color Computer Club, Shawn Jipp, P.O. Box 61593, Sunnyvale, 94088, (408) 749-1947

South Bay Color Computer Club, Karen Schlotzhauer, 2545 W. 255th Place, Torrance, 90505, (213) 539-2439

Ventura County Color Computer Club (VC4), c/o Pete Lydall, Oxnard Public Library, 214 "C" Street, Oxnard, 93030, (805) 984-1842 or DATA (805) 984-1842

COLORADO

Lowry Microcomputer Club/CoCo Users' Group, Jerry D. Surritte, 2249 Moline St., Aurora, 80010, (303) 343-3273

FLORIDA

Broward CoCo Club, Sue Spahn, 11950 N.W. 29th FL 33582, (305) 741-4737

C.C. Club of Sarasota, Ernie Bontrager, 4047 Bee Ridge Rd., FL 33582, (813)921-7510

Jacksonville Color Computer Club, William H. Brown III, 2411 Hirsch Ave., Jacksonville, 32216 (904) 721-0282

Northwest Florida CoCo Nuts, William N. Lamb, Pres., P.O. Box 1032, Fort Walton FL 35249, (904) 244-5281

ILLINOIS

Cook County Color Computer Club, Tim Powers, 1633 Fifth Ave., Chicago Heights, 60411, (312) 747-7062

Glenside Color Computer Club, Chuck Roberg, 521 Canyon, Carol Stream, 60188, (312) 690-9374

Motorola Microcomputer Club, Steve Adler, Pres., 1301 Algonquin Rd., Schaumburg, 60196, (312) 576-3044

Northern Illinois Color Computer Club, 580 Milton Lane, Hoffman Estates, 60194, (312) 885-2573

Town & Country CoCo, Kenwood, Chicago, (312) 493-3748

INDIANA

Southern Indiana Computer Club, Route 1, Box 459, Mitchell, 47446

Three Rivers Users Group, Russ Garner, 533 Villa Park Ct., Fort Wayne, 46808

IOWA

Iowa City TRS-80 Users Group, Susan Chapler, R.R. 6, The Woods, Iowa City, 52240, (319) 351-5959

Metra Area Color Computer Club, K.L. Knudtson, 3324 11th Ave., Council Bluffs, 51501

KANSAS

Kansas City CoCo Club, Mike Allinder, P.O. Box 11192, Kansas City, 66111, (913) 287-1904

Topeka Color Computer Club, Kevin Cronister, 2224 Hope, Topeka, 66614 (913) 272-1353

KENTUCKY

Roger Idstrom, 2603 Garden Lake Lane, Louisville, 40220, (502) 491-1853

Lo-CoCo Club Liason, 2820 Del Rio Place #27, Louisville, 40220, (502) 458-0649

LOCO-COCO, c/o Mike Standefer, 3141 Doreen Way, Louisville, (502) 458-6990

LOUISIANA

Red Stick Color Computer Club, Gary Cash, Pres., 8929 Metairie Drive, Baton Rouge, 70810, (504) 293-7799

MASSACHUSETTS

Greater Boston Super Color Users Group, Robert Biamonte, 6 Boulder Drive, Burlington, MA 01803

New England C.C. Users Group, Christopher E. Sweet, P.O. Box 255, Harvard, 01451, (617) 456-8291

Massachusetts CoCo Club, Jason Rahaim, Spring St., Lunenburg, 01462, (617) 582-6514

MICHIGAN

Greg Miller, P.O. Box 365, Haslett

Midland C.C. Club, Neil Drake, 709 Coolidge, Midland, 48640, (517) 631-2939

Michiana CoCo Club, Clay Howe, 310 S. Jefferson St., Sturgis, 49091, (616) 651-4248

Petoskey Area CoCo Club (PAC³), Dennis Hoshield, 670 Iegli Drive, Alanson, 49706, (616) 347-0607

MISSISSIPPI

Singing River C.C. Club, Henry Nielsen, 9001 Gray Ave., Ocean Spring, 39564

MISSOURI

Mid-America Color Computer User's Group, Jerry Morgan, 807 Ponca Drive, Independence 64056, (816) 796-5813

North County 80 Group, Tom Vogel, 12 Ville Donna Ct., Hazelwood, 63042, (314) 739-4078

MONTANA

Billings C.C. Club, Jayne Kenyon, 4306 Phillip Billings, 59101

NEW JERSEY

Bug 80 Users' Group, George R. Miller, Jr., Box 62, Glen Gardner, 08826

Loco CoCo Club, Bud Lavin, 73B Wavercrest Ave., Winfield Park, 07036

NEW MEXICO

Chaves County Color Computer Club, Lee Mitchell, 1102 Melrose Drive, Roswell, 88201, (505) 623-0789

NEW YORK

Adirondack CoCo Club, Bill Edwards, Box 365, Bolton Landing, 12814, (518) 644-9927

Broome CoCo Club, Bucky Helmer, 57 Front St., Binghamton, 13905

C.C. Club of Central N.Y., Joseph Short, 248 S. Fourth Ave., Ilion, 11357, (315) 895-7730

Kings Byte CoCo Club, Morty Libowitz, 1063 East 84th St., Brooklyn, 11236, (212) 763-4233

Queensboro Color Computer Club, Bob Rosen, Springfield Blvd & 56th Ave., Bayside, 11364, (212) 631-6233

NORTH CAROLINA

TRS-80 Users' Group of Charlotte, Bill Hardin, 6613 Summerlin Pl., Charlotte, 28226, (704) 542-8959

Raleigh Color Computer Club, David Roper, P.O. Box 681, Garner, 27529

OHIO

CoCo Club of Youngstown, Timothy McFadden, P.O. Box 478, Canfield, 44406, (216) 788-4218

Columbus & Central Ohio Color Computer Club, D.E. Sparrow, 19 E.N. Broadway, Columbus, 43214, (614) 268-5366

Cincinnati TRS-80 Users Group, R.A. White, 44 Dow Court, Fairfield, 45014

Dayton Area Color Computer Users Group, David R. Barr, 2278 Yorkshire Pl., Kettering, 45419, (513) 293-2228

Dayton CoCo Users' Group, Joseph P. Evans, 609 Applehill Dr., W. Carrollton, 45449

Miami Valley CoCo Club, R. Douglas Wales, Pres., 2065 Le Feure Rd., Troy, 45373

M.U.G. of CoCo—Middletown Users Group, James Carr, Middletown, 45042, (513) 424-6905

Northeastern Ohio (N.E.O.) CoCo Club, Tony Rugue, 527 Malvern Drive, Painsville, 44077, (216) 354-2736

The Cleveland CoConuts, Paul Selig, 20734, Stanford Ave., Fairview Park, 44126, 333-2920

OREGON

Willamette Valley CoCo Users, Brian James, P.O. Box 11468, Eugene, 97440, (503) 687-9286

PENNSYLVANIA

Penn-Jersey Color Computer Club, Jerry Behler, 1231 Walnut St., Allentown, 18102, (215) 253-1238

Pittsburgh Color Group, William Tucker, P.O. Box 351, West Mifflin, 15122, (412) 466-3078

RHODE ISLAND

New England CoCo Nuts P.O. Box 6604, Providence, 02940

SOUTH CAROLINA

Hilton Head Island CoCo Club, Kevin Clark, P.O. Box 6187, Hilton Head Island, 29928, (803) 785-9630

Metropolitan Greenville CoCo Club, Ed Lowe, P.O. Box 6, Gray Court, 29645, (803) 876-3928

Midlands 80 Computer Club, Robert Rose, P.O. Box 7594, Columbia, 29202, (803) 776-4361

Spartanburg County CoCo Club, Dennis Shattuck, 473 Royal Oak Drive, Spartanburg, 29302, (803) 583-3017

TENNESSEE

Chattanooga CoCo Club, Jim Perkins/Jim Cox, P.O. Box 9825, Chattanooga, 37412, (615) 870-2439

Memphis Color Computer Users' Group, Ben Barton, Pres., 4903 Warrington Rd., Memphis, 38118, (901) 795-7075 or 362-5945

TEXAS

CoCo User Group, David Karam, 1809 Dexter, Austin, 78704, (512) 442-6317

International Color Computer Club, Inc., Ronald L. Garrett, Pres., 2101 East Main Street, Henderson, 75652, (214) 657-7834

UTAH

Ogden CoCo, Kathy Rush, 4535 S. 2600 W. Roy, Ogden, 84067

VIRGINIA

Central Virginia Color Computer Club, Lane Lester, 413 Woodland Circle, Lynchburg, 24502, (804) 237-4188

D.C./N. Va. C.C. Club, Jack Darling, 43 Donovan Dr., Alexandria, 22306, (703) 780-6159

WASHINGTON

Northwest Computer Club, Judy Gehman, E. 14012 Cataldo, Spokane, 99216, (509) 928-2169

WEST VIRGINIA

Kanawha Valley Personal Computer Club, Robert L. Vaughn, 1223 Ridge Drive, S. Charleston, 25309, B.B.S. (304) 925-3338 or B.B.S. (304) 345-8280

Mtn. State CoCo Users Group, Donald G. Barber, Jr., P.O. Box 1084, Morgantown 26507, (304) 599-4493

Mt.-O-Bar C.C. Club, Jim Lemaster, Ona, 25545, (304) 743-4752

Blennerhassett CoCo Club, David Greathouse, Rt. 9, Box 119, Parkersburg, 26101

WISCONSIN

Southern Wisconsin CoCo Club, David C. Buehn, P.O. Box 411, Twin Lakes, 53181

CANADA**ALBERTA**

Calgary Color Computer Club, David Logan, 151 Whitelock Place N.E., Calgary, T1Y 4S7

Medley Computer and Electronics Club, P.O. Box 1267, Medley, T4A 2M0

NEW BRUNSWICK

Color Computer Moncton Users Group (CoCo MUG), Leo Allain, 91 Woodland Drive, Moncton, E1E 3C4

NEWFOUNDLAND

Avalon CoCo Club, Mr. A.R. Thompson, Chairman, 10 Foran St., St. John's, A1E4G1

NOVA SCOTIA

Halifax Dartmouth CoCo Users Group, P.O. Box 572, Dartmouth, B2Y 3Y9, (902) 469-3656

ONTARIO

K-W C.C. Club, Peter Karwowski, 23 Hudson Cr., Kitchener, N2B 2V7

International Adventurer's Club, Maurice Dow, 84 Camberley Cres., Brampton, L6V 344

Meadowdale Color Computer Club, Howard Porter, P.O. Box 186, Streetsville, Mississauga, L5M 2B8

Niagara Regional CoCo Club, Harry VanDyke, 7707 Jubilee Drive, Niagra Falls, L2G 7J3

London CoCo Nuts Computer Club, Harry K. Boyce, 180 Concord Road, London, N6G 3H8 (519) 472-7706

QUEBEC

Montreal TRS-80 Users Group, Jacobus P.C. Bagchus, Pres., 1176 Phillips Place, Suite 201, Montreal, H3B 3C8, (514) 861-3488

South Shore CoCo Club, Jacques Bedard, 33 Lisilre, St-Constant, P.Q. J0L 1X0

SASKATCHEWAN

Regina Color Computer Club, Georges Glass, 26 Tweedsmuir Bay, Regina, S4X 2B1, (306) 949-3942

Saskatoon Color Computer Club, Guy Tomashewski, 415-423 Pendency Rd., Saskatoon, S7M 4Z2

MEXICO

Mexico City Color Computer Club, Marcelo Luft, Laja #232, 01900 Mexico D.F., Mexico City, 5-68-78-75

WEST GERMANY

First CoCo Club Hamburg, Theis Klaueberg, OP DESOLT 56, 2000 Hamburg 65,

new clubs

Editor:

If there are any people in the Glenwood/Alexandria area interested in starting a Color Computer Club, please call me at (612) 278-3580 or write me at Rt. 1 Box T-7, 56383.

The Rainbow is an excellent magazine. Keep up the good work.

*Rogers George IV
Terrace, MN*

Are you interested in forming a Color Computer/OS-9 Users group in the Ames area? Please give me a call or write me. Maybe we can all get something organized. Contact me at 651 Pammel Court, 50010; phone (515) 292-2712.

*Tim Harris
Ames, IA*

We are currently forming a users group in the Jefferson City-Central Missouri area. Anyone interested in participating may contact me at 900 Rock Hill Road, 65101 or call (314) 893-2789.

*Wayne E. Johnson
Jefferson City, MO*

I am looking for CoCo users in the Bergen County area. My address is 553 Huckleberry Lane, 07417.

*Joel Makowsky
Franklin Lakes, NJ*

I would like to announce a Color Computer Club for kids (teens). I am in the Grand Island area of western New York. For more information please contact me at 1897 Bedell Road, or phone 773-5371.

*Ricky Susfalk
Grand Island, NY*

The Adirondack C.C. Club publishes a newsletter every three months. The cost is \$4 a year. Please write for a sample newsletter and entrance form. Club membership is still free. Box 365, 12814.

*Bill Edwards
Bolton Landing, NY*

The Northern Illinois Color Computer Club (NICCC) meets every fourth Tuesday at the Des Plaines Public Library.

For more information contact me at 580 Milton Lane, 60194. (312) 885-2573.

*Richard Ekstrom
Hoffman Estates, IL*

We would like to announce the existence of the Niagara Regional CoCo Club, regrouping Color Computer users of the Niagara Peninsula in Ontario, Canada. We meet every second Sunday of each month in the cafeteria of Confederation High School (670 Tanguay Ave., Welland) between 1 and 4 p.m. We are about 80 members hoping to meet other Color Computerists. Anyone interested should contact Gerry Chamberland at (416) 357-3462 or Gilles Prescott at (416) 734-3529 or write us at 7707 Jubilee Dr., Niagara Falls, L2G 7J3.

*Gilles Prescott
Niagara Peninsula, Ontario*

I would like to inform your readers of the formation of a CoCo Club on the South Shore of Montreal. We meet on the second and fourth Sundays of each month at 1 p.m. Our principle aim is mutual assistance and to this end some of our members even translate into French existing programs for members' ease of use and benefit. For further information contact Jacques Bedard, 33

Lisiere, St—Constant, P.Q. J0L 1X0, telephone number (514) 632-4311.

*L. D. Villeneuve
Greenfield Park, P.Q.*

We are pleased to announce the formation of our user group — Color Computer Moncton Users Group (CoCoMUG) in Canada. We would like to hear from as many users groups as possible and welcome any assistance offered us. Contact us at CoCoMUG, 91 Woodland Dr., E1E 3C4.

*Leo Allain, Pres.
Moncton, N.B.*

We have a small local users group in the Walnut Creek-Concord area called the "Contra Costa County Color Computer Conspiracy" . . . the COSIXers. Interested people can contact me for additional information at 1754 Kasba Court, 94518, 825-9939.

*T. J. Morris
Concord, CA*

We would like to inform readers that a TRS-80/TDP 100 Color Computer Club is now being formed in Salinas, Calif. We need more members very much. For further information contact me at (408) 422-9475.

*Larry Livingston
Salinas, CA*

I would like to announce the formation of a Color Computer Club in the Pinellas/Hillsborough county area of Florida. The Color Force is the group's name. We also run a public bulletin board, Colorama of Dunedin Realty. If you have any questions or would like to join The Color Force, call Reid Baker (vice president) at (813) 733-5095. Or, call the BBS at (813) 733-2415. We prefer that you call voice or write: The Color Force, c/o Dunedin Realty, 503 South Paula Drive, 33528.

*Emery Mandel
Dunedin, FL*

We've started a CoCo Club called the Alachua CoCo Club and our first meeting drew about 30 people with very little advance advertisement. For more information contact us: George McDonald (904) 462-5392, or Albert Kirk (904) 377-6285. We meet at 555 SE 5th Ave., 32601 on the second Tuesday of every month at 7 p.m.

*Sal Capozzi
Gainesville, FL*

I am happy to announce the official beginning of the Evansville CoCo Club. Anyone interested please call or write Box 462, 47633, (812) 874-2210.

*Brian Broyles
Poseyville, IN*

Please publish the existence of the Greater Boston Super Color Users Group. We meet every second Thursday of the month at Sylvia Technical School, 63 Second Ave., Waltham, Mass. We publish a monthly newsletter, the SCUGBUG. CoCo users may contact John DeBay, 100 Central Street, Waltham, Mass., 02154, for more information.

*Robert Biamonte
Burlington, MA*

I am starting a club in northern Michigan. There will be monthly newsletters and meetings; and there will hopefully be help and information for everyone. If interested please call or write, Your Computer Services, 670 Liegl Dr., 49706, (616) 347-0607.

*Dennis Hoshield
Alanson, MI*

I would like to announce the first New York Metropolitan Area Color Computer Club, centrally located (near the Long Island Expressway) for CoCo owners residing in Long Island, Queens and Brooklyn. The Queensboro Color Computer Club meets in Room T18 of the Technology Building of Queensboro Community College. As an added attraction, the room is fully equipped with 18 full blown 64K Disk systems with monitors and printers. Meetings are the first Saturday of every month at 10 a.m. Meeting notices are posted on the Rainbow Connection BBS.

*Bob Rosen
Woodhaven, NY*

I wish to announce the reorganization of the Albuquerque Color Computer Club, a part of the New Mexico Computer Society. We meet every other Tuesday at 7 p.m.; meetings last two to three hours. There are no dues unless you join the computer society itself, which we prefer that long-time members do eventually. For more information contact Steve Maggs at 293-8567 or Anthony Segura at 821-5876.

*Stephen Schenkel
Albuquerque, NM*

I would like to inform your readers of the formation of the Piedmont Color Computer Users Group here in Lincoln, N.C.

We have been meeting since August and now have 35 members. Meetings are held the second Sunday of each month at 2 p.m. at the local Commodore dealer's store, so inquiries should be sent to us at the following address: Piedmont Color Computer Users Group, c/o Computers & Programming, 111 S. Academy St., 28092.

*Ernest Withers
Lincolnton, NC*

Is anyone interested in putting a CoCo Club together here in Victoria, B.C.? Please write me at 973 Weaner Pl., V9C 3C2.

*Darla Ellis
Victoria, British Columbia*

I'm trying to form a users group in the Athabasca area. This is for both CoCo and Apples. Anyone interested should contact me at 675-9295 or write Box 1594, T0G 0B0.

*Dooley Nelson
Athabasca, Alberta*

I would like to join a CoCo Club in my area; Ottawa-Hull (Canada). My address is 14 Avenue D'Auvergne, J8T 1H1.

*Mireille Poulin
Touraine, Quebec*

I'd like to start a users group in the Stockton-San Joaquin Valley. Anyone interested call me at (209) 951-3938 or write: S.P.M., P.O. Box 99024, 95209.

Also, keep up the good work at *the Rainbow*. It's a wealth of information for such a low price!

*Steven Paul Moreno
Stockton, CA*

A new Color Computer Club in the northern Virginia area meets monthly in the community room of the Manassas Public Library, Manassas, Va.

The club is for all Color Computer users, from beginners to advanced. Regular classes in assembly language and BASIC are in progress, and several members are informally meeting as an OS-9 SIG.

Anyone wishing more information about upcoming meeting dates, times and special programs should contact the vice president, Allan Weinstein, (703) 361-2293 (in the Manassas area) or me (703) 820-0658 (in the greater Washington, D.C. dialing area).

*Logan McMinn
Falls Church, VA*

I would like to tell your readers about our computer club, the "Triad Coconuts." We have about 20 members from the greater triad area and we have room for all those new CoCo owners. For more information call or write to: 4984 Woodsboro Lane, 27105, (804) 767-6700.

*Terry May
Winston Salem, NC*

On behalf of the other members of the Eric TRS-80 User's Group, I would like to inform your readership of the recent formation of our computer club. We have monthly meetings, a club newsletter, a software library of public domain programs and a wide

variety of other interests. Although the vast majority of our membership are CoCo owners, we are open to all TRS-80 users.

Anyone interested in our User's Group may write or call our club president: 320 Maryland Ave., 16505, (814) 456-4786.

*Tom Kuklinski
Erie, PA*

Please list in your magazine the existence of CAPATUG (Capital Area TRS-80 Users Group). Our meetings are held the first Thursday of each month at the Fairview Township Fire House in New Cumberland, Penn. All are invited to attend and participate. For more information call the CAPATUG Bulletin Board at (717) 774-6543 or write to CAPATUG, 340 Lewisberry Rd., 17070.

*David Morrow
New Cumberland, PA*

The Kanawha Valley Personal Computer Club welcomes computer users having all types of equipment. Meetings are on the second and fourth Tuesday of each month at the Seventh Day Adventist Church, 622 Kanawha Boulevard, West, starting at 7 p.m. The first Tuesday features user group activities and the second Tuesday has tutor-

ial sessions. CoCo users are the majority of the nearly 100 members.

*Sharon J. Graff
S. Charleston, WV*

We are a non-profit organization called the North Island CoCo Club. Our mailing address is P.O. Box 1740, V0N 2P0. We are a TRS-80 club. We have a software, reading, and hardware library. If anyone is interested please write or phone (604) 949-6761.

*Ann Marie MacKay
Port Hardy, B.C.*

I would like to inform your readers of the London CoCoNuts Computer Club. The meetings are held at 7 p.m. at Fanshawe College. The club meets the last Monday of each month. For further information contact (519) 471-1345, 180 Concord Road, N6G 3H8.

*Harry Boyce
London, Ontario*

A few of us from Down Under would love to correspond with the CoCo Users of America. We have Color Computers over here, not Dragons as some have thought, and are eager to bridge a gap that has developed between our countries. We wouldn't mind

some hints on club development, either. Contact could be made by sending correspondence to: P.O. Box 506, 2760.

*CoCo Colyteens
St. Mary's, N.S.W., Australia*

We are announcing a CoCo Club called Blacktown City Color Computer Users Group. For correspondence contact me at 27 Alford St., Blacktown, N.S.W., 2148, (02) 626-9936.

*Keith Gallagher
Blacktown City, Australia*

I am very interested in corresponding with an American CoCo Club, because in Germany there are not very many CoCo users. If you are interested, write to me (by airmail): First CoCo Club Hamburg, OP Desolt 56, 2000 Hamburg 62.

*Theis Klauberg
Bültenmoor 43, West Germany*

I would like to hear from anyone in this area interested in forming a CoCo User's Group. Please call me at 795-6211 or write to me at 320 Old Silo Road, 06477.

*James J. Pino
Orange, CT*

PRINT #-2,

(continued from Page 14)

even if the only alternative is to have to lose?

I would welcome any input you might have on this issue as a letter to the editor. I think we might see some interesting and thought-provoking positions on the subject.

We are in the process of planning what has become one of the more interesting projects of our year — our annual Anniversary issue. This is the July issue and it will be *the Rainbow's* third birthday this time around. As usual, we have planned a surprise. And, as is usual with surprises, we aren't going to tell you what it is.

But, we think you'll like what we have planned and, even if not, you will certainly agree that it will be unique.

By way of finally for this month, I have some good news for those of you who have been harried trying to call us on the telephone. After watching our "line busy" lights burn on all lines more often than not, I finally broke down and ordered more lines for *the Rainbow*.

It should make things easier for you to reach us and, if there is anything that we can do to help, I hope you will. The number remains unchanged: (502) 228-4492.

— Lonnie Falk

See Page 145

CO-812

- a lot of software for a little silver

(continued from Page 29)

It was asked of Mr. Rosen how he had all *Rainbow* programs on his bulletin board available for downloading, and he replied that his was the official *Rainbow* bulletin board, and these programs were there by arrangement with *Rainbow*.

"The seminar did a good job of providing a look at the immense scope of the theft problem, and gave a lot of people a chance to get a lot of gripes off their chest."

A much questioned subject was the practice of putting protection on a tape or disk at all, and whether or not there was evidence either way to indicate if this was an effective strategy to limit piracy. Searby said that Computerware had a policy of not protecting their utilities and applications, but felt that the protection of games was necessary. He admitted that no hard facts were available either way.

Goodman took a position in support of education of the consumer as the best way to combat piracy, and a member of the audience said he thought that protection or no protection should be a part of the advertised description of the

product, so the user would know ahead of time what he was getting.

Along that line, a question was raised about the practice of some software vendors who put a contract in the software package. This contract must be signed by the customer and returned before support can be obtained from the vendor. He pointed out one case of a very expensive program, *Pirator*, which would not work normally until the contract had been signed and returned, at which time the company would provide a "patch" to correct the abnormal operation. The customer pointed out that he didn't know about this additional contract requirement until the vendor already had his money, and he felt that the buyer has a right to be put on notice by the vendor in a situation like this. Searby agreed, and said that his company tried to make mention of things like this in their catalog, but that space often did not permit it in magazine advertising.

In general, the seminar did a good job of providing a look at the immense scope of the theft problem, and gave a lot of people a chance to get a lot of gripes off their chest. It did not provide much in the way of ideas for solutions, however, and I think that may well be because nobody has any real solution. It was pointed out that the biggest problem isn't the professional thief, it's the private individual multiplied by all the other individuals all over the world who don't see the clear fact that software piracy is stealing, even if you call it by nice names like trading. It is this rationalization that is at the core of the trouble.

Our thanks to the people on the panel for putting themselves on the firing line in what shapes up to be one of the tough issues of the next few years in this industry.

AVAILABLE NOW DRAGON USER



To make the most of your new Dragon microcomputer from Dragon-Tano, you need *Dragon User* — the international, independent magazine for Dragon owners.

- Each issue of *Dragon User* contains:
- reviews of the latest software
 - programming advice for beginners
 - hardware projects

- program listings covering games and utilities
- reviews of Dragon peripherals and add-ons
- technical advisory service
- programming articles for users

The Dragon microcomputer was launched in the UK last year. Since then we have developed a knowledge and mastery of the machine's abilities. You can benefit from our experience by subscribing to *Dragon User*, which is expanding its coverage to include all US developments.

To make sure that you receive a copy of *Dragon User* regularly, subscribe direct to us. This costs only \$29.95 for 12 issues airspeeded to you — or take advantage of our special offer to long-term subscribers. Individual copies of the magazine can be obtained from your Dragon dealer.

Subscription order form. Receive a free book and save money by taking out a long-term subscription — a two-year subscription saves 10%, a three-year subscription saves 20%. In addition, long-term subscribers will receive a free copy of either *The Working Dragon* or *Dragon Games Master*. Please send a check, made payable to *Dragon User*, with this form. Start my subscription from the following issue

Name

Address

Signed

Date

Subscription rates US and Canada airspeeded US\$29.95 for 12 issues/1 year
 US\$53.90 for 24 issues US\$71.90 for 36 issues Send this form to
Dragon User, % Business Press International, 205 E. 42nd St., New York, NY 10017

WAR GAMES!

WE CHALLENGE YOU!

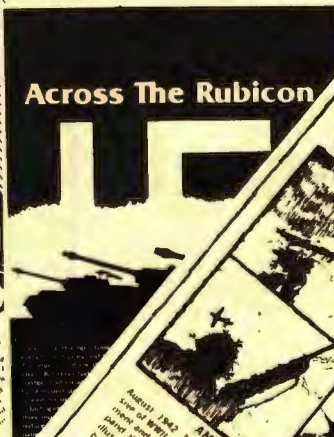
WAR GAMES!

ACROSS THE RUBICON 32K CASSETTE \$24.95.

WATERLOO! 32K CASSETTE \$24.95

KAMIKAZE 32K CASSETTE \$24.95

*** NEW THIS MONTH! 32K EXT CASSETTE \$24.95**



BOMBER COMMAND 16K EXT CASSETTE \$22.95

ARK ROYAL provides three types of game: The Strategy Wargame, Strategy Arcade and Arcade games. DEALER DISCOUNT AND COLOR DISPLAY PACKAGING AVAILABLE. WE CARRY UTILITY SOFTWARE, TOO!

OTHER ARK ROYAL GAMES...

GALACTIC TAIPAN 32K EXT Battle storms, pirates and high taxes in hopes of making a profit in the galaxy. CASSETTE...\$24.95.

MISSION EMPIRE 32K EXT cass or disk. Starting with one planet, incomplete intelligence and limited resources, you must form alliances, build armies and conquer the galaxy. Game save. Cass or Disk version on Cassette...\$24.95.

STARBLAZER 32K EXT During your absence, the SPECTRUM galaxy has been overrun by the draconic xyclons. Now you command the only Starship left to retaliate. CASSETTE...\$24.95.

LASER SUBS 16K (Suited for kids, 12 and under). Hi-res graphics. Lots of fun — kids love it! Your destroyer discovers a fleet of enemy's laser-firing subs heading towards the surface. Destroy them with depth charges before they blast you apart. Joysticks. CASSETTE... **(SPECIAL) \$10.00**

CRYSLON — 32K 3-D graphics, joysticks. Player commands the remote-controlled defense missiles of the planet Cryslon. Your mission — defend the planet's cities from invading aliens with powerful lasers. CASSETTE... **(SPECIAL) \$10.00**

**P. O. Box 14806
Jacksonville, FL 32238
904 777-1543**

Prices on All games include shipping. Florida Resident add 5% tax.

Orders are shipped the day they are received regardless of check or money order. Send no cash, please. We pay shipping on all prepaid orders. On C.O.D.'s, customer pays charges No bankcard sales. We have enough paperwork already.

All games strategy oriented, graphically portrayed and guaranteed from defect and boredom. For DISK version add \$3.00. No mail delays with personal checks. State system with order.

All Programs require Color ComPuter™ (Tandy Corp) or TDF System 100 ComPuter™ (RCA)

A Primer On Printers

By Tom Nelson
Rainbow Contributing Editor

I'm taking some time off the legal beat for a bit to write a little something for those of you who are considering buying your first printer, or who have just purchased a printer. Those of you who own a printer already know it, and those of you who don't own a printer yet I'll tell: Printer manuals are a poor lot. They are written for the person with a Ph.D. in computer science who has the time and inclination to study a new computer language. Almost none of the manuals contain sufficient information even for the Ph.D. to use the printer! With such manuals it's a miracle that the rest of us can make our printers work at all.

With this and a subsequent article I hope to dispell some of the mystery about what the world of printers is like and how you can make your CoCo and your printer work together. Let's start with a discussion about printers.

Printers can be divided up in two ways. One way is to distinguish between dot matrix printers and letter quality printers; the other way is to divide the world of printers up into "dumb" printers versus "smart" printers. The first way distinguishes the end product produced by the printer; the second way distinguishes how the end product is produced.

Letter quality printers are "impact" printers, where a complete character is struck against the paper, making a high-quality, attractive typeface. Dot matrix printers, on the other hand, print characters by composing each character out of several dots. The printer is programmed to strike several pins to make each character. The final product from a dot matrix printer ranges from very poor quality to very high, nearly letter quality. As time goes on, the quality of dot matrix printers is steadily increasing.

(Tom Nelson was formerly a special assistant attorney general for the State of Minnesota. He currently is general counsel for Softlaw Corporation, makers of the VIP Library™ and of ColorQuest™ games.)

Just to be complete, you should know that another type of printer is now on the horizon: the ink jet printer. This type of printer produces letter quality printing with a jet of ink rather than by striking paper. These printers should produce a very nice product and will be extremely desirable—once the price comes down out of the heavens!

Printers can also be divided up into dumb and smart printers. Smart printers are printers with the built-in abilities to do any number of tasks in addition to simply printing characters of text. The more the printer can do the smarter it is. If it can't do anything, or if it can only do a few things it is called a dumb printer. The dot matrix character generation method used by dot matrix printers has made them very versatile for creating many different print fonts and styles, such as elongated text or compressed text, italics and so on. Thus, dot matrix printers have increasingly been made very smart to do all these things. This is not to say that letter quality printers are not smart. Although they do not have the versatility allowed by the dot matrix method, they do allow you to change the daisy wheel or thimble for any of a score or more different type faces. Anyway, there are other things that make a printer smart, such as automatic underlining, superscripts, backspacing, proportional spacing, and total paper movement control. Smart printers of both kind give the user virtually total control over such items.

When you go looking for a printer you want to find one in your price range that gives the quality of print you need and has the built-in features you constantly use. Of course, the more you can pay the more you will get. Still, even in a single price range there is a great difference in features offered. There are some very dumb printers selling for the same price as quite smart printers of equal or better quality of print.

In the lower price range you are likely to look at printers which do not offer lowercase characters, or do not offer descending lowercase characters, that is, the lowercase "p," "y," "j" and "q" do not descend below the line, but are scrunched to fit on the line. With lower priced printers also

be sure to check if they have the ability to underline, backspace or do superscripts or subscripts—at all. Many do not, much to the dismay of the purchaser.

Matching Your Software With Your Printer

Once you have your printer, the next task is understanding how to make your software run your printer. Very few programs can fully use every feature offered by every printer. For the most part this is because of the design of the word processor or other program. Often it is a limitation imposed by the need for totally versatile software. Some features are printer specific, for example, using graphics. This means that with some features, each printer uses its own method to perform those features. The program would have to be tailored to each printer in order to allow each printer to perform that feature. With the hundreds of different types of printers out there this is a hopeless task. Most programs therefore elect either to work with a specific printer, or to provide the means for the user to customize the program so that it can use that feature. Some features are so troublesome that general programs do not support them at all and a special program must be purchased to do the task.

Even though software cannot be expected to use every feature of your printer, you still want software that can use every feature of your printer feasible. What follows is a discussion to help you better understand how your printer is controlled.

The Structure of Information

The basis for understanding how printers work is knowledge of the ASCII system. ASCII is a standard for symbols used in computer communications, the acronym standing

for American Standard Code for Information Interchange. It provides the building blocks for almost all communications. To understand it better you first must understand a little about how computers store and use information.

The most basic thing which is necessary for communication between different computers and printer is a standard system for representing data. The printer must know what the computer means in computerese.

"All computers think and talk with numbers; people, however, communicate with symbols. The designers of computers have devised a means for our symbols to be uniformly used by computers so that computers can communicate."

Computers "think" with electricity, and this limits them to two states: off and on. All data in the computer is stored as binary digits ("bits") which are off or on. This feature makes binary arithmetic the basis for manipulating data in computers. Eight bit computers deal with data in eight-bit chunks called "bytes." The sequence of eight bits per byte allows up to 256 numeric combinations of ones and zeros per byte; 256 has thus become a standard number of things allowed by computers.

These 256 combinations must be used for storing and

STOCK & FUND INVESTING

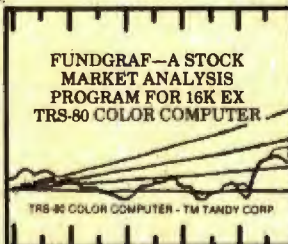
with the

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.



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. G
118 WOODSHIRE DRIVE
PARKERSBURG, WV 26101

Meet the direct-connect Signalman MODEM

Meet the direct-connect **SIGNALMAN MODEM** designed for use with RS-232C type interface... the smallest, lightest, most compact modem available today. Its long life 9-volt internal battery and exclusive audible Carrier Detect Signal allow you to install the SIGNALMAN anywhere... out of the way, and out of sight. Now, there's no need for messy cables, and no need to look at a LED to verify carrier.

Anchor's SIGNALMAN is designed to operate only with modular telephones having plug-in handsets. Bell TRMLINE™ type telephones which combine handset and dial are not suitable.

Your SIGNALMAN transmits both voice and data over all common telephone lines, and is fully compatible with Bell 103 modems - putting your computer in instant communications with thousands of other computers. And when you're in the data position, your SIGNALMAN automatically changes from ORIGINATE to ANSWER and back again as the need arises - ending all that confusion.

Anchor Automation has taken the fuss out of communications. For business or fun, SIGNALMAN is the ideal modem.

\$89.95 A.C. Adapter \$8.95

FREE...
 with each modem
\$100. VALUE
 Subscription to
 The SOURCE +
 One Hour Hook-Up
 Time.

COLORCOM/E

SMART TERMINAL PACKAGE

- Complete Upload and Download Support
- Online Cassette/Disk Reads and Writes
- 110, 300, 600, or 1200 baud
- Full or Half Duplex
- Preset Data Before Calling (Stores \$F's)
- Offline and Online Scrolling
- ROM Pack or Disk

- Automatic Capture of Files
- Send All 127 ASCII Characters from Keyboard
- Word Mode (Eliminates split Words)
- 7 or 8 Data Bits (including Graphics Support)
- Efficient Data Storage 512-4096-Bytes Memory
- 100% Compatible with Rainbow Connector (RS-232C)
- Disk Version-ask and 1/2 Disk version now available!

COLOR TERM + PLUS +
\$29.95 Now even more + PLUS + features than before!!!
Star and Registered!
(TAPE) An Intelligent Terminal Program For The Color Computer or TDP 100.

COLORCOM/E \$49.95

SOFTWARE PLUS

6201 C Greenback Lane
 Citrus Heights, CA 95610

Phone
 (916) 726-8793

handling all commands, instructions and data in your computer. Obviously, there are more than 256 different commands, instructions and forms of data. The computer uses different hardware and software to handle different tasks in 256 unit chunks.

One of the most important of these chunks is used to define how data is represented, i.e., the letters of the alphabet, punctuation, numbers and graphic characters, and 256 separate types of data are allowed. Each unit of data is assigned a number so that the computer can deal with it as a discrete unit.

Other 256 unit chunks are used for machine language instructions, tokenized BASIC commands, locations and the like. The interpretation of the exact correlation of each number in the computer, from 1 to 256, depends on the hardware and software using the number.

The chunk to which we will devote most attention will be those 256 units which are assigned to the data symbols. It is a proper understanding of these symbols which is most crucial to useful data communications.

The ASCII System

All computers think and talk with numbers; people, however, communicate with symbols. The designers of computers have devised a means for our symbols to be uniformly used by computers so that computers can communicate. As noted above, this system has the acronym ASCII, standing for American Standard Code for Information Interchange.

The ASCII system is a very limited standard. Of the 256 possible symbols which could be used for representing data, the ASCII standard covers only the first 128. You can find ASCII charts just about everywhere, including in printer manuals, your BASIC manuals, VIP library manuals, and so on. The ASCII chart contains a list of symbols with corresponding numbers (numeric equivalents) from 0 to 128, and sometimes even more information. The numeric equivalents for the ASCII symbols have been randomly assigned by the people who created the standard.

Of the standard 128 ASCII symbols the first 32 symbols are called control codes; the remaining 96 symbols are the letters of the alphabet, in upper- and lowercase, numbers, punctuation and other standard keyboard symbols. Let's discuss each of these.

First the 96 ASCII symbols, represented by the decimal numbers from 32 to 127. These symbols, from the space character (32) to the rubout character (127) are standard with every system adhering to ASCII, which is nearly every type of computer and printer made. These symbols comprise the alphabet, numbers, etc. No matter the computer, the same symbol will always be assigned the same number. A space will always be 32, "A" will always be 65, and so on. This standardization allows free transfer of data between computers or between computer and printer since each device will interpret the numbers to be the same characters.

The control characters are different. Control characters, covering numbers 0 through 31, are symbols used to control display and communication functions in computers and print functions in printers. Control characters cover such things as the "bell" character to sound a beep, the formfeed character, linefeeds, and escape. Although they have been assigned standard names, they do not always have the same function in all computers or printers. Thus, control characters must be used carefully.

What of the remaining 128 symbols from 128 to 255? These symbols are not standardized yet, although there is great likelihood that they will be in the near future. Now,

each computer, printer or other device uses these symbols for different things. Your computer uses them for screen representation of its graphics symbols which you probably use in your programs. Your printer may use them for a special character set, such as copyright and other legal symbols or the Japanese alphabet. Because of this lack of standardization, it is very certain that what will be shown on the screen when you generate decimal 128 to 255 and what will be printed when you send your file to the printer will be different. You must, therefore, be sure to refer to your printer manual to see what you will be printing when you generate one of these numeric equivalents.

From Keyboard to Memory

The ASCII system is used by most word processors and other editors to handle all your text. This is essential so that you can use other ASCII compatible programs to manipulate your files, such as a spelling checker or a terminal program. Without a standard system, you couldn't even spell check a letter.

"If you have your buffer chock full of text you want to have printed, your buffer will contain oodles of bytes, each containing a number from decimal 0 to 255 representing an individual ASCII symbol."

So, what exactly happens when you type in letters? When you press a key on the keyboard, what you are really doing is putting a number into the buffer, that number being the numeric equivalent of the ASCII symbol you have generated—the number you see next to the symbol on the ASCII chart. The keyboard is an ASCII device and so is the screen generator. Each is ASCII compatible so that each reacts the same way to numeric equivalents of ASCII symbols. Manufacturers wishing to be compatible with ASCII make sure that the numbers used in their systems always result in the same ASCII symbols.

I'll show you what I mean. When you press the "7" key, you have generated the ASCII symbol 7, which is represented on the screen as a 7. How is the ASCII symbol 7 represented in your buffer? The numeric equivalent for the ASCII symbol for 7 is decimal 55 (37 hex). (Actually the buffer contains the binary equivalent of the decimal number 55. For convenience I will refer to decimal numbers when referring to buffer contents.) Thus when you press 7, your buffer receives a decimal 55 in the appropriate memory location. Since 7 is itself a number, why isn't it sent to the buffer as a decimal 7? Because the 7 on your keyboard and the 7 on your screen are merely symbols, the ASCII symbol 7 to be precise, and this symbol has been assigned the numeric equivalent of decimal 55 in the ASCII system. Your keyboard is an ASCII device. When you press the ASCII symbol, here 7, its numeric equivalent, here decimal 55, goes marching into your buffer.

Since the numeric equivalent decimal 7 is not the equivalent of the ASCII symbol 7, you might wonder with which symbol it is tied. It is the numeric equivalent of the ASCII symbol "Control G., Control G and its numeric equivalent

decimal 7 are not generated by pressing 7. So, how is it generated? As you can see, there is not a Control G key on the Color Computer to send the decimal 7 to your buffer. The Color Computer, like all other computers, does not have 128 keys to cover all of the "standard" 128 ASCII symbols. Symbols other than those on the keyboard can only be generated in word processors or other programs that allow it. BASIC uses the CHR\$ command to generate ASCII codes not available from the keyboard. VIP Writer and other word processors allow you to generate those ASCII symbols from the keyboard

One more thing should be clarified. Instead of pressing the 7 key to get an ASCII 7, can you get an ASCII 7 by pressing its numeric equivalent 55? No! By pressing the 5 key twice you generate TWO bytes of data for your buffer, both being the numeric equivalent of the ASCII symbol for 5, which is decimal 53 (35 Hex). You can't directly type the numeric equivalents of ASCII symbols in from your keyboard because your keyboard is an ASCII device.

You should now basically understand how ASCII symbols relate to their numeric equivalents. This is important for proper use of your printer since you will have to generate decimal equivalents to implement many printer functions.

From Buffer to Printer

If you have your buffer chock full of text you want to have printed, your buffer will contain oodles of bytes, each containing a number from decimal 0 to 255 representing an individual ASCII symbol. Your printer is also programmed to work with the ASCII system, so when you commence printing, your buffer sends its numbers one by one to the printer. The printer receives the numbers and interprets them for printing.

Many of the numbers, specifically decimal 32 to 127 (the alphabet, etc.), are printed by the printer as their ASCII equivalents. Not all numbers sent to the printer, however, are intended for printing. Take the ordinary space for example. When you press the space bar, you generate the ASCII symbol for space, which ain't much. Into your buffer goes a decimal 32 (20 Hex). When the space goes to the printer, your buffer sends the decimal 32 to the printer. The printer receives the decimal 32, and in response

"Your printer is also programmed to work with the ASCII system, so when you commence printing, your buffer sends its numbers one by one to the printer. The printer receives the numbers and interprets them for printing."

it skips a space during printing. Thus, the decimal equivalent for the ASCII symbol for space does not have the printer "print" anything; instead, decimal 32 commands the printer to do something, i.e., skip a space.

Other ASCII symbols, and their numeric equivalents, also serve as commands to the printer. Recall that the ASCII symbols from 0 to 31 are called control symbols. These symbols were designed to be used to control functions such as turning on or off underlining, superscripts, subscripts, and different types faces. With few exceptions, smart printer manufacturers have taken these control symbols and adopted them to

control certain functions within the printer. They are called control codes. This is great! By generating these control codes and putting them in your buffer you can send them to the printer while printing and control the printer functions! Now for the bad part: Although the numeric equivalents will always bring forth the same ASCII symbol, printer manufacturers do not use the same ASCII symbol and its numeric equivalent for the same printer function. This lack of uniformity requires that you carefully read your printer manual to see what the proper numeric equivalents are to implement the desired functions. This lack of standardization also stops anyone from supplying a chart showing how to uniformly affect printer functions.

A look at a typical smart printer shows that the user may choose from normal, elongated, compressed and other print modes and fonts, not to mention using superscripts, graphics and special character sets that the printer provides. To implement these functions requires that the printer be sent the proper control codes. The printer manual for your printer should have a control code summary chart which tells you which control codes will implement which functions. The chart should list the functions, and in columns next to the functions give the decimal and/or hexadecimal equivalents for the ASCII Control symbol which will implement the function. It is from this chart that you derive the control codes to use to make your printer dance.

Reading these charts can be tricky, especially since they are written by "hex heads" for hex heads. Next month I'll annotate a control code summary to help you understand what each control code is for and how to use it. I'll also explain the common printer practices to put fun back into getting your thoughts on paper.



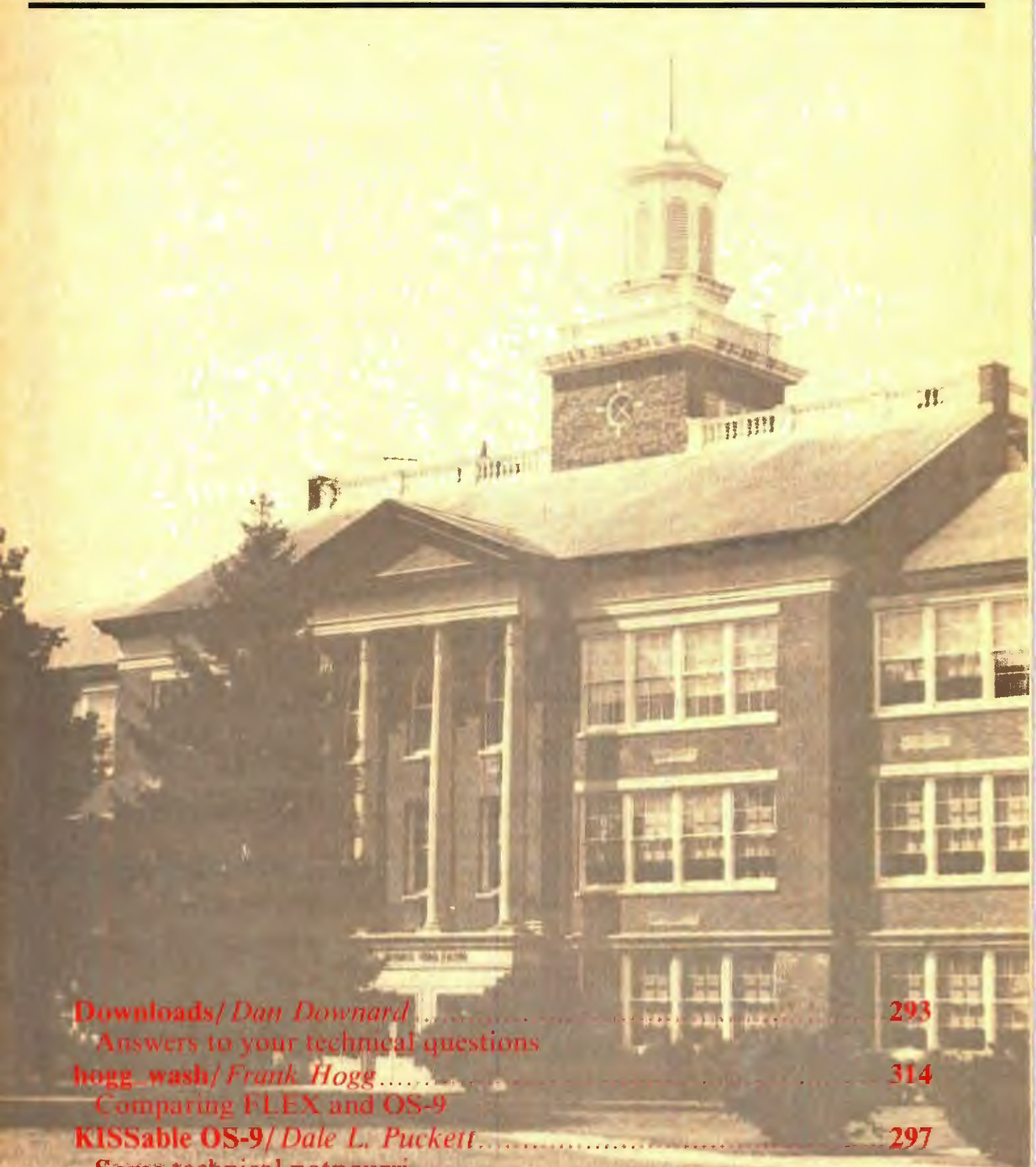
LOCKING DISKETTE STORAGE SYSTEM

**HOLDS 70 MINI-DISKETTES
A LOCKING STORAGE SYSTEM FOR 5 1/4"
DISKETTES, INCLUDES A HINGED LID, TWO
BUILT-IN CARRYING HANDLES. COMPLETE WITH
INTERIOR DIVIDERS, TWO KEYS. INJECTION
MOLDED OF HIGH IMPACT PLASTIC.**

**\$24.95 + \$2.00 S/H
MARYLAND RESIDENTS ADD 5% SALES TAX**

**DISK-HAVEN PRODUCTS
P.O. BOX 443
COCKEYSVILLE, MD 21030**

RAINBOW TECH



Downloads/ Dan Downard	293
Answers to your technical questions	
hogg_wash/ Frank Hogg	314
Comparing FLEX and OS-9	
KISSable OS-9/ Dale L. Puckett	297
Some technical potpourri	

By Dan Downard
Rainbow Technical Editor

Some Floating Pointers On Numerical Functions

• I use assembly language quite often. I know that you can add or subtract 1, 2, 3... from any of the registers, but what if you need to add 1.8 or 1.456? How do you divide two numbers like 45/12 and get 3.75 instead of 3? I'm trying to write a program to duplicate Extended BASIC's LINE(X,Y)-(XX,YY), PSET command and I need to work with fractions as well as whole numbers. Any help would be appreciated.

Harry L. Perkins, III
Norfolk, VA

The following routines in the BASIC ROMs are responsible for all math functions, Harry.

- \$B9B9 - Floating point subtract
FPAC1=(X)-FPAC1
- \$B9C2 - Floating point add
FPAC1=(X)+FPAC1
- \$BACA - Floating point multiply
FPAC1=(X)*FPAC1
- \$BB8F - Floating point divide
FPAC1=(X)/FPAC1

FPAC stands for Floating Point Accumulator. There are actually two (FPAC1 and FPAC2) memory locations reserved for these six-byte values. FPAC1 is located at \$4F-\$54. FPAC2 is located at \$5C-\$61.

Each floating point number has an exponent, a 32-bit mantissa and a sign. The exponent has \$80 added to it. The mantissa is shifted by the number of bits specified by the exponent. The last bit is the sign bit. Remember that you are dealing with binary numbers.

These routines are accessed by loading the X-register with the address of a five-byte value (X). The subroutine at \$BC14 is called to move (X) to FPAC1. Then, you call the desired math routine. Call \$BC35 to move FPAC1 back to (X).

I would suggest that if you plan to use these routines for anything but experimentation, it would be wise to obtain a disassembly of BASIC and examine the routines from \$B9B9 to \$BC5E in detail.

Another suggestion is to obtain a copy of TRS-80 Color Computer Assembly Language Programming (RS Cat. No. 62-2077). Math subroutines are covered in several chapters.

Try adding 2+2. If it's somewhere close to 4, you're on the right track.

(Dan Downard is an electrical engineer and has been involved in electronics for 24 years through ham radio [K4KWT]. His interest in computers began about five years ago and he has built several 68XX systems.)

Tape To Disk Transfer

• I have the Super Color Writer II which I love. I have the ROM Pack version. If I got into disks, how could I save letters and files to disk like I can to tape. I know about the Multi-Pack Interface from Radio Shack, but I thought when you switched from one to another, you disconnected all but the port you were using. However, in the November issue of the Rainbow, in the review of the Voice Pak by Bruce Rothermel, he mentions that by putting the disk controller in slot four, and the voice in slot three, you could run the disk and access the Voice Pak. Please help. I spent \$90 on the ROM Pack version and would hate to turn around and buy the disk version of SCWII.

Steve Hewitt
Leeton, MO

We know of no easy way to solve your dilemma, Steve, other than buying the disk version of the program. Since disk I/O is a different ball game than tape, new routines are necessary for storing programs.

Most disk-based word processors have tape I/O routines in addition to disk, so it should be no problem to transfer any of your existing files. Another approach would be to use one of several commercial programs on the market for tape-to-disk transfer of data. As long as it's in ASCII, you're okay.

Cable Talk

• I have several questions to ask you that will change my computing hobby. Here they are:

- 1) What do I need when I buy a Hayes Smart Modem II, 1200 Baud, for connecting it to my CoCo 2-64K?
- 2) Is this the best modem suited for me? I live in Mexico, and the telephone line reception is not as good as in the USA on international calls. (I say international calls, because these are the calls I will make most often because that is where the major bulletin board systems are.)
- 3) The telephone system in Mexico is rotary, not digital as in the USA. Is this a problem? If so, how can it be solved?
- 4) Which would be the best modem for CoCo with regard to price and quality?
- 5) Do I need disks, or is a cassette-based system sufficient for running a modem?

Marcelo Luft
Mexico

To connect your Hayes Modem to the CoCo, Marcelo, all you need as far as hardware is a cable obtainable from your local

Radio Shack dealer. Ask for Cat. No. 26-3014. It is called a Color Computer to RS-232C Interface Cable. You may want to make your own per the following instructions:

Connectors:

CoCo	Modem
4 pin DIN	DB25P

Connections:

CoCo	Modem
Pin 1	to Pin 8
Pin 2	to Pin 2
Pin 3	to Pin 7
Pin 4	to Pin 3

After you get everything working on the hardware end you will need software. Look through the ads for terminal software. There are programs available for both tape and disk. Both work equally well.

The Hayes Modem you are referring to has the ability to use both tone and pulse dialing, so there should be no problems with the rotary dial system. Good luck and, after buying all this, I hope you have enough left to pay your phone bills.

Clearing Up Dean's Problem

• When I received my copy of Rainbow On Tape for the month of December, I CLOAD-ed the program Creator and was amazed at what it did. (It offered the ability to type graphic letters in the graphic mode.)

I found that I can make graphs and charts and have the ability to add words to them. All in PMODE4.1. My problem is that I can't print what's on the screen to the printer. I have a 32K Extended BASIC CoCo and also the screen print program made available by Radio Shack. What happens is I load the machine language program, CLEARing 200,15743. After that, I find I don't have enough memory to run the Creator program. I end up with about 3,000 bits of memory.

Is there any way to print what I have on the screen to my printer?

Dean McCauley
Columbia, MD

Dean, the CLEAR200,15743 is for a 16K computer. Since you have 32K, you should CLEAR200,32126. The 32126 sets the top of memory for BASIC from writing over your machine language routine. By the way, 32126 is 15743 plus 16383(16K). Have fun with the Creator.

Puff, A Dragon Conversion

• I have been using a TRS-80 Color Computer (32K RAM) for one year. Many of my friends have a similar computer, a Dragon 32.

In order to adapt their programs to my TRS-80, I need a transformation program for conversion. My question is: How can I load my computer with two programs, one after the other, without erasing the first one?

I think there is a little information to give before loading the first program and before the second one, just like it is used for TRS-80 black/white, but I don't know it.

If you have another solution to this problem could you inform me.

Andre Broccart
Belgium

Try the following, Andre. It is a summary of an article written by Joseph Kolar in the January '84 issue of the Rainbow.

- Step 1 Renumber one of the programs if necessary to insure that line numbers are not duplicated.
- Step 2 CLOAD the program with lower line numbers.
- Step 3 POKE25,PEEK(27)
- Step 4 POKE26,PEEK(28)-2
- Step 5 CLOAD the program with higher line numbers.
- Step 6 With Color BASIC, POKE25,6
With Extended BASIC, POKE25,30
- Step 7 POKE26,1

Another article with a short BASIC program appeared in the October '83 Rainbow titled "Put 'Em Together" by Jorge Mir. This accomplishes the same thing automatically.

With Disk BASIC you can use the MERGE command to do the same thing as long as both programs are in an ASCII format.

Printer Problem

• In regard to Mr. Joe Hadley's letter concerning the use of the TP-10 printer with his "D" board Color Computer, I also have a "D" board that was 4K Color BASIC 1.0. About a year ago I piggybacked 16K chips to accomplish 32K. A few months later I installed Extended BASIC 1.1. Then, and finally to the point, I acquired a TP-10 printer and got nothing but garbage. The problem, however, does not lie with RAM but with the Color BASIC 1.0 ROM. After changing to 1.1 Color BASIC it works like a champ. I hope this helps Mr. Hadley's printer problems.

Larry Craddock
Anadarko, OK

A similar letter was written by Dave Jenkins.

• In reference to the letter in your column of February, 1984, where Joe Hadley was having trouble getting a TP-10 printer to work with his CoCo, I have the same configuration he has, and had the same problem. I confirmed that with a phone call to Mr. Hadley.

The solution is to upgrade to Color BASIC 1.1 or 1.2. This printer (and apparently many if not all the new Radio Shack prin-

ters) will not work with the 1.0 ROM.

The difference, as you probably know, is that the 1.0 version sends a 7-bit word, while later versions send an 8-bit word. These printers require the 8-bit word for graphics. A 7-bit word ends up printing only graphics blocks.

Radio Shack upgraded my ROM for free.
Dave Jenkins
Evansville, IN

Thanks for the info, Dave and Larry. I still recommend using 64K RAMs instead of piggybacking, though. There are several advantages, especially when you upgrade to a disk system.

Baud Rates

• I own a Model I and a CoCo 2. I use a DMP 400 printer for both, but I also have a Model 37 Teletype running at both 110 and 150 Baud. I am using the line feed patch that was in one of your issues but I need two others. One is to be able to add nulls for the carriage return timing, and the other is related to the characters/line of the CoCo 2. It seems that there either is not enough information in the CoCo manual or there is a bug in the ROM. When I poke the location referred to in the manual with the value for fewer characters per line, it won't work. It still prints 132 CPL, the default value.

Paul Eriksen
Newark, DE

The poke you mention in your letter, Paul, does not add a carriage return, but inserts a delay for mechanical printers. The manuals are not very clear on this point. Fear not, the BASIC program that follows should do the trick. You can customize this program as follows:

- Line 250 — change 87 to your Baud rate constant
- Line 260 — change 128 to your required line delay
- Line 270 — change 72 to your desired carriage width.

If a line delay is not required, simply omit line 260 from the listing. At present it's set at about 1/2 second. Raising this number will make it longer, and lowering it will make it shorter.

By the way, the Baud rate constant given is for 600 Baud. For 110 Baud, change line 250 to POKE149,1:POKE150,246. See February '84 Rainbow, Page 24, for a list of many common Baud rate constants.

```
100 'PRINTER DRIVER
110 CLEAR200,32716
120 DATA52,20,246,0,111,193,254
130 DATA38,20,246,0,156,92,241
140 DATA0,155,39,16,129,13,38
150 DATA7,190,160,2,173,3,134
160 DATA10,53,20,57,0,0,52,2,134
170 DATA13,190,160,2,173,3,134
180 DATA10,173,3,53,2,32,234
190 FOR D=32717TO32767
200 READ E:POKE D,E:NEXT D
210 POKE32748,PEEK(359)
220 POKE32749,PEEK(360)
230 POKE32750,PEEK(361)
240 POKE359,126:POKE360,127:
```

```
POKE361,205
250 POKE150,87
260 POKE151,128
270 POKE155,72
280 END
```

Conversion Problem

• I have a question regarding converting Model I/III programs to Color BASIC. For the most part they will run directly with minor modifications to print locations, Low-Res graphics, etc. However, I have difficulty with single/double precision variables and poke commands. Do you know of any type of BASIC or machine language conversion routines for single/double precision variables or equivalent Model I/III/Color BASIC poke commands as well as any other unforeseen conversion problems?

Mark Rennebaum
Sierra Vista, AZ

For those readers who are not familiar with the Model I, Mark, let's summarize the three types of numerical variables.

A% — Integer Variable Whole Number
A! — Single Precision 7 Significant Digits
A# — Double Precision 17 Significant Digits

The Color Computer has only one form of numerical variable, single precision. I've had no trouble converting programs by just omitting the modifier. One thing that may cause problems is the fact that all three of the above examples are distinct variables, even though they start with "A." Just change the name of the variable to another unused symbol.

The poke statements you are referring to are a different story. Some are loading machine language programs into memory. They will not work on the CoCo. Some are for modifying BASIC pointers. To find the equivalent pokes for the CoCo, if they even exist, will require disassemblies of both Color and Level-II BASIC. Some Model I programs I have seen use pokes for buffer storage. If that's the case just pick an unused section of RAM in the CoCo and continue using the same poke with a different address.

Watch out for the DEFFN(X) function. It is different for each computer. Obviously, all of your PRINT@ locations will have to be changed along with LPRINT if printer output is required.

The above hints are only a few of the things to look out for, Mark. What is really necessary is a thorough understanding of BASIC for both computers.

Your technical questions are welcomed. Please address them to: Downloads, the Rainbow, P.O. Box 209, Prospect, KY 40059. We reserve the right to publish only questions of general interest and to edit for space and clarity.

**SALE
PRICED**

Z-PAK™ CARTRIDGE \$29.95

If You Order Two of the Following Packages with it. If Ordered Separately \$79.95

Z-Pak is an 8" x 4" cartridge that plugs into the expansion port of the CC. **Z-Pak** is capable of holding up to 80k of EPROM (must be factory installed). THAT'S RIGHT as firmware packages become available and are ordered, they become part of random access memory. *All on line at the same time!*

Now lets do a little addition, if you have 64k of ram and X-Basic then **Z-Pak** gives you the potential of having a 160k system someday... *That's approximately what a disk holds!*

Imagine... having a C compiler, a hi-res screen editor, an assembler, and two debuggers all on line at the same time!... and there's more to come!

**FOR
OS-9
OR
DOS
OR
Non-Dsk**

OS9 Users... are you finding out that 64K isn't that much when you start filling it with a hi-res screen, a compiler and a good screen editor... not to mention the OS overhead?! **Z-Pak is the solution!**

Z-Pak grows with you. The programs will run on a 16k CC without X-Basic THRU a 64k CC with 4 disks.

Option #1 Two Parallel Ports \$19.95
Includes firmware & cable diagram for driving MX-70.

Option #2 Disk Expansion Capability \$19.95
Includes firmware & hardware to allow RS controller to 'piggy back' the Z-Pak.

INTERACTIVE-E™ PACKAGE \$39.95

IE™ is a high resolution screen oriented editor, just a few of the features are:

- ★ cursor commands
- ★ block moves
- ★ search & replace
- ★ auto insert
- ★ 64 character lines
- ★ and more....

Option #4 Reference Card For OS9 \$5.95

Option #5 Screen Driver For OS9 \$9.95

Option #6 OS9 / CC Disk Xfer Utility \$9.95

Option #7 IE Reference Card \$4.95

INTERACTIVE-C™ PACKAGE \$44.95

Interactive-C is the next generation in compiler technology. **Imagine...** you only recompile the functions that you're working on. Everything else is AUTOMATIC and done in *one pass*.

- ★ preprocessing
- ★ parsing
- ★ lexical analysis
- ★ expression evaluation
- ★ code generation (no assembler needed... IC compiles to an extremely efficient Z-Code™)
- ★ dynamic cross checking (ever redefine a variable but missed recompiling a function referencing it?)
- ★ dynamic linking
- ★ dynamic loading (for testing)
- ★ automatically loads library modules from your library directory.

Aren't you tired of typing (and *waiting* for) assembler and linker commands (and the three extra passes they require!)? We haven't found a 'professional' level, C development system that is better than this.

Quite simply, with the exception of floats & doubles, **IC™** supports *the entire C programming language* as described by K & R. The FULL macros, initializers & multi-dimensional arrays really make the language... *Don't settle for less!*

Interactive C Debug™ (Included)
Are you debugging a higher level language at assembler level... with **ICD™** you can see the variable names and watch their values change as you single step. Function trace and much, much, more...

Two Resident Libraries (Included)
IC includes a RESIDENT standard i/o library & a RESIDENT standard function library.

Option # 8 Tool Kit A Useful utilities and filters \$14.95

Option # 9 Resident Extended Library \$9.95

Option #10 IC & ICD Reference Card \$4.95

Option # 3 C Programming Book K & R \$19.95

INTERACTIVE-A™ PACKAGE \$39.95

Interactive-A is an assembler... but we must WARN you. It is NOT an ordinary assembler, there are dozens of ordinary assemblers available for the 6809, and if you don't want to change the way you program, buy one of them... *However, if you're tired of performing surgery with a butterknife... then read on...*

We took a look at the programming process and decided it was inefficient to wait for a program to re-assemble after every change, and that it was even more inefficient to patch a program, only to find out 15 minutes later that the patch was wrong.

IA™ is a very fast one pass assembler, and it ONLY reassembles and auto links the subroutine or variable that has just been changed.

We've added a few NEW features that allow the building of libraries of subroutines without the OLD PROBLEM of symbol and register conflicts, these features also facilitate recursive subroutines.

Interactive A Debug™ (Included)
This is a screen oriented debugger that eliminates WAITING FOR A LISTING SO THAT YOU CAN DEBUG. Just a few of the features are:

- ★ single step with disassembly
- ★ dynamic reg. display
- ★ trap, dump, blk moves
- ★ load map
- ★ crash eliminator
- ★ byte/word search
- ★ command table hook
- ★ examine modify memory
- ★ cref refs to variables
- ★ trap on variable reference

AS IAD™ has access to the assemblers tables, variables may be referenced symbolically. *You should see IAD in single step mode. It looks like a logic analyzer!*

Option #11 Resident Misc. Subr. & I/O Library \$9.95

Option #12 Programming the 6809 book Z & L \$19.95

Option #13 IA & IAD Reference Card \$4.95

Option #14 Disassembler (output assemblable) \$9.95

NEW! DISK BASED STARTER KIT FOR OS9 \$39.95

We think that the serious programmers are already sold on **Z-Pak...** especially at this month's sale price. However, if you're just getting into programming and OS9, and would like to move a bit slower...

The starter kit for OS9 is disk based (NO Z-Pak) and includes:

- ★ Interactive E screen editor
- ★ OS9 / CC disk xfer utility
- ★ OS9 screen driver

If you don't have OS9 we'll be happy to place the editor on tape or RS disk for **\$35.95**.

Color Computer is a trademark of Tandy Corporation. MX-70 is a trademark of EPSON. OS9 is a trademark of Microware & Motorola. Z-Pak, Interactive-C, IC, Interactive-E, IE, Interactive A, IA, Z-Code, Interactive C Debug, ICD, Interactive A Debug & IAD are trademarks of Micro Tools Inc.

MICRO TOOLS INC.

CALL DAYS OR EVENINGS 7 DAYS A WEEK
(716) 594-1088
P.O. BOX 357
NORTH CHILI, NEW YORK 14514

Terms: FOB, add \$4 shipping.
New York residents add sales tax.
We accept VISA, MASTER CARD and Personal checks.

Prices subject to change without notice. We reserve the right to limit quantities.



I'll teach you a lesson ...

Twenty-four half-hour lessons, in fact.

I'm Dennis Kitz, weary but cheerful after days in Green Mountain Micro's recording studio. What I've just finished are twelve hours of lessons for "Learning the 6809", a guide to assembly language programming like there's never been before. With the Micro Language Lab, you get it all — not only the theory of 6809 assembly language programming, but what you need to know to make your Color Computer really sweat for you.

And you'll get me on tape doing what I do best: talking, explaining 6809 assembly language and showing you how to tame it. You'll also get dozens of example programs right on the tapes, ready to load, examine and run. Even the accompanying book of documentation could teach you assembly language, but "Learning the 6809" doesn't stop there. Micro Language Lab gives you what you can't get anywhere else: programming information for every one of your Color Computer's "smart" circuits.

"Learning the 6809" isn't that same old isn't-it-wonderful-you-can-put-the-dot-on-the-screen approach. My Micro Language Lab will teach you numbers, graphics, and sound, but it won't run away from you after the first lesson. I want you to learn to program. To learn to use those numbers, graphics, and sound. To find ways of using every electronic nook and cranny in your machine. And I want you to stop wasting memory and make your program run in seconds, not minutes. I won't lose you, because each lesson is carefully paced, and the book contains exercises and self-tests.

I put jargon in its place, too. If you've ever been intimidated by genius programmers, you'll know what I mean. You'll be able to drop a few accumulators, registers, and zero-indexed offsets into your conversation, too.

So contact me or RB2-3 at Green Mountain Micro. "Micro Language Lab" comes in a notebook containing twelve cassettes, documentation, workbook, and data booklets. It costs \$99, plus \$4.50 shipping and handling. Z80 and 6502 Labs will be available shortly.

And don't forget that Green Mountain Micro is your haven for Color Computer support. We've got hardware and software for the holidays, technical assistance, memory upgrades and spare parts.

What is the ultimate all-software music synthesizer for your TRS-80 Color Computer?

What is the least expensive all-software music synthesizer for your Color Computer?

Quaver, the most realistic music experience you'll ever hear from your Color Computer!

COLOR QUAVER

Software Music Synthesizer

(New Version 2.1 for 32K ECB)

by Dennis Bathory Kitz author of "Custom Color"

- Real Music Synthesis — More Than Bleeps!
- Full 4-Part Harmony — In Precise Tuning.
- Versatile Editor/Compiler/Storage System.
- Entirely Software — No Hardware Needed.
- Variable Tone Qualities for Each Part.
- 64-Step Variable Envelope for Each Part
- FAST Compiler — Finished Music in 5 Seconds!
- Ready-to-Play Sample Tunes Included.

— Special Price —

Only \$19.95 on tape

(Add \$2.50 shipping and handling)

(Not sure? Audition Our Sample Music Tape — \$4.00 postpaid)

For 32/64K TRS-80 Color Computers with Extended Color Basic.



- Lowerkit II, \$79.95 / \$49.95 kit
 - 64K Color memory upgrade kit, \$49.95
 - MC-10 added 4K upgrade kit, \$19.95
 - CoCoPort interface, \$49.95 / \$39.95 kit
 - RAM/ROM pack, \$29.95 / \$19.95 kit
 - Color Burner, \$49.95 / \$39.95 kit
 - 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)

Green Mountain Micro

Bathory Road • Roxbury, Vermont 05669

(802) 485-6112

Continuing support for Color Computer Model I/III and 100

COD/VISA/MASTERCARD

TRS-80 is a trademark of Tandy Corporation

Dealer Inquiries Invited.

KISSABLE OS-9

Sad News, Good News, A Successful Terminal Program And Some BASIC09 Tricks

By Dale L. Puckett
Rainbow Contributing Editor

The OS-9 community suffered a tremendous loss when Jim Belomo died of a heart attack at the age of 34. Jim was one of OS-9's strongest proponents and established the OS-9 SIG on CompuServe. Everyone who read the message that weekend was shocked. Perhaps Jim's close friend, Phil Mongelluzzo, said best what we all felt:

As one of Jim's closest friends I cannot begin to express the admiration that I held for Jim. Perhaps the OS-9 SIG can become a living memorial of Jim's efforts. With the help of all of you, I am confident that we can continue the effort Jim began and create the knowledge base of OS-9 experts that Jim dreamed of.

CompuServe has assigned Wayne Day, the SYSOP of The Color SIG, as temporary SYSOP of the OS-9 SIG. Wayne has assured members of the group that they will have continued access to the OS-9 User's Group Software Exchange library on database XA-4 and has arranged to have the remainder of the software library uploaded. By the way, my CompuServe User Number is 71446.736 if you ever need to reach me.

Tandy's C Compiler Arrives

I received an exciting Express Mail package from Jim Reed at *the Rainbow*

"Step by step my trusty CoCo went through the motions needed to compile a program."

this weekend. I immediately backed up the disk's containing Microware's C and compiled my first program.

```
main()
{
  int sum, x, y;
  x = 20;
  y = 30;
  sum = x + y;
  printf("This is my first 'C' program.\n");
  printf("The sum of %d and %d = %d", x, y, sum);
}
```

I realize it doesn't do too much. But it compiled perfectly and ran the first time. It was quite a sight to watch. To compile the program I typed the line:

```
OS9:ccl C_Test.c
```

Step by step my trusty CoCo went through the motions needed to compile

a program. In several minutes it ran these programs.

- c.prep (a macro pre-processor)
- c.pass1 (OS-9 Level 1 systems)
- c.pass2 (require two passes)
- c.opt (the assembly code is optimized)
- c.asm (and assembled by a relocating assembler)
- c.link (and finally linked by a linkage editor)

(Dale L. Puckett is a free-lance writer and programmer who has worked with the Motorola family of microprocessors since 1976. He just completed his first book, The Official BASIC09 Tour Guide, this summer. It is being published by Microware and will be available this fall. He is the author of DynaSpell, Readtest, Esther and Help, which are available from Frank Hogg Laboratories. He serves on the Info World Software Review Board and is a Chief Warrant Officer in the U.S. Coast Guard.)

It's not interactive like BASIC09, but it sure is an effective package. Written by James McCosh, author of several 6809 C compilers, this language is implemented almost exactly as described in *The C Programming Language* by Kernighan and Ritchie. Bit fields are the only thing missing. Other differences between the C description in K & R and the Color Computer C can be counted with the fingers on one hand and they all reflect parts of C that are obsolete or constraints imposed by memory size limitations.

C is not one of the most elegant languages around but it gives you a solution to a lot of different problems. It is

sort of a high-level assembly language.

One of the things C does have going for it is the fact that its code is highly transportable. You can write a program on the Color Computer and carry it over to an IBM PC for example. C's language and power can be attributed to the fact that most C programmers use libraries, written in C, which can be adapted to any environment.

One real plus for Tandy's C is the fact that it supports almost all the system calls for both OS-9 and UNIX. This means you can write a C program on the Color Computer, port the source code to a 68000 computer running UNIX, compile it there and run it. Not bad.

"One real plus for Tandy's C is the fact that it supports almost all the system calls for both OS-9 and UNIX."

```

PROCEDURE Hex_Dump
0066      (* Program to print a structured hexadecimal dump of all *)
0068      (* control and ascii characters in a file *)
0067      (* note CR and LF are - $0D & $0A *)
006D
006E      REM *****
006B      REM *
006E      REM * VARIABLE TYPING AND INITIALIZATION *
0115      REM *
0142      REM *****
016F
0170      DIM count,Control,cr_lf_count:REAL
017F      count=0 \Control=0 \cr_lf_count=0
0197
0198      DIM char_blocks_per_line:INTEGER
019F      char_blocks_per_line=0
01A6
01A7      DIM INP,OUT:INTEGER
01B2      DIM CHAR,Output_Path:BYTE
01BD      DIM InPath$,OutPath$:STRING[60]
01CD
01CE      DIM Blank:STRING[1]
01DA      Blank=" "
01E2
01E3      PRINT
01E5      PRINT "Program prints the hexadecimal value of all characters in a file"
0229      PRINT "including non-printing control characters."
0237      PRINT
0259      PRINT "Hex_Dump requires both an input pathlist and a output pathlist."
029D      PRINT
029F      PRINT "The output pathlist may be to the terminal '/term' "
02D6      PRINT "or to a hard copy device such as '/p.'"
02FF      PRINT
0301      PRINT "The pathlists must be entered without quotes."
0332      PRINT
0334
0335      REM Program was written By David R. P. Gibson
0361      REM " (703) 285 - 2378"
0377
0378      INPUT "Enter input file pathlist :",InPath$
039B 5    INPUT "Enter output file pathlist:",OutPath$

```

Microware makes this possible by using UNIX names for system functions, even though the same OS-9 function might have a different name. And sometimes, there are UNIX functions that do not have an exact equivalent OS-9 function. In that case, Microware gives you a library function to simulate it. Finally, when there is an OS-9 function that does not have a UNIX equivalent, OS-9 names are used.

This C also has an optional profiler which can be used to determine how many times a particular function is executed when a program is being run. This means you can identify the most frequently used functions. You can then study them in an attempt to find a more efficient algorithm.

New Dynastar Being Shipped

I also received the final version of the *DynaStar* text editor from FHL this weekend. Couldn't resist giving it a spin.

I was amazed at the speed of this editor. *DynaStar* automatically configures itself to the size of the Hi-Res screen you happen to be running at the time you call it. But here's the best part: You can have a document with column widths up to 250. It's amazing, when the cursor gets to the last position in the line the entire screen (except for the menu at the top) jumps to the left eight positions. If you move the cursor back, it moves back. It seems to work just like the Wang system at work.

Another cute feature is a second cursor which moves along in the ruler line above your text. It always points to your position in the line and is really good if your are a character counter. Also, *DynaStar* comes alive with its help menus on. You don't even need a

manual to run this program. All the information is on the screen in front of you. Then, when you have the operation down pat and don't need the information on the help menu, you just toggle it off and you can use all but one line of the screen for text.

About That External Terminal Problem

You're in luck this month. We have two solutions to the problems you've been having trying to run an external terminal as device /t1. We mentioned several months ago that you could only get reliable operation at 300 Baud.

One solution comes from Ray Nicklas a member of the Color Computer Users group of Melville, Long Island, N.Y. Ray is 36 and holds a BSEE from Hofstra and a MSCS from Polytechnic Institute of New York. He provided this table which shows changes you can make to the device driver PRINTER. Ray says that with these changes his CoCo has never failed at 9600 Baud.

PRINTER

Offset	From	To	Baud Rate
5F	0485	0482	110
61	01A5	01A2	300
63	00D0	00CD	600
65	0066	0063	1200
67	0030	002D	2400
69	0016	0013	4800
6B	0008	0005	9600

Also make the following changes that assure that the bit-time for both a zero and a one will be the same.

Offset	From	To
9F	C6	12
A0	02	C6
A1	25	00
A2	01	59
A3	5F	58
AD	F1	F2

The original CRC (the last three bytes in the module) was FEF3EA. After these changes the new CRC should be 741EC6. The Baud rate constants in the module RS-232 which drives /t1 are the same as those listed above. Find them with your debugger and makes similar changes and you'll be in business. You shouldn't need to change the big bang routine in RS-232. As Ray said in his letter, "Only a purist would do that."

```

03C1
03C2 REM On my system, the dot matrix printer is /p
03EF REM the letter quality printer is /p3 and
0410 REM the crt is /term. If your system has other devices,
044F REM the IF statement should be modified to include them
0485
0486 IF OutPath<>"/p" AND OutPath<>"/p3" AND OutPath<>"/term"

THEN
04AA PRINT "Output must be directed to /p or /p3 or /term (crt)."

```



```

,cr_lf_count,Blank
07E1 PRINT
07E3
07E4 CLOSE #Output_Path
07EA END

PROCEDURE New_Hex_Dump
0000 (* Program prints a structured hexadecimal dump of all *)
0039 (* control and ascii characters in a file *)
0065
0066 DIM count,Control,cr_lf_count:REAL
0075 count=0 \Control=0 \cr_lf_count=0
008D
008E DIM char_blocks_per_line:INTEGER
0095 char_blocks_per_line=0
009C
009D DIM InPath,OutPath,ErrorPath:BYTE
00AC InPath=# \OutPath=# \ErrorPath=#2
00C1
00C2 DIM CHAR:BYTE
00C9
00CA DIM Blank:STRING[1]
00D6 Blank=" "
00DE
00DF ON ERROR GOTO 10
00E5
00E6 PRINT #OutPath
00EC
00ED WHILE EOF(#InPath)=FALSE DO
00F9 SET #InPath,CHAR
0103 char_blocks_per_line=char_blocks_per_line+1
010E count=count+1
011A
011B IF CHAR<020 OR CHAR=07F THEN
0130 IF CHAR=00D OR CHAR=00A THEN
0145 cr_lf_count=cr_lf_count+1
0151 ENDIF
0153 PRINT #OutPath USING "":H2,"]",81",CHAR,Blank;
0172 Control=Control+1
017E ELSE
0182 PRINT #OutPath USING "":[",H2,"]",81",CHAR,Blank;
01A1 ENDIF
01A3
01A4 IF char_blocks_per_line>=16 THEN
01B0 PRINT #OutPath
01B6 char_blocks_per_line=0
01BD ENDIF
01BF
01C0 ENDOHILE
01C4
01C5 10 PRINT #ErrorPath,Blank
01D2 PRINT #ErrorPath
01DB PRINT #ErrorPath,"Total number of characters = " count
0202 PRINT #ErrorPath,"Found " count; " control characters in file."
0234 PRINT #ErrorPath,"Of which " count; " cr_lf_count; " were <CR> or <LF> "
0261
0262 END

```

Ray's New Disk Drivers

Ray is also the proud author of a new disk driver module for CoCo. He calls it *CCDISKrev2* and it supports double stepping for 48 tracks per inch media on a 96 track per inch drive as well as real time clock compensation. And, he packed it all into 982 decimal bytes. I just did an ident on *SDISK* for comparison purposes. It is 1,194 decimal bytes long.

The new module increases the disk storage capacity, lowers the access time and is also standard OS-9 compatible. It determines the step rate by reading the device descriptor and will work at 6, 12, 20, and 30 ms with the appropriate

"These drivers adjust the motor startup delay and the head settling delay according to the step rate, a fine tuning that should give you super disk performance."

drives. Double-sided drives are supported as are 80-track (96 tpi) drives and Ray noted that three 80-track drives will give you 8,640 sectors.

These drivers adjust the motor startup delay and the head settling delay according to the step rate, a fine tuning that should give you super disk performance. They also write single- and double-density disks. Ray told me he hoped to license these drivers through FHL so you most likely will see them bundled with other OS-9 support software soon.

And, A Format Patch

Load the standard Radio Shack Format utility and then use the Debugger to make the following changes.

Offset	Old	New	
1A3	13	49	(to recognize tracks)
1A8	2C	2A	(for * to cause single-sided operation)
1A9	00	01	
1AB	0B	0F	
A85	18	A0	(CRC)
A86	99	8C	
A87	C1	39	

PROCEDURE Strip

```
0000 (* Program to strip off all control characters in a file *)
0030 (* Except CR's and LF's - $0D & $0A *)
0063 (* written for David R.P. Gibson *)
0080 (* modified by David R. P. Gibson to include *)
009A (* deletion of $7F (DEL) *)
00D5
00D6 DIM count,Control:REAL
00E1 DIM INP,OUT:INTEGER
00EC DIM CHAR:BYTE
00F3 DIM InPath$,OutPath$:STRING(80)
0103
0104 PRINT
0106 PRINT "This program strips off all control characters in a file"
0142 PRINT "except CR's and LF's."
0150 PRINT
015D
015E Control=0 \count=0
016E
016F INPUT "Enter input file pathlist :",InPath$
0192 INPUT "Enter output file pathlist:",OutPath$
01B5
01B6 PRINT
01B8
01B9 OPEN #INP,InPath$:READ
```

Then, type the following command with a new disk in device /d1.

OS9: format /d1 * (35) R "Your Name"

This command should format a single-sided, 35-track disk (even on a double-sided 40-track drive). Also, using a letter "C" (instead of an R) in the command line should cause the disk to be in the CoCo format, even though your Device Descriptor is set to Standard OS-9 format. One caution goes with Ray's changes here, however. Track 0, Side 0 sector value *must* agree with the number of sectors per track, i.e., they both must be 18.

Now, An Interrupt Driven Device Driver For /T1

We got a nice letter and a piece of code you'll love from Ivan Helmrich in Cambridge, Mass. Ivan sent me source and object code for an interrupt driven RS-232 driver that works on a stock Color Computer.

Being skeptical as usual, I plugged in my TeleVideo terminal using the null modem cord Bob Rosen sent me and fired up the CoCo. Lo and behold, it



UNLIMITED EXPANSION

- 6 SLOT EXPANSION BUS
- PARALLEL PRINTER CARTRIDGE
- DUAL RS232 CARTRIDGE
- PROTOTYPING BOARD
- 80 COLUMN VIDEO CARTRIDGE
- REAL TIME CLOCK CARTRIDGE
- 16K RAM/ROM CARTRIDGE
- MORE TO COME

PJ inc.
P.O. BOX 613
N. Bergen, N.J. 07047
(201) 330-1886

WRITE OR CALL FOR OUR CATALOG

worked at 19,200 Baud. Wow!

Ivan used a few pieces of code from Microware's standard ACIA drivers so he was afraid we wouldn't be able to publish the code for you. I got on the line with Microware immediately and Ken Kaplan was kind enough to give us permission to publish it. If you want to use a real terminal on your CoCo you'll be thanking him for a long time.

In his letter Ivan said that normally the RS-232 input won't throw an interrupt, but by tying the CD line (pin 1) to the RS-232 input line (pin 2), you can generate an interrupt. This causes a FIRQ on the start bit on an incoming word. Since CoCo OS-9 doesn't use the FIRQ, Ivan supplied a vector to them in the driver's Init routine. Enjoy!

Speaking Of New Packages

I received a care package from Richard Don at GIMIX last month also. Seems he is now shipping RMS, a powerful OS-9 database manager and DO, a procedure language with his computers now. I hope to review them for you sometime in the future. I have also been told that Computerware has a package of OS-9 utilities out that give you a

```

01C5 CREATE #OUT,OutPath#WRITE
01D1
01D2 WHILE EOF(#INP)=FALSE DO
01DE GET #INP,CHAR
01E8 count=count+1
01F4 IF CHAR(#20 OR CHAR=#7F THEN
0209 IF CHAR=#0D OR CHAR=#0A THEN
021E PUT #OUT,CHAR
022B ELSE
022C Control=Control+1
023B ENDIF
023A ELSE
023E PUT #OUT,CHAR
024B ENDIF
024A ENDWHILE
024E
024F CLOSE #INP
0255 CLOSE #OUT
025B
025C PRINT
025E PRINT "Total number of characters = "; count
0283 PRINT "Stipped off "; Control; " control characters from file."
028B PRINT
028A END
  
```

PROCEDURE NewStrip

```

0000 (* A program to strip off all control characters in a file *)
003D (* except CR's, LF's and DEL's *)
  
```

Marshmallows for your CoCo

ED THE SUPERIOR PROGRAMMER'S EDITOR
for OS-9 or FLEX \$49

A combination screen/line editor which addresses specific lines by line number.

ASM 6809 STANDARD MACRO ASSEMBLER
for OS-9 or FLEX \$49

OSM 6809 EXTENDED MACRO ASSEMBLER
for OS-9 or FLEX \$99

CRASMB 8 BIT MACRO CROSS ASSEMBLER
for OS-9 or FLEX \$399

Cross assembles these CPU types:
6800-2-8 6801-3 6804 6805
6809 6811 6502 1802
8048 8080-5 Z-8 Z-80

CRASMB 16.32 16 and/or 32 BIT CROSS ASSEMBLER
for OS-9 or FLEX \$249

Exclusively supports the 68,000 CPU.

DO SHELL COMMAND LANGUAGE
for OS-9 \$69

Intended to be used for batch processing. Similar appearance to BASIC, with nine string and 26 number variables for parameter passing.

K-BASIC BASIC LANGUAGE COMPILER LEVEL 1
for OS-9 or FLEX (Available 1/84) . . . \$199

A BASIC to Machine Language compiler. Level 1 supports sequential files, floating point, three sizes of integers, string variables, and arrays. Includes 6809 run time package and OSM assembler.

....PLEASE SPECIFY OS-9 OR FLEX, AND INDICATE DISK SIZE....

LLOYD I/O 19535 NE GLISAN PORTLAND, OR 97230 (503) 666-1097

GRAF PLOT

DRAW A PICTURE WORTH 1000 WORDS



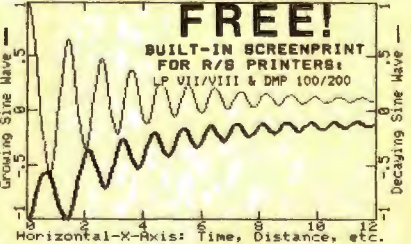
User-Defined Functions! Sine Waves

FREE!

BUILT-IN SCREENPRINT
FOR R/S PRINTERS:
LP VII/VIII & DMP 100/200

"-Very impressed."
"-Equally useful in the home and office."
"-Meticulous, handholding documentation."
"-Very easy to use."
- RAINBOW, July '83

(Actual output)
(Shown reduced)



GRAF PLOT 1.1 includes everything you need to go effortlessly from raw data to professional-quality printed graphs in minutes. Perfect for business, personal, educational, scientific and engineering applications. Free screenprint for R/S printers.

- * Automatically scales and draws graph for best appearance.
- * Full ASCII upper and lower case in 4 on-screen labels.
- * Two fully labeled Y-axes, 200 or more data points per axis.
- * 9 graphing symbols with unlimited overlay of data.
- * Full function data editing: add, change, delete and sort.
- * Universal Screenprint Loader - Automatically interfaces ANY screenprint program for non-Radio Shack printers.
- * Graphs and data output to screen, printer, tape or disk.
- * Plots user-defined functions: projections, regressions, etc.
- * Calculates moving averages (binomial smoothing), cumulative totals and integrals of data or user-defined functions.
- * Saves completed graphs for instant reloading.
- * Menu driven with complete error trapping and auto-prompting.
- * Comprehensive manual w/ tutorials and sample data.
- * Disk Only: display or print directory, kill or rename files.
- * Many other labor-saving and time-saving features.

GRAF PLOT is available for 16K E.C.B. (\$35.00) and 32K E.C.B. (\$40.00) on cassette and for 32K disk (\$45.00) (U.S.). Send check or money order to: HAWKES RESEARCH SERVICES, 1442 Sixth St., Berkeley, CA, 94710. Manual available separately for \$10.00 + shipping, refundable with purchase. Include \$3.00 shipping on all orders. Dealer (30-50%) and club discounts (20-40%) available. VERSION 1.0 OWNERS - \$3.00 FOR EXCHANGE.


```

005E
005F      (* modified by Dale L. Puckett to get its input and output *)
009C      (* from standard input and standard output *)
00C9
00CA      DIM count,Control:REAL
00D5      DIM CHAR:BYTE
00DC      DIM InPath,OutPath,ErrorPath:BYTE
00EB
00EC      InPath:=0
00F3      OutPath:=1
00FA      ErrorPath:=2
0101
0102      Control:=0 \count=0
0112
0113      ON ERROR GOTO 10
0119
011A      WHILE EOF(#InPath)=FALSE DO
0126          GET #InPath,CHAR
0130          count=count+1
013C          IF CHAR<=20 OR CHAR=07F THEN
0151              IF CHAR=00D OR CHAR=00A THEN
0166                  PUT #OutPath,CHAR
0170              ELSE
0174                  Control=Control+1
0180              ENDIF
0182          ELSE
0186              PUT #OutPath,CHAR
0190          ENDIF
0192      ENDWHILE

```

selective directory copy and a patch to *CCDISK*. We hope to take a look at those for you next month.

BASIC09 Programs And Tips

Dave Gibson at Federal Highways in McLean, Va., the new acting secretary of our OS-9 users group gave me a couple of programs for our software exchange last week. They gave me an idea that I would like to share with you. First, the programs.

STRIP is a very useful program that will remove all control characters from a file except the carriage return and line feed. You'll find you need a utility like this when talking to some mainframe computers or bulletin boards.

HEX_DUMP prints the hexadecimal values of all characters in a file, including non-printing control characters. This is helpful when you are trying to find out why a program bombed.

Both of these programs work in a conventional manner. They come alive, print a billboard and then ask you for a file name, etc. I wondered if it was possible to make them work like other OS-9 and UNIX utilities from within BASIC09.

A PICTURE IS WORTH . . .



PJ inc.

P.O. BOX 813
N. Bergen, N.J. 07047
(201) 330-1898


```

0196
0197 10 PRINT #ErrorPath
01A0 PRINT #ErrorPath,"Total number of characters = " | count
01CA PRINT #ErrorPath,Control | " control characters were stripped from file."
0203 PRINT #ErrorPath
0209 END

00001
00002
00003 * Interrupt driven RS-232 driver
00004
00005 NAM SERIAL
00006 IFP1
00009 ENDC
00010
00011 0020 OVERUN SET 020
00012 00E1 TYPE SET DRVR+OBJECT
00013 008C INPSIZ SET 140
00014 0011 XONC SET 011
00015 0013 XOFFC SET 013
00016 04CC B110 SET 04CC
00017 01C0 B300 SET 01C0
00018 00DF B600 SET 00DF
00019 006F B1200 SET 06F
00020 0037 B2400 SET 037
00021 001B B4000 SET 01B
00022 000E B9600 SET 00E
00023 0007 B19200 SET 007
00024
00025 D 001D ORG V.SCF
00026 D 001D DELAY RMB 2
00027 D 001F INXT1 RMB 1
00028 D 0020 INXTO RMB 1
00029 D 0021 INCNT RMB 1
00030 D 0022 INHALT RMB 1
00031 D 0023 HALTED RMB 1
00032 D 0024 TEMP RMB 2
00033 D 0026 TEMP1 RMB 1
00034 D 0027 DUMMYA RMB 2
00035 D 0029 DUMMYM RMB 75
00036 D 0074 INPBUF RMB INPSIZ
00037 D 0100 SERMEM EQU .
00038
00039 0001 H.XOFF EQU 1
00040 0002 H.EMPTY EQU 2
00041
00042 0000 07CD025D MOD SEREND,SERNAM,TYPE,REENT+2,SERENT,SERMEM
00043 0000 03 FCB UPDAT.
00044 000E 52533233 SERNAM FCS "RS232"
00045 0013 01 FCB 1
00046
00047 W 0014 16000F SERENT LBRA INIT
00048 W 0017 160071 LBRA READ
00049 001A 1600B4 LBRA WRITE
00050 001D 160135 LBRA GETSTA
00051 0020 16013C LBRA SETSTA
00052 0023 16013D LBRA TERM
00053

```

I wanted to be able to send data to them through a pipe and have them output data into a pipe.

I knew that to do this, I would need to program them so that they received their data from the standard input (0) and standard output (1) paths. I also imagined that when I needed a message on the terminal during the process I would be able to use the standard error output path (2).

"Remember, you must always SAVE a BASIC09 procedure before you PACK it."

To accomplish this, I edited the files, removing the prompts for the filenames and the input statements, etc. Then I *SAVED* my source code in my working data directory and *PACKED* the procedures into my working execution directory (/d0/cmds) in this case. Remember, you must always *SAVE* a BASIC09 procedure before you *PACK* it. If you don't, you will have lost your source code forever.

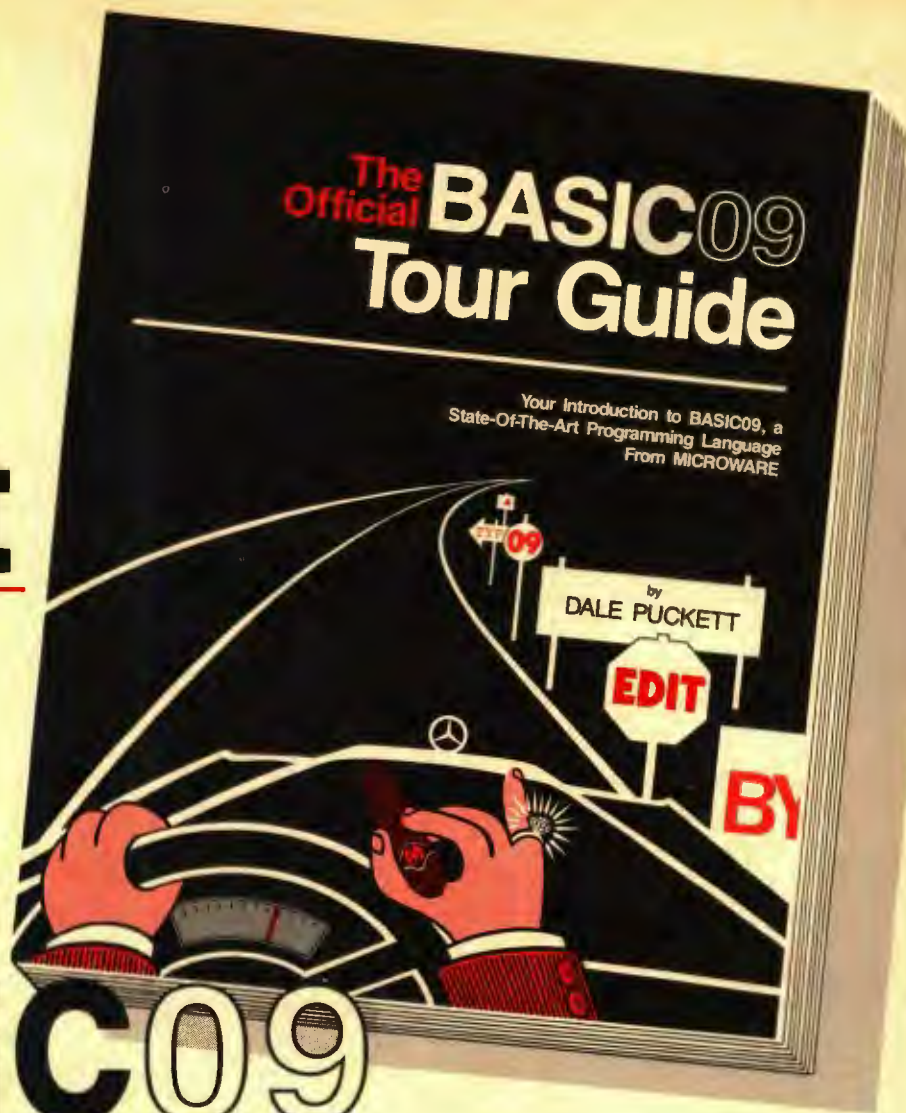
I tried several different command lines to see if my ideas would work. First, just to save time for my series of experiments, I loaded BASIC09's run time package, RUNB, and the two packed modules, New_Hex_Dump and NewStrip. Here are a few of the commands I tried. They all worked. Hope you enjoy and apply this technique to your BASIC09 programming.

```

OS9: load runb
OS9: load new_hex_dump
OS9: load NewStrip
OS9: list /d0/sys/password !
      new_hex_dump
OS9: list /d0/cmds/dir ! NewStrip !
      New_Hex_Dump
OS9: list /d0/cmds/list !
      New_Hex_Dump >/p
OS9: list /d0/cmds/dir !
      New_Hex_Dump >DirDump
OS9: New_Hex_Dump </d0/cmds
      /dir >NewDirDump

```


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[®]
microware

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

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

00054	0026 3401	INIT	PSHS	CC	
00055	0028 1A50		ORCC	0050	Kill Interrupts
00056	002A 8EFF20		LDX	00FF20	Get addr of device to set up
00057	002D 6F01		CLR	1,X	Data direction
00058	002F 86FE		LDA	00FE	Prepare to set RS-232 lines
00059	0031 A784		STA	0,X	Mostly Output
00060	0033 8636		LDA	0036	Data register
00061	0035 A701		STA	1,X	
00062	0037 3501		PULS	CC	Enable Interrupts
00063	0039 4F		CLRA		
00064	003A 5F		CLRB		
00065	003B EDCB1F		STD	INXT1,U	Initialize Storage
00066	003E 6FC823		CLR	HALTED,U	
00067	0041 6FC822		CLR	INHALT,U	
00068	0044 6FC821		CLR	INCNT,U	
00069	0047 8611		LDA	00X0NC	
00070	0049 C613		LDB	00X0FFC	
00071	004B ED4F		STD	V.XON,U	
00072	004D 30DD020B		LEAX	ENDUM2,PCR	Get end of dummy routine to go
00073	0051 AFC824		STX	TEMP,U	Hold this value
00074	0054 31C829		LEAY	DUMMYM,U	Get start of Static storage fo
00075	0057 10AFC827		STY	DUMMYA,U	Hold this value to use as a v
00076	0058 30DD01B4		LEAX	DUMMY,PCR	Get the start of the routine
00077					
00078	*THIS NEXT SECTION TRANSFERS THE ROUTINE TO STATIC STORAGE*				
00079					
00080	005F A600	SETLOP	LDA	,X+	Proceed with the transfer
00081	0061 A7A0		STA	,Y+	Store the byte
00082	0063 ACC824		CMPX	TEMP,U	End of the dummy routine?
00083	0066 23F7		BLS	SETLOP	no
00084	0068 3139		LEAY	-7,Y	Fix up Y for the terminating j
00085	006A 30DD0119		LEAX	SRIRGS,PCR	Get the address to jump to
00086	006E AFA4		STX	,Y	Put it in the routine
00087	0070 1A50		ORCC	0050	Kill the interrupts for a bit
00088	0072 30C829		LEAX	DUMMYM,U	Prepare the pointer
00089	0075 AFC827		STX	DUMMYA,U	Put the pointer in storage
00090	0078 30C827		LEAX	DUMMYA,U	Get address of pointer
00091	W 007B BF0127		STX	0127	Put it in the vector table
00092	007E 1CAF		ANDCC	0X10101111	Enable the interrupts
00093	W 0080 86FF20		LDA	0FF20	This clears INT flag
00094	0083 8635		LDA	0035	Prepare to enable interrupt fr
00095					
00096	*THIS CONFIGURES THE PORT TO THROW A FIRD ON THE START BIT*				
00097					
00098	W 0085 87FF21		STA	0FF21	Do it
00099	0088 39	INIT9	RTS		
00100					
00101	0089 8D36	READ00	BGR	SLEEP	
00102	008B 17009A	READ	LBGR	BDLOOP	Set up the Baud delay
00103	008E A6C822		LDA	INHALT,U	Is input halted?
00104	0091 2F0E		BLE	READ0	If not go ahead
00105	0093 E6C821		LDB	INCNT,U	If so, check to see if it is t
00106	0096 C10A		CMPB	010	Close enough to empty?
00107	0098 2207		BHI	READ0	If not, move on
00108	009A E64F		LDB	V.XON,U	Prepare to send XON Character
00109	009C CAB0		ORB	0B10M	This activates the flag
00110	009E E7C822		STB	INHALT,U	Flag input resume
00111	00A1 E6C820	READ0	LDB	INXT0,U	Get the next out pointer
00112	00A4 30C874		LEAX	INPBUF,U	Get the start of the buffer
00113	00A7 1A50		ORCC	0050	Kill interrupts while operatin

Note that you do not have to load these modules or RUNB before you run them. If you type a name in the OS-9 command line and the program isn't already in the module directory, OS-9 will look for it in your current execution directory. When it loads a module and finds that it is a BASIC09 I-code (for intermediate) module it attempts to link to the module RUNB. If it finds that RUNB is not in memory, it will automatically load it from your current execution directory. Of course, you are

"Here's a nice trick you can use when using PACKed BASIC09 I-code procedures."

responsible for making sure that it is in this directory.

BASIC09 Input From The Standard Path

Here's a nice trick you can use when using *PACKed* BASIC09 I-code procedures. We credit it to Carl Kreider, a regular visitor to the CompuServe OS-9 SIG.

In addition to using the standard paths, 0, 1, and 2 as in the listings above, Carl suggests that you try this line when you need to input data into a *PACKed* procedure from the standard input path. For example, maybe your procedure needs to get its instructions from a procedure file.

INPUT "",instruction

The secret here is that the null string, i.e., "" causes BASIC09 (or RUNB in this case) to suppress the prompt that it normally prints for an input statement. Thanks Carl.

Here's another tip. Cor Dikland asked how he could input a keystroke into BASIC09 when that key did something obnoxious like clear the screen. In his words, "When using *INKEY\$* or *GET0* in BASIC09, the key pressed is printed. This is very annoying, especially when using the up-arrow key as it clears the screen. Is there a way to prevent this from happening?" Cor, try this.

Shell "tmode -echo"
Get 0, character
Shell "tmode echo"

SERIOUS SOFTWARE FOR THE SERIOUS USER!

SUPER SLEUTH for OS-9 \$49.95

Examine, modify or disassemble binary files into source code!

DYNA-C for OS-9 \$59.95

A Small-C derivative.

A-BASIC Compiler OS-9 \$75.00

Produce fast, ROMable object code from BASIC source code!

DYNASOFT PASCAL OS-9 \$59.95

A Pascal subset requiring only 12K of RAM!!

UTILIX for OS-9 \$49.95

A set of UNIX-like utilities for OS-9!

O-Pak for OS-9 \$34.95

Hi-Res screen for OS-9

CRASMB for OS-9 \$399.00 (includes all CPM's)

Cross assemble source code into object code files.!

DYNASTAR/DYNAFORM OS-9 \$99.90
DYNASPELL for OS-9 \$59.95

Word processing complete with spelling checker!!!

SERIOUSLY NOW . . .

FHI FRANK HOGG LABORATORY

THE REGENCY TOWER • SUITE 215 • 770 JAMES ST. • SYRACUSE, NY 13203
PHONE (315) 474-7856 • TELEX 648740

*OS-9 IS A TRADEMARK OF MICROWARE, INC.

00114	00A9 E1CB1F	CMPB	INXT1,U	Check to see if buffer is empty
00115	00AC 27DB	BEQ	READ00	If so, go and wait a bit
00116	00AE 3A	ABX		Get pointer to next out in X-R
00117	00AF A6B4	LDA	,X	Get character
00118	00B1 6ACB21	DEC	INCNT,U	Drop the count
00119	00B4 5C	INCB		Advance the next out pointer
00120	00B5 C1B0	CMPB	0INPS1Z-1	End of Buffer?
00121	00B7 2301	BLS	READ10	No
00122	00B9 5F	CLRB		Reset if End
00123	00BA E7C820	READ10	STB INXT0,U	Update the pointer
00124	00BD 5F	CLRB		Clear carry
00125	00BE 1CAF	READ90	ANDCC 0X10101111	Enable Interrupts
00126	00C0 39		RTB	
00127				
00128	00C1 3416	SLEEP	PSHS D,X	
00129	00C3 A644	LDA	V.BUSY,U	Get the process Id
00130	00C5 A745	STA	V.WAKE,U	This is the process to wake up
00131	00C7 1CAF	ANDCC	0X10101111	Enable the Interrupts
00132	00C9 BE0000	LDX	00	indefinite sleep period
00133	00CC 103F0A	OS9	F0SLEEP	Take a snooze
00134	00CF 3596	PULS	D,X,PC	
00135				
00136	00D1 E6C822	WRITE	LDB INHALT,U	Do we want to send an IOFF?
00137	00D4 2A0D	BPL	WRITE1	No
00138	00D6 C47F	ANDB	0^810N	Clear Flag
00139	00D8 E7C822	STB	INHALT,U	
00140	00DB 3402	PSHS	A	Hold the original character
00141	00DD 1F90	TFR	B,A	We will send special character
00142	00DF 8D02	BBR	WRITE1	Go send it
00143	00E1 3502	PULS	A	Get back original
00144	00E3 8D43	WRITE1	BSR BDLOOP	Get the timing values
00145	00E5 255B	BCS	BR1	If Error in timing setup get 0
00146	00E7 E6C823	WRITE2	LDB HALTED,U	Check Flag
00147	00EA C401	ANDB	0001	Check Bit0
00148	00EC 2700	BEQ	WRITE3	We can send
00149	00EE 8E0001	LDX	0001	We can't send, so sleep for a
00150	00F1 103F0A	OS9	F0SLEEP	
00151	00F4 20F1	BRA	WRITE2	Try it again
00152				
00153	00F6 C609	WRITE3	LDB 009	Get number of bits to write
00154	00F8 3405	PSHS	B,CC	Store bit count
00155	00FA 1A50	ORCC	0050	Kill interrupts
00156	00FC 1CFE	ANDCC	00FE	Clear Carry
00157	00FE A7C826	STA	TEMP1,U	
00158	0101 C602	WLOOP	LDB 0002	This is the Write Mask
00159	0103 2501	BCS	BR10	If carry set, write a 0 bit w/
00160	0105 5F	CLRB		This is the mask to write a 0
00161	W 0106 F7FF20	BR10	STB 0FF20	Put the bit on the line
00162	0109 ECC81D	LDD	DELAY,U	Get the delay count
00163	010C 830006	SUBD	0006	Subtract overhead
00164	010F 830001	BR56	SUBD 001	This is the timing loop
00165	0112 26FB	BNE	BR56	End of time?
00166	0114 64CB26	LBR	TEMP1,U	Shift the output character to
00167	0117 6A61	DEC	1,0	lower the bit count
00168	0119 26E6	BNE	WLOOP	done with all bits?
00169	011B C602	CONTIN	LDB 0002	
00170	W 011D F7FF20	STB	0FF20	put stop bit(s) on line
00171	0120 A6CB26	LDA	TEMP1,U	
00172	W 0123 F6FF20	LDB	0FF20	Clear interrupts
00173	0126 3585	PULS	CC,B,PC	

And An Assembler Question

We got a real nice letter from Tim Harris in Ames, Iowa, with some questions about assembly language programming. In fact, he sent a real puzzler. I scratched my head for awhile and then the problem hit me like a sledge hammer.

Tim works at the ISU Computation Center and has experience with MS-DOS and UNIX so he decided he would write some of his own file handling utilities. Since he had learned to program on the PDP-11, he wrote the program with subroutines. Unfortunately, he kept getting an ERROR 10 message when he attempted to run his program. The problem is compounded by the fact that in the OS-9 manual there is no Error 10. This number is reserved for BASIC09 and other high level languages. He wrote the program without the subroutines and it worked. See if you can spot the problem.

Calling routine:

```
LSTENT stx PRMPTR,u   save param pointer
        bsr OpenPth   open the file path
        tst ERROR,u   check error flag
        bne LST30     branch on error
        . . .
        else, continue
```

Now, the called routine:

```
OpenPth ldx PRMPTR,u   get start of param
        lda #READ.     set read access
        os9 ISOpen     open path
        bcs Oppth10   branch on error
        sta PATHNO,u   store path number
        stx PRMPTR,u   save updated parameter pointer
Oppth10 stb ERROR,u   store error status
        rts           return
```

Here's the solution. OS-9 detects an error condition by checking the carry bit, i.e., the bcs instruction. Tim does this also. But, he stores the B-register in a variable called ERROR. When he returns from the routine he checks the ERROR variable to see if it is zero.

Several problems could occur here. It may, or may not be, zero when the program is run. Also the B-register would not be changed by the ISOpen call unless an error happens, in which case it would be loaded with the proper error number. In this code the B-register must contain 10 at the time of the call.

Tim could solve this problem by setting the variable ERROR equal to zero if the path to the file is opened successfully.

Closing Notes

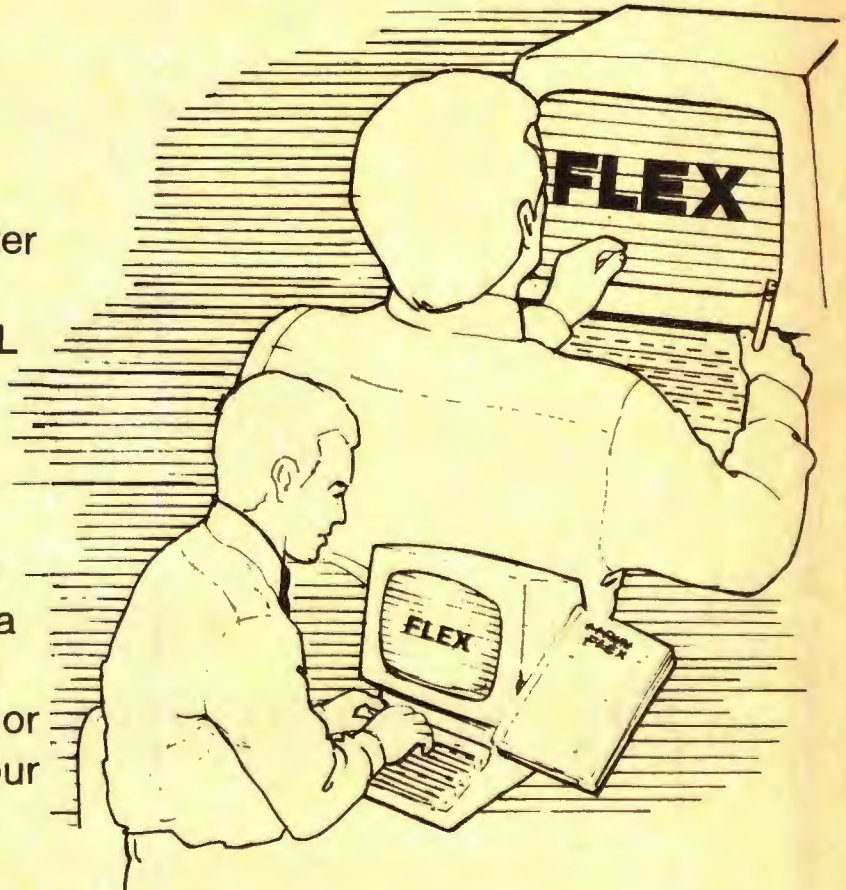
That's about all we have room for this time. In closing, we would like to give special thanks to G.J. Lipovski at the University of Texas who sent us a disk which contained a patched version of

STILL, ONE OF THE BEST!

FHL COLOR FLEX*

If you have a 64k Color Computer and you can't decide on an operating system, consider FHL Color FLEX! On the market for over two years, it has proven itself to thousands of users!

With FHL Color FLEX's unique features and the availability of a lot of well written software, you can't afford to overlook FHL Color FLEX as a viable solution to your disk operating system needs!!



FHL Color FLEX ONLY \$69.95
with DBASIC ONLY \$99.00

Don't wait, order yours today and receive our FREE newsletter/catalog packed with great information on what we have available to help satisfy your software and hardware needs! Or write or call for the dealer nearest you.

FHL **FRANK HOGG LABORATORY**

THE REGENCY TOWER • SUITE 215 • 770 JAMES ST. • SYRACUSE, NY 13203
PHONE (315)474-7856 • TELEX 646740

*FLEX is a trademark of Technical Systems Consultants, Inc.

TIME IS RUNNING OUT !



**Don't Be The Last One
To Subscribe To Our**

FREE

Newsletter/Catalog

"Serious Users Software Catalog"

FHI **FRANK
HOGG
LABORATORY**

THE REGENCY TOWER • SUITE 215 • 770 JAMES ST. • SYRACUSE, NY 13203
PHONE (315) 474-7856 • TELEX 646740

00174					
00175	0128 3402	BDLOOP	PSHB	A	
00176	012A A6A835		LDA	035,Y	Get the baud rate code
00177	012D 8108		CMPA	000	Is the code too high?
00178	012F 240D		BHS	BR7	If so, set up the error
00179	0131 48		ASLA		Multiply by two
00180	0132 308D000F		LEAX	DAT1,PCR	Get top of table
00181	0136 EC8A		LDD	A,X	Get the timing delay
00182	0138 EDC81D		STD	DELAY,U	Prepare to count down
00183	013B 5F		CLRB		Clear CARRY
00184	013C 3582		PULB	A,PC	
00185					
00186	013E C6CB	BR7	LDB	00CB	Get Error Code
00187	0140 3502		PULB	A	
00188	0142 1A01	BR1	ORCC	0001	Get Carry
00189	0144 39		RTS		
00190					
00191	0145 04CC	DAT1	FDB	B110	Baud rate table
00192	0147 01C0		FDB	B300	
00193	0149 00DF		FDB	B400	
00194	014B 006F		FDB	B1200	
00195	014D 0037		FDB	B2400	
00196	014F 001B		FDB	B4800	
00197	0151 000E		FDB	B9600	
00198	0153 0007		FDB	B19200	
00199					
00200	0155 8101	GETSTA	CMPA	0001	
00201	0157 2602		BNE	BR12	
00202	0159 5F	BR13	CLRB		
00203	015A 39		RTS		
00204					
00205	015B 8106	BR12	CMPA	0006	
00206	015D 27FA		BEQ	BR13	
00207	015F 53	SETSTA	COMB		
00208	0160 C600		LDB	0000	
00209	0162 39		RTS		
00210					
00211	0163 3402	TERM	PSHB	A	
00212	0165 8434		LDA	0034	Prepare to get rid of the inte
00213	W 0167 B7FF21		STA	0FF21	Turn off device
00214	016A CC0030		LDD	000030	
00215	W 016D FD0127		STD	0127	Put the original vector back i
00216	0170 3582		PULB	A,PC	
00217					
00218	0172 C635	WAKEUP	LDB	0035	
00219	W 0174 F7FF21		STB	0FF21	Enable input INTn
00220	W 0177 F6FF20		LDB	0FF20	Clear INT flags
00221	017A C601		LDB	0S0WAKE	Wakeup signal
00222	017C A645		LDA	V.WAKE,U	Owner waiting?
00223	017E 2705	WAKE10	BEQ	WAKE90	No, return
00224	0180 6F45		CLR	V.WAKE,U	Make sure it is ready for next
00225	0182 103F08	SENDB10	DB9	F0SEND	Wake up the process
00226	0185 5F	WAKE90	CLRB		Clear CARRY
00227	0186 39		RTS		
00228					
00229	0187 ICEF	SRIRQ0	ANDCC	0%11101111	Enable IRQ only
00230	0189 A14B		CMPA	V.INTR,U	Is the character a keyboard in
00231	018B 275A		BEQ	INABRT	Yes
00232	018D A14C		CMPA	V.QUIT,U	Keyboard abort?

The **RAINBOW**

Back Issue Availability



Back copies of many issues of *the Rainbow* are still available.

All back issues sell for the single issue cover price. In addition, there is a \$3.50 charge for the first issue, plus 50 cents for each additional issue, for postage and handling if sent by United Parcel Service and \$6 for orders sent U.S. Mail. UPS *will not* deliver to a post office box or to another country. This charge applies whether you want one back issue or all of them.

Issues July 1981 through June 1982 are available on white paper in a reprint form. All others are in regular magazine form. VISA, MasterCard and American Express accepted. Kentucky residents please add 5 percent state sales tax. We do not bill and no C.O.D. orders accepted.

Due to heavy demand, we suggest you order back issues you want now while supplies last.

To order, just fill out the form on the next page and mail it with your payment to:

the RAINBOW
9529 U.S. Highway 42
P.O. Box 209
Prospect, KY 40059

BACK ISSUE ORDER FORM

Please send me the following back issues:
(Payment must accompany back issue orders.)

VOLUME 1

NO.	MONTH YEAR	PRICE
1	JULY '81 PREMIER ISSUE	\$2.00 <input type="checkbox"/>
2	AUG. '81	\$2.00 <input type="checkbox"/>
3	SEPT. '81 EDUCATION	\$2.00 <input type="checkbox"/>
4	OCT. '81 PRINTER	\$2.00 <input type="checkbox"/>
5	NOV. '81	\$2.00 <input type="checkbox"/>
6	DEC. '81 HOLIDAY	\$2.00 <input type="checkbox"/>
7	JAN. '82	\$2.00 <input type="checkbox"/>
8	FEB. '82	\$2.00 <input type="checkbox"/>
9	MAR. '82	\$2.50 <input type="checkbox"/>
10	APR. '82	\$2.50 <input type="checkbox"/>
12	JUNE '82	\$2.50 <input type="checkbox"/>

VOLUME 2

9	MAR. '83 NUCLEAR	\$2.95 <input type="checkbox"/>
10	APR. '83 SIMULATIONS	\$2.95 <input type="checkbox"/>
11	JUNE '83 PRINTERS	\$2.95 <input type="checkbox"/>
12	JULY '83 ANNIVERSARY	\$2.95 <input type="checkbox"/>

VOLUME 3

1	AUG. '83 GAMES	\$2.95 <input type="checkbox"/>
2	SEPT. '83 EDUCATION	\$2.95 <input type="checkbox"/>
3	OCT. '83 GRAPHICS	\$3.95 <input type="checkbox"/>
4	NOV. '83 DATA COMM.	\$3.95 <input type="checkbox"/>
5	DEC. '83 HOLIDAY	\$3.95 <input type="checkbox"/>
6	JAN. '84 BEGINNERS	\$3.95 <input type="checkbox"/>
7	FEB. '84 ADVENTURE	\$3.95 <input type="checkbox"/>
8	MAR. '84 BUSINESS	\$3.95 <input type="checkbox"/>
9	APR. '84 GAMING	\$3.95 <input type="checkbox"/>

TOTAL _____

SHIPPING & HANDLING _____

U.P.S. CHARGE _____

U.S. MAIL \$6.00 _____

KY RESIDENTS ONLY

ADD 5% _____

TOTAL AMOUNT _____

ENCLOSED _____

Name _____

Address _____

City _____ State _____ ZIP _____

CARD # _____

PHONE # _____

EXPIRATION DATE _____

00233	010F 275A	BEG	INQUIT	Yes
00234	0191 A14D	CNPA	V.PCHR,U	Keyboard PAUSE?
00235	0193 274A	BEG	INPAUS	Yes
00236	0195 A14F	CNPA	V.XON,U	XON received?
00237	0197 275F	BEG	INXON	Yes
00238	0199 A1CB10	CNPA	V.XOFF,U	XOFF Received?
00239	019C 276B	BEG	INXOFF	Yes
00240	019E 30CB74	SRIRQ1	LEAX INPBUF,U	Set input buffer pointer
00241	01A1 E6CB1F	LDB	INXT1,U	Get input pointer
00242	01A4 3A	ABX		Set X to the input pointer
00243	01A5 A704	STA	,X	Put character in buffer
00244	01A7 5C	INCB		Advance input pointer
00245	01A8 C10B	CMPB	#INPSIZ-1	End of circular buffer
00246	01AA 2301	BLS	SRIRQ2	No
00247	01AC 5F	CLRB		Reset Pointer
00248	01AD E1CB20	SRIRQ2	CMPB INXT0,U	Input Overrun?
00249	01B0 2600	RNE	SRIRQ3	No
00250	01B2 C620	LDB	#OVERUN	Get the Error Code
00251	01B4 E04E	ORB	V.ERR,U	Put it with the others
00252	01B6 E74E	STB	V.ERR,U	
00253	01B8 2000	BRA	WAKEUP	Throw away the character
00254				
00255	01BA E7CB1F	SRIRQ3	STB INXT1,U	Yodate Input Pointer
00256	01BD 6CCB21	INC	INCNT,U	Advance the character count
00257	01C0 A6CB10	SRIRQ4	LDA V.XOFF,U	Get XOFF character
00258	W 01C3 1027FFAB	LBEW	WAKEUP	This is for descriptor disable
00259	01C7 E6CB21	LDB	INCNT,U	Get input count
00260	01CA C102	CMPB	#INPSIZ-10	is end of buffer close?
00261	W 01CC 1025FFA2	LBLO	WAKEUP	No, continue on
00262	01D0 E6CB22	LDB	INHALT,U	Has X-OFF been sent?
00263	W 01D3 1026FF9B	LBNE	WAKEUP	Yes, don't send it again
00264	01D7 0A00	ORA	#SIGN	
00265	01D9 A7CB22	STA	INHALT,U	Flag input halt
00266	W 01DC 16FF93	LBRA	WAKEUP	
00267				
00268	01DF AE49	INPAUS	LDX V.DEV2,U	
00269	01E1 2000	BRA	SRIRQ1	
00270				
00271				* Rest of this routine does nothing
00272				* Sort of dummy routine.
00273				
00274	01E3 A700	STA	V.PAUS,X	
00275	01E5 2007	BRA	SRIRQ1	
00276				
00277	01E7 C603	INABRT	LDB #B*INTRPT	
00278	01E9 2002	BRA	INQUIT10	
00279				
00280	01EB C602	INQUIT	LDB #S*ABORT	
00281	01ED 3402	INQUIT10	PSHS A	
00282	01EF A643	LDA	V.LPRC,U	
00283	W 01F1 17FFBA	LBSR	WAKE10	
00284	01F4 3502	PULS	A	
00285	01F6 20A6	BRA	SRIRQ1	
00286				
00287	01F8 A6CB23	INXON	LDA HALTED,U	
00288	01FB 04FE	ANDA	#H.XOFF	
00289	01FD A7CB23	STA	HALTED,U	
00290	0200 2605	RNE	INXON99	
00291	0202 0635	LDA	#035	
00292	W 0204 B7FF21	STA	#FF21	


```

00293 0207 5F      INXON99 CLRB
00294 0208 39              RTS
00295
00296 0209 A6C823    INXOFF LDA  HALTED,U
00297 020C BA01      INXOFF10 ORA  #H.XOFF
00298 020E A7C823    STA  HALTED,U
00299 0211 5F              CLRB
00300 0212 39              RTS
00301
00302      * This is the routine to move
00303
00304 0213 341E      DUMMY  PSHS  A,B,X,DP  Stack only the necessary stuff
00305 0215 1F50      ISME   TFR   PC,D      We are going to make up a DP
00306 0217 1F8B              TFR   A,DP
00307 0219 DC1D              LDD  DELAY
00308 021B C107      CMPB  #B19200
00309 021D 2606      BNE   SLOW      We can take time to wait for t
00310 021F C608      LDB  #8         Get bit count
00311 0221 3404      PSHS  B         Hold it
00312 0223 2018      BRA  QUICK2     Let's go and get the character
00313
00314 0225 44              SLOW  LSRA
00315 0226 56              RORB              Divide the delay by two so we
00316 0227 830004      SUBD  #04       Get rid of overhead
00317 022A 830001      TIM2  SUBD  #01  Time it out
00318 022D 26FB      BNE  TIM2      Time up?
00319 022F C608      LDB  #08       Get bit count
00320 0231 3404      PSHS  B         Hold it
00321 0233 DC1D      BITBET LDD  DELAY     Get the time delay
00322 0235 830005      SUBD  #05       Subtract out overhead
00323 0238 830001      TIM   SUBD  #01
00324 023B 26FB      BNE  TIM       End of time?
00325 W 023D F6FF22    QUICK2 LDB  #FF22     Get the incoming bit
00326 0240 54              LSRB              Hold bit in CC
00327 0241 0626      ROR  TEMP1     Build the character
00328 0243 6AE4      DEC  ,9        decrease bit count
00329 0245 26EC      BNE  BITBET    done with character?
00330 0247 3504      PULS  B
00331 0249 3460      PSHS  Y,U      Now let's stack the rest of th
00332 024B 1F8B      TFR  DP,A      We need to build a U-register
00333 024D 5F              CLRB
00334 024E 1F03      TFR  D,U
00335 0250 9626      LDA  TEMP1     Get the character
00336 W 0252 8D1111    ENDUM JSR  #1111    #1111 is a dummy address, it w
00337
00338      * THIS JUMP WILL GO TO THE REMAINDER OF THE INPUT ROUTINE
00339      * PULL THE REGISTERS OFF IN THE RIGHT ORDER
00340
00341 0255 3560              PULS  Y,U
00342 0257 351E              PULS  A,B,X,DP
00343 0259 3B              ENDUM2 RTI      Go back to the original task
00344 025A A26C3D      EMOD
00345 025D              SEREND EQU  *

00000 error(s)
00020 warning(s)
00250 00605 program bytes generated
000E3 00227 data bytes allocated
0246A 09322 bytes used for symbols

```

CCDISK and a nice disassembler program named DIS as well as the descriptions of several student projects, most developed around CoCo OS-9. A hard disk system and voice synthesis were included. We'll try to highlight it soon. We'll also try to pick up that promised look at the UNIX-like utilities from D.P. Johnson.

OS-9 Users Group President's Column

By Dale L. Puckett

Who Are We And What Are We Doing For You?

We are a Des Moines, Iowa based corporation formed to promote the use of computers in general and Microware's OS-9 operating system in particular. This year's officers were elected at the Second Annual Microware OS-9 seminar during August 1983. They were given a mandate to incorporate the group, establish a method of communication and set up a software exchange. Progress is being made in all areas. However, to mimic an old saying, four officers do not a dynamic group make.

What Can You Do For Us?

You, the OS-9 user, are the lifeblood of the group. If you take an active part in the organization by contributing programs to the software exchange, articles for the newsletter and technical help for the newcomers, we will someday be a viable force in the industry. If you do nothing, you will get nothing in return. It's up to you.

We need engineers and systems programmers to help George get the bulletin board system on line. We need recruiters and personnel types to help Peter increase the membership. We need people to help Dave Gibson put out the newsletter. We need people to manage the software library. We need others to write articles and stir up publicity. And we need people to coordinate the exchange of information between the many local OS-9 users groups we hope to inspire.

Why Should We Care?

The 6809 microprocessor — the best on the market — has run behind all others in the personal computing field since the beginning because there has been no coordination and cooperation. With the increase in the number of users made possible by Tandy's Color Computer version of OS-9, we again have a chance to become a viable force in the marketplace.

Please, say you want to help. Send us a letter and tell us what you would like to do. We'll put you in touch with the proper committee chairman immediately. And remember, if you solve a problem or create something you're proud of, send it to us for publication in MOTD and leave a note on the CompuServe OS-9 SIG.

Membership News

Your membership will be good through January 1, 1985. Renewals at or after the Third Annual OS-9 Seminar in August 1984, will be good from then through December 31, 1985. All members, regardless of when they join, will receive all services of the Users Group provided since August 1983. Additionally, all OS-9 Users Group members will have access to the special CompuServe XA-4 database which contains our complete software exchange library.

We hope you'll join us.

On OS-9 Matters, Frank FLEXes His Bias

By Frank Hogg
Rainbow Contributing Editor

NOTICE: The following is a very strong opinion that may upset certain people. Parental discretion is advised.

/d0/os9 vs +++FLEX

We have been getting three to five calls a day and perhaps as many letters from customers wanting to know whether they should purchase OS-9 or FLEX. I have been keeping a low profile on the subject because OS-9 is from Tandy and FLEX comes from us. However, with all these calls coming in, perhaps it is time to give my biased opinion about the two operating systems. Keep in mind that I have a vested interest in selling FLEX when you read the following.

What is wrong with OS-9? Nothing really. It's just that on the CoCo it leaves a lot to be desired. What exactly do I mean by this? After all, I use OS-9 every day. We have a terminal on each person's desk in the office and they all use OS-9. So why would I say anything bad about OS-9? I like OS-9! I think it is a fine operating system. Of course, I'm using it on a \$15,000+ Gimix III computer with I/O processors and other fancy stuff. Not a CoCo! I guess it is a matter of matching the tool to the job.

(Frank Hogg is the president of Frank Hogg Laboratory, one of the world's largest suppliers of software for 6809 based computers. He and his wife, Linda, live in Syracuse, New York.)

A \$15,000 Gimix* OS-9 Level II is the perfect tool: multi-user, multi-tasking, able to work with one megabyte of RAM and 20 megabytes or more of hard disk — the system really flies. However, on a CoCo, I think OS-9 is close to useless and this is why.

First, Tandy did not do a pure OS-9. Close, but not pure. The disk driver will only support single-sided drives and at the maximum, only 40 track. To put BASIC09 on the system disk, you have to delete files, otherwise it won't fit. A single-drive user is plumb out of luck. You can't change the stepping speed of the drives either. So, if you have better drives than Tandy's, you will not be able to utilize the extra speed. Now, before you write nasty letters to me, let me say that you can patch OS-9 to get around some of the above. But, my point is that Tandy does not support that and it should have been part of the system in the first place. The end result of all this is that the disk drives do not have enough room left on them to do anything really useful. There is a replacement driver available from DP Johnson for \$29.95 that will support the above shortcomings. I think Tandy should have designed it so you do not have to spend another \$30 for something that should have been there in the beginning.

Second, Tandy does not provide a Hi-Res screen with OS-9. You are left to work with the pathetic 16 x 32, upper-case only screen. Of course, you can buy our O-Pak for \$35.

*Our system includes the Gimix III, 320K RAM 20 megabytes hard disk, 7 TV925s and 3 printers. The Gimix itself only costs about \$9,000.

And it is a good buy. But you shouldn't have to. It should have been part of the package.

Third, multi-user and multi-tasking on the CoCo is possible, but it is useless. The serial port can only be run at 300 Baud and even then you can lose characters. Besides, what use is multi-user at 300 Baud? Multi-tasking is great fun on the CoCo, but it is also useless. During disk access the keyboard is not scanned and you have to type slow and deliberate in order not to lose characters. All this gives you is a taste of what it would be like. A lot of promise but no action.

Fourth, there is not enough memory to do anything useful. In order to make OS-9 useful, you have to have O-Pak's Hi-Res screen. With that in memory, there is only 32K left. You would have been better off to stay with RS DOS and saved a lot of money. We have been struggling to squeeze our programs into this restricted work space and it is not easy to get sophisticated programs into a small amount of memory. Many will not fit. These include the very fine *DynaCalc*, which is just too big to fit into 32K. Too bad, it is probably the finest spread sheet program available.

Fifth, the printer port only runs at 2400 Baud. There is no reason for this. We run the darn thing at 9600 Baud in FLEX with no sweat.

Sixth, OS-9 is *not* user-friendly. User-friendly means that a program is easy to learn and use. OS-9 takes a dedicated person many weeks to learn. But once you learn it, you will like it. However, if you don't have two or more weeks to devote to it, then perhaps you ought to reconsider. For instance, to do a simple thing like copying all the files from one disk to another in FLEX, you would type: "COPY 0 1". In OS-9 this is what you would type, presuming that you had already changed the data directory to point to the disk in /d0. Type "save -is24 /d0 /dl ! shell". This is *not* user-friendly!

Seventh, you need two disks to boot OS-9. FLEX is only one.

Finally, let me sum up by saying that I believe that our FLEX is a better tool for the job than RS OS-9. All that you need to run OS-9 costs a total of \$135. With FLEX, you get everything for \$70. Also with FLEX, it is already on the disk, ready to run. With OS-9, you have to order from three different places and do the installation yourself. FLEX has been around for the CoCo for over two years and it is easy to run and use. It is easier to write software for FLEX and there is more software available. You can use your CoCo with the right software to run a business or do sophisticated word processing or program development. All you can do with CoCo OS-9 is get a taste of what it would be like to have the real thing.

I like OS-9 a lot, but not on the CoCo. I like it on a Gimix with seven users and lots of memory and fancy hardware. That is where it fits better. OS-9 on the CoCo is like trying to fit 10 pounds of things in a one-pound bag. It is not the best tool for the job. FLEX is the best operating system for the CoCo.

Postscript: Before you write saying that I should not get on a soapbox talking about a product I sell, keep two things in mind. First, many, many people have asked for my opinion on this matter, and second, I never say anything I don't believe.

Interview with Chuck Eaker

Chuck Eaker is the author of *X-FORTH* and *CC-FORTH*. Both packages were taken off the market until this

new package *E-FORTH* was ready. I wanted to send a letter to users of *X-* and *CC-FORTH* telling them about the new *E-FORTH*. In order to get the information from Chuck, I played devil's advocate, while Margaret Hart (who is Jeri Colella's new assistant) took notes. It worked out so well that I thought you would like to see the results of the interview.

Evesdropping on a conversation between Chuck Eaker and Frank Hogg By Margaret Hart

(As the discussion begins, Chuck is seated comfortably in a recliner in Frank's office, smoking a cigarette. Frank, on the other hand, in his eagerness to learn everything there is to know about the new E-FORTH, is perched on the edge of his couch fidgeting, as their conversation begins.)

Frank: Why is the 83 Standard better? I've got *X-FORTH*. What's the difference? Why should I buy *E-FORTH*?

Chuck: It is different. It's different in that the words that are available in the glossary are 83 Standard words. This means that if you pick up *FORTH Dimensions* and you see a program that you like, you can probably enter it without any changes and it will run. Similarly, if you pick up Brody's book and try some of the examples in it, they'll run. This is not the case with *X-FORTH* or *CC-FORTH*.

Frank: Were there things you changed about the core?

Chuck: Well, it's smaller and, in some cases, it's faster.

Frank: Does it have the Assembler built into the core?

Chuck: The Assembler is built into the nucleus. The Assembler vocabulary has changed. It now conforms to the "Motorola Green Card."

Frank: It matches the Motorola Mnemonics?

Chuck: Yes.

Frank: In the past we had two distinct versions. A core for *X-FORTH* and a core for *CC-FORTH*.

Chuck: Right.

Frank: Now we have a generic core?

Chuck: Yes, that runs on the Color Computer or under FLEX and, hopefully, under other systems too.

Frank: So, that gives you a more transportable version. What other things? What am I going to gain from using *E-FORTH*?

Chuck: Well, it has the Editor that Brody describes.

Frank: Does it follow the Brody *Getting Started With FORTH* book?

Chuck: It follows Brody with a few exceptions. Those are listed in the appendix. And none of those exceptions, as far as I know, make any difference using his examples. You can still use all of his examples as is, without change.

Frank: So, as a learning tool, it's much better than the other implementations?

Chuck: Yes, much better. All I/O is vectored so that you can rewrite I/O returns.

Frank: It would make it more suitable to be in ROM?

Chuck: It's ROMable.

Frank: It's ROMable now. But, could you modify it to patch into a target machine more readily than before?

Chuck: Yes. In fact, the core itself is assembled separately. You just patch in all the I/O and you can do it at the assembly level or at the *FORTH* level. *E-FORTH* believes that it owns the disk.

Frank: Does it use a Standard *FORTH* disk format?

Chuck: Yes it does.

Genesis Software

presents

Arcade Action

★ Q*Man

This is the challenging one! Fast-paced with hi-res graphics. Jump onto the cubes, ride the spinning discs and avoid nasty characters. Requires joystick and 32K machine language arcade game.

Tape cassette (postage paid).....\$26.95

DESIGNER'S CHALLENGE: The first three players who reach level 9 on Q*Man will receive \$25 from Genesis Software.

Adventure

★ The Enchanted Forest

The BIG adventure in hi-res graphics. Move through more than 50 scenes on a quest to rescue the captive princess. Decisions are made according to visual clues, not text. There are many inhabitants in the Enchanted Forest — some are friendly, some are not. This is a sophisticated computer adventure — a real challenge. A must for your adventure library. (Enchanted Forest was reviewed in the Dec. 1982 issue of Rainbow). Requires 32K extended basic.

Tape cassette (postage paid).....\$21.95

★ Secret Of The Crypt

The BIG adventure continues. The sequel to the popular "Enchanted Forest" is here! You'll move in more than 50 hi-res, 3-D graphic scenes searching for clues in an attempt to enter the crypt. But beware, the trail to the crypt is beset with puzzles. In fact, the crypt's secret will remain a mystery to all but the most adventuresome. Requires 32K extended basic.

Tape cassette (postage paid).....\$21.95

★ Bigfoot

Hunt Bigfoot in a hidden maze of caverns and twisting tunnels that are displayed in hi-res graphics as you move. Seek out the lair of Bigfoot while avoiding perils along the way. Features multiple levels and many options of play. Each hunt takes place in a new, randomly generated maze. Challenging and fun. (Bigfoot was reviewed in the March 1983 issue of Rainbow). Requires 32K extended basic.

Tape cassette (postage paid).....\$21.95

Family Fun

★ The Game Show

Now a lively party game where two teams compete against the clock to name several items in a category. Includes 60 rounds with color graphics and sound. Machine language routine for fast response. (Game Show was reviewed in the Jan. 1983 issue of Rainbow). Requires 16K extended basic and joysticks.

Tape cassette (postage paid).....\$14.95

Personal checks welcome - no delay.
Missouri residents add 5.625 percent sales tax.

Genesis Software
P.O. Box 936
Manchester, Mo. 63011



Frank: Although it still reads and writes FLEX disk, but, indirectly?

Chuck: It comes with DOS in the FLEX version, which allows you to pass a string to FLEX to execute.

Frank: How can you transfer information between X-FORTH and E-FORTH?

Chuck: You can't. However, the add-on for the FLEX version would add this capability.

Frank: Would that be an option?

Chuck: Yes. And the way that works is, you can transfer X-FORTH files over directly (16 lines by 63 characters) and two, the other version allows you to get the Standard 64 characters by 16, by doing a lot of calculating as to where the sector is. It will also include information on how to install another I/O device (you can define the class of I/O devices a little like OS-9) like ACIA's and PIA's, then you can create named devices of that type.

Frank: So this would be similar to an I/O package that would also support other systems?

Chuck: Yes, I've written a few FLEX utilities in FORTH, like *List*, to give samples of how this can be done in FORTH.

Frank: This sounds like a very nice, interesting package. What are the other options that will be available?

Chuck: For the Color Computer, a screen editor (standard FORTH has the Brody line editor) which is a powerful editor, and one of the reasons why I have never been tempted to do a screen editor.

Frank: Does the Color Computer come with a Hi-Res screen?

Chuck: Yes.

Frank: 51 x 24?

Chuck: Yes. User-definable keyboard, that's the non-alphabetic keys. The special keys are definable.

Frank: Do you have the turtle graphics option?

Chuck: That, and the Four Part Harmony option.

Frank: Are those going to be complete with Source?

Chuck: The documentation will also be included and significant. The manuals are tutorials giving a thorough explanation on what's being done and why. All that is needed to run this program is a Color Computer.

My basic idea here was to come up with a bare bones package that you needed to be able to use Brody, to learn FORTH, and to use examples that are published in FORTH Dimensions, Doctor Dodd's, etc. And then all the other features that have been included in X-FORTH and CC-FORTH would be additional add-ons.

So, what I have planned is an add-on specifically for the FLEX version, which would show how to change the input/output routines and how to add new input/output devices, such as printers and video boards. Another optional package for either version, which would work with the Color Computer, would be a turtle graphics package.

Another add-on would be what I'm calling a Four Part Harmony package. This would allow chord sequences to be written. With that, you would take the disk out, load it, and then it would run immediately on the Color Computer. For FLEX users who use Gimix or SS50 machines, it will include a diagram of how you can wire up a PIA to get the sound.

And finally, definitions are provided in source so that the user can change them.

+++Redefine Keys For FLEX

The following will let you change what key(s) are used for control keys in FHL FLEX.

FLEX Patches For Alternate Control Keys

- #1 Make the down arrow key the control key and [SHIFT]-[down arrow] becomes "super-shift."
#2 Make the [CLEAR] key the control key and [SHIFT]-[CLEAR] the "supershift" key.

C7F6 = 7D
C7DA = 7D
C808 = 03 = 03
C80D = 40
C810 = 2E = 2B
C812 = 06 = 06
C816 = 7C = 7C
C817 = C7 = C7
C818 = FC = FC
C819 = 35 = 35
C81A = 82 = 82

Make the above patches with the MON or SETUP commands. Remember that with SETUP you can create a .BIN file that you can append to FLEX for a permanent change. See the part on SETUP that refers to creating files (F) and also see the beginning of the FLEX manual regarding customizing FLEX.

d0/sage_news

I recently spoke to MPD in England about SAGE for Level 1 OS-9. They are working on it and expect to have it operating within a few months. No information about price as yet. This program will put the CoCo on the map as far as application software is concerned. See February's column about SAGE.

Hint . . .

Putting On The Brakes

When using the *STOP* command to debug your program, ask for the information you want before you request the *STOP* action. For instance:

```
10 INPUT "NUMBER",A
20 IF A=3 THEN Y=10:X=30
30 IF A=4 THEN Y=20:X=40
40 PRINT X;Y:STOP
```

Line 40 shows the format that I use. It saves typing in the print request after the *STOP* command functions. A little thing, but it has saved me many finger strokes.

I submit this in order to repay the help and enjoyment that your fine magazine has afforded me as I try to learn about my CoCo.

George B. Sullivan
New Carrollton, Md.

Plan to Attend the 3rd ANNUAL OS-9 USERS SEMINAR

August 17, 18, 19, 20
Pre-Registration Only!

• MORE INFORMATION

- MORE EXHIBITS
- MORE SPEAKERS
- HARDWARE
- SOFTWARE



• TECHNICAL
SESSIONS FOR
6809 & 68K



Plan now to attend the 3rd Annual OS-9 User Seminar. This is an event you won't want to miss if you use, sell or are interested in systems that use Microware 6809/68000 software. Informative round-table discussions on almost every aspect of the design and use of Microware software will be held. A bigger and better exhibit area will have display booths from many of the leading suppliers of OS-9 compatible hardware and software. Don't miss this chance to increase your knowledge and skill in the latest microcomputer software technology — Register today!!!

Fee: \$125

Location: Marriott Hotel
Des Moines, Iowa

Don't Miss It: Pre-Register Now!
Call: 515/279-8844 or Write:

Boy, everyone is having a great time . . . You bet, Jeanne.

microware®

MICROWARE SYSTEMS CORPORATION
P.O. Box 4865 • Des Moines IA 50304

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

THESE FINE STORES CARRY THE RAINBOW

The retail stores listed below carry *the Rainbow* on a regular basis and may have other products of interest to Color Computer users. We suggest you patronize those in your area.

ALABAMA	Jefferson News Co. Anderson News Co. Endicott Software Madison Books Trade 'N' Books	Kissimmee Longwood Melbourne	Radio Shack & Elec. Hut Adventure International Store City Newsstand The Little Store The News Rack Micro Byte The Alamo Software Unlimited Computer Systems Group Boyd-Ebert Corp. Anderson News Co. Family Computers	Jasper	Computer Store Elex Mart Bauer Electronics Arcs Office Supplies Radio Shack Corrico's Radio Shack Advanced Color Software Radio Shack of Scottsburg Mitting's Electronics
Anchorage Fairbanks	Radio Shack Electronic World	Miami	Poling Place Caribbean Engineering Corp. Anderson News Co. Software Store Sound Trader & Computer Center	Lawrenceburg Madison Martinsville Mishawaka New Haven Scottsburg Walbach	
ALASKA		Orlando		IOWA	
Forest City Glendale Mesa	Softie World Road Runner Computer Products Personal Computer Place Software Center Home Brew Computers The Computer Shop Tri-Teck Computers Data Concepts SoftwareLand Corp. Livingston Books All Systems Go Books Etc. Computer Library Anderson News Co. Soft Shop	Panama City		Ames Bettendorf Davenport	Myers' TV & Stereo Repair Cosmas Computers Interstate Book Store Software City
ARIZONA		Pensacola Sarasota South Pasadena Stuart Tallahassee Tampa		KANSAS	
Phoenix				Hays Junction City Kansas City Topeka	Gulliver's Inc. Ill H's Stereo Special Computer Support Palmer News, Inc. Town Crier of Topeka, Inc. Amateur Radio Equipment Co. Lloyd's Radio
Scottsdale		GEORGIA		Wichita	
Sierra Vista Tempe		Atlanta	Chips, Inc. Guild News Agency Software City Muscogee News Co. Software City Kent Radio Shack Kannon Music Radio Shack Act One Video Martin Music Radio Shack		
Tucson Yuma		Columbus		KENTUCKY	
ARKANSAS	Anderson News Co.	Cummings Jesup		Hopkinsville Louisville Paducah Paintsville Pikeville	Hobby Shop The Computer Store Radio Shack Gus-Stan Enterprises Gus-Stan Enterprises
CALIFORNIA		Marietta Toccoa		LOUISIANA	
Atwater Citrus Heights Downey El Cajon Exton Fortuna Half Moon Bay Hesperia Hollywood Livermore Lompoc Los Angeles Marysville Madesto National City	Electrobrain Software Plus The Floppi Disk Radio Shack Software City R&V Sound Strawflower Electronics Dessert Sound, Inc. Levity Distributors Software Galeria L&H Electronics Emporium OPAMP Technical Books Barton Software & More Software Mart JARB Software Willy's Electronics DeLauer News Agency Pro Am Electronics Printers, Inc. Software Center Tower Magazine Computer Dimension The Computer Store Cost Plus Software Dimensional Software Disney's Electronics Radio Shack News On 24 Software 1st Color Computing Hardings Way News Computer Literacy Software Centre Int.	IDAHO	Magnum Computer Products Johnson News Agency	Baton Rouge Crowley Shreveport Slidell	Acme Book Co. Acadlana Newsstand Computer SOS Radio Shack 7181
Oakland Pacific Beach Palo Alto Sacramento		Moscow		MAINE	
San Diego		ILLINOIS		Brockton E. Wilton Lewiston South Portland Waterboro	Voyager Bookstore O'Brien's Electronic Svc. Ctr. Computer Software & Education Centers Portland News Co. Radio Shack
San Francisco Santa Rosa Southgate Stockton Sunnyvale Torrance		Aurora Champaign Chicago		MARYLAND	
COLORADO				Baltimore Kensington Lexington Park	The Program Store The Program Store Books, Etc. Bowes Books
Aurora Colorado Springs Denver Westminster	Aurora Newsland			MASSACHUSETTS	
CONNECTICUT		Danville DeKalb Evanston Geneseo		Brockton Cambridge	Voyager Bookstore Ninis Corner, Inc. Out Of Town News The Program Store Microcon Computer & Software Store Program Store Corners Book Shop Ipswich News Computer Plus North Shore News Co. Software Shop Software City Microcon Softwarecenters
Danbury Hartford Meriden Orange	Computer Serv. of Danbury The Aetna Life Club Store Mackey's Software City	Lisle Newton Oak Brook Oak Park			
DELAWARE		Pearia		Danvers Farmingham Fitchburg Ipswich Littleton Lynn Mansfield Springfield Woburn	
Wilmington	Norman, Inc.—The Smoke Shop	Schaumburg		MICHIGAN	
DISTRICT OF COLUMBIA	The Program Store			Allen Park Ann Arbor	Book Nook, Inc. Community News Center Software City Weatherwax Radio Shack Computer Options DSL Computer Products Robbins Electronics Tri-County Electronics Radio Shack "I O" John Rollins Computer Corner User Friendly Curt's Sound & Home Arcade Center Shop And Save The Eight Bit Corner MI Software Dist., Inc. Software City C/C Computer Systems Hi-Fi Audio Co. Perry Oil & Gas Computer Shack New Horizons Software City Clinton Electronics Software City
FLORIDA		Skokie S. Holland Wheeling Wood Dale		Lowell Mt. Morris Muskegon Novi Okemos Owosso	
Clearwater Coconut Creek Davie Ft. Lauderdale	Soenen & Wilmoth Books Data Base Software Plus More Mike's Electronics Distributor Software Connection Mr. Chips Book Town	INDIANA		Perry Pontiac Roseville Royal Oak St. Johns Southfield	
Holiday Jacksonville Beach		Berne Garrett Greenwood Indianapolis	White Cottage Electronics Finn News Agency The Computer Experience Bookland, Inc. Game Preserve Indiana News		

Sterling Heights Utica	Sterling Book Center Byte By Byte	Cleveland Columbus	Jerry's Computer Software City The Program Store Utopia Software Wilke News News-Readers The News Shop T.W. Hogan & Associates Lakewood International News Brunner News Agency Edu-Caterers Computer Network PCLEAR 80	VERMONT Burlington	Software City
MINNESOTA Minneapolis	Read-More News	Coshacton Dayton Fairborn Kent Kenton Lakewood Lima	Programs Unlimited Software City Wilke News Computer Showcase Little Professor Book Center Programs Unlimited Leo's Book & Wine Shop Reitz Electronics Home Computer Store	VIRGINIA Alexandria Falls Church Gafton Richmond	Alonso Book & Periodical The Program Store Electronics Marketing Software City
MISSISSIPPI Grenada Gulfport	Stereo Store of Grenada, Inc. Computerland	Lorain Mansfield Mayfield Heights	Computers 'N' Stuff Radio Shack Muskogee Oklahoma City Stillwater Tulsa	WASHINGTON Bellevue Maryville Mount Lake Terrace Renton Richland Seattle Spokane Tacoma Vancouver	Software City More Than Games Emerald Computer Services Data Borne C & J Electronics Computer Center Adams News Co., Inc. Bits, Bytes & Nibbles Nybbles 'N Bytes Northwest Effect
MISSOURI Creve Coeur Kansas City St. Louis	Software City Midwest CoCo Systems Magic World Software Centre Computer Xchange Final Edition	Miamisburg Niles Philadelphia Rocky River Toledo	B. Color Computer and Software John's News Stand 80-Plus	WEST VIRGINIA Logan Parkersburg	Stan's Electronics & Radio Shack Valley News Service
University City		Westerville		WISCONSIN Appleton Cudahy Janesville Milwaukee	Badger Periodicals Cudahy News & Hobby Book World Book Tree Booked Solid Booked Solid II Computer Software Center Harvey Schwartz Bookshop Univ. of Wisconsin Bookshop Digi-Tech Communications
MONTANA Sydney	Tomalino's Electronics	OKLAHOMA Duncan Muskogee Oklahoma City Stillwater Tulsa		WYOMING Casper	The Computer Store
NEBRASKA Lincoln Omaha	Hobby Town Computers & Components	OREGON Aloha Medford Portland		AUSTRALIA: SYDNEY	Paris Radio Electronics
NEVADA Las Vegas	Hurley Electronics	PENNSYLVANIA Allison Park Altoona Elyon Greensburg Harrisburg Malvern Philadelphia		CANADA: ALBERTA	McLeans Ltd. Barhead Sound 1982 Ltd. Double "D" A.S.C. Radio Shack Imperial Computer Ltd. Radio Shack Associated Stores Radio Shack Associated Stores Coaldale Sight & Sound Langard Electronics CMD Micro Kelly Software Distributors Radio Shack D.N.R. Furniture & TV Fax City Color & Sound Radio Shack The Stereo Hut The Book Nook Northern Computer Service Technics TV Ltd. Radio Shack Associated Stores Radio Shack Associated Stores Radio Shack Associated Stores Thornton & Son's Computerworld Tele-Logic Pynewood Sight & Sound Don's Radio Shop Photocraft Vermillion Ltd. Radio Shack
NEW HAMPSHIRE Peterborough Portsmouth West Lebanon	Radio Shack Portsmouth Computers Verham News Corp.	Phoenixville Pittsburgh Pleasant Hills Plymouth		BRITISH COLUMBIA	CompuIt Ken Dawson Microwest Distributors International Software
NEW JERSEY Bergenfield Cedar Knolls Cherry Hill Clinton Eatontown Lawrenceville Linwood Marmora Midland Park Montvale Morristown Nahwah Pennsville Pinebrook River Edge Rockaway Summit Teaneck Wayne	Software City Village Computer & Software Software City Micro World II The Program Store Micro Con Software Center Software City Outpost Radio Shack Software City Software City Software City Computer Discount of N.J. Dave's Elect. Radio Shack Software City Software City Software Station Software City Software City Wayne Software	Meeting Quarryville Shippensburg Tunkhannock Warrington Whitehall Williamsport York		MANITOBA Winnipeg	J & J Electronics Ltd.
NEW MEXICO Albuquerque	East West Enterprises Page One Newsstand Salt of the Earth	RHODE ISLAND Newport Warwick		NOVA SCOTIA Dormouth Halifax	Sector Software Atlantic News
NEW YORK Brockport E. Rochester East Syracuse Fairport Great Neck Hudson Falls Johnson City Melville Mt. Kisco New York	Lift Bridge Book Shop, Inc. The Software Shop The Data/Phile Co. Software City Software City G.A. West & Co. Unicom Electronics Imperial News Software City Barnes & Noble—Sales Annex Coliseum Books Eastern Newsstand Grand Central Station, Track 37 200 Park Ave., (Pan Am #1) 55 Water Street World Trade Center #2 First Stop News Idle Hours Bookstore International Smoke Shop Janil Smoke Penn Book State News Usercom Systems, Inc. Walden Books World Wide Media Services Software City Adirondack Computer Supplies Village Green World Wide News Programs Plus Spectrum Projects	SOUTH CAROLINA Charleston Hts. Beaufort Greenville Hilton Head N.Charleston Union		ONTARIO Bowmanville Etobicoke Hamilton Kincardine Kingston London Ottawa	Bowmanville Audio Vision LTD NEPCOM Gails Book World Prism Software T.M. Computers Multi-Mag National News Co., Ltd.
N. White Plains Plattsburg Rochester		TENNESSEE Chattanooga		QUEBEC LaSalle Sherbrooke	Messageries de Presse Benjamin Etn. Soc. De Lac
Syracuse Woodhaven		TEXAS Austin		SASKATCHEWAN Regina Saskatoon	George Glass ComputerTime
NORTH CAROLINA Aberdeen	King Electronics Radio Shack It's Just For You, Inc. Software City Newsstand Int'l Papers & Paperback Computer Concerns Papers & Paperback Boomers Rhythm Center D.J.'s Book and News Softmart K & S News Stand	Beeville Comroe Dallas		YUKON Whitehorse	Big Byte Computer Services H & H Electronics
Cory Charlotte		Elgin Ft. Worth		PUERTO RICO San Juan	Software City
Havlock Hickory Marion Raleigh		Houston			
Winston-Salem		Irvine Paris San Antonio			
NORTH DAKOTA Fargo	Computer Associates	UTAH Murray Ogden Salt Lake City			
OHIO Canton	Little Professor Book Center Software Centre International Cinsoft				
Cincinnati					

Also available at all Waldenbooks and selected B. Dalton Bookseller stores in the United States and Canada.

GIMIX HAS THE 6809 SYSTEM TO SUIT YOUR NEEDS

HARDWARE

All systems feature the **GIMIX CLASSY CHASSIS**; with a ferro-resonant constant voltage power supply, gold plated bus connectors, and plenty of capacity for future expansion.

Static **RAM** and double-density **DMA** floppy disk controllers are used exclusively in all systems.

All systems are guaranteed for 2 MHz operation and include complete hardware and software documentation, necessary cables, filler plates, etc.

Systems are assembled using burned-in and tested boards, and all disk drives are tested and aligned by **GIMIX**.

You can add additional components to any system when ordering, or expand it in the future by adding **RAM**, **I/O**, etc.

GIMIX lets you choose from a wide variety of options to customize your system to your needs.

OS-9 GMX III/FLEX SYSTEMS (#79)

The #79 super system now includes (in addition to the above): the **GMX 6809 CPU III**, a **256K CMOS Static RAM Board (#72)**, and a **3-port Intelligent Serial I/O Processor (#11)**.

The **GMX 6809 CPU III** can perform high-speed DMA transfers from memory to memory and uses memory attributes and illegal instruction trapping to protect the system and users from program crashes. If a user program crashes, only that user is affected; other users are unaware of the problem.

The **3-Port Intelligent Serial I/O Board (#11)** significantly reduces system overhead by handling routine I/O functions; freeing the host CPU for running user programs. This improves overall system performance and allows user terminals to be run at up to 19.2K baud.

with dual 40 track DSDD drives	\$5998.79
with dual 80 track DSDD drives	\$6198.79
with #88 dual 8" DSDD drive system	\$7698.79
with #90 19MB Winchester subsystem and one 80 track	\$8898.79
with a 47MB Winchester subsystem and one 80 track	\$10,898.79
with a 47MB plus a 6MB removable pack Winchester subsystem and one 80 track drive	\$12,398.79

TO ORDER BY MAIL: SEND CHECK OR MONEY ORDER OR USE YOUR VISA OR MASTER CHARGE. Please allow 3 weeks for personal checks to clear. U.S. orders add \$5 handling if order is under \$200.00. Foreign orders add \$10 handling if order is under \$200.00. Foreign orders over \$200.00 will be shipped via Emery Air Freight COLLECT, and we will charge no handling. All orders must be prepaid in U.S. funds. Please note that foreign checks have been taking about 8 weeks for collection so we would advise wiring money, or checks drawn on a bank account in the U.S. Our bank is the Continental Illinois National Bank of Chicago, 231 S. LaSalle Street, Chicago, IL 60693, account #73-32033.

BASIC-09 and OS-9 are trademarks of Microware Systems Corp. and MOTOROLA, Inc. FLEX and UniFLEX are trademarks of Technical Systems Consultants, Inc. GIMIX, GHOST, GMX, CLASSY CHASSIS, are trademarks of GIMIX, Inc.

SOFTWARE

All **OS-9/FLEX** systems allow you to software select either operating system. Also included is the **GMXBUG** monitor and, in systems with 128K or more of RAM, **GMX-VDISK** for **FLEX**.

All **GIMIX OS-9** systems include **Microware's Editor, Assembler, Debugger, Basic09, and Runb**; and the **GMX** versions of **RMS** and **DO** for **OS-9**.

All **GIMIX** versions of **OS-9** can read and write **RS** color computer format **OS-9** disks, as well as the **Microware/GIMIX** standard format.

New and exclusive with **OS-9 GMX III** systems is the **GMX OS-9 Support ROM**, a monitor for **OS-9** that includes memory diagnostics and allows the system to boot directly from either hard disk or floppy.

A wide variety of languages and other software is available for use with either **OS-9** or **FLEX**.

OS-9 GMX I / FLEX SYSTEMS #49

The #49 systems include 64KB static RAM, #05 CPU, #43 2 port serial board.

with dual 40 track DSDD drives	\$3998.49
with dual 80 track DSDD drives	\$4198.49
with #88 dual 8" DSDD drive system	\$5698.49
with #90 19MB Winchester subsystem and one 80 track	\$6898.49

OS-9 GMX II / FLEX SYSTEMS #39

The #39 systems include 128KB static RAM, #05 CPU, #43 2 port serial board.

with dual 40 track DSDD drives	\$4498.39
with dual 80 track DSDD drives	\$4698.39
with #88 dual 8" DSDD drive system	\$6198.39
with #90 19MB Winchester subsystem and one 80 track	\$7398.39

GIMIX DOES NOT GUARANTEE PERFORMANCE OF ANY GIMIX SYSTEMS, BOARDS OR SOFTWARE WHEN USED WITH OTHER MANUFACTURERS PRODUCT.

EXPORT MODELS: ADD \$30 FOR 50Hz. POWER SUPPLIES.

GIMIX, Inc. reserves the right to change pricing, terms, and products specifications at any time without further notice.

ALL PRICES ARE F.O.B. CHICAGO

Contact GIMIX for price and availability of UniFLEX and UniFLEX GMXIII Systems.

NOTE on all drive systems: Dual 40 track drives have about 700KB of formatted capacity; dual 80's about 1,400KB; dual 8" about 2,000KB. The formatted capacity of hard disks is about 80% of the total capacity.

Want to expand your system to a megabyte of Static RAM and 15 users?

Simply add additional memory and I/O boards. Your **GIMIX** system can grow with your needs. Contact us for a complete list of available boards and options.

#72 256KB CMOS STATIC RAM board with battery back up	\$1898.72
#64 64KB CMOS STATIC RAM board with battery back up	\$528.64
#67 64KB STATIC RAM board	\$478.67
#11 3 port intelligent serial I/O board	\$498.11
#43 2 port serial I/O board	\$128.43
#42 2 port parallel I/O board	\$88.42
#95 cable sets (1 needed per port), specify board	\$24.95

TRADE UP YOUR CoCo!

GIMIX will allow you up to \$1100.00 credit toward the purchase of any GIMIX system when you trade-in your working Color Computer, peripherals, and original software. The trade-in value is limited to 110% of the RADIO SHACK™ list price at the time your order is placed. You pay the freight. This offer is good only in the Continental U.S.; is limited to the first 100 orders; and expires on 9/30/84. Only one trade-in per customer.

GIMIX inc.

1337 WEST 37th PLACE
CHICAGO, ILLINOIS 60609

(312) 927-5510 • TWX 910-221-4055



ADVERTISER'S INDEX

We encourage you to patronize our advertisers — all of whom support the TRS-80 Color and TDP System-100 computers. We will appreciate your mentioning the RAINBOW when you contact these firms.

A & P Software	22	DSL Computer Products	235	Oelrich Publications	248
Aardvark 80	231	Dugger's Growing Systems	245	Oregon Color Computer	28
Abbey Tape Duplicators	88	Dymax	192	The Other Guys Software	274
Access Programs Marketing	50	EAP Co.	163	Owls Nest Software	244
All-American Ultralight	94	Eaton Computer Products	260	P.B.H.	25
Analog Micro Systems	213	EchoSoft	72	Pal Creations	262
Arizona Discount Software	174	Elite Software	107, 109, 111	Parallel Systems	242
Ark Royal Games	287	Emerald Computer Services	258	Parsons Software	289
Armadillo International Software	169	Endicott Software	120	PBJ, Inc	301, 303
Aurora Software	216, 260	B. Erickson	259	PCM	114
B&B Software	114	EVS	12	Perry Computers	270
B5 Software	171	Federal Hill Software	189, 191	Petrocci Freelance Associates	134
Basic Technology	87	futurehouse	162	Photographics Software	243
Botek Instruments	239	Genesis Software	316	Dr. Preble's Programs	148
Bye George	78	GLIMIX	320, 322	Prickly-Pear Software	132, 179
BYTE-BACK CO.	73	Great Plains Computer Company, Inc.	176	PXE Computing	177
C & C Engineering	240	Green Mountain Micro	296	Pyramid Distributors	141
Calc-Soft	42	Hawkes Research Services	302	QCS (Quality Christian Software)	224
Cer-Comp	261	HJL	30	Radio Shack	90, 91
Challenger Software	126	Frank Hogg Laboratory	307, 309, 310	Rainbow Adventure Contest	63
Chattanooga Choo-Choo Software	238	Hot CoCo	225	Rainbow Connection Software	218, 219, 253
Chris Computers	122	Howard Medical	34	Rainbow Gift Certificate	275
Chroma Systems	172	Hycomp Software	164	Rainbow On Tape	269
Chromasette	147	Incentive Software	65	RAINBOWfest	226, 227
Circling Star Software	187	Inter+Action	70	Reitz Electronics	229
Classical Computing	268	Intracolor	104, 105	REM Industries	43
CoCo Chips	232	J & M	71	Robotic MicroSystems	242
CoCo Pro	208	JARB Software	98, 217	S & S Arcade	194
CoCo Warehouse	39	The JBM Group, Inc.	165	Saguaro	215
Cognitac	15	K & K Computers	205	Saturn Electronics	223
Color Connection Software	16	Kelly Software Distributors	79	SDS Computers	221
Color Micro Journal	249	Key Color Software	199	Selected Software	66
Color Power Unlimited, Inc.	9	Key Programs	133	Shamrock Software	254
Color Software Services	196	KRT Software	230	Silverware	24, 145, 285
Colorware	138, 139	Leader Sales Corporation	214	Skyline Marketing	150, 151
Compukit	243	Lloyd I/O	302	Softlaw Corporation	45, 46, 47
Computer Accessories of Arizona	233	Macrotron Systems, Inc.	85	Software Connection	232
Computer Island	40	Magnum Distributors, Inc.	160	Software Factory	272
Computer Plus	3	Mark Data Products	17, 76, 220, 277	Software Plus	289
Computer Systems Center	273	Marymac Industries	118	Software Support, Inc.	82, 83
Computerware	58, 59, 101, 240, 241	Merrick & Co.	186	Southern Software Systems	103
Computize, Inc.	237	Metric Industries	36	Spectral Associates	BC
Cosmos Computer Services, Inc.	102	Metro Electronics	222	Spectrum Projects	153, 154
Counterpoint Software, Inc.	8	MichTron	33, 35, 37	Speech Systems	155, 157, 158, 159, 161
Creative Technical	198	Micor R.G.S., Inc.	6	Star-Kits	128, 129
Custom Software Engineering	57	Micro-80	246, 255	Sugar Software	256, 257
CY-BURNET-ICS	51	Micro Magic	278	Syntactics	68
Data-Comp	173	Micro Solutions	264	T & D Software	271
Dataman	266, 267	Micro Tools, Inc.	295	T & S Software	228
Dayton Associates Of W.R. Hall, Inc.	200	The Micro Works	124	TCE Programs, Inc.	55
Deft Systems, Inc.	279	Microcom Software	264	ThunderVision	53
Delker Electronics	97	Microware Systems Corporation	305, 317	Transition Technology	276
Dennison Computer Supplies	IBC	Tom Mix Software	181, 182, 183, 184	True Data Products	281
Derringer Software	56, 136, 265, 280	ML-US'R Software	252	Vidtron	42, 43
Desert Press, Inc	234	Moreton Bay	130	Wasatchware	263
DISK-HAVEN PRODUCTS	291	Mr. R's Software	44	The West Bay Company	250
Dorsett	92	Nelson Software Systems	45, 46, 47	Woodstown Electronics	127
Double Density Software	11, 209			Workbase Data Systems	95
Dragon User	286			York 10	263

GIMIX STATE OF THE ART 6809 SYSTEMS FOR THE SERIOUS USER.



**GIMIX has 19MB or high performance
47MB Winchester Drive Systems and/or
Floppy Disk Drive Systems.**

**See our other ad
on Page 320.**

For the ultimate in performance, the Unique GMX 6809 CPU III, using either OS-9-GMX III or UniFLEX GMX III (available shortly), gives protection to the system and other users from crashes caused by defective user programs. e.g. During program development, a programmer who crashes goes back to the shell or the debugger, while the other users are not even aware anything occurred.

The intelligent serial I/O processor boards significantly reduce system overhead by handling routine I/O functions, thereby freeing up the host CPU for running user programs. This speeds up system performance and allows multiple terminals to be used at 19.2K baud.



BASIC-08 and OS-9 are trademarks of Microware Systems Corp. and MOTOROLA, Inc. FLEX and UniFLEX are trademarks of Technical Systems Consultants, Inc. GIMIX, GHOST, GMX, CLASSY CHASSIS, are trademarks of GIMIX, Inc.



For the user who appreciates the need for a bus structured system using STATIC RAM and powered by a ferro resonant constant voltage transformer.

GIMIX has single user systems that can run both FLEX and OS-9 or Multi user systems for use with UniFLEX or OS-9.

GIMIX versions of OS9 and UniFLEX include maintenance and support by Microware (90 days) and TSC (1 year). Maintenance and support after this period are available at extra cost.

(NOTE: this support and maintenance is only for use with approved GIMIX hardware)

GIMIX 6809 systems support five predominant operating systems:

**OS-9 GMX III,
OS-9 GMX II,
UniFLEX,
OS-9 GMX I,
FLEX**

and a wide variety of languages and development software.

Whatever your application: software development, instrumentation, process control, educational, scientific or business; whether you need single or multi-user capabilities, GIMIX has hardware and the operating systems to get the job done reliably.

Please phone or write if you need further information.

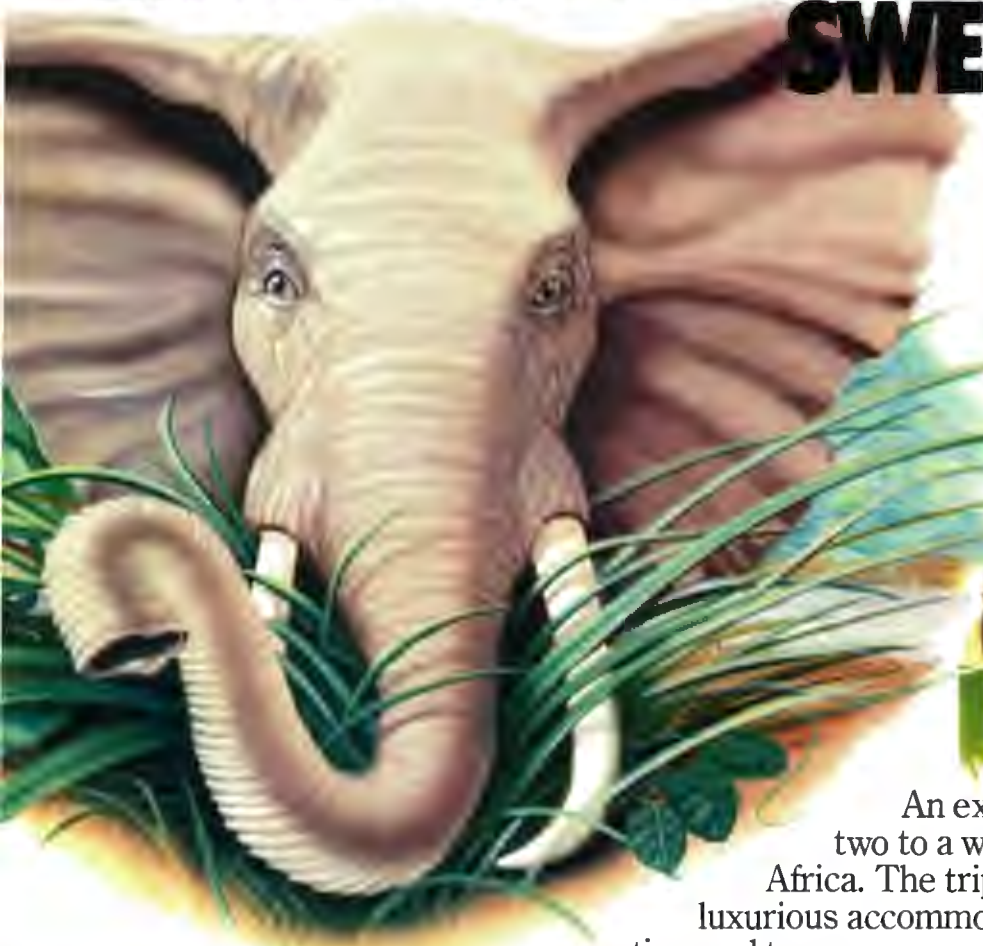
GIMIX inc.

1337 WEST 37th PLACE • CHICAGO, ILLINOIS 60609 • (312) 927-5510 • TWX 910-221-4055

© 1983 GIMIX Inc.



ENTER THE ELEPHANT SAFARI SWEEPSTAKES.



GRAND PRIZE

(1 winner)



An exciting two week adventure for two to a wild game preserve in Kenya, Africa. The trip includes airfare, luxurious accommodations, meals, tips, and taxes.



SECOND PRIZE

(25 winners)

A Bell & Howell 35mm camera. The 35J complete with fine Lumina lens completely eliminates complicated focusing.

FIRST PRIZE

(5 winners)

A Deluxe Camping Package featuring an 8' x 10' Wenzel Cabin Tent, four Wenzel sleeping bags, plus a Coleman lantern, stove and cooler.



THIRD PRIZE

(100 winners)

Camouflage Nylon Duffle Bag. This handsome bag is water repellent and double reinforced at all stress points.

And thousands of Elephant Safari camouflage T-shirts featuring the Elephant logo.

HOW TO ENTER

No purchase necessary. Just come into a participating Elephant Safari Sweepstakes dealership where you'll find free entry blanks and official rules. While you're there, check out our full line of quality Elephant memory disks and accompanying products. Entries must be received by July 31, 1984. Void where prohibited.

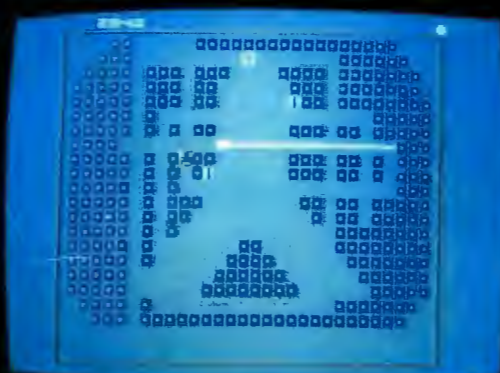


For the Elephant dealer nearest you, call 1-800-343-8413. In Massachusetts, call collect 617-769-8150.



ELEPHANT NEVER FORGETS

SPECTRAL ASSOCIATES



BEAM RIDER CASSETTE: \$24.95
DISK: \$28.95



CASSETTE: \$24.95
DISK: \$28.95 **PENCIL**



CASSETTE: \$24.95
DISK: \$28.95 **GALAGON**



COLOR PANIC CASSETTE: \$24.95
DISK: \$28.95

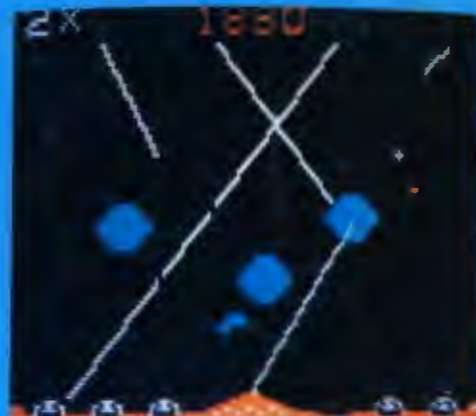


DEVIOUS CASSETTE: \$24.95
DISK: \$28.95

We produce the most complete line of Color Computer products:
 ARCADE GAMES
 FLEX-PLUS
 EDITOR/ASSEMBLER
 UTILITIES
 EDUCATION
 HOME USE

Call or write for a complete catalog.
 Business Office and Information
 Call: (206)581-6938
 Office open 8:30-4:30 P.S.T.
 We accept VISA, MASTERCARD
 Add 3% for shipping. No C.O.D.
 All prices U.S. FUNDS.
 WA residents add 7.8% sales tax.

3416 South 90th Street
 Tacoma, WA 98409



CASSETTE: \$24.95
DISK: \$28.95 **DEFENSE**

SATISFACTION GUARANTEED!!

Are you tired of paying big \$\$\$ for junkware? Spectral Associates sells only the BEST, HIGH QUALITY, FAST ACTION, 100% MACHINE LANGUAGE software. See for yourself. . . if not completely satisfied, return to us within 10 days for a refund. What other software company will stand behind their product like that?